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REVIEW ARTICLE

## THE PEDIATRIC MENTAL HEALTH CRISIS DURING THE COVID-19 PANDEMIC: AN INTEGRATIVE REVIEW

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### ABSTRACT

**Introduction:** During the Covid-19 pandemic, a rise in symptoms of anxiety and depression was described in the general population. It's critical to analyze these symptoms in the pediatric population, considering the influence of mental health across the social and academic domains, and its impact on neurodevelopment, morbidity, and mortality. This study aims to recognize and compare its risk factors, and suggest evidence-based policies to mitigate the adverse effects of future pandemics on youth.

**Methodology:** Using a search strategy through PubMed, CINAHL, and Scholar Google platforms, after screening 106 articles, 50 were read in full. After its analysis, 10 met the inclusion criteria of a publication date after March 2020, cross-section or cohort/case-control study with data including general pediatric population mental health or pediatric population infected with Covid-19 mental health.

**Discussion:** In the general pediatric population, isolation, higher time of screen use, and information restriction to one news vehicle were factors associated with the self-reported psychological distress. Nonetheless, the time spent exercising was suggested as a protection element. In the sociodemographic domain, older age, low socioeconomic status, migration background, and limited living space were associated with adverse mental health. Hospitalization and Long-Covid were risk factors associated with the pediatric population infected with the SARSCov-2.

**Conclusion:** It's crucial to measure and discuss the impact of the Covid-19 pandemic on the mental health of vulnerable children and adolescents. Applicable interferences that showed less anxiety in hospitalized kids were contacting the family member through free teleconferencing programs and providing video games for children in isolation. There are still COVID-19 worldwide studies and data to be released, it's a subject to continue its discussion, and formulation of evidence-based policies.

**Keywords:** Humanization of Assistance; Pediatrics; Covid-19; Play therapy;

## 1. Introduction

On March 11, 2020, the World Health Organization (WHO) declared a pandemic, Covid-19 outbreak. For more than three years, the world fought through this peculiar combination of public health crises and social distancing, with schools suspended in 188 countries. Although lockdown is an efficient measure against SarsCov-2 aerosol transmission, isolation is a known risk factor for mental health diseases<sup>1 2</sup>. This correlation is a suggestive cause of the rise of psychological symptoms of anxiety and depression in the general population that was described during this period<sup>3 4</sup>.

Several studies aborded this subject, tracing different sociodemographic and individual factors correlated with the referred symptoms, which will be aborded in this review considering the pediatric viewpoint.

Although an important theme for all ages, it's critical to discuss it specifically in the pediatric population, considering the influence of mental health across many domains as family, social and academic, but also impact on neurodevelopment and link to morbidity and mortality<sup>5 6 7</sup>. This study aims to recognize and compare the risk factors associated with the risk of a decrease in pediatric mental health in the selected studies and provide information for evidence-based policies.

## 2 Methods

It was used in this integrative review, a search strategy through PubMed, CINAHL, and Scholar Google platforms. After screening 106 articles, 50 were read in full and 10 met the inclusion criteria of a publication date after March 2020, cross-section or cohort or case-

control study with data of the general pediatric population mental health or of the pediatric population infected with Covid-19 mental health.

Table 1 summarizes characteristics from the 10 studies including the year of publication and location of the studied population.

**Table 1 – Studies Selected**

Article Title	Year	Location
Prevalence and risk factors associated with self-reported psychological distress among children and adolescents during the COVID-19 pandemic in China	2020	China
Impact of COVID-19 pandemic on the mental health of Canadian children and adolescents	2021	Canada
Screen Use and Mental Health Symptoms in Canadian Children and Youth During the COVID-19 Pandemic	2021	Canada
Compliance and Psychological Impact of Quarantine on Children and Adolescents due to Covid-19 Pandemic	2020	India
Association of Children's Physical Activity and Screen Time With Mental Health During the COVID-19 Pandemic	2021	USA
Long COVID and the mental and physical health of children and young people: national matched cohort study protocol	2021	UK
Physical and mental health 3 months after SARS-CoV-2 infection (long COVID) among adolescents in England (CLoCk): a national matched cohort study.	2022	UK
The Association Between School Closures and Child Mental Health During COVID-19	2021	USA
Social Determinants of Health and Pediatric Mental Health Before and During COVID-19 in New York City Primary Care Pediatrics.	2022	USA
Impact of the COVID-19 pandemic on quality of life and mental health in children and adolescents in Germany.	2021	Germany

USA: United States of America; UK: United Kingdom

### 3 Global Background

In May 2023, WHO declared the end of the state of emergency of the Covid-19 Pandemic. It's of prime importance to look retrogradely at this period as a time of change in family dynamics and everyday lifestyle, and to study its negative effects, mainly on deteriorating mental health<sup>8</sup>. It was described

a strong interrelationship between psychological stress, depression, anxiety, and obsessive-compulsive traits in the general population during the COVID-19 pandemic<sup>9</sup>. In the COMET-G Study, probable depression was detected in 17.80% of the participants, in which persons with a history of mental disorders had higher rates of current depression

(31.82% vs. 13.07%)<sup>4</sup>. Changing the optic to children, there are fewer studies regarding this theme, although its importance. This fact might be connected to the subtle manifestations of deteriorating mental health in children. Some presentations of anxiety symptoms can be temper tantrums, misbehaving, and defiant behavior, while some depressive symptoms in this population can present as impatience, irritability, boredom, and clinginess<sup>10 11</sup>.

Regarding the existing articles, there was a significant increase in anxiety and depression symptoms in the pediatric population. In the Dragioti study, the prevalence of anxiety among children and adolescents was 19% (95% confidence interval 14% to 25%, data from 22 studies), and the depression prevalence was 15% (95%CI 10% to 21%, data from 16 studies)<sup>12</sup>. Compared to data previous to the pandemic, a German Study reported more mental health problems (17.8% vs. 9.9%) and higher anxiety levels (24.1% vs. 14.9%) than before the pandemic<sup>13</sup>. This rise was also found comparatively in a Canadian study, that described "anxiety and depression scores significantly higher than previous trajectories would have predicted"<sup>14</sup>. Before these monumental effects on the well-being of families worldwide, it's important to understand its risk factors, so prevention politics can be built for future health crises and generations.

To organize the discussion of the selected studies, firstly, it will be approached the articles that analyzed the pediatric population in general, and, secondly, articles that analyzed children and adolescents infected with the SARSCov-2.

## 4 Risk factors associated with the pediatric population in general

### LOCKDOWN AND ISOLATION

According to United Nations Educational, Scientific and Cultural Organization (UNESCO), during the Covid-19 Pandemic, schools were suspended nationwide in 188 countries, with nearly 1.6 billion affected students<sup>15</sup>. Although lockdown is an efficient measure against SarsCov-2 aerosol transmission, isolation is a known risk factor for mental health diseases<sup>1 2</sup>.

Children and adolescents who were under quarantine had statistically significantly more psychological problems than those who were not quarantined. Fear and annoyance were anxiety-related insomnia, isolation, boredom (not statistically significant) and sadness were more common in a quarantine group of children.

### SOCIODEMOGRAPHIC FACTORS

The sociodemographic factors of age, sex, residence, economic status, and school class, were significantly associated with self-reported psychological distress<sup>17</sup>. The findings regarding ages showed that the older the children, the higher the psychological distress reported. This is probably correlated to a better understanding of the situation and uncertainty regarding the future, considering that the students in the last year of school, who are near to college entrance examination, had higher results of self-reported psychological distress. <sup>17</sup> Regarding younger children, there is a need for better tools for evaluating their mental health. Although of young age, children of 2 years are already aware of the changes around them

and are affected by them<sup>18</sup>. Young children couldn't understand the toll of the pandemic, but their parents' stresses regarding it make them anxious and increase their worries<sup>19</sup>.

Regarding economic status, it was found that children with "low socioeconomic status, migration background, and limited living space" suffered the most during the pandemic<sup>13</sup>. This could be explained by the association of high levels of psychological problems and referred financial losses of family and unavailability of basic life needs<sup>16</sup>.

#### RESTRICT INFORMATION

Interestingly, knowledge about sources for information on COVID-19 was associated with mental health status in the China prevalence cross-sectional study. Compared with students who knew more than 5 ways of finding knowledge about COVID-19, students who knew 1 way had higher odds of psychological distress (OR, 1.59 [95% CI, 1.56-1.63]), as did students who knew 2 to 3 ways (OR, 1.23 [95% CI, 1.21-1.26]), and those who knew 4 to 5 ways (OR, 1.10 [95% CI, 1.08-1.12])<sup>16</sup>. This could suggest that restriction to only one vehicle of News, and disinformation are linked to worse mental health.

#### HIGHER TIME OF SCREEN USE

Higher levels of electronic learning time were associated with higher levels of depression and anxiety. In younger children, higher TV or digital media time was associated with higher levels of conduct problems and hyperactivity/inattention. In older children and youth, higher levels of TV or digital media time were associated with higher levels of depression, anxiety, and inattention; higher levels of video game time were associated with higher levels of depression, irritability,

inattention, and hyperactivity<sup>20</sup>. The exposure to online bullying, stressful news, and harmful advertisements during screen use could also contribute to poor child mental health during the pandemic<sup>21</sup>.

#### LACK OF EXERCISE

The time spent exercising was associated with protection from adverse mental health<sup>12</sup>. The China prevalence cross-sectional study, compared students who spent more than 1 hour exercising. Students who spent less than 0.5 hours exercising also had higher odds of self-reported psychological distress (OR, 1.64 [95% CI, 1.62-1.67])<sup>16</sup>.

## 5 Risk factors associated with the pediatric population infected with the SARSCov-2.

#### LONG COVID IN CHILDREN

In the academic literature, much has been said and discussed about the cognitive and emotional symptoms of adult patients with SARS COVI-2 in acute illness, post-illness, and rehabilitation. Several studies have shown disease-associated symptoms such as confusion, depressed mood, impaired memory and insomnia, anxiety, irritability, memory impairment, and fatigue. Considering its academic relevance and inclusion in the "Long Covid Syndrome", it suggests that the rise of anxiety and depressive symptoms during the pandemic can not only come from the exterior and socio-risk factors but also from the effects of the actual disease<sup>22</sup>.

#### HOSPITALIZATION

The experience of the illness-hospitalization complex was already a difficult situation for

children before the pandemic. Considering its impact on the child's physical and affective development, in addition to suffering from his unstable clinical condition, the routine hospital also represents its depersonalization because of loss of privacy and withdrawal from loved ones and the comfort environment break with everyday life. It was an even more difficult scenario because of the respiratory isolation inside the hospital, distancing not only family members but the health team and its tools for rehabilitation and ludic therapy. There was a loss in the important pillar of collaboration between family members and the health team and the maintenance of family integrity<sup>23</sup>.

Technologies like cell phones have helped in this regard, providing video-phone calls. These strategies, devices, and tools became allies in this distant scenario, since the support of the family nucleus, the understanding of care, and the decisions between the family and health team are foundations in the treatment of the patient. It was transformed from their traditional form - face-to-face and physical, to a virtual form, opening gates to a new holistic approach<sup>24 25</sup>.

Hospitalized children in general need extensive support from the family nucleus, multidisciplinary monitoring, and playful and stimulating therapies, but in particular those in neurorehabilitation. In the Covid-19 scenario where distance is a propaedeutic to control the spread of infectious diseases; video games and ludic-virtual games were shown to be promising tools and good allies in adjunctive treatments. <sup>26</sup> Besides the ludic effect on children, it's been suggested applicability of video games in neurological rehabilitation, gait training, balance

improvement, general motor development, and even cognitive improvement of children with CP, and ASD<sup>26</sup>. Another conduct that was effective as a ludotherapy was to encourage the patient to bring to the hospital bedroom some objects of sentimental value. It is a low cost action with the benefit to transform a hostile scenario in a more accessible and welcoming environment<sup>25</sup>.

## 6. Conclusions

It's crucial to measure and discuss the impact of the Covid-19 pandemic on the mental health of vulnerable children and adolescents. The isolation, lack of exercise, and sociodemographic factors of age, sex, residence, economic status, and school class, were significantly associated with the self-reported psychological distress in the general pediatric population. While in the Covid-19 infected children, hospitalization and long covid were associated.

Applicable interferences that showed less anxiety in hospitalized kids were contacting the family member through free teleconferencing programs and providing video games for children in isolation<sup>25,26</sup>. Considering that there are still worldwide studies to be released, such as the COH-FIT-C&A<sup>27</sup>, the subject abbordered in this integrative review must remain in discussion and formulation of evidence-based policies to mitigate adverse effects of the future pandemics on youth.

**Conflict of Interest Statement:**

The authors declare no conflicts of interest.

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