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Covid-19 among children: Updates of the literature.

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Abstract

We conducted the present study to review the extent by which children are likely to be affected by COVID-19. There has been a perception that children are not affected by the corona virus, and accordingly, children were excluded from vaccination programs against this virus. The results of the present study showed that important proportions of patients with COVID-19 were children but developed less severe symptoms. Nowadays, the picture started to change, and children are recommended to have the vaccination anti-COVID-19 for protection purposes. 9. This review was carried out by reviewing the literature and exploring the contents about COVID-19. Up-to date, we think that the information about COVID-19 is expanding and new concepts are expected to develop.

Keywords: COVID-19, Children, Corona virus, Pandemic, Vaccination.

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Introduction

As the pandemic progressed from February 2020 in East Asia to late April across Europe and the Americas, school closures were widely implemented based on what was known about the role of children in the spread of influenza during previous pandemics, with an estimated 80–100 percent of European Union/European Economic Area (EU/EEA) countries closing pre-schools, primary and secondary schools, and higher education institutions [1]. NPIs (Non-Pharmaceutical Interventions) and effective "lockdowns," many of which included school closures, have played a significant role in reducing transmission [2]. However, due to changes in contact patterns because of these measures, it's been impossible to determine how many youngsters were infected with SARS-CoV-2 or were able to spread the virus to others. Children and young adults make up a small percentage of COVID-19 cases recorded globally so far, but also account for a small proportion of severe cases and deaths7. In the early stages of the COVID-19 pandemic, there was evidence for age-dependency in clinical cases, with severe cases and mortality concentrated in the elderly and those with comorbidities [3,4]. Children, on the other hand, are thought to have lesser clinical symptoms [5,6]. It's worth noting that in most nations, early routine testing and diagnosis were limited to symptomatic cases requiring medical attention. As a result, early in the pandemic, statistics reported by countries using routine monitoring systems were likely to under-estimate cases among persons with moderate or no symptoms. Furthermore, widespread Social Distancing (SD) measures such as gathering restrictions, encouraging people to work from home, and closing bars and restaurants have had a significant impact on individual contact patterns, and universal school closures would have had a significant impact on how much children interact with others [7]. COVID-19 outbreaks in schools were not extensively reported at the start of the pandemic. National vacations and school closures in reaction to the pandemic, on the other hand, would have reduced the amount of non-household interactions that children have, lowering the chance of SARS-CoV-2 infection. It's been proposed that changes in children's innate immune systems make them less susceptible to SARS-CoV-2 infection, allowing for a faster and broader immune response [8]. In contact-tracing studies, population-based infection surveys, and retrospective seroprevalence surveys, a fat attack rate has been reported across different age groups [9-11]. This is typical of a novel disease in a population that has never been exposed to it before. There is also mounting evidence that the age distribution of newly found cases is changing towards younger age groups, which may have been captured because of increased test capacity in various nations, including the United Kingdom and the United States, as of April 202021. Increased hospitalizations among young people (20–35 years old) have begun to reflect this transition, but it remains to be seen if children will be affected at the same rate [12]. The largest question is whether children are inherently less infectious than adults and how much they contribute to the spread of infection. Children are not frequently identified as the index case within household clusters, but this is difficult to determine due to age-dependent clinical signs and a higher proportion of infections in children seeming asymptomatic [13]. Pre-symptomatic transmission has been demonstrated to be a key driver of transmission throughout the population, making the relationship between clinical severity and transmissibility difficult to untangle [14,15]. It’s unknown how much

asymptomatic and moderate cases contribute to forward transmission at any age [16]. New evidence and the extent of transmission in each country are being used to change school policies. With increased concern about the long-term developmental and mental health effects of school closures on children, the safe reopening of schools has become a top issue for governments around the world. Understanding the role of children in SARS-CoV-2 transmission is thus crucial for determining ongoing policy for schools that provide face-to-face education [17].

The discovery and spread of the novel coronavirus disease 2019 (COVID-19), also known as the severe acute respiratory syndrome coronavirus type 2 (SARS-CoV-2) poses a major public health threat to the world [18]. It has now spread to every country on the planet. The World Health Organization (WHO) declared this epidemic a pandemic on March 11, 2020, based on its alarming levels of spread, intensity, and inaction [19]. It's the first time a coronavirus has triggered a pandemic [20]. According to AAP statistics, children were responsible for 10% of illnesses in the United States up until September 2020 [21]. Most studies have looked upon COVID-19 instances in adults that have been reported [22]. The most common symptom of this infection in adults is pulmonary involvement, which is far less severe in children. In contrast to adult patients, there are many cases of multi-systemic involvement in children, and it appears that pediatric patients cannot be managed based on adult evidence.

The first confirmed pediatric patient was discovered on January 28, 2020, in Wuhan, China, the epicenter of the COVID-19 outbreak [23]. According to the Chinese Center for Disease Control and Prevention, roughly 0.9 percent of verified COVID-19 infection cases occurred in children under the age of ten. Individuals aged 10 to 19 were found to have similar occurrences. For persons under the age of 19, the rate was 2.16 percent [24]. In a recent study in Wuhan, 171 (12.3%) of 1391 children tested positive for COVID-19 over the course of a month [25].

Similarly, of 661 COVID-19 patients studied by Qui et al., 36 (5%) were between the ages of 0 and 16, and 28% were under the age of 5. Only 1.2 percent of the 22,512 Italian COVID-19 cases were youngsters, according to Italian investigators, with no deaths. Children accounted for 5% of the 4,226 COVID-19 cases in the United States, accounting for less than 1% of all hospitalizations [26]. Children accounted for 10% of cases and 0.3%-3.6% of all hospitalizations in the United States up to September 2020, according to AAP statistics. COVID-19 appears to be substantially more common in youngsters than previously thought. It could be owing to their varied symptoms, a lack of concern, or the disease's less severe course in youngsters, which results in fewer laboratory tests. Because Polymerase Chain Reaction (PCR) tests are now more widely available, even for milder cases, this would be adequately defined [27].

Gender and Age of Onset

This virus can infect children of all ages, from newborns to young people, according to case reports. The average age of affected children was 6.7 years in a recent research by Lu et al., [28]. Boys made up 60.8 percent of pediatric cases, 33.9 percent of patients were between the ages of 6 and 10, and 18 percent were under the age of 12 months. The average age of the 2143 children in a large Chinese pediatric case series was 7 years [29].

The symptoms of COVID-19 infection in children are frequently milder than in adults. Cough was the most prevalent symptom, according to Lu et al., report of 171 confirmed pediatric cases (48.5%). In 15.8% of the patients, the infection was asymptomatic. Meanwhile, 19.3 percent of patients experienced upper respiratory symptoms, with pneumonia being the most common clinical characteristic in this study (64.9%). Infected children had fever in 41.5 percent of cases. Only 16 percent of the cases had a temperature of more than 39°C, while 68 percent had a fever of less than 38°C.

Fever lasted an average of three days. Tachycardia and tachypnea were both recorded in 42.1% and 28.7% of patients, respectively. Pharyngeal erythema was another prevalent symptom (46.2%). In 8.8% and 6.4 percent of patients, respectively, diarrhea and vomiting were reported. Only 4% of the individuals had O2 saturation levels above 92 percent during the inpatient time. Radiologic signs of pneumonia were seen in 12 asymptomatic patients.

Neonates and COVID-19

The COVID-19 virus can be transmitted from an infected pregnant mother to her fetus, according to some experts. Medical personnel must use N95 masks, protective gowns, goggles, and head covers while resuscitating neonates born to COVID-19 suspected or confirmed moms. Furthermore, if the mother's COVID-19 has been confirmed, the baby should be isolated and examined [30,31]. There was no vertical transmission to their infants in one study of nine pregnant women [32]. In all conception products and infants, Fan et al., found no indication of COVID-19 infection [33]. A baby born to a reported COVID-19-positive mother had high antibody levels two hours after birth and had aberrant cytokine test results, according to a recent report by Dong et al. [34]. The presence of an elevated amount of IgM antibody showed that the neonate had been harmed while still in the womb. Although infection now of delivery cannot be ruled out, IgM antibodies do not normally show until several days after the infection has begun. According to Fan et al., no virus was found in the newborns, umbilical cords, breast milk, vaginal swabs, placentas, or amniotic fluids of two symptomatic pregnant women who had a positive COVID-19 Real Time -polymerase chain reaction (RT-PCR) test. As a result, it was hypothesized that the chance of intrauterine infection was extremely low. According to Chen et al., PCR testing of all three children delivered to verified COVID-19 positive moms were negative 72 hours after birth, and none of them became symptomatic [35]. Treatment for symptomatic newborns includes oxygen, as

well as correction of fluid and electrolyte imbalances to prevent over hydration and oxygen desaturation. High-frequency oscillatory ventilation inhaled nitric oxide, high-dose pulmonary surfactant, and extracorporeal membrane oxygenation may be beneficial in infants with severe acute respiratory distress syndrome.

Psychological Impacts

People's life has been disturbed across the world as a result of the COVID-19 epidemic and related public health actions. The COVID-19 pandemics direct and indirect psychological and social repercussions are already visible, and they are affecting the mental health of young children and adolescents today and in the future. The goal of this knowledge-synthesis study was to determine the impact of the pandemic on children's and adolescents' mental health, as well as to assess the effectiveness of various interventions used to enhance children's and adolescents' mental health during previous and current pandemics. The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) standards was used to perform the systematic review, which comprised experimental randomized and nonrandomized controlled trials, observational studies, and qualitative research. Results: 18 articles were found that met the inclusion criteria out of 5828 total. The authors evaluated them conceptually and organized the significant findings into the subject categories of the pandemic's impact on children's and teenagers' mental health. Art-based programs, support services, and clinician-led mental health and psychosocial treatments are all beneficial at reducing mental health difficulties in children and adolescents. Conclusion: During and after a pandemic, children and adolescents are more likely to have high rates of sadness and anxiety. Future researchers must investigate effective mental health methods suited to the requirements of children and adolescents. Exploration of effective channels for the creation and delivery of evidence-based, age-appropriate services is critical to reducing the effects of mental health care for children and improving long-term capacity [36].

Conclusion

COVID-19 affects all people irrespective to age and gender. Children were perceived to be less likely to be affected by corona virus, but this perception was built on the consideration that less severe conditions of the COVID-19 were associated with children compared with adults. Children must take serious considerations for the possibility of infection and receiving the vaccination against the virus.

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