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## Paediatric long-COVID diagnosis in school's health unit environment

### Abstract

It is known that the mental health and well-being of all children and young people should be taken care of, regardless of their SARS-CoV-2 infection status. It is difficult to know the exact number of young people who need help, but in many health systems the need is likely to be greater than the resources available. Many questions about long-COVID-19 in children and adolescents <18 years of age, its prevalence, natural course, risk factors, mechanisms and consequences remain unanswered. As well as studies assessing whether vaccination reduces the risk of long-COVID-19 in children and adolescents who contract COVID-19 despite vaccination would be valuable.

This paper examines the degree to which environmental elements were connected to children's well-being during COVID-19 lockdowns and restrictions. The purpose of this study is to investigate early learning experiences in the family, childhood education and environmental elements that affect children's social-emotional health. The results also show that there may be protective variables for kids' mental health amid stressful situations, such as the lockdowns that many families went through during the pandemic.

**Keywords:** long-COVID, mental health in children, COVID-19, vaccinations, pandemic.

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### INTRODUCTION

Long COVID or post-acute COVID-19 syndrome is a state where people experience some symptoms of COVID-19 even after getting discharged from the hospital. Even though children and adolescents are less likely to experience severe manifestations compared to adults, a significant number of them have evolving symptoms, so-called pediatric Long COVID. It is now estimated that between 4% and 25% of children with COVID-19 infection could be affected by Long COVID-19, which is characterised by prolonged neurological or respiratory effects like headache, fatigue, changes in cognition, gastrointestinal systems, and respiratory problems. In the context of the school health unit, identifying and treating long-term COVID-19 in school-going children is complex. School health units have a scarcity of finances and human resources, and the problem is compounded by the general lack of recognition and inadequate preparedness concerning Long COVID in children. This paper identifies some challenges that may be encountered when differentiating Long COVID symptoms from other diseases and when gathering medical histories and reliable reports of patients, particularly children. This study aims to identify the difficulties of diagnosing and managing Long COVID in school-age children within health-facility-based school units. As a result, by revealing the obstacles to the implementation of care for children and adolescents with Long COVID in school environments and by knowing best practices, the school health units can guarantee a better quality of care to those students

most affected and, consequently, the children's well-being and academic performance will improve.

### Overview of Long-COVID in children

Long COVID or post-acute COVID-19 syndrome is a condition that is specified by symptoms experienced after recovery from the initial acute SARS-CoV-2 infection. From acute infection, Long COVID-19 in children and adolescents is described as symptoms with a duration of above 12 weeks by the World Health Organisation. Some symptoms that affect children and adolescents include fatigue – headache, difficulty sleeping or staying awake, respiratory problems, nasal stuffiness, and problems with learning or understanding. Data regarding children and adolescents having Long COVID suggests that it affects this age bracket with an incidence of between 4% and 25.2% [1]. For instance, though COVID-19 is not as severe for young people, Long COVID can negatively affect their health, cognition, and daily existence [2]. Chronic symptoms can affect the level of functionality, quality of life, school, and social life in a child's daily life [3]. Some of the issues that have been put forward as possible risk factors for Long COVID in children and adolescents include the following. Specific underlying diseases, including allergic rhinitis, atopic dermatitis, respiratory, GI, and rheumatic diseases, may also seem to elevate the risk. Other factors include what we can call geriatric features, namely, older age, obesity, and initial COVID-19 symptoms, such as fatigue, muscle, and abdominal pain, increasing the risk of post-viral syndromes [4,5]. Some

people, for example, those with Attention Deficit Hyperactivity Disorder, could be vulnerable since the drugs used for this condition could interconnect with other medications.

Diagnostic challenges in the school health unit environment

Various school health units are usually faced with challenges related to resource scarcity, including inadequate workforce and capital and a lack of sophisticated medical facilities. School nurses and other healthcare providers may be handling hundreds of students and numerous health issues to attend to, and hence, they may not have adequate time and focus to give to Long COVID [6]. Long COVID is a novel condition, and the scientific community is gradually gaining knowledge about it, especially among children. The school health units may not have the particular expertise and experience of the SHU on the screening, diagnosis, and treatment of long-term COVID-19 in children and adolescents [7]. This lack of knowledge can fail to diagnose disorders or diagnose them inadequately, complicating a patient's access to proper treatment and assistance. Long COVID symptoms in children may also differ from those in adults. They can manifest as headaches, joint pains, and fatigue, similar to chronic fatigue syndrome, anxiety and depression, or respiratory issues [8]. Differentiating Long COVID from such disorders may sometimes prove difficult given that there is no specific diagnostic test or biomarker for the condition. This complexity may lead to misdiagnosis or late diagnosis, detrimental to the child's overall well-being. It can sometimes be challenging to obtain an accurate and detailed medical history and describe the symptoms of children and adolescents. The participants might be unable to express the symptoms correctly, lack health literacy, or be driven by parental opinions or beliefs [4]. Further, some symptoms, such as cognitive loss or fatigue, may be somewhat concealed or hard to measure, and therefore the school health units struggle to evaluate and diagnose Long COVID [9].

### Best practices for diagnosis and management

Therefore, it is essential to design diagnostic measures and procedures that can be unique to the setting of the school health unit and be effective in diagnosing long COVID in children. These tools should be up-to-date with the research and guidelines and include a complete evaluation of somatic, cognitive, and psychopathological symptoms [10]. The most critical step that can be taken is to develop more precise guidelines for diagnosis and decision-making matrices to minimise potential misidentification of Long COVID cases. Since Long COVID in school-age children involves several symptoms and multiple body systems, a team approach to diagnosis and management is crucial [8]. School nurses who act as the initial caregivers to these children should seek cooperation with paediatricians, specialists, and other caregivers, including pulmonologists, neurologists, and developmental psychologists, among others, to provide the best evaluation and care plan. Education about Long COVID, alongside raising awareness, should be targeted at the school staff, families of the affected learners, and the community in general. Long Covid-positive learners should be enlightened on the signs, symptoms, and the possibility of it affecting their learning ability and well-being [3,11]. These programs can help school staff become aware of such cases, ensure that correct support measures are implemented, enable families to become aware and seek adequate medical help and ensure that their children's needs are met.

When children are potentially affected with Long COVID, they should undergo an extensive physical examination that involves laboratory examination, imaging, and other tests where necessary. Preschool children with suspected developmental and behavioural disorders should be referred to a specialist with clear guidelines on the type of evaluation required, and the health units in schools and hospitals can collaborate to ensure that the child obtains proper diagnostic assessment [6]. Further, follow-up and appropriate physical check-ups should be done occasionally to monitor the progression of the symptoms, change the treatment regimens, or address new problems as necessary. Long COVID-19 can cause some mental, psychological, and social-emotional changes in children. The said aspects should be closely monitored and managed by the school health units; counselling services, support groups, and referrals to a Mental Health worker may be required [12]. Considering the psychosocial aspects of Long COVID is essential for the comprehensive health of an individual and healthy children's functioning during this time.

### Implications and recommendations

Prompt diagnosis and management of Long COVID in kids can help prevent its detrimental effects on their physical, academic, and emotional well-being [8]. School health units should also express the need for improved resource allocation, including extra finances, more staff, and appropriate training to combat Long COVID challenges. Therefore, encouraging research and systematic reviews, which detail the incidence, symptoms, and consequences of Long COVID in the school context, is critical for formulating effective strategies and interventions [1,12]. It is crucial to forming cooperation and collaboration between schools, healthcare centres, and public healthcare institutions. This will allow for developing a practical and integrated approach to addressing Long COVID in children. There is a need for an extraordinarily focused policy change for Long-term COVID-19 in children to work towards formulating an intervention guideline, strengthening health units in schools, and supporting future studies and investigations [4].

### CONCLUSION

This research has revealed the increasing cases of Long COVID in school-age children, possible contributing factors to the condition, and the challenges the school health units face in identifying and addressing the condition. Specific recommendations include creating standard screening protocols, offering pre-symptomatic and patient education, employing rigorous assessment methods and appropriate aftercare, and focusing on mental health issues. Since Long COVID has affected school-age children, its management in school settings should encompass health, educational, social, and community services. Multi-sectoral cooperation is essential within the first years of children's lives for their early identification, referral, and coordinated care. Intervention studies should be conducted to assess the efficacy of different proposed interventions; biomarkers should be investigated to determine the best diagnostic tools for Long COVID in children; and longitudinal research should be carried out to establish the long-term effects of Long COVID on children. Proactive, ongoing assessment of the child population in the school setting is critical to developing substantiated policy and programming recommendations regarding this novel childhood condition.

**REFERENCES**

1. Lopez-Leon S, Wegman-Ostrosky T, del Valle TNCA, et al. Long COVID in children and adolescents: A systematic review and meta-analyses. *Sci Rep.* 2022;12(1):9950.
2. Borel M, Xie L, Kapera O, et al. Long-term physical, mental and social health effects of COVID-19 in the pediatric population: A scoping review. *World J Pediatr.* 2022;18(3):149-59.
3. [<https://www.apa.org/monitor/2023/04/pediatric-long-covid>].
4. Merzon E, Weiss M, Krone. B, et al. Clinical and socio-demographic variables associated with the diagnosis of Long COVID syndrome in youth: A population-based study. *Int J Environ Res Public Health.* 2022;19(10):5993.
5. Hogu O. Understanding Long Covid-19 patterns in pediatric patients using network analytics. Doctoral dissertation. Auburn University; 2022.
6. Floridia M, Grassi T, Giuliano M, et al. Characteristics of Long-COVID care centres in Italy. A national survey of 124 clinical sites. *Front Public Health.* 2022;10:975527.
7. Zimmermann P, Pittet LF, Curtis N. How common is long COVID in children and adolescents? *Pediatr Infect Dis J.* 2021;40(12):482-7.
8. Stephenson T, Pereira SMP, Shafran R, et al. Physical and mental health three months after SARS-CoV-2 infection (long COVID) among adolescents in England (CLOCK): a national matched cohort study. *Lancet Child Adolesc Health.* 2022;6(4):230-9.
9. Nittas V, Gao M, West EA, et al. Long COVID through a public health lens: an umbrella review. *Public Health Rev.* 2022;43:1604501.
10. Luedke JC, Vargas G, Jashar DT, et al. Neuropsychological functioning of pediatric patients with long COVID. *Clin Neuropsychol.* 2024:1-8.
11. Gupta M, Gupta N, Esang M. Long COVID in children and adolescents. *Prim Care Companion CNS Disord.* 2022;24(2):40720.
12. Hersh Z, Weisband YL, Bogan A, et al. Impact of Long-COVID in children: a large cohort study. *Child Adolesc Psychiatry and Mental Health.* 2024;1:48.

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