

# Impacts of the COVID-19 pandemic on the physical and mental health of children

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The total number of new cases of coronavirus disease 2019 (COVID-19) is decreasing in Hong Kong, but two recent paediatric cases have attracted immense public attention—a 4-month-old baby who contracted the viral infection from his family and a 4-year-old boy who was likely infected in the community several months before, possibly concurrently with roseola infantum, and tested positive despite the long interval between infection and testing.

Since the outbreak of COVID-19 in Hong Kong in January 2020, there has been a great deal of research by local paediatricians on the clinical manifestations<sup>1–3</sup> and scientific findings<sup>4,5</sup> of the paediatric cases, including comparative studies with paediatric cases in South Korea,<sup>6</sup> Wuhan,<sup>6–8</sup> and other regions of mainland China,<sup>6–8</sup> and with those of children infected with severe acute respiratory syndrome in 2003.<sup>9</sup> Collaborations with local and overseas researchers have also contributed to a deeper understanding of COVID-19.<sup>10–13</sup>

The overt effects of COVID-19 on children are known: severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection generally causes mild illness in children and adolescents, with 99.2% of paediatric patients with COVID-19 experiencing mild symptoms<sup>8</sup> and 26% to 38% asymptomatic.<sup>3,8</sup> However, serious complications have occurred in children in Hong Kong, such as PIMS-TS (paediatric inflammatory multisystem syndrome temporally associated with SARS-CoV-2), post-COVID-19 autoimmune haemolytic anaemia, and COVID toes.<sup>8</sup> These patients required lengthy hospital management including intensive care and prolonged follow-up after recovery.

In order to protect vulnerable individuals in Hong Kong, such as children and older and/or chronically ill adults, social distancing measures to mitigate the spread of infection have been enforced. Intermittently, schools have been closed and were fully open for <3 months in the entire year of 2020, and school closures have continued into 2021. Schools are fundamental to child and adolescent development and wellbeing, providing academic instruction, social and emotional skills, safety,

reliable nutrition, physical/speech and mental health therapy, and opportunities for physical activity, among other benefits. Schools also play a critical role in addressing racial and social inequity.<sup>14</sup> In the past 15 months of school suspensions, online teaching has played a central role in ensuring academic provisions but other aspects of development and wellbeing have been compromised.

In addition to providing a learning environment, schools serve to satisfy students' non-academic needs and school closures have serious consequences on the physical and mental wellbeing of students.<sup>15</sup> Internationally, studies have found that obesity<sup>16</sup> and myopia<sup>17</sup> among school-age children have increased because of longer screen times, lack of physical activities, and the small living and learning spaces at home. These indirect consequences can affect all children, but some are disproportionately more likely to be affected, such as those with special educational needs or those who are financially deprived. Tso et al<sup>18</sup> conducted a large-scale cross-sectional population online survey of 29 202 Hong Kong families with children aged 2 to 12 years. The authors found that, amid the COVID-19 outbreak and the resulting related school closures and disease containment measures in Hong Kong, the risk of child psychosocial problems was higher in children with special educational needs, and/or acute or chronic disease, mothers with mental illness, single-parent families, and low-income families. Delayed bedtime, inadequate sleep, inadequate exercise, and extended use of electronic devices were associated with significantly higher levels of stress among parents and more psychosocial problems among pre-school children. These indirect impacts of COVID-19 could potentially create a social crisis because school closures are likely to widen the learning gap between children from lower-income and those from higher-income families.<sup>19</sup>

In Hong Kong, Chua et al<sup>3</sup> found that household transmission was the main source of infection for children and youths, and the risk of being infected at school was small. On 10 May 2021, the Hong Kong College of Paediatricians, The Hong Kong Paediatric Society, and the Hong Kong Society for Paediatric

Immunology, Allergy and Infectious Diseases jointly issued an appeal to adult household members and carers (aged  $\geq 16$  years) to receive the COVID-19 vaccine for the benefit of the younger generation.<sup>20</sup>

However, this is only the first step in the appeal from paediatricians. The ultimate goal is to boost the overall immunisation rate in the community and to restore societal normalcy. On 24 May 2021, whole-school half-day face-to-face classes resumed for all school grades in Hong Kong. However, students were still not permitted to interact with peers at lunch, enjoy many of the non-core subjects that have to be missed due to shortened class time, nor socialise outside of “class bubbles”.

The United States, Canada, Singapore, and Israel have approved COVID-19 vaccination for those aged 12 to 15 years. This is a welcome development in the efforts to protect the population from COVID-19, and we look forward to newer scientific evidence for vaccine safety and efficacy in even younger children.

The take-home message remains: community-wide immunisation is safe and effective—and much more desirable than closures of educational and leisure facilities—for protecting the physical health and long-term psychosocial and emotional development of children, and for reducing social inequity.

#### Author contributions

All authors contributed to the editorial, approved the final version for publication, and take responsibility for its accuracy and integrity.

#### Conflicts of interest

All authors have disclosed no conflicts of interest.

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