

Indirect Impact of the COVID-19 Pandemic on Child and Adolescent Health and Possible Interventions for Low- and Middle-Income Countries

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First reported in Wuhan, China, the COVID-19 pandemic, declared by the World Health Organization (WHO), has been with us for over a year now [1].

The COVID-19 outbreak has led public health officials in most countries to establish legal and authoritative policies for mitigating and containing the outbreak by implementing different public health strategies, including avoiding the 3Cs (close contact, crowding, and closed environment), closure of schools and child-care facilities, and complete and partial lockdown [2]. These measures have significantly contained the COVID-19 pandemic [3]. Moreover, in consequence of social distancing, movement restriction, lockdowns, increased hand hygiene, and decreased hospital visits due to fear of COVID-19, the World's northern hemisphere has experienced a significantly reduced prevalence of seasonal influenza and other respiratory virus infections [4].

Children seem spared direct morbidity and mortality from COVID-19. However, children and adolescents, especially those who need long-term care or frequent medical attention, are unintentionally becoming victims of this once-in-a-lifetime pandemic [5]. Due to weak health systems and the interruption of essential health services such as immunization and antenatal and newborn care, the pandemic's indirect effects harm child and adolescent health. This disruption to health care access, combined with the lost educational and socialization opportunities with school closures, could have detrimental effects that last a lifetime. Some examples of many sad cases related to the negative consequences of COVID-19 containment measures are a teenage boy who died from the bubonic plague in July 2020 in Mongolia and a 12-year-old girl passed away from extreme exhaustion after walking many hours to her home during a nationwide lockdown in India in April 2020 [6, 7].

The impact of public health measures against the COVID-19 pandemic on children and adolescents' health and well-being depend on the types and level of pandemic containment measures implemented by governments. Some countries' economic stability and pandemic preparedness have been critical enabling or disabling factors to health and well-being. A recent modeling study covering 118 low and middle-income countries published in *The Lancet Global Health* estimated that an additional two million children under-five would die or experience

childhood wasting if essential health care services are restricted, and there is decreased access to food for 12 another months [8].

Children and adolescents with special needs should be a part of the impact assessment and interventions assessing the pandemic's direct and indirect effects. Such children require healthcare services more frequently. As nursing centers and clinics were closed during the pandemic, these patients couldn't receive the health care they needed. Consequently, future policies and public health measures mitigating the spread of COVID-19 and other public health emergencies should more ethically and empathetically address this population's health and social needs.

Another difficulty encountered by children and adolescents related to the public health measures for COVID-19 is the increased risk of domestic violence. From the point of service, child protective services have been interrupted or weakened. Simultaneously, social isolation, economic and mental health difficulties faced by parents and caregivers, and job losses have increased during this pandemic era. At the same time, 66 percent of countries reported reducing child protection services related to the COVID-19 [9]. Since school personnel are a crucial part of surveillance and reporting child maltreatment, prolonged school closures resulted in a reduction of reported cases of child abuse at precisely the time when the risk of domestic violence has increased [10].

As Jansen et al. stated, further research to prioritize child and adolescent public health services is needed to understand better how the pandemic mitigation and containment strategies imposed by governments are impacting children and adolescents' health and well-being [5]. Research is also necessary to understand the effectiveness of interventions addressed at minimizing the impact of these pandemic containment strategies. Such research is especially needed regarding those living in low and middle-income countries where curative healthcare services are more vulnerable to disruption, and disruption results in many preventable childhood deaths.

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