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**Impact of COVID-19 on Children and Pediatricians**

*(This is a preprint version of an article submitted for publication in Indian Pediatrics. Changes may be made before final publication)*

**PII:** S097475591600157

During the 2009 H1N1 pandemic, we had written about lessons learnt from the pandemic [1]. After a decade, we are in the midst of another pandemic due to a respiratory virus (SARS-CoV-2) [2] – We, herein; try to highlight some of the similarities and differences in the public and government response to the epidemics, and its impact on children and pediatricians.

Agent, host and environment decide the course of an outbreak of infectious diseases. Both pandemic flu and SARS-CoV-2 spread by respiratory droplet, but it is thought that the mortality is higher in SARS-CoV-2 infected cases. While pandemic flu caused significant mortality in children, SARS-CoV-2 mainly kills people over 60 and with comorbidities. From the data published so far, it appears that children account for 1-5% of all cases and would generally have a milder disease compared to adults [3]. The less severe presentation may be attributed to less exposure or sensitivity to COVID-19, different immune response mechanisms, or higher levels of antibodies to viruses than in adults due to broader exposures to respiratory infections in winter. There is some interest in the possible role of measles [4] and BCG vaccine in providing protection against SARS CoV2; if true, India stands to gain from its recent Measles-Rubella vaccine campaign. However, we cannot be complacent and we need to be on the lookout for severe disease in “high risk” children (immunocompromised, lung or airway disease, long term steroids, thalassemia, nephrotic syndrome etc.), in addition to continuing their ongoing management [5]. Seasonality of influenza is largely dictated by temperature and it remains to be seen how these factors affect SARS-CoV-2 transmission. Social determinants of health, including health equity and age-related illness, may play an important role in both pandemic flu and COVID-19 pandemic.

During the 2009 pandemic, India reported 27,236 laboratory confirmed cases of pandemic influenza A (H1N1) with 981 deaths [6]. The first case of the COVID-19 pandemic in India was reported on 30 January, 2020. As of 5<sup>th</sup> April, 2020, the Ministry of Health and Family Welfare has confirmed a total of 4643 active cases and 149 deaths in the country, with an increase predicted in coming days.

During the 2009 H1N1 pandemic, few people in India had access to social media and the primary source of information was television and print. Information about the number of cases and

deaths worldwide and in India was available but not at the pace it is available today. In general, there was poor awareness about how the infection spreads and the simple public health measures that could be taken to prevent spread. In contrast, there has been a huge outpour of information and misinformation primarily attributable to the social media during the current pandemic. It was heartening to see increase in public awareness about social distancing, hand washing, use of hand sanitizers, and cough hygiene, and measures to prevent transmission of SARS-CoV-2. At the same time, a lot of fake news and videos about the disease went viral on social media adding to the panic and confusion among lay persons.

During 2009 H1N1 pandemic, active public participation was limited. In contrast, the COVID-19 pandemic has sparked off a citizen's movement, with people standing at the frontline, shoulder-to-shoulder with governmental agencies. Several industrialists and celebrities have responded with financial contributions to the government funds and startups have come forward with innovations and technical expertise.

In 2009, the government response was much more limited to advisories on prevention of H1N1 through television and print. During this pandemic, the government has been seen to be very proactive by taking measures like public education through social media, television, radio, mobile phones and by various measures like active contact tracing and restrictions on public travel. The entire country was put into lockdown from 24<sup>th</sup> March, 2020. This has implications for children's physical and mental health. Due to decreased physical activity and consumption of fast food children from privileged section of society may become overweight. More importantly children from less privileged sections of society may become malnourished. Excessive screen time during lockdown may cause eye strain and behavioral issues may crop up. Online and domestic child abuse may increase during this period. ICMR has been quite proactive with updates on diagnostic testing and management guidelines. Also seen is better coordination between various government departments like health ministry (both central and state), law enforcement, transport authorities etc. Tackling the COVID-19 or any other pandemic, must not just be a point-in-time solution, but that it must always keep the larger objective of comprehensive, affordable public health in view. A robust community health framework is essential if we have to achieve this objective.

Problems that have persisted include insufficient trained healthcare workers, ICU beds and PPE. There is an urgent need to work on these issues if we do not want to be seen as laggards when it comes to managing pandemics in the future. We should also look at indigenous manufacturing of high quality (WHO standard) PPEs, point of care diagnostics and ICU equipment as these are crucial part of pandemic preparedness.

Finally, the pediatrician treating the sick child is a susceptible adult and due care must be taken by all pediatricians while examining children, particularly those with respiratory symptoms. Use of

appropriate PPE, postponing routine visits (immunization visits can be continued as per WHO guidelines), allowing only one attendant with the child in the clinic, frequent sanitizing of the clinic, educating the clinic staff and parents accompanying children, appropriate use of telemedicine, avoiding throat examination, spacing out appointments, hydroxychloroquine prophylaxis are some ways in which pediatricians can minimize the risk to themselves. For pediatricians serving in ICUs, following strict guidelines issued by IAP [7] and government is of utmost importance.

*Funding: None; Conflict of interest: None*

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