INVITED COMMENTARY

Routine Immunization During the Covid-19 Pandemic: Need for Improved Strategies for Future Threats

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Immunization, one of the most cost-effective public health measures, has considerably reduced the under-5 mortality. However, Vaccine Preventable Diseases (VPDs) are still causing significant morbidity and mortality in young children in India [1]. India's National Immunization Program, one of the world's largest public health programs, provides free vaccination against 12 VPDs to 26.7 million newborns and 29 million pregnant women and has performed exceedingly well in recent years [2]. Full immunization coverage in India reached 89% in 2021-22, showing improved vaccine accessibility and delivery. The Intensified Mission Indradhanush (IMI) lowered the number of zero-dose children from 2.7 million in 2021 to 1.1 million in 2022 in the high-risk and hard-to-reach areas. Through targeted interventions, advocacy, focused communication, and community-based inter-ventions, the marginalized and disadvantaged commu-nities (tribal, urban, high-risk and hard-to-reach) were better served [3].

COVID-19-led disruptions in the routine immunization

The onset of the COVID-19 pandemic in the late 2019 caused significant interruption in the routine immunization services worldwide leading to delayed and reduced vaccination rates [4]. According to the World Health Organization (WHO), over 90% nations experienced delays in their routine vaccination services by the end of 2021. The percentage of countries facing these disruptions climbed from 33% to nearly 50% between the first and fourth quarters of 2021 [5]. In April 2020, the DPT3 coverage in the WHO South-East Asia area decreased by 57% compared to April 2019 [6]. The pandemic substantially affected health and immunization services, especially in low- and middle-income countries (LMICs). An analysis of 58 studies revealed that 25% of the studies demonstrated a decrease in routine immunization (RI) coverage ranging from 10% to 38%, from 2019 to 2021. The study reported a decrease in the administration of vaccination doses from 25% to 51%, delays in timeliness from 6.2% to 34%, and reduced availability of fixed and outreach services [7]. In 2020, almost 23 million children did not receive the third dose of the DPT vaccine (DPT3), which is 3.7 million higher than the previous year. Out of these children, 60% resided in ten LMICs, including India. In the first half of 2020, over 170 nations experienced a decrease in the number of children receiving the DPT3 vaccine dose and the first dose of the measles-containing vaccine. However, there was an increase in coverage during the later part of the year [6].

During COVID-19 pandemic, India's childhood vaccination rate fell precipitously. The decreases in immunization were worse for rural households and later-scheduled vaccinations. Polio and DTP vaccines were delayed longer during the pandemic, therefore more kids missed them. India's DPT3 vaccination rates dropped from 91% in 2019 to 85% in 2020, according to WHO estimates [8]. According to a research based on adminis-tered dose data, India's DPT3 immunization rate fell by 15.8% in 2020 compared to prior projections [9]. COVID-19-exposed children had a lower likelihood of receiving a nine-month vaccination compared to children who were not exposed, according to a study conducted in Rajasthan between January and October 2020 [10].

The indirect impacts of the pandemic will take years to surface. Reduced vaccination coverage will significantly increase the childhood morbidity and mortality especially due to highly contagious illnesses like measles. Measles can impair children's inherent immunity by up to 2 years and one case can infect 12-18 people (case reproduction number) which can substantially raise a community's VPD burden [6]. A recent global report details the measles elimination efforts from 2000 to 2022. During 2000-2019, the coverage of the first dose of measles-containing vaccine increased from 72% to 86% but fell to 81% in 2021 during the COVID-19 pandemic [11]. Many countries including India have recently experienced a resurgence of measles following the pandemic. More than half the world's countries could have measles outbreaks this year, according to the WHO [11].

Impact on immunization in tribal belts

Globally, India has one of the largest tribal populations comprising 8.6% of the total population. They face marginalization and limited access to essential services including healthcare delivery due to socio-economic factors, and issues related to difficult terrain, environment, culture, and social systems [12]. The article by Alekhya et al in the current issue of Indian Pediatrics has assessed the impact of the COVID-19 pandemic on immunization coverage and delayed vaccination among tribal children in Odisha [13]. It is heartening to note that the pandemic had only an insignificant impact on the routine immunization services in the studied tribal population. The study highlights the resilience of healthcare delivery in surmounting the overwhelming challenges posed by the pandemic in a difficult terrain. We need to learn and introduce some of the inventive methods adopted by the program managers to safeguard immunization services during future pandemics or natural calamities.

The way forward

The diversion of healthcare resources during the pandemic, lockdown measures, and infection concerns highlight the need for resilient primary care systems, especially to maintain access to routine childhood vaccination. Vaccine supply chain disruptions and other issues highlight the need to strengthen vaccination services to prevent outbreaks.

For future infectious disease outbreaks and other global health threats, health systems should improve vaccine accessibility and demand through effective, culturally, and contextually relevant public commu-nication strategies and innovative use of digital and social media in health education using infodemic counter-measures. Pandemic policies and lockdowns should promote safe access to routine immunizations. Plans for responding to and preparing for pandemics must prioritize the continuation of regular health services, such as pediatric immunization, even during outbreaks of infectious diseases.

The COVID-19 pandemic demonstrated the benefits of cooperation, communication, and collaboration among health agencies, regulators, and industry, which may be standard procedures for other epidemics. The pandemic has also revolutionized vaccine development, with a 30% increase in vaccine candidates in five years. The world has received lifesaving vaccines at an unprecedented rate and magnitude. It is crucial to understand that vaccines do not save lives; timely vaccination does. To preserve and optimize the advantages of immunization for the society, the vaccine distribution system must be designed to withstand frequent disruptions induced by infectious disease pandemics. With collaboration and dedication, vaccine stakeholders can leverage the pandemic to transform immunization services to ensure a healthier future.

Funding: None; *Competing interests*: None stated.

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