Invited Commentary

Impact of COVID-19 pandemic on Routine Immunisation of Under-Five Children

Running Title: Impact of Covid-19 on Immunisation

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Background

The COVID-19 pandemic, caused by Coronavirus-2, has brought unprecedented changes in the way the world functioned during pre-pandemic era [1]. The increased number of Covid-19 positive cases and associated mortality in the countries that were most affected such as Italy, Spain and USA; led to early implementation of the lockdown measures in the countries which had just started to report Coronavirus cases [2]. The nationwide lockdown in India started on March 24, 2020 [3]. Though, the lockdown measures have reduced the risk of transmission of Covid-19, it has however led to disruption in routine maternal and child health services including immunization. The immunization of children under five years of age is essential for saving lives that would otherwise be lost to vaccine-preventable diseases. Regional Director of UNICEF for Europe and Central Asia, has emphasized the fact that missing immunization would make the children vulnerable, it is thus the need of the hour that we promptly recognize these vulnerable groups and immunize them [4]. Missed immunizations due to the gaps in public health system during this pandemic are unacceptable. We have reviewed the existing evidence on the impact and public health implications of COVID-19 pandemic on the routine immunization services for under five children.

Global scenario

As per recent estimates published in the Lancet, it has been modelled that if the workforce and supplies are reduced to a moderate level, demand is reduced to a small level, access to services is reduced to large level and immunization coverage reduction is to the tune of 51.9%, then additional annual under five deaths would be about 417,000 without wasting and 506,900 with the increased effect of wasting in the low- and middle-income countries [5]. Vaccines protect against serious childhood diseases such as measles, influenza (flu), tetanus, polio, and whooping cough (pertussis). Centers for Disease Control and Prevention (CDC) estimated that 419 million illnesses, 26.8 million hospitalizations, and 936,000 deaths would be prevented by vaccination among children born between 1994-2018 [6]. The World Health Organization (WHO) estimates that 117 million children are at a risk of missing measles vaccine as

COVID-19 surges. Thus, it becomes imperative that governments undertake a careful risk-benefit analysis when deciding whether to delay vaccination campaigns in response to the outbreak or to continue the vaccination [7]. On 26 March, 2020, the WHO recommended continuation of routine immunisation programmes, however to prevent the spread of COVID-19, temporary suspension of mass vaccination campaigns was recommended [7]. After weighing health benefits of continued routine infant immunisation delivery against the risk of COVID-19 infections in Africa, scientists at the London School of Hygiene and Tropical Medicine (LSHTM), stated that if routine immunisation was continued, for each excess COVID-19 death due to an infection acquired during the vaccination visit (predominantly among elderly household members), around 29 to 347 future child deaths could be prevented [8]. Without vaccination, these deaths could result from a range of diseases including measles, yellow fever, pertussis, meningitis, pneumonia and diarrhoea. In 2018, around 527 000 children missed their first dose of measles containing vaccine in the WHO European Region [4]. In 2019, the measles virus, infected over 100 000 people in Europe, across all age-groups [4]. Protecting children, from vaccine-preventable diseases through vaccination is a must for the sustainability of health care systems. COVID-19 should not distract us so much that we neglect our general health. Immunisation should be routine—otherwise, we may soon see outbreaks of vaccine-preventable diseases around the globe. The impact of missing immunization could be devastating for both individual families and the healthcare system at-large, as it would burden the already overstretched health care facilities. Countries should plan to resume immunization as early as possible if local COVID-19 response measures, during these exceptional times have caused short term suspension of routine immunization services.

Another facet that needs to be highlighted is that COVID-19 in the near future shall be a vaccine-preventable disease. Thus, it becomes imperative that we strengthen our routine immunisation services. The urgent need for a COVID-19 vaccine emphasizes the pivotal role immunisations play in protecting lives and economies. As a vaccine against the novel coronavirus is yet to be developed, and health care capacities are already overstretched in responding to COVID-19, national routine immunisation programmes are more important than ever before. Governments across the world must use every opportunity feasible to protect people from the various diseases for which vaccines are already available. Missing routine vaccinations increases the risk of disease outbreaks [9].

Routine childhood immunization may protect against COVID-19

There is evidence that lower rate of fatality and illness in children infected with COVID-19 can be attributed to active viral immunization. The viral vaccines stimulate CD4+ T helper cells, which in turn secrete cytokines, killing the virus. This could lead to protection of lung cells against SARS-CoV-2. Another hypothesis states that the response to virus could be different in adults and children. Adults, owing to stronger immunity have an exaggerated immune response to the virus whereas children do not have an exaggerated response thus masking the symptoms [10].

Impact of interstate exodus of migrants due to COVID-19 lockdown on routine immunisation

While the health of all children is at stake, some are at a higher risk. This includes the minority groups, the economically weaker

section, children living in crowded homes, and children belonging to far flung areas of the rural India. In the light of the lockdown imposed to prevent the spread of COVID-19 infection, the consequent unemployment of migrants has led to interstate exodus of these migrants. This has put to question the availability of immunisation services for migrant children. Most of these migrations are from the resource-constrained states of Uttar Pradesh and Bihar [11]. This will further negatively impact the already overstretched health system of these states, especially in terms of immunization coverage.

Current situation of routine immunisation services in India

A recent national level study done by Garg et al (2020) among OPD clinics in 51 primary health care sites across the country, found significant reductions in clinic operations for immunization services ($p<0.001$) as well as antenatal care services ($p<0.001$), in contrast to general OPD's ($p=0.002$) which were least disrupted during COVID-19 pandemic [12].

The Ministry of Health and Family Welfare (MOHFW), Government of India (GoI), has issued the guidelines for continuation of essential services in the face of the pandemic. These focus on widespread immunization without compromising the safety of health care providers. Immunisation at birth is to be continued for institutional deliveries. Every opportunity is to be utilised for vaccination, for all beneficiaries, considering social distancing and infection preventing techniques. Catch up vaccination through tracking and follow-up needs to be conducted once the restrictions are eased. The need for outreach sessions and mass vaccination needs to be assessed; these are to be avoided if they pose high risk to the health care worker [13]. Catch up immunization needs to be done after identifying children who have missed immunization due to COVID-19.

We conclude by saying that immunization is the most cost effective intervention to protect the children. It is the right of every child and should be accessible to all. Hence, all efforts should be done to reach out to children under five to provide them routine immunization services in the current pandemic situation.

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