

Impact on Routine Immunization Services During the Lockdown Period in India: Implications and Future Recommendations

Nishantadeb Ghatak¹, Roy Rillera Marzo², Sheikh Mohd Saleem³, Neha Sharma⁴,
Sudip Bhattacharya⁵, Amarjeet Singh⁶

¹Visiting Consultant, Institute of Child Health, Kolkata, India

²Deputy Dean, Asia Metropolitan University, Johor, Malaysia

³Demonstrator, Department of Community Medicine, Government Medical College,
Srinagar, India

^{4,5}Assistant Professor, Department of Community Medicine, Himalayan Institute of Medical
Sciences, Dehradun, India

⁶Professor and Head, Department of Community Medicine and School of Public Health,
PGIMER, Chandigarh, India

E-mail: drsudip81@gmail.com

Abstract: World Health Organisation (WHO) declared the ongoing COVID-19 as a global pandemic on March 11, 2020. For this advancement, countries all over the world has begun to implement lockdown as one of the strategies to tackle the spread of SARS-CoV-2 virus. Like other countries, the lockdown in India also poses serious problems to the health industry and to many other sectors. One of the severely affected and ignored programs, the Universal Immunization Programme (UIP) which approximately addresses 27 million newborns seeking immunization per year, is also suspended. In this scenario, outbreaks of vaccine-preventable diseases could be catastrophic for communities and health systems which are battling the impacts of COVID-19. At present, there exists no definite medicine and vaccine for COVID-19. The immunity of an individual plays a crucial role in the prevention of disease as well as severity. The interruption of vaccination program can give rise to a resurgence of measles cases. This resurgence can lead to profound immunosuppressants which can cause an increased incidence of COVID-19 with a rise in the number of severe cases which eventually leads to increased mortality rate. Moreover, the suppression of immune function can lead to increased incidence of other infections which may have a huge burden to the healthcare system where services have already been compromised due to low resources. Lessons should be learned from Europe and Africa. Initiatives should be taken to restore the routine immunization program immediately with all precautionary measures as per WHO guidelines.

Keywords: Immunization, Pandemic, Lockdown, Vaccine

1. INTRODUCTION

World Health Organisation (WHO) declared the ongoing COVID-19 as a global pandemic on March 11, 2020. For this move, countries all over the world has begun to implement lockdown as one of the strategies in order to tackle the spread of SARS-CoV-2 virus. (1) For India, Honourable Prime Minister of India, Sri Narendra Modi Ji announced the countrywide lockdown on 21 March 2020, and it completed its 4th phase on 3rd May 2020. (2) More than

two months of lockdown has not only regressed the spread of the COVID-19 to some extent but has influenced the national economy, trade, travel, tourism, etc. The most badly hit was the healthcare system of the country. To sustain its existence, various measures were taken to gear up its infrastructure to face the wrath of the ongoing deadly pandemic. As the healthcare system mainly focused on the COVID-19 pandemic and the issues which surround this, other healthcare programs were more or less ignored(3-7).

One of the badly affected and ignored programs is the Universal Immunization Programme (UIP)(8). There is no doubt that Routine Immunization (RI) is high on the carts of the Government of India (GoI). In this view, GoI launched "*Mission Indradhanush*" in December 2014(9) which refers to the world's biggest immunization program in terms of the number of beneficiaries, regional distribution, and vaccine regimens used, with approximately 27 million new-borns seeking immunization per year. Moreover, to substantiate this program, an "*Intensified Mission Indradhanush*" was launched in two phases in October 2017 and December 2019, respectively. The purpose of launching these phases is to reach every child up to two years of age and all those pregnant women who have been left uncovered under the RI program(10). However, with the announcement of the countrywide lockdown, RI activities were also suspended. Lack of appropriate infrastructure at the sub-centers and health care institutions to maintain social distancing, lack of handwashing facilities, lack of health literacy among the people regarding COVID-19, and unavailability of proper PPE among the healthcare workers maybe some of the reasons behind this adjournment(8). Priority was given to the prevention of the spread of COVID-19 through immunization activities rather than possible outbreaks of vaccine-preventable diseases among children(11).

The conduct of RI activities during lockdown period may increase the incidence of diseases like Measles, Pertussis, and Polio. In India, a survey conducted in 30 villages of Rajasthan revealed that around 250 children lost the opportunity to get vaccinated due to various reasons. Considering this rate from one village, it can be estimated that around five million children missed their RI all over India. It is also possible for this figure to increase for April 2020.(12) Furthermore, living in the era of COVID-19 pandemic with an increase RI dropout rate can pose an extra health burden for the country due to synergistic effect resulting to a high toll in the morbidity and mortality among children group(12).

The increasing dropout rate which causes interruption of RI activities during the lockdown period is multifaceted. Unavailability of public transport has prevented peripheral healthcare workers and parents to reach the immunization clinics which affects RI activities. Moreover, parents were apprehensive about the fear of contracting the virus and were not willing to move out of their homes. Most importantly, lack of appropriate health infrastructure to maintain social distancing norms, handwashing practices, and timely delivery of logistics at the immunization clinics to carry out RI activities smoothly were some of the barriers to look for. Timely supply of the vaccines, maintenance of cold chain during the vaccine supply, and lack of appropriate personal protective gear for the health workers were some of the barriers which health workers felt insecure while providing their service(12).

All the major steps undertaken by the policymakers mostly directed containment and mitigation of COVID-19. Most of the manpower used to carry out RI activities was utilized for COVID-19 surveillance and containment at the community level. This practice resulted to a shortage of manpower for carrying out RI activities in its normal capacity. Private hospitals and clinics which usually carry out RI activities were also shut down during the lockdown period. There is a fear of contracting the COVID-19 because of the following reasons: lack of doctors and other hospital staff members, inadequate supply of personal

protective gears, and cost issues. Moreover, one thing which needs attention was the lack of clear-cut Standard Operating Procedure (SOP) and poor communication between higher authorities and ground-level health workers. As the viral was novel, most of the published guidelines were either confusing or inadequate to address the operational issues faced at the ground level(3,12).

One concern to ponder upon is the mass migration of workers and laborers along with their families from the metropolitan cities to their villages to survive the hunger and economic loss, lockdown imposed on them. This scenario of mass migration has increased the burden of unvaccinated children as their parents has moved towards their native place due to COVID-19 panic. The workers and laborers were not able to vaccinate their children at the scheduled time. Some of the reasons were inability to reach the health institutions, financial loss, non-availability of vaccination records, and the intelligibility of vaccination cards since health workers faced problems to comprehend other languages used in India. One more serious issue was the rise of anti-vaccination campaigns and non-vaccinating religious communities tied with a limited access to the vaccine in some geographic areas which leaves millions of people unprotected(12).

The gap in vaccination led to 110,000 deaths caused by measles globally in 2017. Making measles is one of the leading causes of infectious disease-associated childhood mortality(13). Death due to measles should not be repeated. Masresha et al. (2020) showed the effect of interruption of vaccines during the outbreak of Ebola during the 2014-15 period in three African countries: Guinea, Sierra Leone, and Liberia. They clearly showed that in Guinea's average vaccine, the coverage was 45% during 2012 and 2013 before the onset of the Ebola outbreak. During the period of an outbreak in 2014-2015, it dropped to 38%. As a result, the incidence of measles was 83% and 61% in 2014 and 2015. Respectively, and subsequently compared to the pre-Ebola era which was 43% and 74% during 2012 and 2013, respectively. Liberia and Sierra Leone also showed an increased incidence of measles during 2014-15 (14).

Outbreaks of vaccine-preventable diseases could be catastrophic for communities and health systems which are battling the impacts of COVID-19 and substantively increase sickness and fatalities. In 2019, measles caused more than 6000 death in the Democratic Republic of the Congo, a country fighting its largest Ebola outbreak, as the country faced a deadly convergence of diseases(15). The WHO's guidance calls for the participation of countries to prioritize RI of children in essential service delivery as well as some adult vaccinations such as influenza for groups most at risk. If immunization services will be suspended, WHO recommends urgent catch-up vaccinations as soon as possible where those who are at risk will be prioritized. In line with physical distancing measures, the WHO guidance recommends temporarily postponing preventive immunization campaigns where there is no active outbreak of a vaccine-preventable disease. In the event of an outbreak, however, rapid vaccination campaigns may be essential after a careful risk assessment analysis(3). Furthermore, it is stated that where these are conducted, health workers and the public must be protected from COVID-19 through appropriate sanitation procedure. All immunization services must consider the importance of both ensuring that people are protected against preventable diseases, as well as the safety of communities and health workers. WHO is providing a series of guidelines to help countries to safely maintain essential health services in the context of COVID-19 response(3).

The guidance from WHO, United Nations Children's Fund (UNICEF), and The International Federation of Red Cross and Red Crescent Societies (IFRC) addresses the role of community-based healthcare in the context of the COVID-19 pandemic. It included practical

recommendations for decision-makers to help keep communities and health workers safe, to sustain essential services at the community level, and to ensure an effective response to COVID-19. When health systems were overwhelmed, both direct mortality from an outbreak and indirect mortality from vaccine-preventable and treatable conditions increased dramatically. Countries had to take difficult decisions to balance the demands of responding directly to COVID-19, while simultaneously engaging in strategic planning and coordinated action to maintain essential health service delivery which mitigates the risk of system collapse. WHO (When was this recommendation released?) recommended member states to provide universal access to public hand washing stations and to assure its use on entering and leaving any public or private commercial building and on any public transport facility. WHO also recommended healthcare facilities to improve access to and practice of hand hygiene(11,16).

At present, there are some proposed vaccines like AZD122, COVAXIN, Ad5-nCoV, CoronaVac are under the trial phases (II-III). The immunity of an individual plays a crucial role in the prevention of disease as well as severity. In this circumstance, interruption of vaccination program can give rise to a resurgence of measles cases. This can further lead to profound immunosuppressant's which can cause an increased incidence of COVID-19 with a rise in the number of severe cases that will eventually lead to increased mortality rate. In addition to that, suppression of immune function can lead to increased incidence of other infections, and that can have a huge burden to the health care systems, where services have already been compromised(17,18).

Lessons regarding the temporary withdrawal of the RI services and its adverse effect on healthcare system and public, should be learned from Europe and Africa and initiatives should be taken to restore the RI program immediately with all precautionary measures. Social distancing must be maintained in the immunization camps. A person accompanying a child and healthcare workers must adhere all infection control procedure/precautions like proper sanitation measures, using personal protective gears. The SOP should be made by competent authority and should be properly circulated among the peripheral health workers. Due to lack of manpower during this pandemic, the number of outreach camps can be reduced. However, this should be well communicated among the people of the area. Special focus should be on the first dosage of measles and pertussis vaccine, as it has proven negative and this causes long term impact on a child's health. Peripheral health workers who are engaged with COVID-19 surveillance and contact tracing team should not be engaged in the immunization services. Children of migrant labourers or any other person who does not have immunization records should also be vaccinated as per the age especially for measles and pertussis to prevent their outbreaks. Lastly, the surveillance team should be vigilant for the early detection of vaccine-preventable diseases. Early detection of cases and timely isolation can prevent the spread of disease in the community. Through taking necessary precautions timely, mortality and morbidity due to vaccine-preventable diseases can be prevented.

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