Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

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Letter to the Editor

Impact of COVID-19 pandemic on Measles surveillance in Pakistan

Dear editor,

We read with great interest the article entitled "Decline in invasive pneumococcal disease during COVID-19 pandemic in Taiwan" by Hung-Jen Tang et at.[1] Authors discussed the decline in invasive pneumococcal disease and here we would like to present the decline in measles cases in Pakistan during the COVID-19 pandemic.

Measles is a highly contagious viral disease which affects susceptible individuals of all ages and remains one of the leading causes of morbidity and mortality among young children causing an estimated 2.6 million deaths each year across the globe. Because of vaccination, more than 21 million lives have been saved and measles deaths have been reduced by 80% since 2000. Despite the availability of a safe and effective vaccine for the last fifty years, many countries around the world still experience measles outbreaks. As of 5 November 2019, there have been 413,308 confirmed measles cases reported to the World Health Organization including more than 110,000 and 140,000 deaths due to measles in 2017 and 2018 respectively.[2]

The present study was conducted to compare the total number of measles cases reported during COVID-19 epidemic between January to August 2020 comapred to the same time period in 2019. The data source utilized for this study is based on the surveillance records available at the Sub-regional Reference Measles Surveillance Laboratory, National Institute of Health, Islamabad, which is the national public health institute supporting disease surveillance and epidemiology programs across Pakistan.

In Pakistan, Measles is a notifiable disease for which the case investigation and reporting is mandatory for all public as well as private clinicians.

A total of 3,253 Measles cases were reported during the first 8 months in 2020 compared to 6,536 measles cases reported during the same period in 2019.

Comparatively in 2020, there was almost 50% reduction with significant difference ($P<0.001$) in total number of reported measles cases as compared to 2019. During the first quarter of 2020 (January, $n=459$), (February, $n=652$) and (March, $n=846$), the reported number of measles cases were higher than in 2019 (January $n=245$), (February $n=326$) and (March $n=663$).

The sudden downward trend in reporting of measles cases in 2020 coincide with the peak of COVID-19 epidemic observed from April to August (April $n=230$, May, $n=124$, June, $n=236$, July, $n=347$ and August $n=359$) compared to a higher number of reported measles cases in 2019 (April, $n=1448$, May, $n=1618$, June, $n=1052$, July $n=810$ and August, $n=374$). According to the results of the study the gradual reduction in Measles cases was noted from April to August 2020, when the highest number of COVID-19

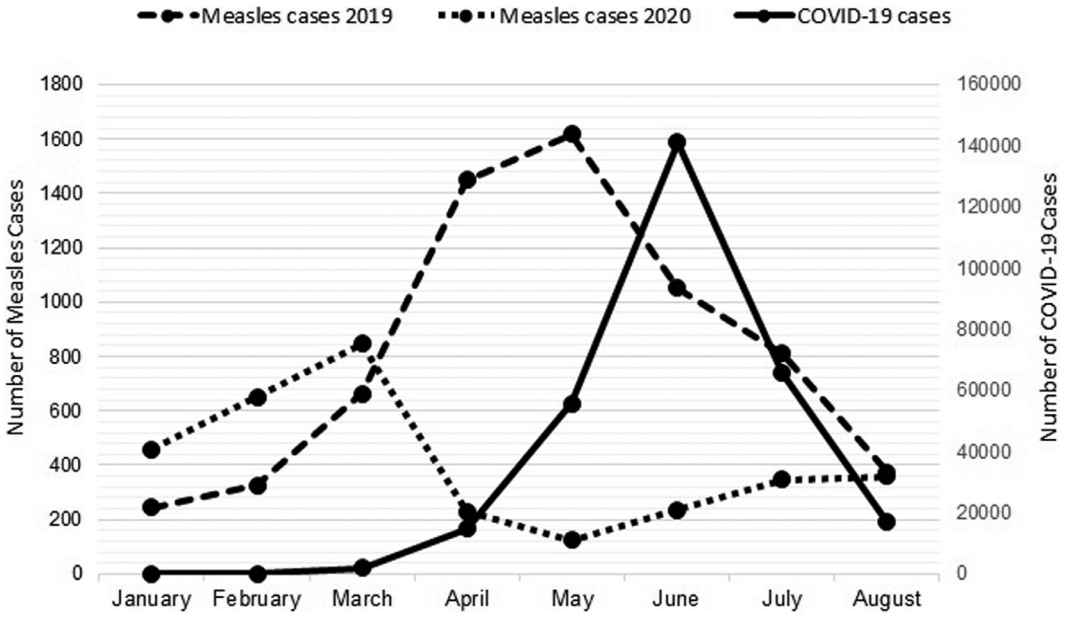

Fig. 1. Month wise Measles cases reported during 2019 and 2020 and COVID-19 cases in 2020.

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cases were reported such as in April, $n = 14{,}778$, May, $n = 55{,}643$, June, $n = 141{,}010$, July, $n = 65{,}676$ and August, $n = 17003$ (Fig. 1).

During the current pandemic situation, there may be three important considerations related to the decline in the number of reported measles cases. First, as the measles is also respiratory disease, the strict implementation of preventive measures such as use of mask, frequent hand washing, use of sanitizers, social distancing and ban on public gatherings helped to prevent the measles virus transmission along with the SARS-CoV-2 transmission. The same strategy adopted to combat COVID-19 spreadmay also helped to prevent the transmission of other respiratory infections including tuberculosis, influenza and pneumococcal disease which is already reported by the previous studies.[1,3,4]

Secondly, the government of Pakistan, as many other countries, diverted majority of the available economic resources, towards containment of COVID-19 epidemic that might resulted in decline of major public health services including decline in disease surveillance activities. Thirdly, owing to the panic associated with COVID-19 pandemic and interventions like lockdown restricted public visits at the health care facilities for medical check-up.

The long term impact of COVID-19 epidemic on measles surveillance is unclear but it would affect the under-resource countries like Pakistan struggling on many other fronts such as measles, polio, dengue, tuberculosis, malaria, typhoid and influenza. Globally, nearly 120 million children are at risk of missing their measles vaccine shots this year.[5] Suspension of immunization activities might be helpful in the control of COVID-19 pandemic but on the other hand it may also sow the seeds of other major public health disasters. The risks of measles epidemic is magnified in countries with already low routine immunization coverage. Measles vaccination coverage in Pakistan stood at 66 percent in 2018, instead of required 95 percent coverage which is required to prevent outbreaks.[6]

In conclusion, the health authorities must ensure that the surveillance systems built over years should remain sustained, operational and should not collapse. In-time planning for continuous surveillance and monitoring in the coming months will help to better understand the epidemiology of measles, particularly any resurgence of cases, once the containment measures are lifted. Importantly, under-diagnosis and under-reporting during the cCOVID-19 pandemic should be ruled out before concluding the unusual data figures generated during this period related to measles, other infectious disease and any other health condition.

Declaration of Competing Interest

All authors have declared that there is no conflict of interest.

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Authors contributions

MSR, AI, SSZZ and MS conceived and designed the study. MSR, MU, MMA, MT and AD were responsible for data collection, lab testing, data analysis. MSR, MMA and OM wrote and revised the manuscript draft.

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Muhammad Suleman Rana*
Muhammad Usman
Muhammad Masroor Alam
Osama Mere
Aamer Ikram
Syed Sohail Zahoor Zaidi
Muhammad Salman
Salman Sharif
Massab Umair
Adnan Khurshid
Ghulam Mujtaba
Department of Virology, National Institute of Health, Park Road, Chak Shehzad, Islamabad 45500, Pakistan
*Corresponding author.
E-mail address: ranavirologist@gmail.com (M.S. Rana)