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Letter to the Editor

Changes in the prevalence of infectious diseases before and after the COVID-19 pandemic in Pakistan



Dear Editor,

We read with immense interest a recent article entitled “changes of staphylococcus aureus infection in children before and after the COVID-19 pandemic, Henan, China” by Ying Liang and colleagues.¹ The authors reported a declining rate of staphylococcus aureus infection in children in response to the COVID-19 pandemic in China. In a similar context, we would like to present the data on the percentage change in the incidence of multiple infectious diseases before and after the COVID-19 pandemic in Pakistan.

Infectious diseases remain one of the leading causes of morbidity and mortality around the world accounting for more than 52 million (33%) annual deaths worldwide. Half of the world’s population remains at risk of emerging and re-emerging infectious diseases. The recent figures indicate an estimated 14 million global deaths in children less than 5 years of age, 70% of which resulted from vaccine-preventable diseases and 99% reported in developing countries.² Despite significant advances and awareness programs launched at a global scale, the prevention and control of infectious diseases face major challenges. Many infectious diseases are common in Pakistan with marginal changes in their case burden and endemicity observed over decades.³

Limited research studies have been conducted in Pakistan to investigate the potential impact of the COVID-19 pandemic on priority infectious diseases. This study highlights the overall impact of the COVID-19 pandemic on the prevalence of endemic infectious diseases in Pakistan supported by data available before and after the COVID-19 pandemic.

The data source utilized for the present study is based on the surveillance records available at the National Institute of Health (NIH) Islamabad, which is the only national public health institute supporting disease surveillance and epidemiology programs across the country. For comparative analysis, we extracted the number of suspected cases reported between January 2019 and December 2022. Twenty infectious diseases including TB, Measles, Rubella, Influenza, RSV, Pertussis, Diphtheria, Leishmania, EBV, Pneumonia, Haemophilus Influenza, VZV, Mumps, Dengue, Malaria, Polio, Typhoid, Hepatitis, HIV, and diarrhea are notifiable in Pakistan. Between 01 January 2019 and 31 December 2022, a total of 13,666,263 cases of 20 infectious diseases were reported across Pakistan.

Overall, a 28% decline in suspected cases of 20 infectious diseases was noticed from 1,995,247 in 2019 to 1,436,772 reported cases during the pandemic period,⁴ with an exceptional increase in a case count of only three diseases including typhoid, hepatitis, and HIV. In contrast, the situation completely reversed after the pandemic subsided, with a 259.4% increase in the number of reported cases (2,227,613 cases in 2021 and 8,006,631 cases reported in 2022), mainly of five diseases including Mumps (2656% rise), malaria (990% rise), polio (2100% rise), influenza (354% rise) and diphtheria (419% rise) (Table 1).

The declining trend in the incidence of infectious diseases during the pandemic period has been reported in various countries including China,^{5,6} owing to the implementation of COVID-19 preventative measures, such as the use of face masks, hand washing, social distancing, a ban on public gatherings, closure of shopping malls, educational institutes, and lockdown. However, the under-reporting during the pandemic as well as the shift in resources towards the COVID-19 pandemic contributed to this decline. In a local country’s context, there are multiple reasons behind the surge of infectious diseases in Pakistan mainly the recent extreme flooding in the country. Due to the devastating flood in 2022, the increase in vector-borne diseases including dengue and malaria was expected, but the increase in vaccine-preventable diseases provides evidence of disruption in immunization during the COVID-19 pandemic and currently due to extreme flooding. The annual coverage of routine immunization in Pakistan remains far below the optimal coverage of 95% as recommended by the WHO,⁷ the COVID-19 pandemic and recent floods made the bad situation worse.

The finding of the study showed that the COVID-19 pandemic as well as climatic change have adversely impacted the control and prevention of infectious diseases in Pakistan. Effective surveillance and high immunization coverage remain the topline strategies for the control of such deadly threats. However, the biased utilization of already limited resources available in the country to control the COVID-19 pandemic further deteriorated the targets required for infectious disease control. We may thus recommend formalizing a rationale and comprehensive preparedness plan to generate, allocate, and wise utilization of resources. This gets extremely critical for countries like Pakistan which are prone to natural calamities like flooding, earthquakes, and droughts. Despite these interventions, political commitment is consistently required to improve and strengthen the fragile healthcare systems and surveillance programs in low- and middle-income countries including Pakistan because communicable diseases do not respect geographical boundaries.

Abbreviations: NIH, National Institute of Health; HIV, Human immuno-deficiency virus.

Table 1
Number of reported cases of infectious diseases during January 2019 to December 2022.

Diseases	% Change in 2019–2020			% Change in 2021–2022		
	2019	2020	% Change	2021	2022	% Change
TB	178767	87358	-51.1	340000	410000	20.6
Measles	7783	6485	-16.7	20867	22725	8.9
Rubella	6552	4877	-25.6	7543	8413	11.5
Influenza	417	87	-79.1	715	3248	354.3
RSV	320	21	-93.4	619	1723	178.4
Pertussis	624	35	-94.4	57	107	87.7
Diphtheria	832	157	-81.1	213	1106	419.2
Leishmania	22114	12587	-43.1	16865	27272	61.7
EBV	73	11	-84.9	31	47	51.6
Pneumonia	1302	248	-81.0	723	2317	220.5
Haemophilus Influenza	209	37	-82.3	87	318	265.5
VZV	523	114	-78.2	308	614	99.4
Mumps	258	39	-84.9	719	19816	2656.1
Dengue	52485	6455	-87.7	50120	77879	55.4
Malaria	542960	375135	-30.9	463240	5050565	990.3
Polio	147	84	-42.9	1	22	2100.0
Typhoid	7673	22537	193.7	174698	365248	109.1
Hepatitis	120509	164652	36.6	189513	234107	23.5
HIV	3241	18000	455.4	25657	27652	7.8
Diarrhea	1048458	737853	-29.6	935637	1753452	87.4
Total	1995247	1436772	-28.0	2227613	8006631	259.4

TB: Tuberculosis, RSV: Respiratory syncytial virus, EBV: Epstein bar virus, VZV: Varicella zoster virus, HIV: Human Immunodeficiency Virus

Authors contributions

MSR, MU, MMA, AI, MS and SSZZ designed the study. MSR, M Umair, MMA collected data and analysis. MSR, MU and MMA wrote the manuscript draft.

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Declaration of Competing Interest

All author declared that there is no conflict of interest.

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