

NUMBER THEORY

Polio virus resurfaces in 'polio-free' countries: Is India ready?

The polio virus unexpectedly resurfaced in 2022 in many "polio-free" countries, like the US, UK, and Israel. A country is called "polio-free" when no case of wild polio transmission is detected for 3 consecutive years in the presence of high-quality surveillance systems. This is a cause for concern because 68 countries witnessed moderate-to-severe disruptions in their polio vaccine campaigns due to COVID-19, with some countries completely halting their polio inoculation programmes, according to a 2020 WHO report. India, which was declared "polio-free" in 2014, should share the concern because different regions within India show wide disparity in polio vaccination coverage. What are the places that lag in this coverage? Unit-level data from the National Family Health Survey (NFHS) conducted in 2019-21, which was fully published in May 2022, allows us to check this at the district-level. However, since political representatives represent parliamentary or state assembly constituencies, it might be useful to study polio vaccination coverage in those regions. Estimates for parliamentary constituencies (PC) generated by the Geographic Insights Lab at Harvard University using NFHS data allow us to do that. Here is what they show.

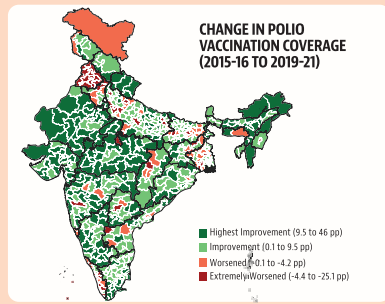
By Shubham Mudgil and Mayank Mishra

1 Most regions have shown promising progress on polio immunisation since 2015

From NFHS-4 (2015-16) to NFHS-5 (2019-21), the national polio immunisation average rose from 72.8% to 80.5%, and almost 80% of PCs across the nation witnessed an improvement in immunisation over this five-year period.

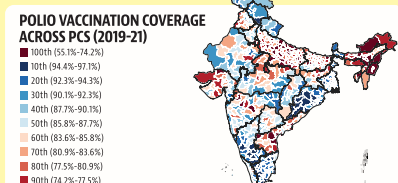
Ratlam in Madhya Pradesh remained on top of the growth chart with an improvement of 46 percentage points, followed by Dadra & Nagar Haveli with 38.8 percentage points, and Bahraich in Uttar Pradesh with 34.7 percentage points. Several states including Rajasthan, Madhya Pradesh, Uttarakhand, Gujarat, and Odisha likewise registered improvement in all of their PCs.

However, it is concerning that the status of immunisation in around 20% of PCs has worsened in the same period. In half of these 106 PCs, the decline in coverage ranged from 4.4 to 25.1 percentage points. Especially in the context of these poor-performing PCs, it will be important to understand the reasons why their immunisation efforts were adversely affected.



2 Despite considerable overall improvement, the absolute levels of polio immunisation still vary significantly across Indian states

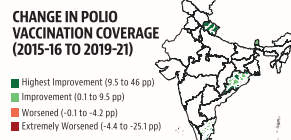
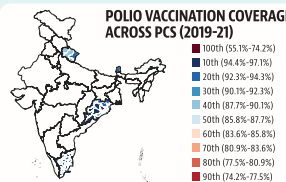
The national polio immunisation average stands at 80.5%. However, polio vaccine coverage in several PCs in Uttar Pradesh, north-western Gujarat, Bihar, the North-east, and certain pockets in central and south-western India is below the national average. Given the lower level of immunisation in these states, they are at a higher risk of polio resurgence. In comparison, the top three PCs nationally, Dadra & Nagar Haveli, Thoothukudi (Tamil Nadu), and Bargarh (Odisha) have coverage of 97.1%, 96.6% and 96.4%, respectively.



3 Stellar performers - Odisha, Uttarakhand, Sikkim and Tamil Nadu

States like Tamil Nadu, Odisha, Sikkim and Uttarakhand have recorded consistently high levels of polio immunisation. The average immunisation rate across these states rose from 83.9% during NFHS-4 to 93.5% in NFHS-5. Among the 66 PCs that lie in these states, polio immunisation coverage in 60 PCs exceeds 90%.

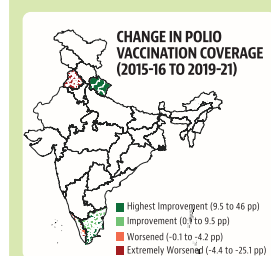
It is interesting to note that Odisha and Uttarakhand, otherwise ranked 14th and 15th in NITI Aayog's Overall Health Performance Index among 19 largest states, have registered a growth in polio immunisation coverage of 8.9 and 16.3 percentage points respectively. This suggests that both states have accorded specific focus to immunisation efforts. Best practices from these states can perhaps be studied and emulated by other states in the country.



4 Striking case of Punjab - Uttarakhand and Kerala - Tamil Nadu

Punjab is the only state where all PCs fall in the "extremely worsened" category or the worse half of the PCs where coverage has decreased. Polio immunisation coverage in the state has fallen from 96.1% in 2014-15 to 82.2% in 2019-21, while its neighbouring state, Uttarakhand, has registered high improvement across all of its PCs. From NFHS-4 to NFHS-5, vaccination coverage in Uttarakhand has increased by 16.3 percentage points, in contrast to Punjab, where it has slumped by 13.9 percentage points.

A similar story is seen in Kerala and Tamil Nadu. Kerala, which ranks first in NITI Aayog's Health Index, has seen 16 out of its total 20 PCs worsen on polio immunisation levels from NFHS-4 to NFHS-5. In comparison, its neighbouring state Tamil Nadu has improved immunisation levels across all PCs. While Kerala fell by 4.6 percentage points from NFHS-4 to NFHS-5, Tamil Nadu registered an improvement of 9.2 percentage points.



5 Conclusion: A concerted effort and stronger coordination is needed between central and state governments

With all of India's states sharing a common national-level immunisation programme, these stark differences observed at the level of these trends across PCs and formulate tailored, collaborative interventions to keep India "Polio-Free".

polio immunisation must continue to be a joint effort between central and state governments, and there is a need to look more closely into these trends across PCs and formulate tailored, collaborative interventions to keep India "Polio-Free".