

**Title: Inequalities in routine immunization coverage in primary care: a multi-level mixed methods study from three Indian states**

Swati Srivastava\*, Sakthivel Selvaraj, Preeti Kumar, Habib Hasan, Maulik Chokshi, Indranil Mukhopadhyay, Pallav Bhatt, Ravi Kumar

\* Corresponding author

Public Health Foundation of India  
ISID Campus, Plot No.4, Institutional Area  
Vasant Kunj, New Delhi- 110070, India  
Phone: +91-11-49566000 Ext 6055  
Fax: +91-11-41648513  
Mobile: +91-9015942985  
Email: [swati.srivastava@phfi.org](mailto:swati.srivastava@phfi.org)

**Background:** Immunization is key to prevent vaccine-preventable disease yet almost half of Indian children do not receive age-appropriate vaccinations. While individual and family level characteristics related to immunization uptake have been explored extensively, areas needing investigation include outreach services, vaccine supply and logistics, human resources issues and training, financing, and service delivery.

**Methods:** We conducted an embedded multi-level mixed methods study exploring programmatic and beneficiary-level constraints in immunization, to understand the roles these factors are playing in immunization uptake. Methodological triangulation was conducted between a qualitative strand consisting of data collected from multiple levels of health care providers and beneficiaries, and a quantitative strand using structured questionnaires. The study was conducted in 11 districts of three states (Uttar Pradesh, Rajasthan, and Himachal Pradesh) from September-November, 2012.

**Results:** Overall, vaccine supply was adequate. Mismatch in vaccine demand and supply, poor financial allocation for supplies and cold chain maintenance, human resource constraints (shortages and poor competencies), infrequent training and lack of monitoring and supervision, and inconsistent staff incentives, was hampering progress. Urban areas had special requirements due to lack of infrastructure, staff, and systematic mechanisms. Novel target setting, beneficiary estimations, and linking immunization to institutional delivery incentives showed marked improvements. National Rural Health Mission has contributed to improvement through financial and technical support, supplementing and supplying vaccines, consumables and cold chain equipment, and utilization of untied and flexible funds.

**Discussion:** There has been significant progress in immunization in the states. However programmatic, financial, human resource and infrastructural challenges remain to improve access and quality of services. At the beneficiary level, societal biases, knowledge gaps, and increasing community's trust in the system, especially in those not accessing services, are important. Consistently, an increased level of awareness among the people for immunization and dedication and leadership from health staff were associated with better coverage.