

# Routine childhood vaccination linked to improved schooling among adults in India

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Vaccines have reduced the global burden of disease by preventing an estimated 2 to 3 million deaths worldwide each year. In India, the reduction in annual under-five deaths, from 3.4 to 1.2 million between

1990 and 2015, was largely due to expansions in coverage of routine childhood vaccination. Vaccines have been linked to increased economic productivity as well as improved cognition, growth, and schooling among children. While the long-term health benefits of vaccination are well known, little evidence exists on the link between routine childhood vaccination and long-term schooling attainment among adults in low- and middle-income countries.

In this study, researchers analyzed levels of schooling attainment in years among adults born during or after the implementation of India's Universal Immunization Programme (UIP) (intervention) compared to adults born before the implementation (control). District-level data from the rollout of India's UIP between 1985 and 1990 was matched to schooling data from the National Family Health Survey of India, 2015-2016, a cross-sectional survey that collects information on health and family welfare indicators. The study included 109,908 non-migrant individuals who were born within five years of UIP rollout (1980-1995).

"We compared schooling attainment of individuals who were born after the introduction of UIP with that of those who were similar, i.e., they lived in the same household or community, but were born just before the UIP," says Arindam Nandi, study author and CDDEP Senior Fellow.

Utilizing fixed-effects linear regression models adjusted for socioeconomic and demographic factors, community-level infrastructure, amenities, and access to healthcare, the study found that India's UIP was associated with 0.2-0.3 additional schooling grades among adults. Specifically, in household, village or city ward, district, and state fixed-effects analysis, adults born during or after UIP rollout attained 0.18, 0.23, 0.29, and 0.25 additional schooling grades, respectively, compared to adults born before UIP rollout. All results were statistically significant (p

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