

Maternal Education and Empowerment, and Its Impact on Vaccination Outcomes

Multivariate equity assessment using the VERSE Equity Toolkit

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BACKGROUND

Financial, social, and geographic barriers to access as well as attitudes limit vaccine uptake. These demand-side constraints may derive from other inequalities such as literacy and access to an education and add to existing inequalities in supply. The mother's educational achievement is a known factor influencing vaccination status. Yet, little is known on how much maternal education contributes to inequity childhood immunization, and how it compounds with other disadvantages to restrict healthcare access.

METHODS

The VERSE Equity Toolkit generates a composite index ranking (wealth, region, rural residence, maternal education, health insurance, and the sex of the child) to account for multiple factors influencing equity in vaccination coverage beyond wealth alone and produce a Wagstaff concentration index (CI). The toolkit runs a decomposition analysis to evaluate the contribution of each ranking factor to the variation in vaccine coverage. We applied it to all available DHS since 2000 for 53 countries to estimate and compare the influence of maternal education over time for three vaccination statuses: DTP, DPT or Pentavalent (first dose), measles-containing vaccine (first dose) and being fully immunized with the vaccines scheduled for the child's age.

Disparities in maternal education better explain inequity in vaccine coverage than wealth, globally



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RESULTS

Maternal education is a dominant driver of vaccine inequity in many low- and middle-income countries (in red in Figure 1). Overall, maternal education level explained 0% to 69% of the variation coverage. Its contributions to inequity in DTP1, MCV1 and full immunization coverage are significantly correlated (Pearson R^2 : 0.45 & 0.47, see Figure 2), which highlights how it often affects simultaneously whether a child starts and follows through the national immunization schedule. Improvements in coverage do not systematically reduce the contribution of maternal education to inequity (Figure 3), indicating that additional efforts to mitigate the adverse effect of illiteracy on vaccination would further improve vaccine coverage.

CONCLUSION

Understanding and quantifying the influence of maternal education on vaccination coverage is a conducive and necessary part of a concerted effort to promote education, reduce the adverse impact of illiteracy, and improve access to healthcare services beyond vaccines. Relying on wealth-based measures of inequity, such as USAID's EquityTool, hides a significant share of inequity in health outcomes due to factors such as maternal education.

Figure 1: The contribution of maternal education to DTP1 coverage inequity

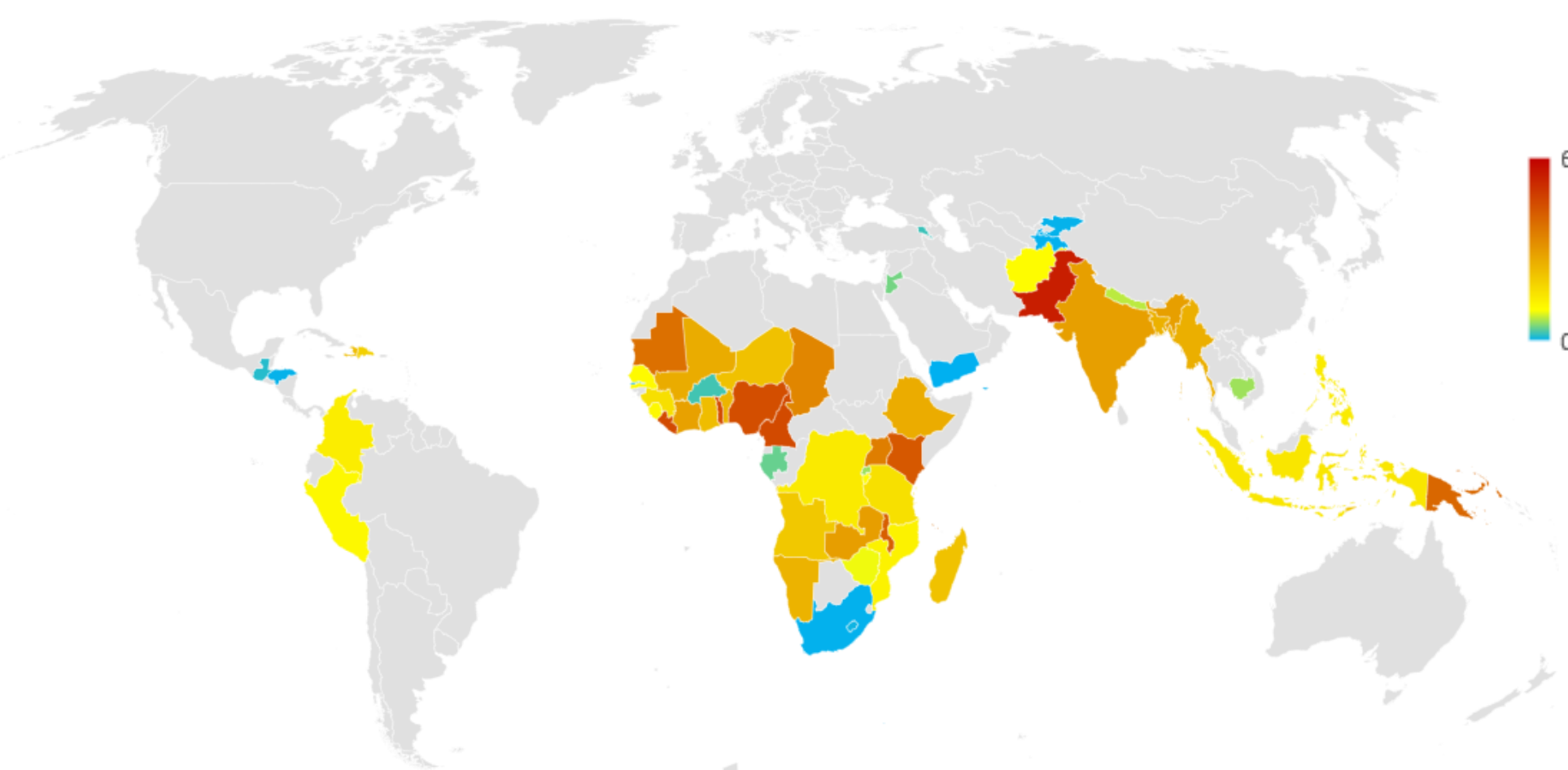


Figure 2: Correlation in the contribution of maternal education

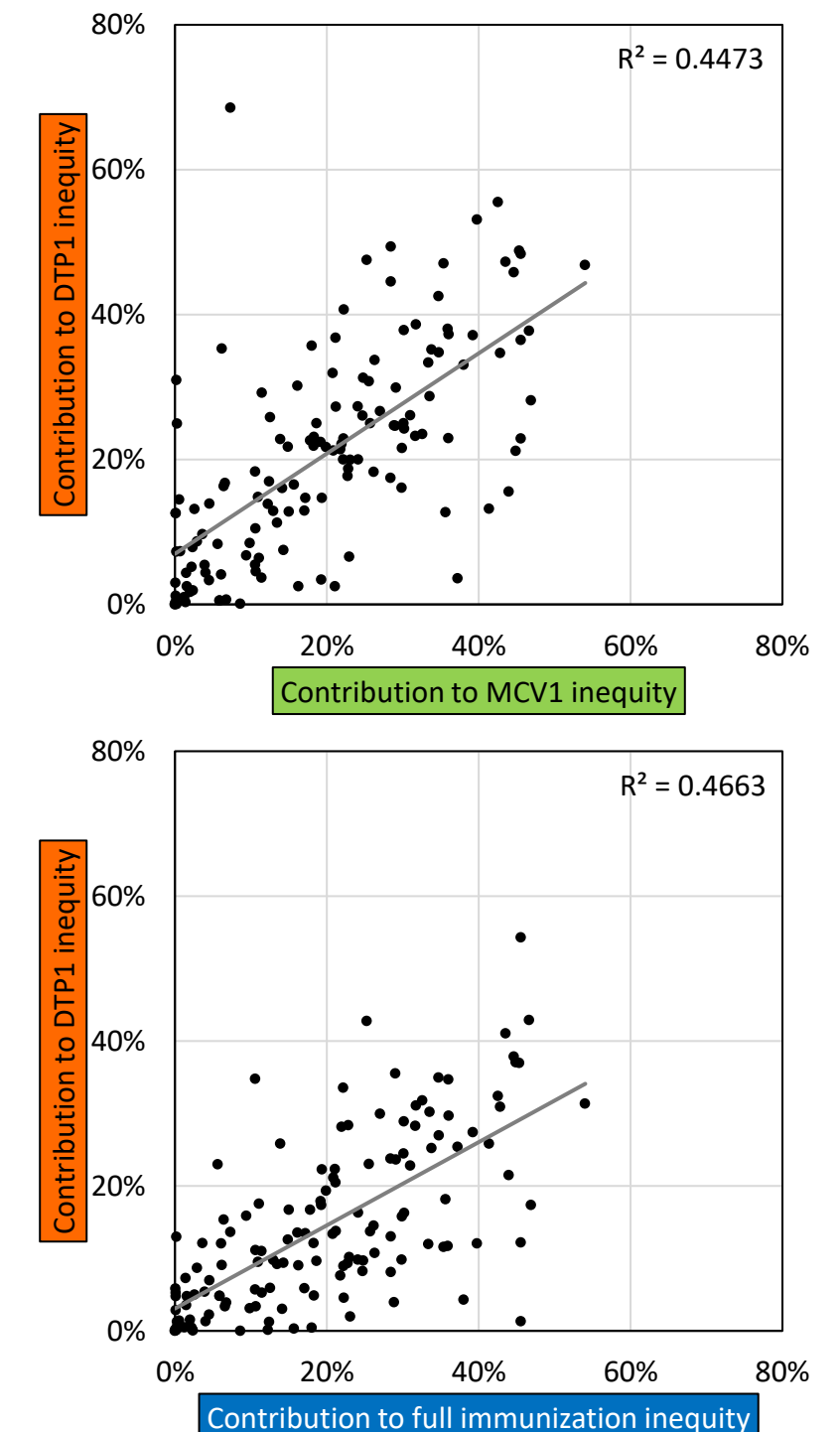


Figure 3: Coverage and equity for being immunized with DTP1, MCV1 and fully

