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Introduction

- Child vaccination is one of the most cost-efficient solutions to potent diseases.
- 1.5 million children under 5 years of age die from preventable disease every year.
- A vast proportion of under-immunized children are in developing countries (ex. Nigeria, India, Indonesia).

Objective of the Study

The objective of the project was to identify the subpopulations in developing countries that experience the lowest amounts of child vaccination.



(UNICEF, 2014)

Methods

- Conducted **systematic search** of medical databases to assemble collection of articles about child vaccination indicators
- Investigated literature for **statistically significant** correlations (results of bivariate analyses)
- Analyzed and attempted to justify trends under different **scopes** (geography, culture, politics, etc.)

Results

- 90 articles were initially collected after searching PubMed and Medline with reviewed search terms – **69 in final collection** after evaluation of full text.
- A majority of papers, regardless of scale of study, included **mother's education** (47 papers) and **family wealth** (41 papers) as significant child vaccination indicators.
- These variables had positive correlations with level of child vaccination (higher wealth and education leads to higher vaccination).

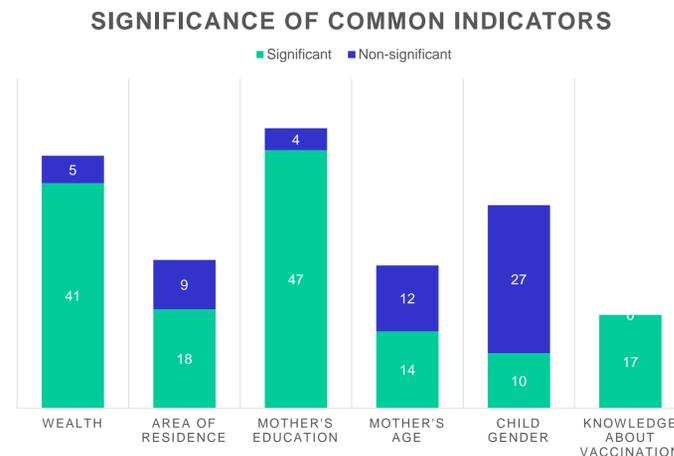


Figure 2. Comparison of significance and non-significance in different studies.

- In addition to family-level factors, **community-** and **country-level** factors were also evaluated.
- The most common significant community-level indicator was **access to sanitation**; for country-level, out-of-pocket spending was most common (upfront costs of vaccination at health facilities).
- The significance of these factors indicates that child vaccination is a result of deep and underlying social, cultural, and political aspects that reach beyond healthcare. Indicators of **standard of living** are often coinciding with indicators of child vaccination (ex. wealth, education, sanitation, area of residence, region, etc.).

Most Common Child Vaccination Indicators	
Indicator	Frequency of Significant Results
Mother's education	47
Wealth	41
Birth order	19
Area of residence (rural vs. urban)	18

Figure 1. Most common family-level child vaccination indicators in 69 studies.

- Other indicators that were overwhelmingly positively correlated with child vaccination include **area of residence** (rural/urban), **birth order**, **knowledge/awareness of vaccinations**, and **antenatal care**.
- Ethnicity, geographic region, and religion also were significantly correlated to child vaccination in **only** certain locations (ex. India, Nigeria, Nepal).
- **Child gender**, a constant focus of many drives for social equality, was actually deemed not significant to child vaccination in most studies (27 out of 37); all 10 studies that deemed it as significant were in areas suffering from historic gender discrimination.

Discussion

- Vaccination indicators are complex; multiple factors affect populations differently based on circumstances or location.
- Common significant indicators like wealth and maternal education increase resources and provide the awareness/knowledge necessary to pursue child vaccination.
- Future research should focus on weighting indicators to account for scale of study.

Questions

- Do community- and country-level indicators create an equal impact compared to family-level indicators on the individual child's level of vaccination?
- Is it viable to create broad national health policy given the clear differences between subpopulations?

Conclusion

Child vaccination has proven to save millions of lives; future policies should be enacted to ensure **all populations** have **equal** access to essential vaccines.

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