Analysis of the effects of individual and community level factors on childhood immunization in Malawi

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Background: Empirical evidence regarding the relationship between childhood immunization and individual- and community-level factors in low-income countries has received little attention. We compared the trends and the effects of a wide range of individual- and community-level socioeconomic factors on the likelihood of a child being immunized between 2004 and 2010 in Malawi.

Methods: We used data from the 2004 and 2010 Malawi Demographic and Health Survey and applied generalized estimating logistic regression equation to analyze data respectively on 2042 and 3496 children aged 12-23months. We compared the relationship between individual- and community-level socioeconomic factors and a child's vaccination status for four basic vaccines recommended by the World Health Organization: bacillus Calmette-Guérin (BCG) vaccine, diphtheria-tetanus-pertussis (DPT3) vaccine, oral polio vaccine (OPV3), and measles-containing vaccine 1 (MCV1).

Results: The trends of vaccination had a similar pattern in 2004 and 2010. The coverage of the four vaccinations was highest for BCG and lowest for OPV3 and complete immunization was higher in 2010. The multivariate analyses show that mother's low education, having one or none antenatal visits, having no immunization card, having immunization card but not seen, residing in poor households, and living in central region were the most significant factors associated with decreased odds of achieving vaccination coverage and complete vaccination in both 2004 and 2010. However, maternal education was more likely to be associated with children's immunization in 2010, while the geographical region was more likely to be associated with children's immunization in 2004.

Conclusions: There were marked improvements in the national immunization coverage from 2004 to 2010. In order to achieve complete immunization, to further enhance the national immunization coverage as well as to lessen the gaps and disparities in childhood vaccination in Malawi, policy makers should design interventions based on the factors addressed in this study.

Keywords: Childhood immunization, socioeconomic factors, community characteristics, complete immunization, child health, Malawi