Some factors associated with non-acceptance of measles immunization in Chikwawa District: A population with high measles immunization coverage

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Abstract

Data from a child health survey in Chikwawa District was used to investigate characteristics of non-acceptance of measles immunization. 9.3% of the children with vaccination cards had not been vaccinated. Distance to a static health centre and failure to attend a growth monitoring clinic were predictors of lack of immunization. There were fewer missed opportunities during mobile clinics compared to static clinics. The high cost of mobile clinics does not make expansion of this method attractive. Strengthening educational efforts at the community level regarding measles immunization may be a more reasonable method for improving measles coverage.

Introduction

Success of measles immunization programmes depend not only on the technical intervention but also on being accepted and used by the target population. Studies evaluating the factors associated with non-acceptance of vaccination in settings with low vaccination coverage suggest that maternal education, cost of vaccination, socio-economic factors, and previous interactions with health staff contribute to non-acceptance of measles immunization.[1,2] As immunization coverage changes factors associated with coverage also change. In order to develop methods for maintaining and improving immunization coverage in settings with high immunization coverage it is important to investigate factors associated with non-acceptance in these settings.

Materials & Methods

We conducted a child health survey in Chikwawa District, Malawi in 1992; the methods have been described previously.[3] Briefly, a probability-proportional-to-size sample of children under 6 years was taken to include 50 children each from 66 villages. Mothers or guardians were interviewed regarding various child health issues and immunization records of children 12-23 months of age were reviewed. No measure of socio-economic status was included in the survey. Measles immunization was defined as complete if recorded on the immunization record, regardless of timing of immunization. Children without immunization records were excluded from the analysis. Multivariate analyses were used to evaluate the independent contribution of factors to the outcome.

Measles immunization in Chikwawa District (population 380,000) is carried out as part of an overall immunization programme. Immunizations are available at all 14 health centres, at two hospitals, and through mobile growth monitoring/immunization clinics held monthly at 61 sites.

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Results

There were 634 children between 12-23 months of age surveyed; 63 children (9.9%) had no vaccination record. Of the 571 children with vaccination cards, 53 children (9.3 %, 95 % confidence interval: 6.9%, 11.7%) had not been vaccinated against measles.

Characteristics associated with vaccination are given in Table 1. All of these parameters, except literacy, when included in a logistic regression model, remained independently associated with measles vaccination. Age and sex of the child, mother's age, sub-district of residence, vitamin A capsule supplementation, and breast feeding practices were not associated with acceptance of measles immunization.

Evaluating the relationship between distance and coverage revealed that there was a large variance in the coverage in villages five or more kilometers from the nearest health centres. (Table 2), Children living far (≥5 kilometers) from health centres were slightly more likely to have attended a growth monitoring clinic in the past six months than children living near a health centre. Among this group (living far from health centres and more likely to rely on monthly mobile clinics rather than static health facilities) 99.0% who participated in growth monitoring were vaccinated. Among the group of children living near a health centre (more likely to use the static health facility for immunization and growth monitoring) 92.5 % of those participating in growth monitoring had received measles immunization. (Yates corrected chi-square=9.2, p=0.002) Immunization coverage among those who had not attended a growth monitoring session was similar between the two groups. Including children without vaccination records (assuming they were unvaccinated) did not change any of our findings.

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Discussion

High measles immunization coverage can reduce disease incidence although it will not eliminate outbreaks; a large outbreak occurred in Chikwawa in 1991. A major concern is the continued occurrence of measles cases in infants under nine months of age. In nearby urban Blantyre, hospital records for 1992 showed that 34% of admitted measles cases were in children under 9 months of age.[4] It has been suggested that in areas where high coverage of infants under 23 months has been attained "catch-up" vaccination of older unvaccinated children and intensified surveillance for prompt action at the onset of an outbreak may reduce the likelihood of exposure of infants.[5] As few Malawian mothers still have immunization records by the time a child reaches school age, identifying older unvaccinated children is problematic. Intensified surveillance may be a more practical approach although it would require additional training and an improved infrastructure.

Low educational level of mothers, an important predictor of acceptance in other settings, does not appear to be a predictor in Malawi. Knowledge of the correct measles immunization schedule reflects previous interactions with health personnel; there have been few efforts outside the health structure to educate the rural population regarding immunization. The presence of tetanus toxoid vaccine (TTV) cards and TTV inoculations also indicate interactions with health staff. Mobile growth monitoring/immunization clinics appear to generate better measles coverage than static clinics; it is our impression that mobile clinics are

often viewed more favorably by the community than many static clinics. Furthermore, health workers are generally keen to participate in mobile clinics.

Additional and alternative strategies will need to be developed to improve (and even maintain) existing vaccine coverage levels. Reasons for missed opportunities for immunization at static health facilities need to be investigated. It will be difficult to expand mobile clinics because of the financial burden involved. Educational programmes may offer an alternative. These should be developed to target defaulters as well as provide information to the community regarding the timing of measles immunization as well as the importance of fully utilizing existing health care services.

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Table 1
Factors Associated with Measles immunization

Variable		Percentage Vaccinated	Odds Ratio (95 % CI) Unadjusted	Adjusted
Mother's literacy				
	Literate	97.7%	4.98 (1.2, 30.2)	1.0(0.9, 1.0)
	Illiterate	89.4%	r	r
Mother knows immunization schedule				
	Yes	96.1%	4.48 (2.2, 9.2)	2.94(1.4, 6.0)
	No	84.5%	r	r
Mother has TTV card				
	Yes	94.8%	3.72 (2.0, 7.0)	2.29(1.3, 4.6)
	No	83.1%	r	r
Mother's TTV inoculations				
	2+	94.1%	3.68 (2.0, 6.9)	2.05(1.0, 4.2)
	≥ 1	81.3%	r	r
Distance to health centre				
	<5 km	96.6%	4.07 (1.7, 10.1)	2.95(1.3, 7.0)
	5+ km	87.4%	r	r
Last attendance at growth monitoring clinic				
	≤ 6 months ago	94.9%	15.8 (7.9, 31.7)	2.44 (1.2, 5.1)
	> 6 months ago	54.2%	r	r

r = reference group
TTV = Tetanus toxoid vaccine

Table 2
Measles Coverage in Villages Surveyed
Mean Proportion of Children Immunized (Standard Deviation)

Distance to nearest health centre (n)	Children with Immunization Records (n=571)	All children (n = 634)
< 5 Kilometers (24)	96.3% (7.3)	88.6% (11.7)
5 + Kilorneters (42)	88.2% (13.7)	79.1% (18.8)

Student's t test value for children with immunization records (separate variance) = 3.1 (p value 0.003) and for all children (separate variance) = 2.5 (p value = 0.01)