Vitamin A Capsule Supplementation in Malawi Villages: Missed Opportunities and Possible Interventions

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ABSTRACT

A population-based survey was used to assess childhood and maternal vitamin A capsule coverage in Malawi and to investigate missed opportunities for capsule distribution. Overall, 9.3% of children had received vitamin A supplementation in the previous 6 months. Missed opportunities for receiving vitamin A were high in younger children. Fifty-five percent of mothers were covered in 8 villages served by volunteers and 23% in the 58 villages without volunteers. Existing strategies need to be redesigned and new strategies defined. For instance, mothers could receive supplementation during infant BCG vaccination, and children could receive initial supplementation during measles vaccination. Village health volunteers could be used to target children over 2 years of age. (*Am J Public Health.* 1995;85:718–719)

Introduction

The evidence is good that vitamin A supplementation of children will lead to a significant reduction in infant and childhood mortality in developing countries.[1–5] Vitamin A supplementation of mothers after delivery improves the vitamin A status of both the mother and her breastfed infant.[6] Sustainable, cost-effective methods for vitamin A capsule supplementation of both children and mothers in the developing world are needed.

The World Health Organization and the United Nations Children's Fund (UNICEF) have recommended that vitamin A supplementation be appended to immunization programs,[7] since these programs reach most infants. This recommendation could be effective in targeting children 9 months of age (at measles immunization) but would fail to reach children more than 1 year of age. Reaching older children will require different strategies.

Using population-based data collected for a child health survey, we sought to determine vitamin A capsule coverage for both children and mothers during immunization and at visits to growth monitoring clinics.

Methods

The survey was carried out in rural Chikwawa District, Malawi. Chikwawa is divided into seven subdistricts; 90% of the inhabitants practice subsistence farming. A 1983 study in Chikwawa and adjacent Nsanje District found a 3.9% prevalence of vitamin A–related xerophthalmia in children; older children were more likely to have xerophthalmia.[8] At the time of our survey, vitamin A capsules were distributed through the district health facilities and in a limited number of villages (eight of those surveyed) by health volunteers.

Based on 1987 census information, a sampling frame of all 475 villages in the district was created. A probability-proportional-to-size sample was taken to generate 70 clusters, each including 50 children under the age of 72 months. The pretested form covered a wide range of maternal and child health issues, including attendance at growth monitoring clinics, treatment of diarrhea, distance to a health facility, and presence of a health worker within the village. Children were considered to have received vitamin A supplementation if such supplementation had been recorded on their growth monitoring card in the previous 6 months. Information on immunizations of children 12 to 23 months of age was recorded from the growth monitoring card.

Mothers were considered to have received vitamin A supplementation after delivery if they acknowledged receipt of supplementation (there is no place on the growth monitoring card to record maternal distribution). Children with no growth monitoring cards were excluded from further analysis.

Results

Interviews were conducted with 2173 mothers of children under 6 years of age. No mother refused to be interviewed. Information was collected on 3573 children; 754 children (27.3%) had no growth monitoring card.

Overall, 256 children (12.8%) more than 11 months of age with growth monitoring cards had received vitamin A in the past 6 months. In general, vitamin A capsule coverage decreased with age (Table 1).

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TABLE 1—Vitamin A Supplementation among 305 Rural Children in Malawi,[a] by Age Group

Age, mo	%
6	16.9
12	18.4
24	13.2
36	12.6
48	8.3
60	4.7

[a]Children with no growth monitoring cards were not included in the estimate.

Among the 571 children 12 to 23 months of age, 73% had attended a growth monitoring clinic at least once in the previous 6 months. In this age group, 90.7% had been immunized against measles; all immunizations occurred before the children had reached 1 year of age. Only 44 children (6.9%) had no documented interaction with health facility staff. Among the other children (more than 23 months of age), 43.1% had been to a growth monitoring clinic in the previous 6 months.

All but four children 12 to 23 months of age with growth monitoring cards had received their BCG inoculation, almost all within 2 months of delivery. Only 23.6% of the mothers of these children had received vitamin A capsules.

Capsule coverage was not associated with sex of the child, maternal literacy, distance to the nearest health facility, or presence of village health volunteers. Supplementation of mothers was not related to maternal literacy, vitamin A supplementation of the child, gender of the child, birth of another child in the past year, or distance to the nearest health facility. Coverage of mothers was considerably higher (55%) in the 8 villages with volunteers than in the 58 villages without volunteers (23%). Older mothers were significantly more likely to have received vitamin A than were younger mothers. Vitamin A capsule coverage for both mothers and children varied considerably by subdistrict, ranging from 2.4% to 24.5% for children and from 0% to 38.7% for mothers.

Discussion

Within the existing health structure, there were clearly many missed opportunities during immunization and during visits to growth monitoring clinics (which occurred simultaneously) for children and mothers to have received vitamin A supplementation.

Few characteristics related to the mother or child explained the variable supplementation coverage. Vitamin A capsules were generally available before the survey period, although health center staff often failed to reorder supplies. The higher coverage figures found in some subdistricts reflect the knowledge and motivation of health staff in these areas. The value of vitamin A to child health is often not appreciated by health staff. It is difficult to clinically demonstrate the efficacy of vitamin A, vitamin A is generally associated with eye diseases, and mothers do not demand it.

Changing nutritional practices is the primary goal of vitamin A deficiency programs. As work proceeds toward achieving this long-term goal, vitamin A supplementation is a valuable tool in child survival. Distribution strategies need to be formulated to optimize existing interactions between health care workers and communities. Suggested strategies include the following.

1. Vitamin A supplementation of the mother should be formally linked to BCG immunization of the child. Health workers should not supplement mothers who are more than 2 months postpartum.

2. The first vitamin A supplementation of the child should be at 9 months of age and should be linked to measles immunization.

3. Vitamin A supplementation should be a part of other interventions at health clinics, particularly diarrheal disease control and supplementary food distribution.

4. Community-based distribution may offer the best strategy for supplementing children more than 1 year of age. Village health volunteers have a long history in the developing world.[9–11] Although their participation is difficult to sustain,[12–14] our experiences with volunteers have been positive.

5. Communities should demand vitamin A capsules. In Malawi, a considerable degree of the success of immunization programs can be attributed to the creation of a demand for these services by the population.

In all countries, a combination of various approaches, both new and existing, will be needed to improve vitamin A capsule coverage. □

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