

## Original article

### **Coverage study on Vitamin A supplementation amongst children aged 12-23 months in urban slums of Ahmedabad city.**

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#### **Abstract**

**Background:** Vitamin A supplementation is a low cost sustainable approach to control Vitamin A deficiency. It has been found to be effective over last 25 years in many developing countries.

**Objective:** To determine Vitamin A – supplementation coverage in children aged 12-23 months in urban slums of Ahmedabad.

**Design:** The 30 cluster sampling technique based on probability proportion to size advocated under Multi Indicator Cluster survey by World health organization was used to assess Vitamin A first dose supplement amongst 138 children in the age group of 12-23 months residing in slums of Ahmedabad during August 2006.

**Results:** Only 75 (54.3%) out of total 138 children had received Vitamin A supplementation. The coverage was more among males as compared to females though the difference was found to be insignificant. 71.7% of the children had received measles vaccination however only 47.8% of the children had received Vitamin A along with measles vaccine.

**Conclusion:** The study reflects low coverage of Vitamin A supplementation and non utilization of measles vaccination for Vitamin A supplementation.

**Key words:** children aged 12-23 months, Multi Indicator Cluster Survey, Vitamin A, and Measles.

#### **Introduction:**

Vitamin A deficiency (VAD) is a major cause of morbidity and mortality in India and other developing countries.<sup>1</sup> It is an essential micronutrient, which cannot be synthesized by the body and has to be

consumed. It is required for maintaining normal growth, regulating cellular proliferation and differentiation, controlling development and maintaining visual and reproductive functions.<sup>2</sup> The major factors leading to Vitamin A deficiency are lack of awareness for consumption of Vitamin A rich food and frequent infections such as ARI, Diarrhea and Measles. The role of protein energy malnutrition is also important in Vitamin A deficiency. Diet Survey have shown that in India intake of Vitamin A is significantly lower in all states and Union territories.<sup>3</sup>

Vitamin A supplementation is a short term approach for prevention of VAD. A large proportion of the Indian Population receives less than 50% of the recommended dietary intake of Vitamin A from Dietary sources.<sup>4</sup> The long term measure is to ensure that the community at risk consumes adequate amount of food rich in Vitamin A. Periodic large dosing of Vitamin A has been found to be a cost effective strategy to combat this micronutrient deficiency. It has been proved to be an effective intervention for the improvement of vitamin A status among deficient populations. Clinical studies have shown that this strategy not only decreases xerophthalmia but also increases the child survival rates in areas endemic for VAD.<sup>5</sup> The Beaton report shows that all- cause mortality among children aged 6-59 months are reduced by 23 % through Vitamin A supplementation especially in areas where Vitamin A deficiency is a public health problem.<sup>6</sup>

The children in the age group of 9-12 months are administered Vitamin A along with measles immunization according to the National Immunization Schedule. In Gujarat, biannual round of Vitamin A supplementation is being conducted in the months of Feb and August every year with regular immunization activities since 2005. The objective is to cover children in the age group of 1-3 years with two doses of Vitamin A every year.

With rapid urbanization in India and one of the highest population growth rates in the world, around 27.8% of the population is forced to reside in urban slums (Census 2001). As slums are considered to be high risk areas in terms of health care delivery, an attempt was made to determine Vitamin A –first dose coverage amongst children(12-23 months) residing in slums of Ahmedabad.

**Methods and material:**

Department of Health and Family Welfare, Government of Gujarat planned to carry out Multi-Indicator Cluster Survey (MICS) in various districts. Community Medicine Departments of various medical colleges who had good liaison with the health department were given the responsibility for conducting the MICS in each district. Urban slums of Ahmedabad city was allocated to Community Medicine department, B. J. Medical College, Ahmedabad.

A structured, pretested questionnaire designed by UNICEF was used after necessary modifications. To minimize errors and uniform reporting, members of the survey team received extensive training and discussed the likely problems in filling the format.

Multi-indicator cluster survey proposed by World Health Organization with 30 clusters has been undertaken in the slums of Ahmedabad.<sup>7</sup> Among these, study of households in four different quadrants of the village with at least two children aged 12-23 months in each quadrant

making a total of minimum 8 children was considered. A cross-sectional study was conducted during the month of July–August 2006 including 1800 households and 138 children in the age group of 12-23 months were studied for their Vitamin A status. The data was relied on the available documents and parents’ recall at the time of survey.

Trained doctors collected the information regarding Vitamin A coverage using a structured questionnaire. Data was entered in Epi-info and the findings are expressed in percentage.

**Results:**

Out of 138 children in the age group of 12-23 months, 54.3% were males and 45.7% were females.

The study findings in Table 1 shows that 54.3 % of the children were supplemented with first dose of Vitamin A and 28.3% were not covered. Supplementation status was not known in 17.4% of the respondents. Vitamin A coverage was more (58.7%) among males as compared to females (41.3%). The difference was found to be statistically insignificant ( $Z=1.53p >0.05$ ). Vitamin A was not supplemented to 56.4% of female and 43.6% of male.

**Table 1: Vitamin A first dose Supplementation in Children (12-23 months of age)**

Vitamin-A Received	Male		Female		Total	
	No.	%	No.	%	No.	%
Yes	44	58.7	31	49.2	75	54.3
No	17	22.7	22	34.9	39	28.3
Do not know	14	18.6	10	15.9	24	17.4
<b>Total</b>	<b>75</b>	<b>100</b>	<b>63</b>	<b>100</b>	<b>138</b>	<b>100.0</b>

( $Z=1.53p >0.05$ )

Table 2 shows that 71.7 % of the children had received measles vaccine however only 47.8% of the children had received Vitamin A along with measles.

Extra 6.5% of the children had also received Vitamin A but not with measles vaccine. Vitamin A as well as measles vaccination was not received by 21.7% of the children.

**Table 2 Vitamin A supplementation along with measles in Children (12-23 months of age)**

Measles	Vitamin A		
	Yes	No /Don't know	Total
Yes	66(47.8%)	33(23.9%)	99(71.7%)
No / Don't know	9(6.5%)	30(21.7%)	39(28.3%)
Total	75(54.3%)	63(45.7%)	138(100%)

( $\chi^2=19.6$ ,  $df=1$ ,  $p<0.01$ )

**Discussion:**

In the Multi Indicator Cluster Survey 2006 conducted in 30 clusters of urban slums of Ahmedabad, 138 children between the age group of 12-23 months were studied for Vitamin A coverage and measles vaccination. It was found that the coverage rate for vitamin A was only 54.3%. Gender difference found in the supplementation of Vitamin A was not significant. Along with measles vaccination the coverage was 47.8%. As per the DLHS-3 data 52.5% of the children in the age group of 9-35 months had received at least one dose of Vitamin A in Ahmedabad.<sup>8</sup> A study in Ahmedabad urban slums shows 19.9% of coverage of Vitamin A along with measles in year 2000.<sup>9</sup> Studies from urban slums of other major cities like Surat and Delhi show 28.9% and 37.6% of coverage respectively.<sup>10,11</sup> It is noted that over the years there is improvement in the coverage of Vitamin A.

It is clear that any attempt to improve coverage of measles vaccination also improves coverage of Vitamin A. In the present study 71% of the children had received measles vaccination but Vitamin A coverage was low among them. This difference could be because of various

reasons, such as (i) Vitamin A deficiency not considered a serious disease by the health workers. (ii) Lack of awareness regarding the dose and its importance (iii) Stock out situation of Vitamin A (iv) There is difficulty on the part of interviewees to recall. This difference could have been avoided by proper supervision and monitoring, training of health workers, proper recording of Vitamin A administration in the immunization card and record. Special emphasis should be given to 100% coverage of Vitamin A supplementation among children who receive measles vaccine.

**Conclusions and Recommendations:**

In the present study the first dose of Vitamin A coverage shows higher coverage than previous studies, it is still below the minimum target, set as national goals. As the vaccination card is an important tool during the survey, health workers must emphasize and act proactively on issue like 100% availability of vaccination card, follow up training of the health workers regarding vitamin A deficiency, coverage of Vitamin A along with measles vaccine and to generate awareness. Coverage studies should be done on a periodic basis to check the effectiveness of measures undertaken and appropriate corrective measures should be taken.

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