

Micronutrient Initiative

MICRONUTRIENT-FORTIFIED 'NUTRI-CANDY' INCREASES PARTICIPATION IN INTEGRATED CHILD DEVELOPMENT SERVICES IN BIHAR, INDIA

Tripti Pant Joshi¹, Dr. Saraswati Bulusu¹, Anil Bhutani¹, Sujata Chaturvedi²
¹Micronutrient Initiative, New Delhi, India ²Department of Women and Child Development, Patna, Bihar, India



BACKGROUND

The prevalence of micronutrient deficiencies among children, adolescent girls and women of reproductive age in India is among the highest in the world. The national prevalence of anemia is 88% among preschool children, 68% among women aged 15 to 49 years, and even higher in pregnant women (National Family Health Survey-3, India). The highest rates of anaemia are observed in the state of Bihar (Figure 1).

The Integrated Child Development Services (ICDS) program of the Government of India is the largest supplementary nutrition program in the world today, with an integrated package of early childhood services targeting children up to 6 years, pregnant/lactating women & adolescent girls belonging to the poorest communities. The supplementary food provided by the ICDS lacks micronutrients.

Fortification of commonly eaten foods is considered one of the best approaches for combating micronutrient deficiencies. However, in India, a large percentage of the population does not consume centrally processed foods. To address the needs of such populations, the Micronutrient Initiative has developed a fortified lozenge popularly called Nutri-candy, which is a centrally processed and indigenously produced hard-boiled sugar-based lozenge with added flavors and colors. This type of candy is highly acceptable and relatively affordable, thus accounting for 60% of the market share in India. Each lozenge provides about 50 per cent of the recommended daily allowances (RDA) of vitamin A, vitamin C, folic acid and iron for a child in India.

Nutri-candy is given to children, adolescent girls and pregnant and lactating women attending supplementary feeding centres in some States of India, where compliance has been very high (> 90%), and reduction in anaemia prevalence has ranged from 15% in an effectiveness trial conducted in West Bengal to 50% in an efficacy trial carried out in Haryana (Figures 2 and 3). Vitamin A deficiency decreased by 11% as well (Figure 4).

AIM

The primary aim of the project in Bihar was to improve the micronutrient status of preschool children, pregnant/lactating women and adolescent girls from low-income families through provision of a multi-micronutrient filled candy. Secondly, the study sought to improve the attendance of beneficiaries at all the supplementary nutrition centers in Bihar.

FRAMEWORK

Based on the success of this innovative approach in one district of West Bengal, the Nutri-Candy project was launched by the Chief Minister of the State in Bihar on July 15, 2006. The ICDS in Bihar reaches all 38 districts of the State. This infrastructure was used to provide one Nutri-Candy to each of 3.53 million beneficiaries daily for 300 days in a year. The candies are centrally procured and distributed to each of the 59,919 village centers. Training of ICDS functionaries at the State, District and Village level covered key issues related to malnutrition of vulnerable groups and use of Nutri-Candy for prevention of micronutrient deficiencies, and IEC for behavioral change. Process indicators related to the Nutri-Candy intervention are built into the routine monitoring and reporting activities of the ICDS system under an ad hoc Project Management Unit.

OUTCOMES

From 225,000 beneficiaries in one district of West Bengal in 2002, this MI product today reaches around 4 million beneficiaries in the country with 3.53 million in Bihar. Attendance of preschool children increased from 88% to 97% when Nutri-Candy was introduced earlier, and declined again to 77% when Nutri-Candy distribution stopped. A substantial (35%) increase in the attendance of pre-school children was observed at the centers during the 6-months period when the Nutri-Candy was provided again (Figure 5). No new educational, communication, financial or public health interventions were introduced in Bihar by the ICDS or other sectors during this period.

Additionally, subjective improvement in health was narrated by the beneficiaries as a result of the increased micronutrient intake. Qualitative assessment in some centers also reported an increase in utilization of other services of the centers like immunization and health education. Government has given the highest priority to this project, with active monitoring by the Chief Secretary through the District Magistrates of each district.

Given the strong demand and success of the project in increasing attendance at the centers, the State Government of Bihar is supporting the project with its own funds while the MI continues to provide technical and monitoring support – a good example not only of public-private partnership, but also of local ownership of the program that will contribute to its long-term sustainability.

IMPLICATIONS

- Nutri-Candy has proved to be a cost-effective (US\$ 1.2 per child per year) and sustainable solution for delivering micronutrients, especially iron, where compliance with supplements is a big problem due to side effects.
- The popular lozenges can be produced by existing manufacturers and made available to large segments of the population (commercially and through existing programs) at low cost and ensure the long term sustainability of the intervention.
- The Nutri-Candy intervention is safe, as the potential for overdose with any nutrient is highly unlikely (a child would need to consume >400 candies in one sitting to reach toxicity levels).
- The lozenges do contain sugar and can potentially contribute towards dental caries. The total quantity of sugar in each lozenge, however, is about 2.8 grams. Even so, it is important that children only receive one lozenge per day with proper messages on oral hygiene.

ACKNOWLEDGEMENTS

The authors wish to acknowledge the close partnership of MI and the Government of Bihar and its functionaries, (from the Honourable Chief Minister to grass root level functionaries), for the effective implementation of this project.

District	Children >6 years			Adolescent girls aged 10-19			Pregnant women aged 15-44		
	Mild	Moderate	Severe	Mild	Moderate	Severe	Mild	Moderate	Severe
Madhubani	12.2	82.0	5.8	26.4	73.6	11.8	82.4	5.9	
Madhepura	61.0	34.0	5.0	28.0	53.0	18.0	56.0	35.0	6.0

Source: District level household survey-Reproductive and child health survey (2002-2003), IIPS, India
 *All figures in percentage

Fig. 1

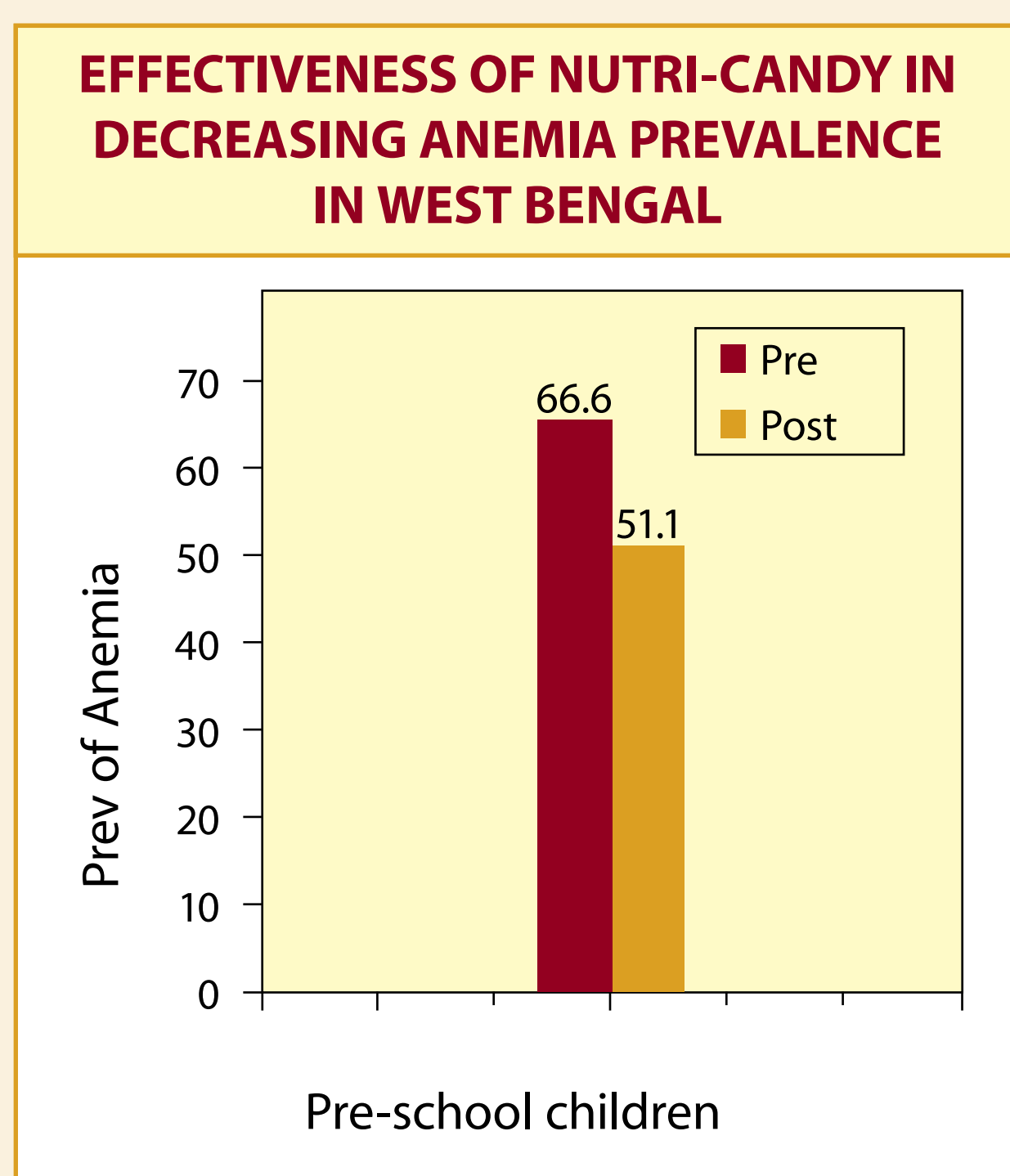


Fig. 2

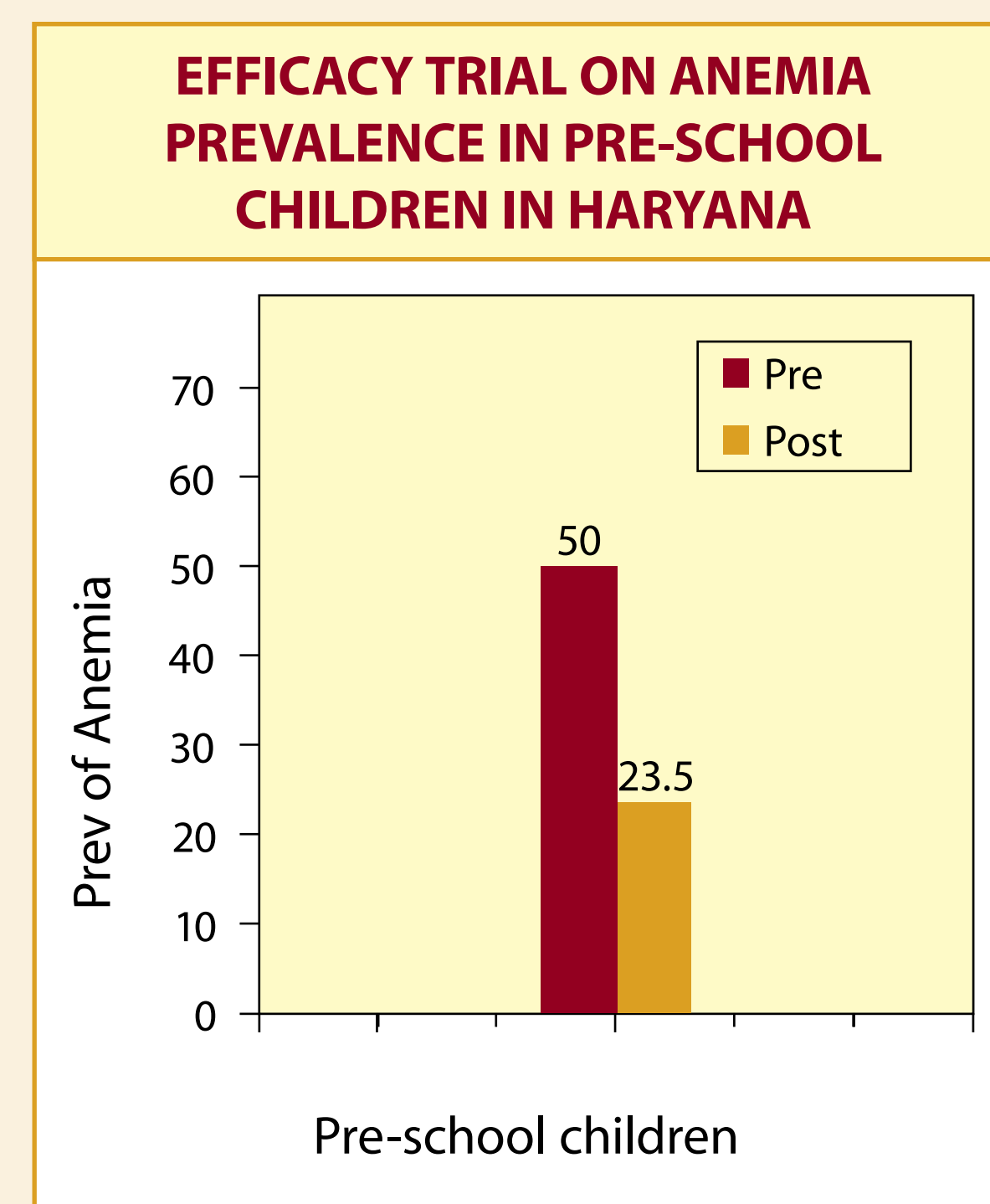


Fig. 3

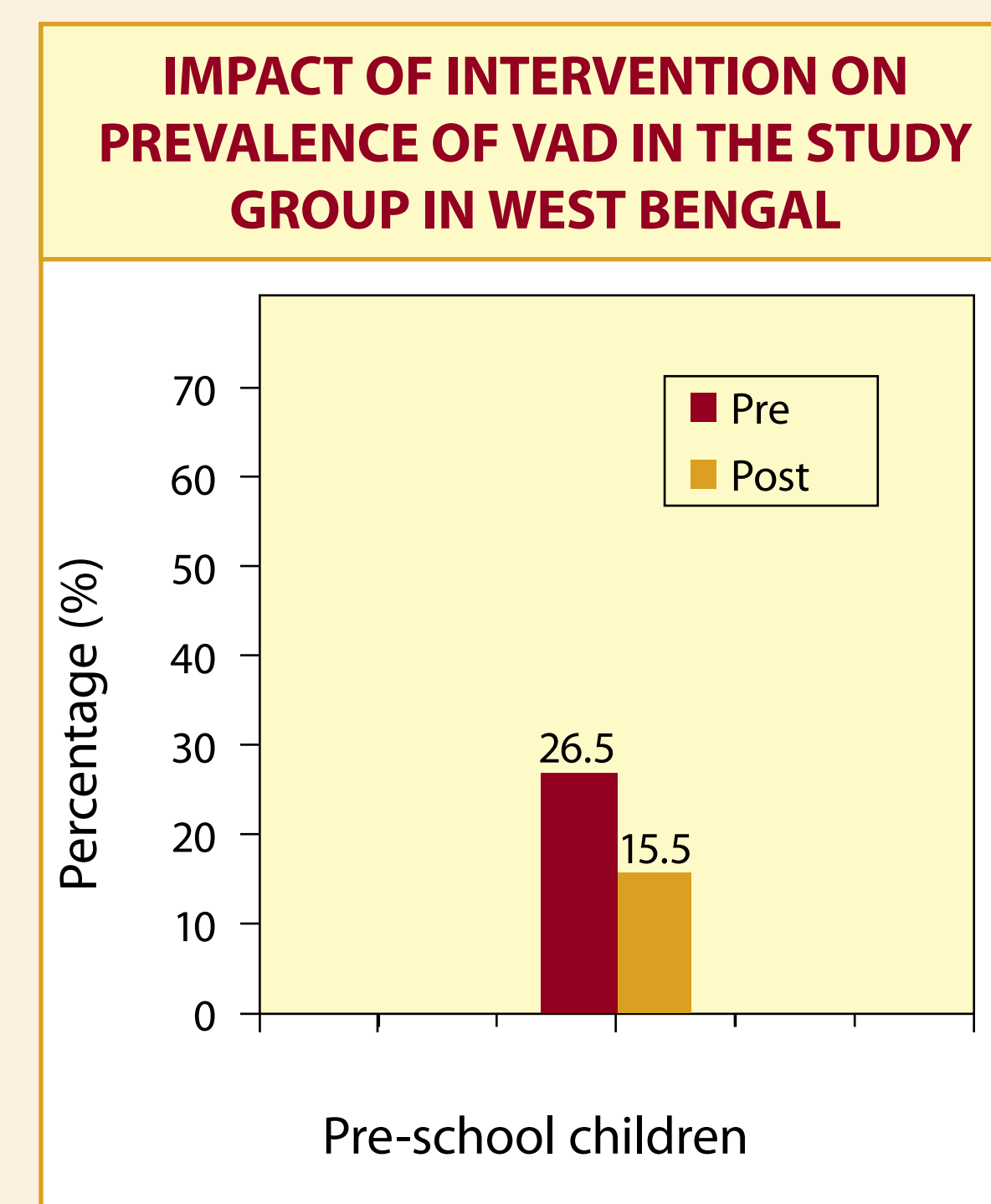


Fig. 4

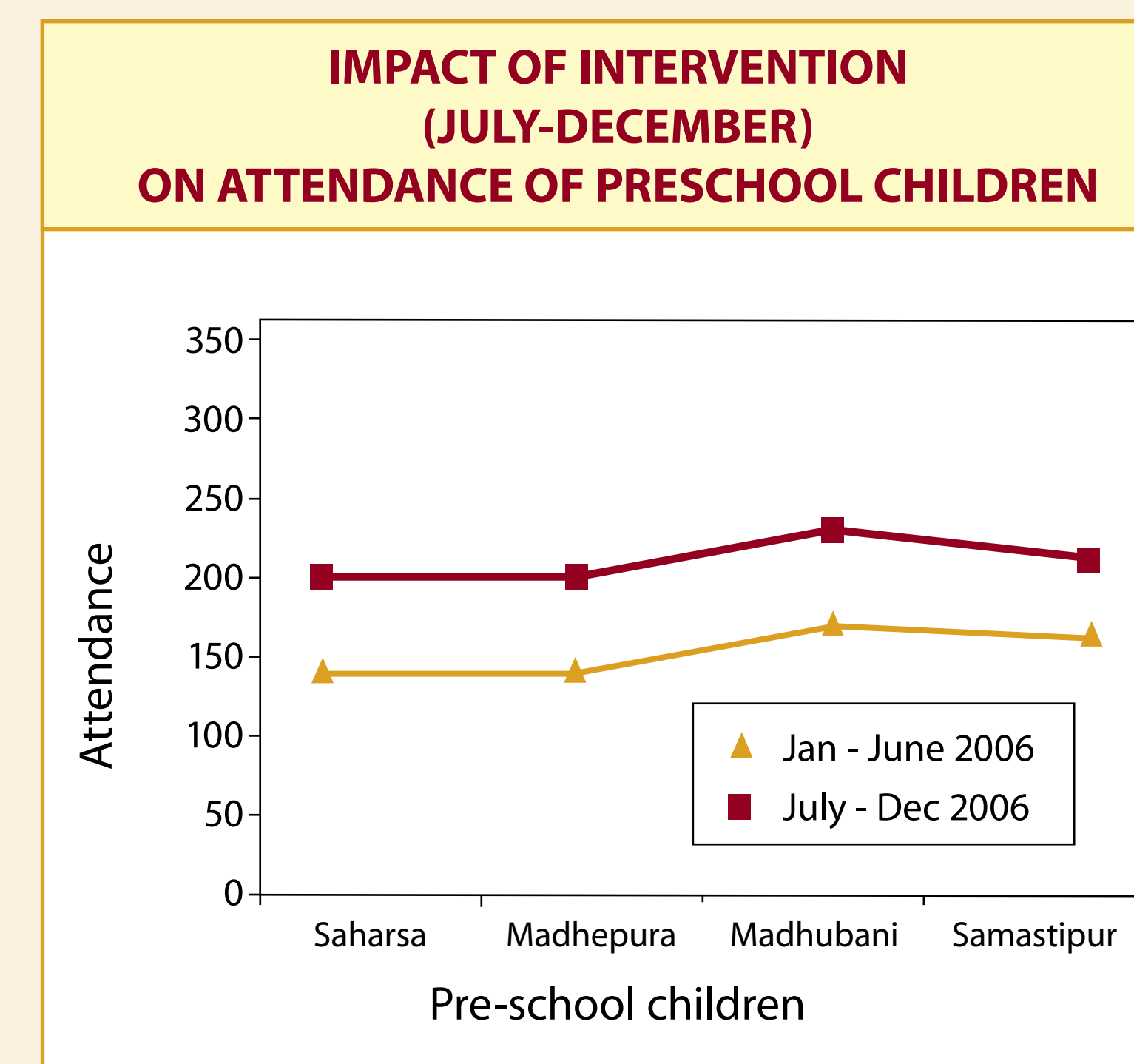
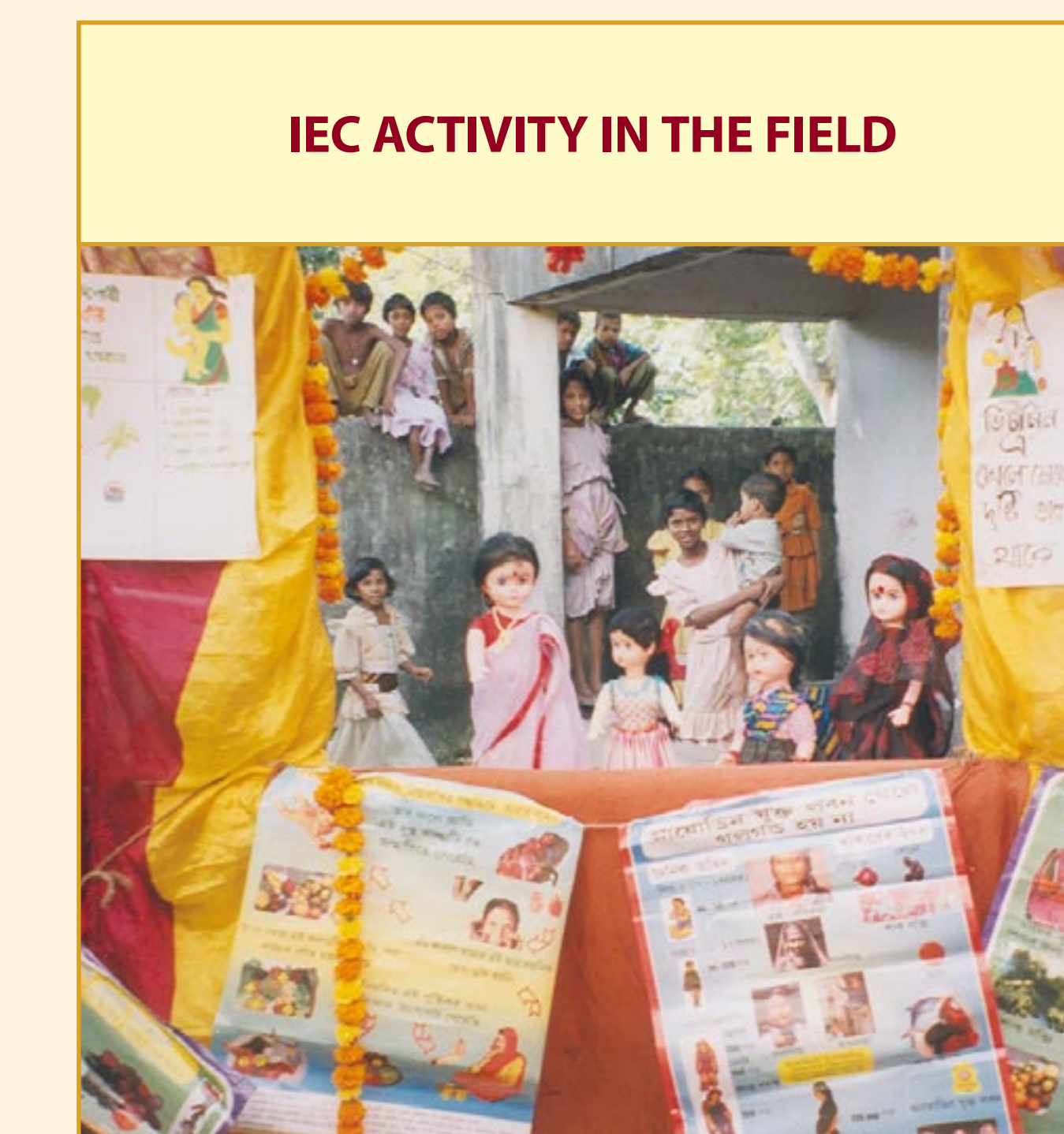
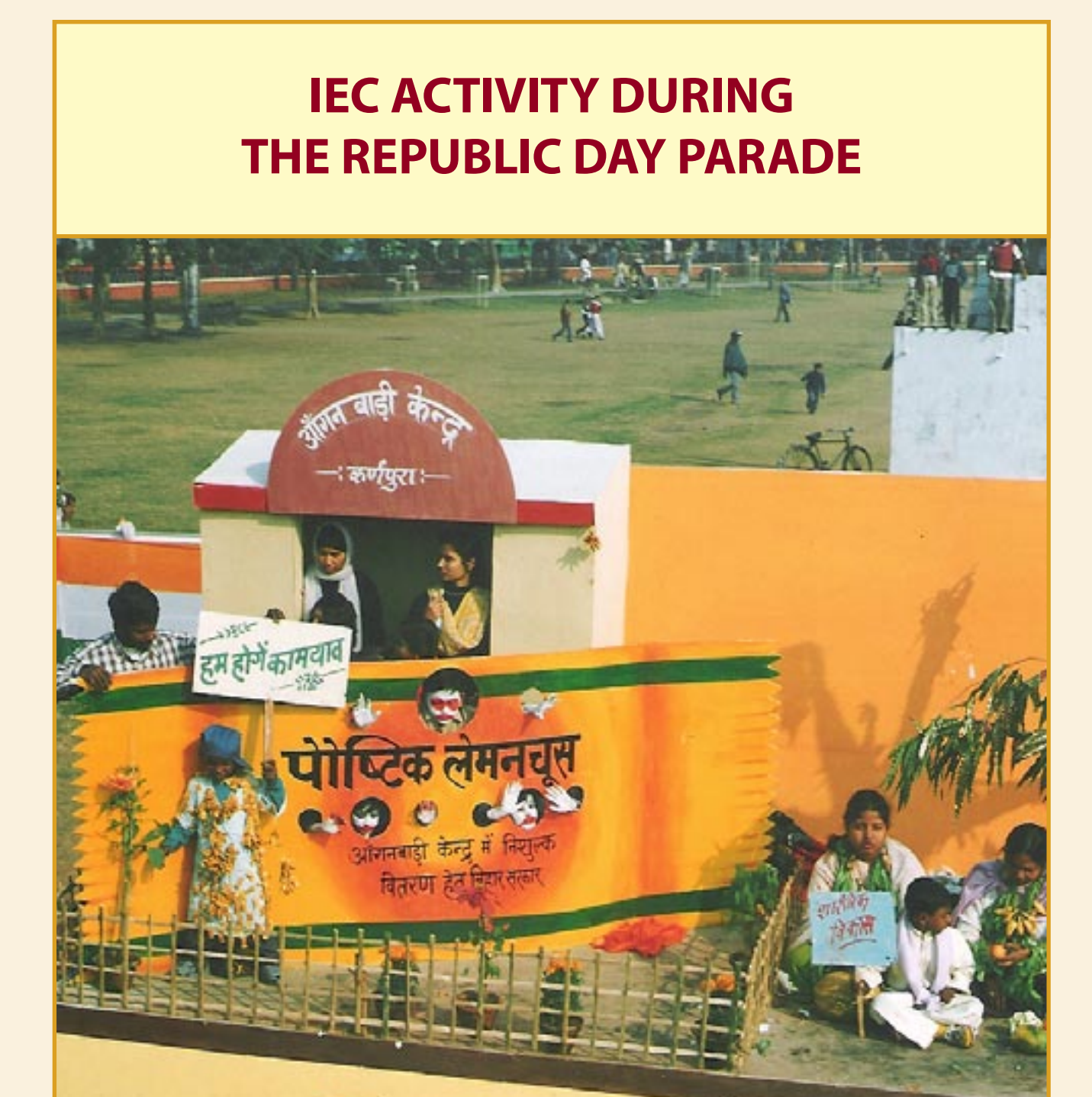


Fig. 5



IEC ACTIVITY IN THE FIELD



IEC ACTIVITY DURING THE REPUBLIC DAY PARADE