

**Epidemiological Overview of Preventable  
Blindness in India- A Focus on  
Vitamin A Deficiency among Pre-school  
Children in Indian**

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# Introduction

- India is home to the world's largest number of blind people - The Times of India-Oct 11, 2007.
- The number of blind persons in India in 2000 was estimated to be 18.7 million .
- The projected number of blind persons in India would increase to 24.1 million in 2010 and 31.6 million 2020 (Sagar Borker-2011).
- As per National Programme for Control of Blindness (NPCB), the prevalence of blindness in India was 1.1% in 2001-02) and 1% in 2006-07.

## **Causes of Blindness in INDIA**

<b>Cause</b>	<b>Percentage</b>
<b>Cataract</b>	<b>62.6</b>
<b>Refraction Error</b>	<b>19.7</b>
<b>Glaucoma</b>	<b>5.8</b>
<b>Corneal pathologies</b>	<b>0.9</b>
<b>Other Causes</b>	<b>11.0</b>

**Source: Vision 2020 India.org**

## Age distribution of visual disability.

<b>Age group</b>	<b>Percentage</b>
<b>0-15</b>	0.38
16-30	0.15
31-45	0.15
46-60	1.69
>60 years	15.42
<b>Total</b>	<b>1.99</b>

## Childhood blindness :

- Childhood blindness and visual impairment is a public health problem in developing countries with 75% of the world's blind children.
- Therefore, childhood blindness is the priority of “Vision 2020 - the Right to Sight,” a global initiative for the elimination of avoidable blindness.
- The prevalence is 3/10000 in children of affluent societies to 15/10000 in the poorest communities.

## Indian Scenario :

- In India 3,20,000 children (<16 years) are blind, and this constitutes 1/5 of the world's blind children (Murthy et al. IJO.2008; 56).
- As reported by Dandona et al (BrJO.2003;87), the prevalence of blindness was 0.17%. and
- This corresponds to 6,80,000 children (after extrapolation).

## Causes :

- Corneal Scar- (VAD, Measles, trauma) is the most common cause of childhood blindness.
- Cataract : 39% all childhood blindness
- Trachoma
- Glaucoma

Source : ORBIS-2010

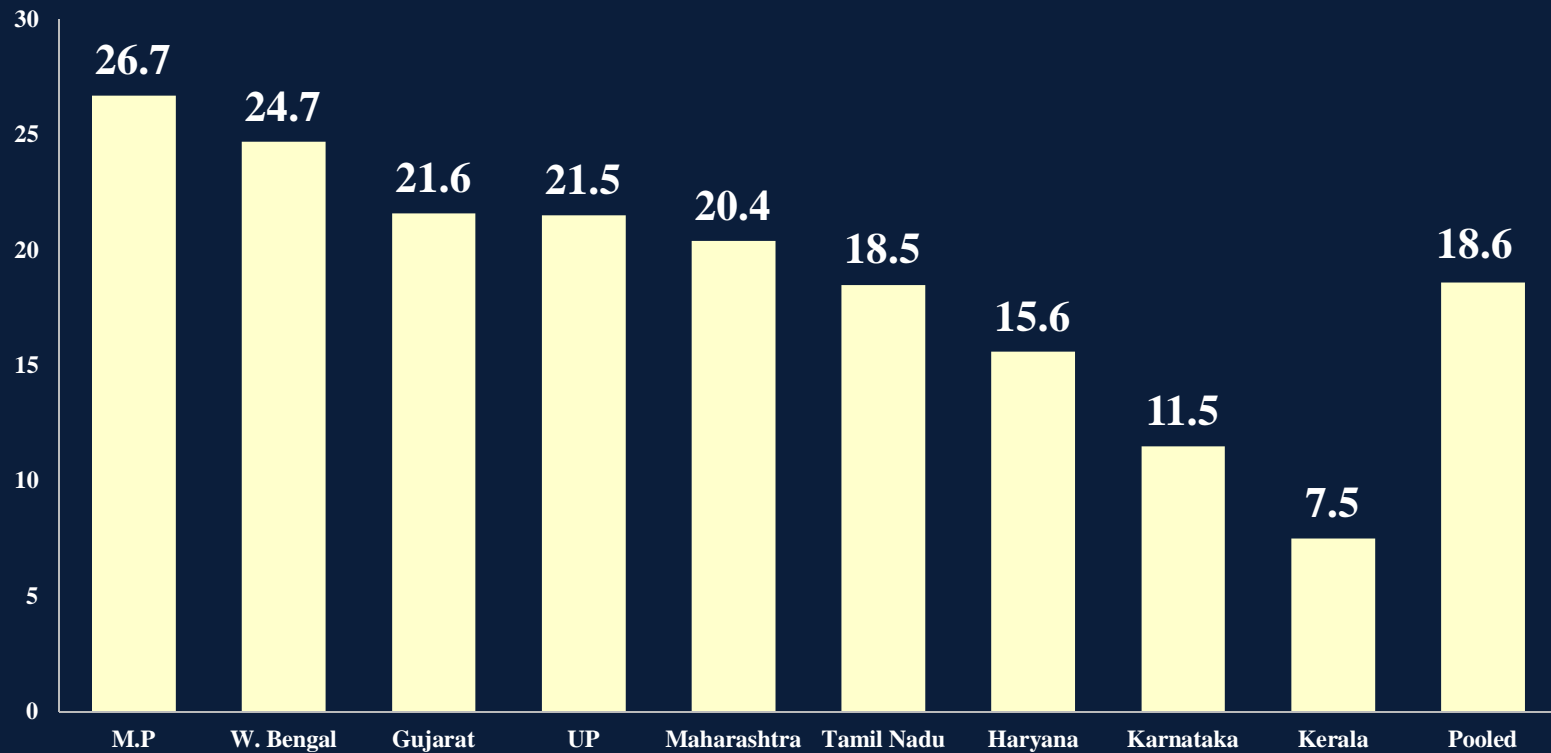
## **Vitamin A deficiency (VAD) :**

- Globally, the prevalence of VAD has been declining, which may be attributed to vitamin A supplementation and measles immunisation.
- Though the incidence of clinical VAD in India has declined significantly, India has the greatest number and percentage of VAD children in the world.
- And VAD persists as a public health problem, especially in rural areas.
- The overall prevalence of xerophthalmia among children is 1.7%, and approximately 0.8% of all children had Bitot's spots.



- VAD is the most common cause of blindness in developing countries.
- VAD affects vision by inhibiting the production of rhodopsin, the eye pigment responsible for vision in dim light.
- VAD causes night blindness, conjunctival xerosis, Bitot's Spots, Corneal xerosis, Corneal ulceration and scarring and Keratomalacia.
- VAD is the cause of blindness in 24% of children in blind schools of NE states of India ( [Bhattacharjee et al .IJO.2008; 56 \(6\)](#)).
- **Rahi et al (1995)** reported it as 18.6% among children.

# Proportion of children with severe visual impairment / blindness due to VAD by State in India



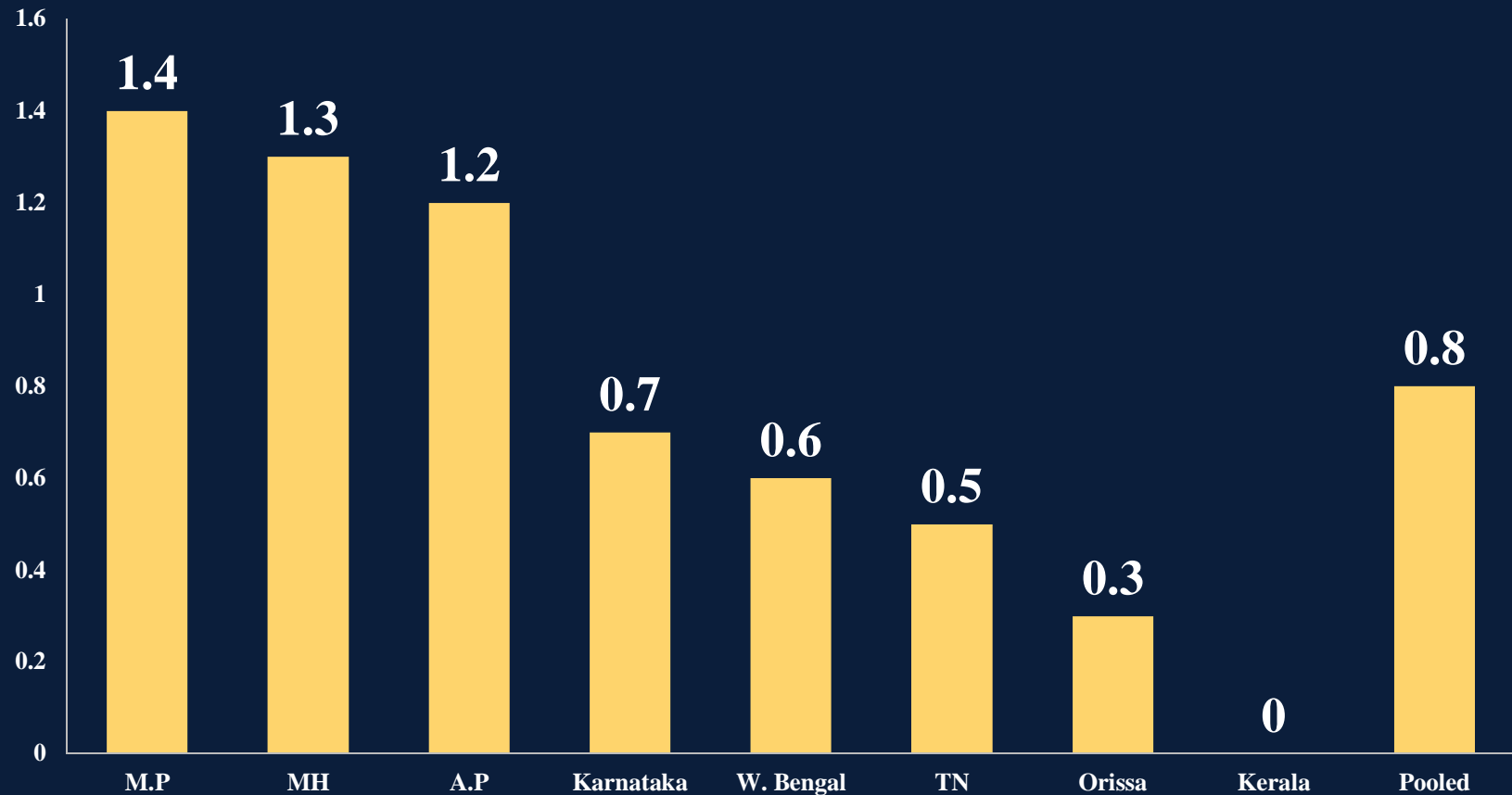
**Rahi et al . Archives of Disease in Childhood 1995; Vol-72.**

## Effectiveness of interventions (**VAS**) in reducing VAD burden

<b>Variable</b>	<b>Percentage</b>
<b>Bitot's spots</b>	<b>26–75</b>
<b>Night blindness</b>	<b>46–100</b>
<b>Blindness</b>	<b>43–75</b>
<b>Mortality</b>	<b>4–23</b>

**Jeffrey et al. PLOS ONE.2010, Vol : 5(8)**

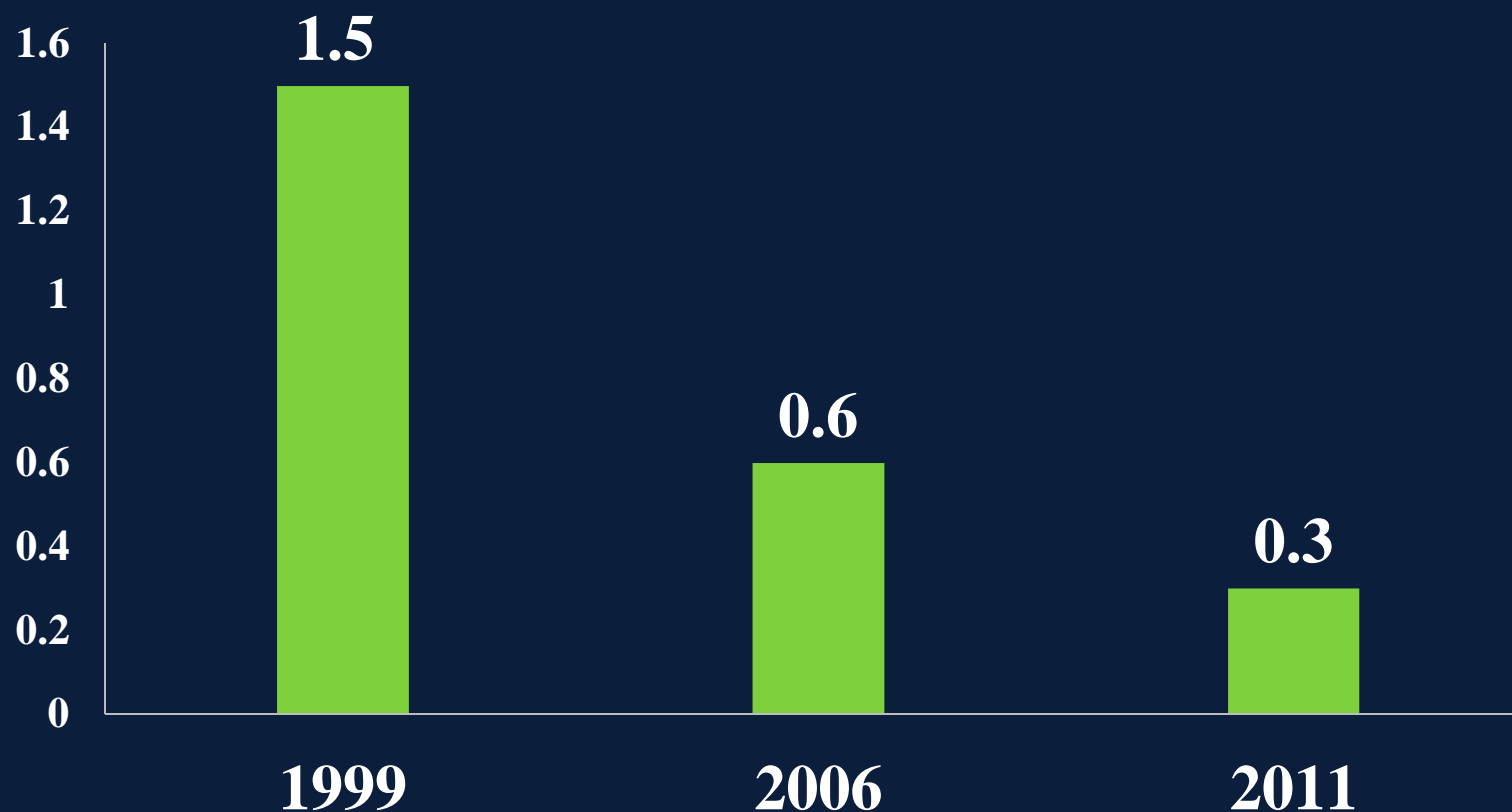
# Prevalence of Clinical VAD (**Bitot' s Spot**) among 1–5 year Children by States in India



# Socio-economic determinants of VAD among Pre-School Children in India

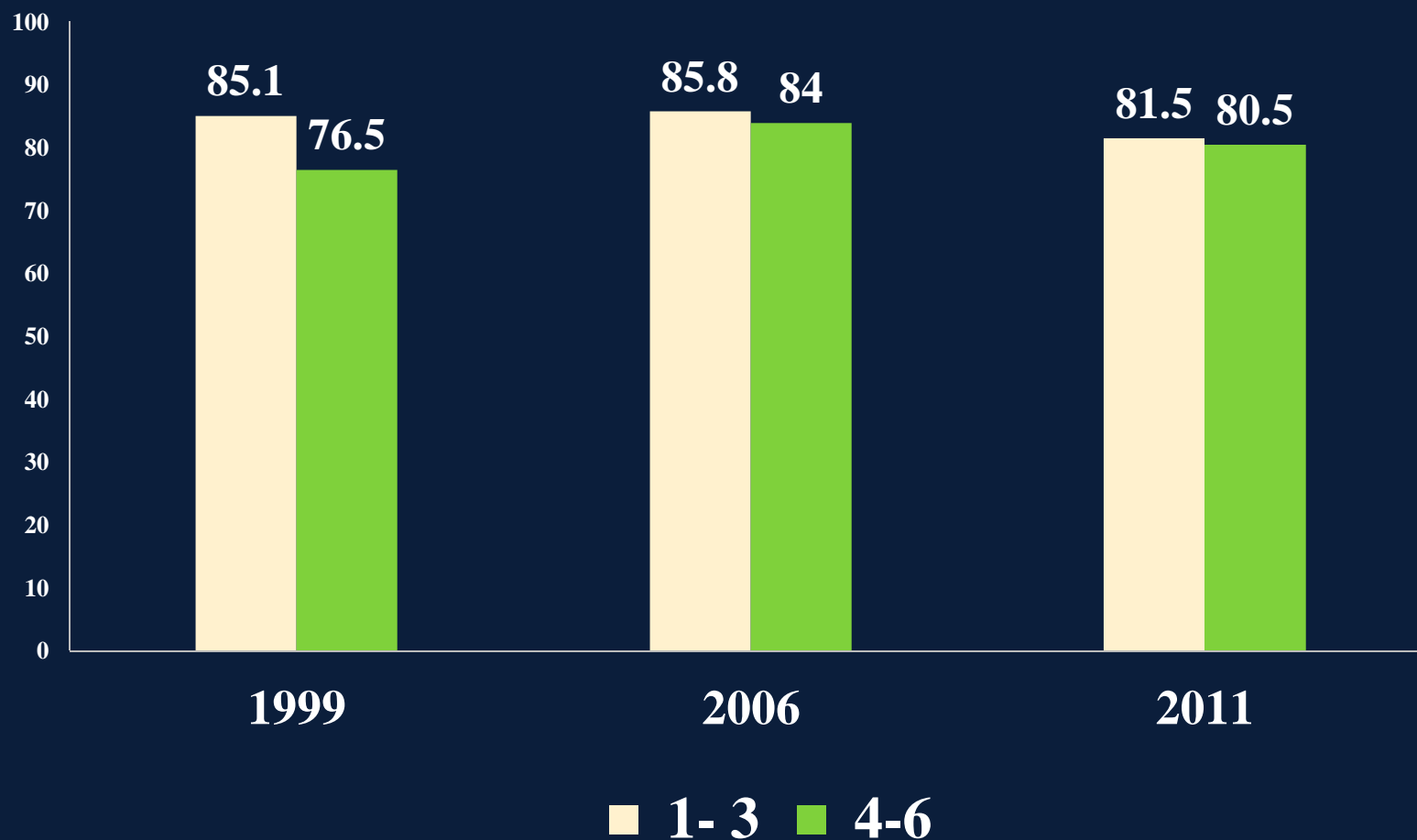
Variable	Bitot' s Spot	p - value	Sub-clinical VAD	p - value
<b>Community</b>				
Scheduled Tribe	<b>1.2</b>	<0.001	74.1	<0.001
Scheduled Caste	<b>1.4</b>		57.7	
Backward Caste	0.6		62.9	
Others	0.4		58.8	
<b>Occupation</b>				
Labourer	<b>1.0</b>	<0.001	62.7	0.088
Cultivators	0.6		59.4	
Service/Business	0.4		64.2	
Others	0.5		58.6	
<b>Family Size</b>				
2 – 4	0.6	<0.001	60.5	0.143
≥ 4	<b>0.9</b>		52.8	
<b>Female literacy</b>				
Illiterate	<b>1.1</b>	<0.001	62.8	0.153
Literate	0.4		60.6	

# Prevalence of clinical VAD (**Bitot's Spot**) among pre-school children – Time trends



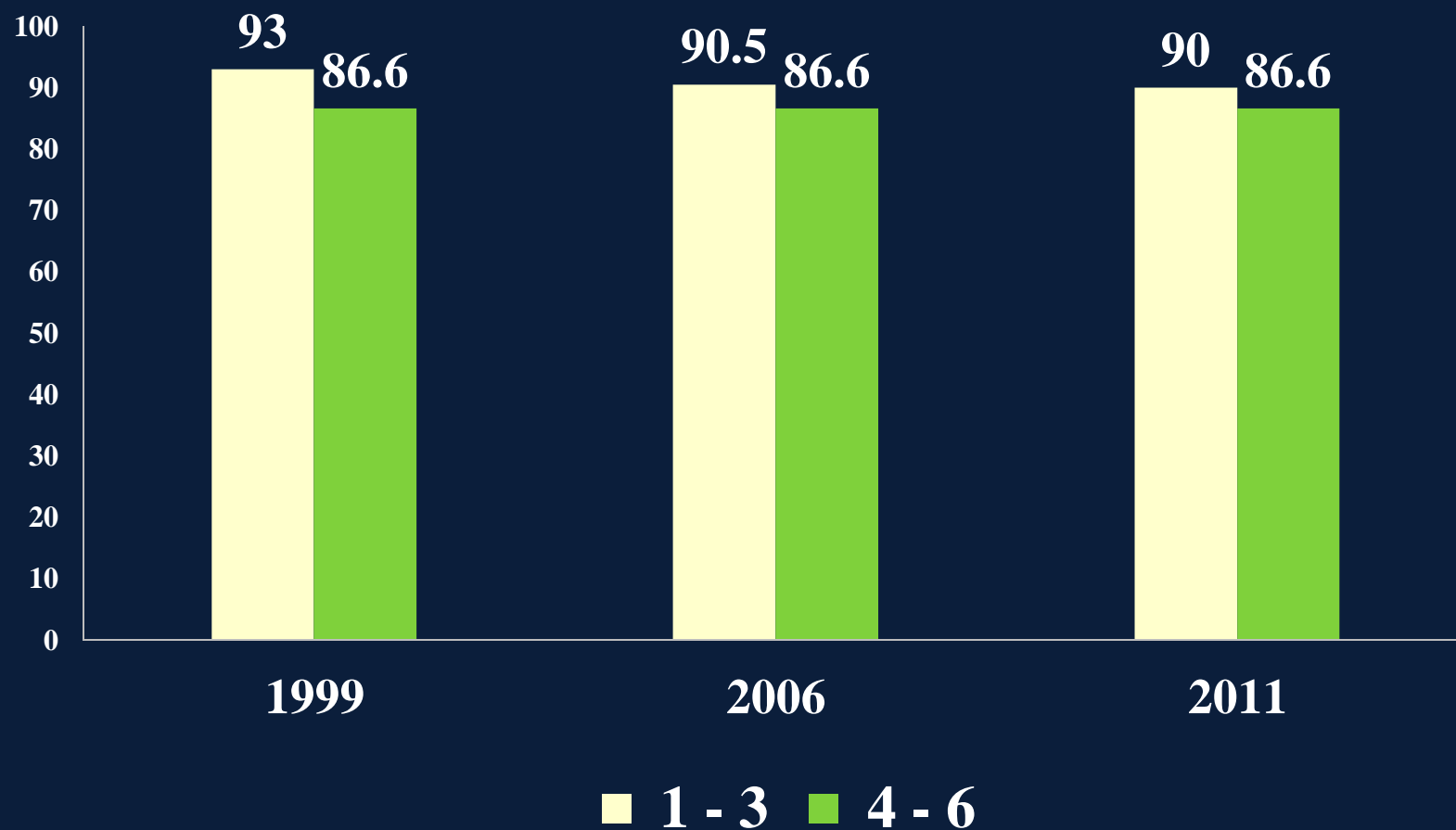
Source - NNMB

# Consumption of **Vitamin 'A'** < 50% of RDA among Pre-School Children – Time trends



Source - NNMB

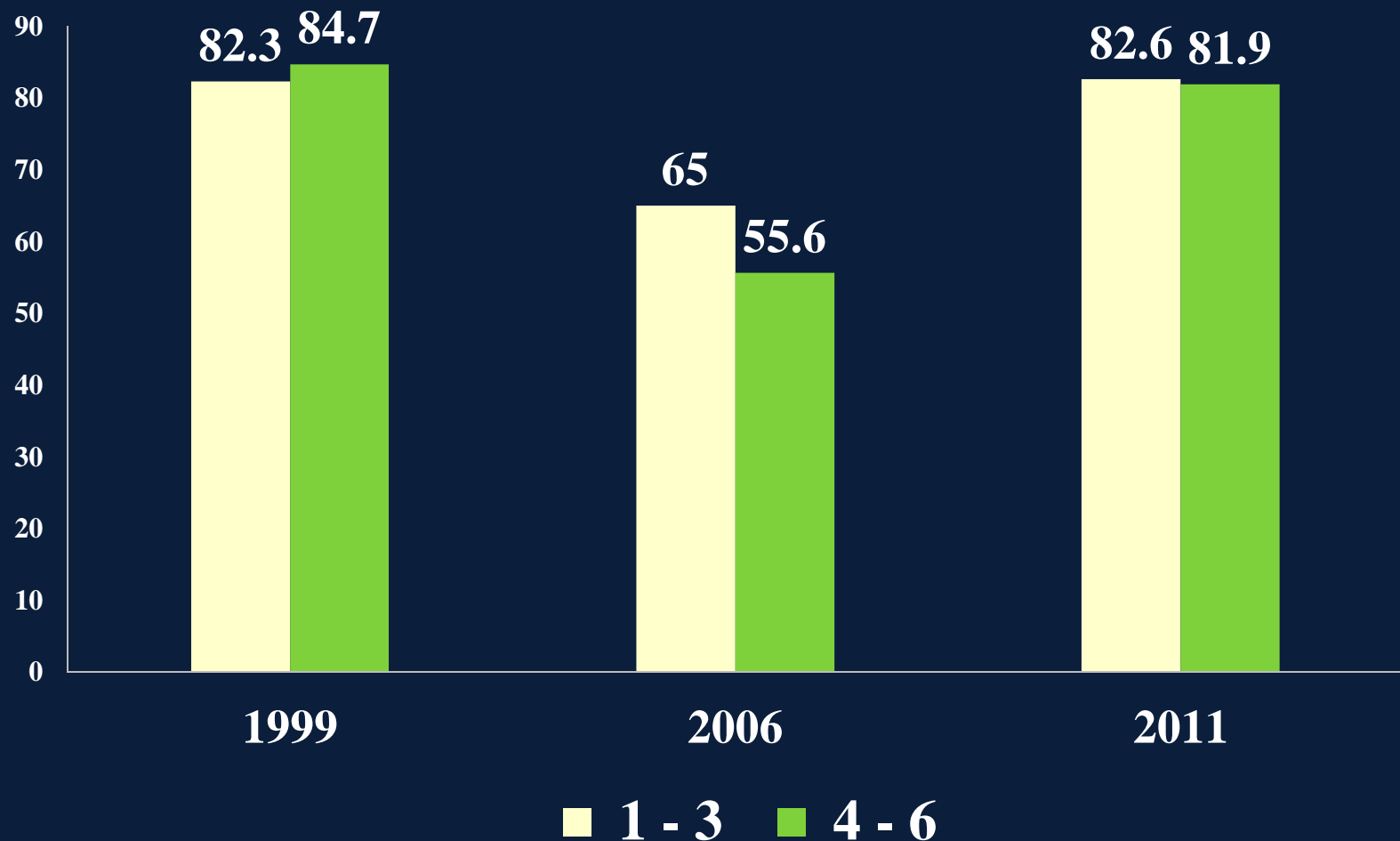
# Consumption of **Leafy Vegetables** < 50% of RDI among Pre-School Children – Time trends



Source - NNMB

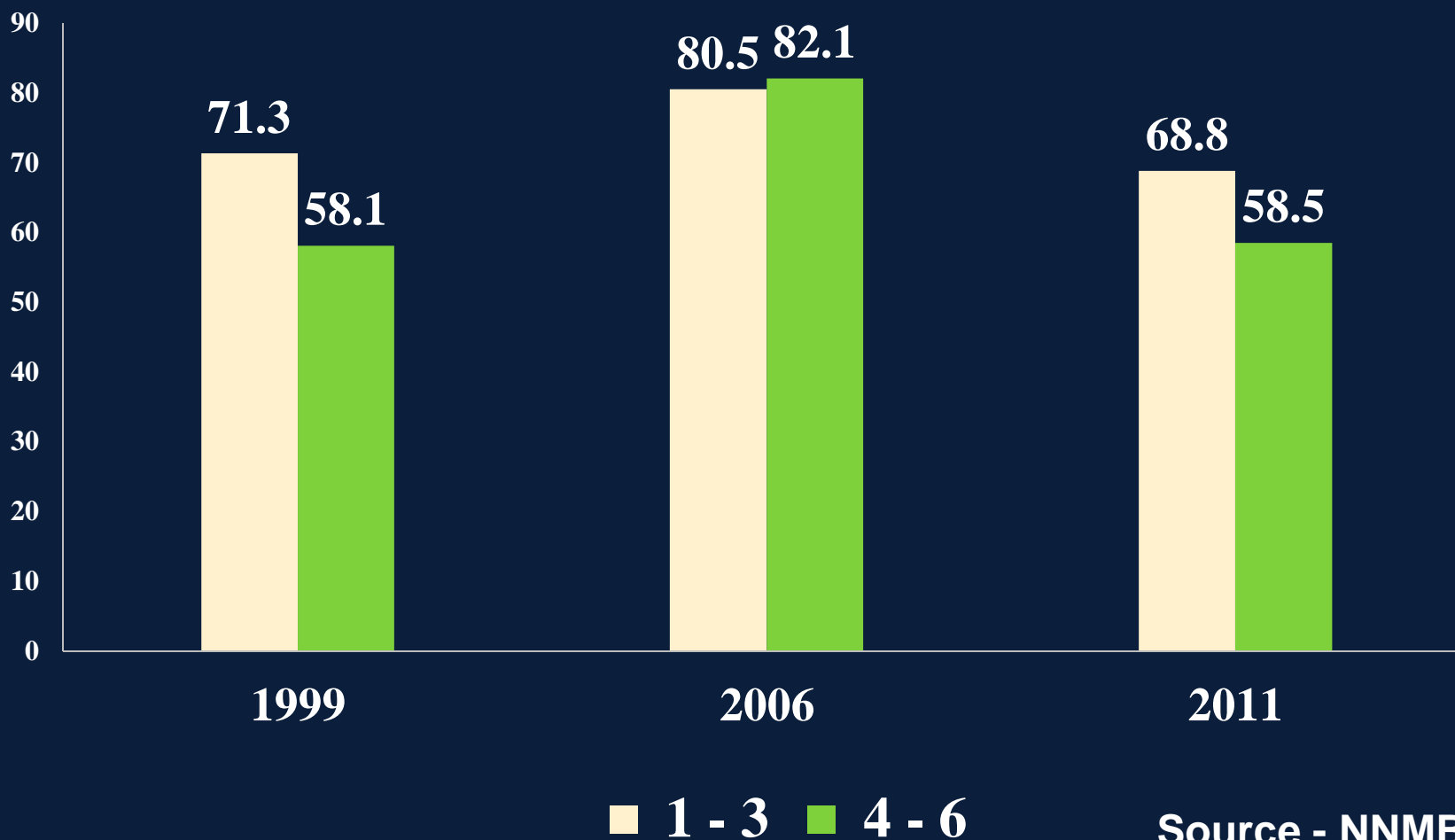


# Consumption of **Milk** < 50% of RDI among pre-school children – Time trends



Source - NNMB

# Consumption of **Vegetables** < 50% of RDI among pre-school children – Time trends



Source - NNMB



*Thank You*

# Prevalence of Sub-Clinical VAD (<math><20 \mu\text{g}/\text{dL}</math>) among 1–5 year Children by States in India

