

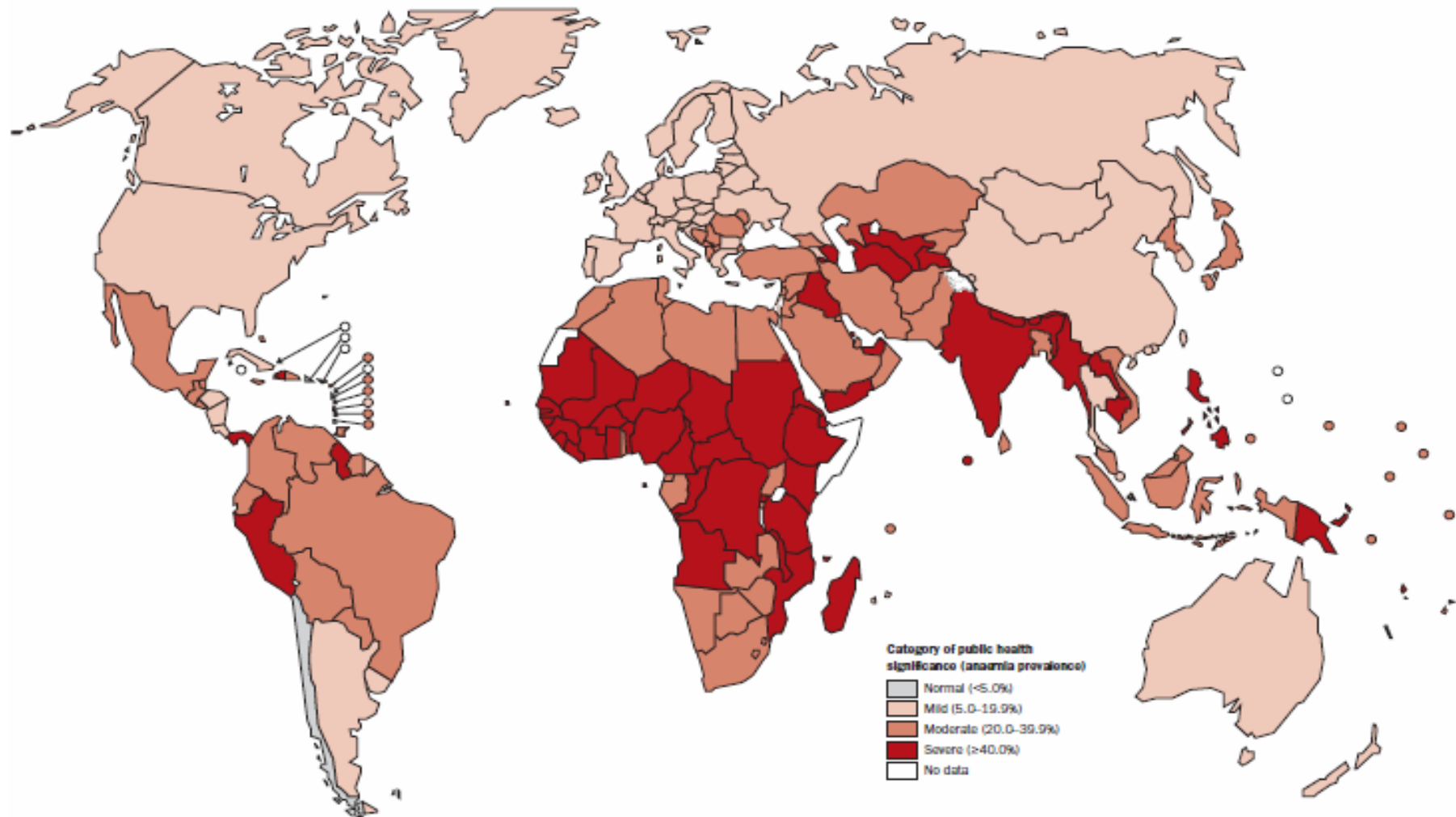
TIME TRENDS IN PREVALENCE OF ANAEMIA

PREVALENCE OF ANAEMIA Source: WHO

	Global	Developed	Developing	India	
				Urban	Rural
Children < 5 yrs	43	12	51	60	70
Children > 5yrs	37	7	46	50	60
Men	18	3	26	35	45
Women	35	11	47	50	60
Pregnant Women	59	14	51	65	75

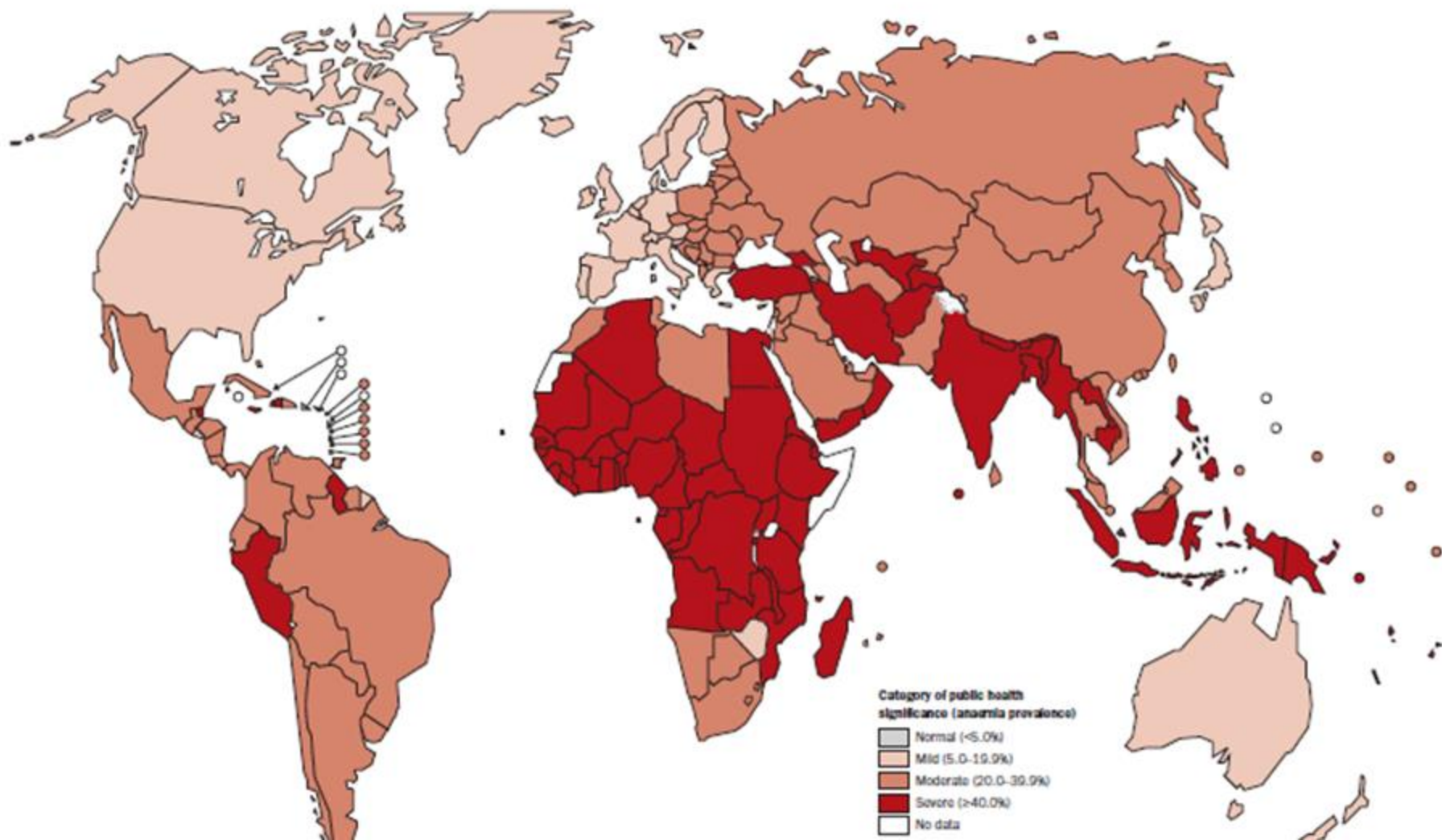
- About one-third of the global population (over 2 billion persons) are anaemic
- Anaemia is the most common nutritional deficiency disorder in the world
- Prevalence of anaemia is higher in developing countries
- Prevalence of anaemia in India is very high in all groups of the population.

PREVALENCE OF ANAEMIA IN WOMEN

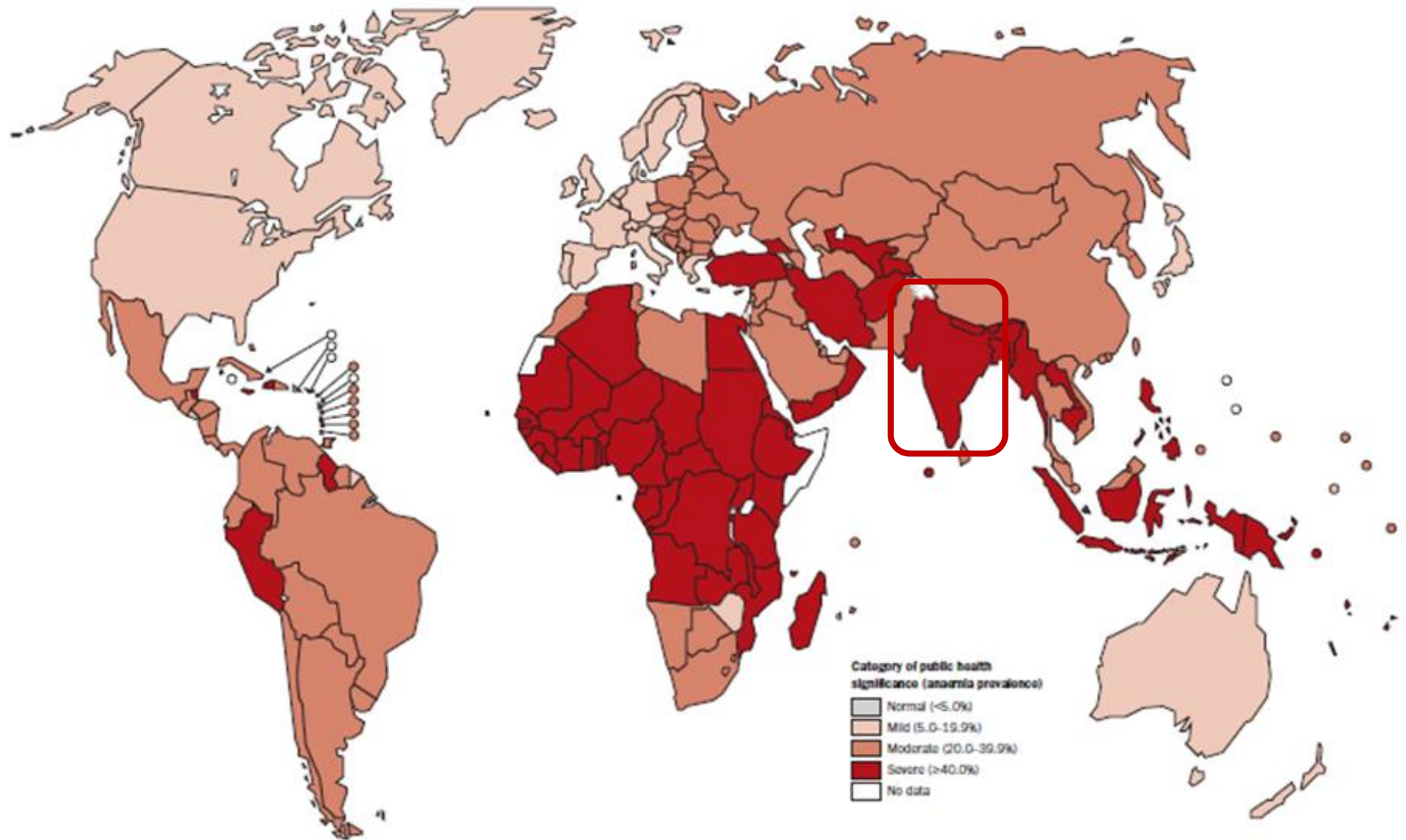


Prevalence of anemia is high in Sub-Saharan Africa and South East Asia – South Asia fares the worst

PREVALENCE OF ANAEMIA PRESCHOOL CHILDREN



PREVALENCE OF ANAEMIA IN PREGNANT WOMEN



India is world no 1 both in terms of prevalence of anaemia and number anaemic pregnant women

PREVALENCE OF ANEMIA IN SOUTH ASIA% WHO

Country	Children < 5 years	Women 15-49 years	Pregnant women	Maternal deaths from anemia
Afghanistan	65	61	-	-
Bangladesh	55	36	74	2600
Bhutan	81	55	68	<100
India	75	51	87	22000
Nepal	65	62	63	760
South Asia Region Total				25,560
World Total				50,000

About half the deaths from anaemia in the world occur in South Asian countries.

India accounts for over 80% of deaths due to anaemia in South Asia.

🌐 Majority of the 1.3 billion Indians from all age and physiological groups are anaemic

🌐 Low dietary iron intake and poor bio-availability of iron from Indian vegetarian diets are the major factor responsible for anaemia

🌐 India was the first developing country to initiate national anaemia prevention programme aimed at medicinal supplementation of iron and folic acid to pregnant women and preschool children.

🌐 Coverage under the IFA supplementation to pregnant women is improving

🌐 There has been some improvement in coverage under weekly IFA supplementation to children and adolescents

TIME TRENDS IN PREVALENCE OF ANAEMIA

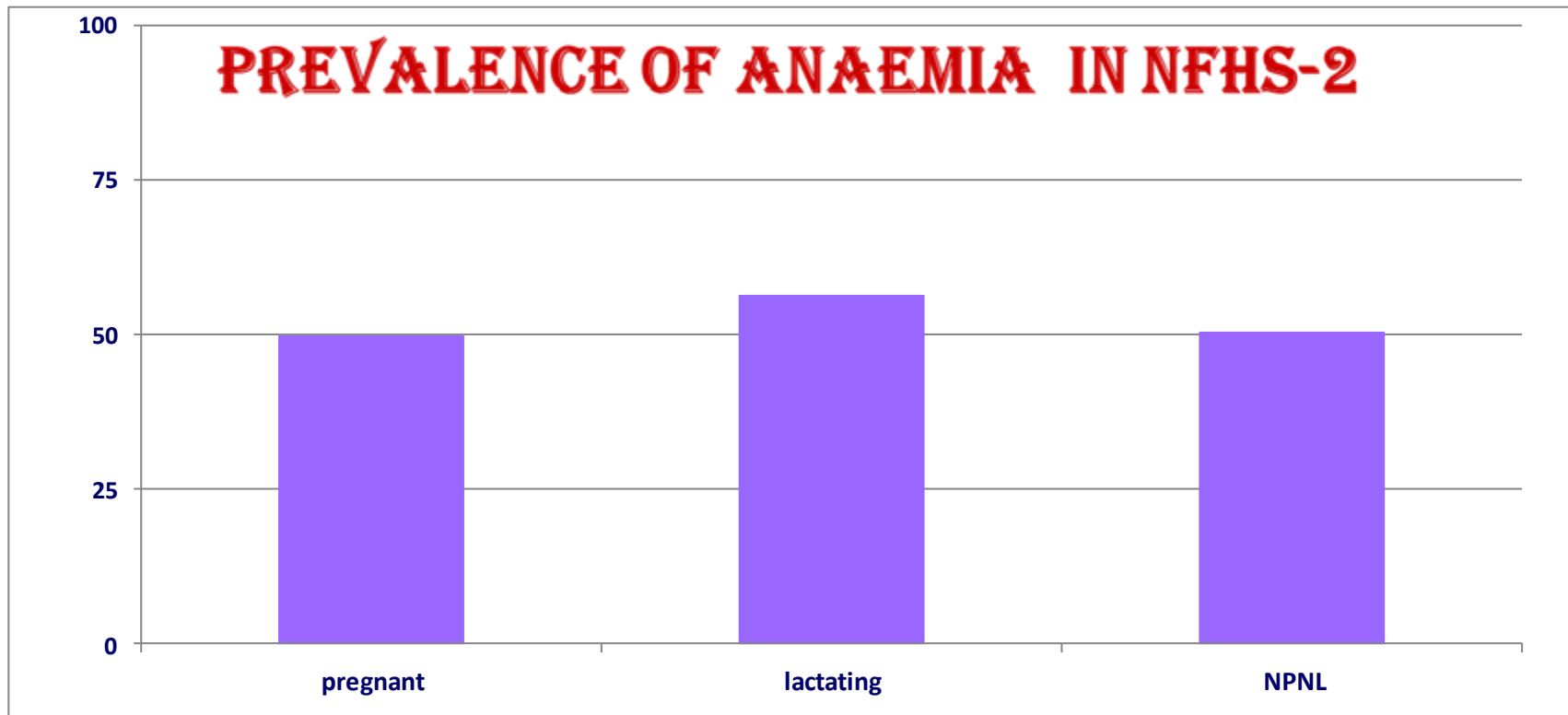
There have been 8 large scale national surveys since 1990.

In 5 of these Hb estimation in pregnant women and under-five children have been undertaken

In 2 of these Hb estimation in adolescent girls from 10-19 yrs of age have been done

Data from these surveys were tabulated to assess time trends in prevalence of anaemia in pregnant women, under-five children and adolescent girls.

**PREVALENCE OF ANAEMIA IN PREGNANCY BASED ON
SURVEYS USING HAEMACUE FOR HB ESTIMATION**



NFHS 2 was the first national survey to provide state wise data on prevalence of anaemia in pregnant women

NFHS used the new expensive Haemacue method for Hb estimation

Data from NFHS 2 showed that:

Pregnant women are not more anaemic than non-pregnant women and prevalence of anaemia in pregnancy was less than 50%.

THIS WAS HAILED AS THE IMPACT OF INDIA'S SUCCESSFUL ANAEMIA CONTROL PROGRAMME FOR PREGNANT WOMEN.

OBSTETRICIANS AND NUTRITION SCIENTISTS DID NOT THINK THAT THERE WAS A DECLINE IN ANAEMIA IN PREGNANT WOMEN

Several Indian investigators had compared Haemocue and cyan methaemoglobin method for Hb estimation and published their results

Mohan Ram M, Ramana Rao GV, Sastry JG. A comparative study on prevalence of anemia in women by cyanmethemoglobin and Hemocue methods. Indian J Community medicine 2002; XXVII, (2) 58-61.

Kapoor SK, Kapil U, Dwivedi SN, Anand K, Pathak P, Singh P. Comparison of Hemocue method with cyanmethaemoglobin method for estimation of hemoglobin. Indian Pediatr 2002; 39:743-746.

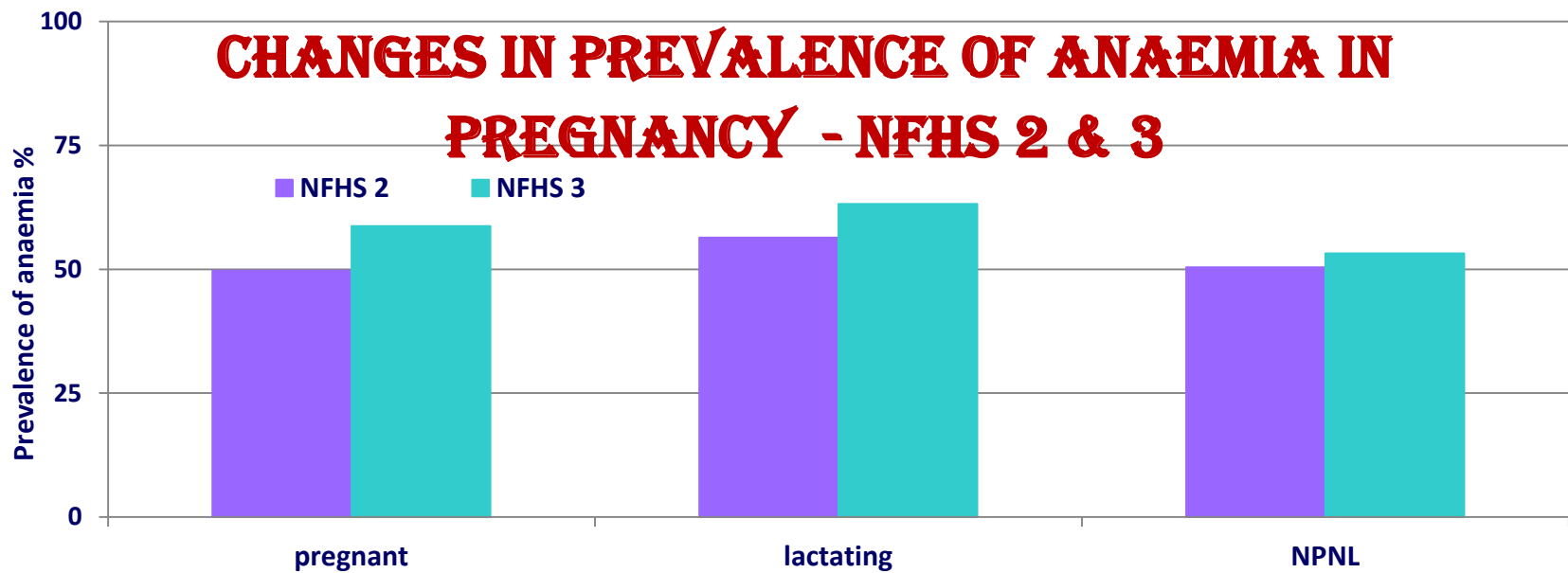
Bhaskaram P, Balakrishna N, Radhakrishna KV, Krishnaswamy K. Validation of hemoglobin estimation using Hemocue. Indian J Pediatr 2003; 70: 25-8.

Pathak P, Kapoor SK, Dwivedi SN, Singh P, Kapil U. Comparison of hemoglobin estimates from filter paper Cyanmethemoglobin and Hemocue methods. Indian J Community Med 2004; 29(3).

Findings: Hemocue overestimates Hb & underestimates anaemia

**The relationship between Hemocue and cyanmethHb values is non-linear;
So correction factor cannot be used to correct the over estimation of Hb by Hemocue**

THE CONCLUSION: DO NOT USE HEMOCUE IF ACCURATE ESTIMATION OF HB IS REQUIRED.



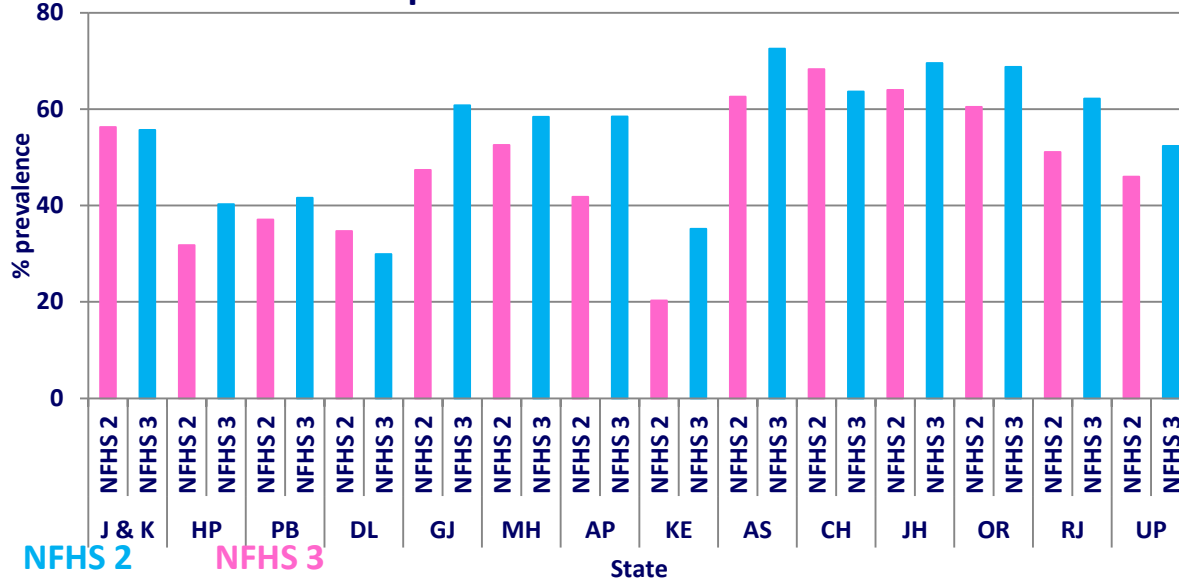
NFHS 3 continued to use expensive Hemocue method for estimation of Hb because:

- other DHS use the method;
- it can be done in the field by the survey personnel with no pipetting skills;
- results are immediately available and can be given to the surveyed person.

There was an increase in prevalence of anaemia in pregnant, lactating and non pregnant women between NFHS 2 & 3; this was viewed with concern

Several Labs and some clinicians started to use Haemacue to estimate Hb in pregnant women because of the ease of doing Hb estimation

Time trends in prevalence of anaemia NFHS 2 and 3

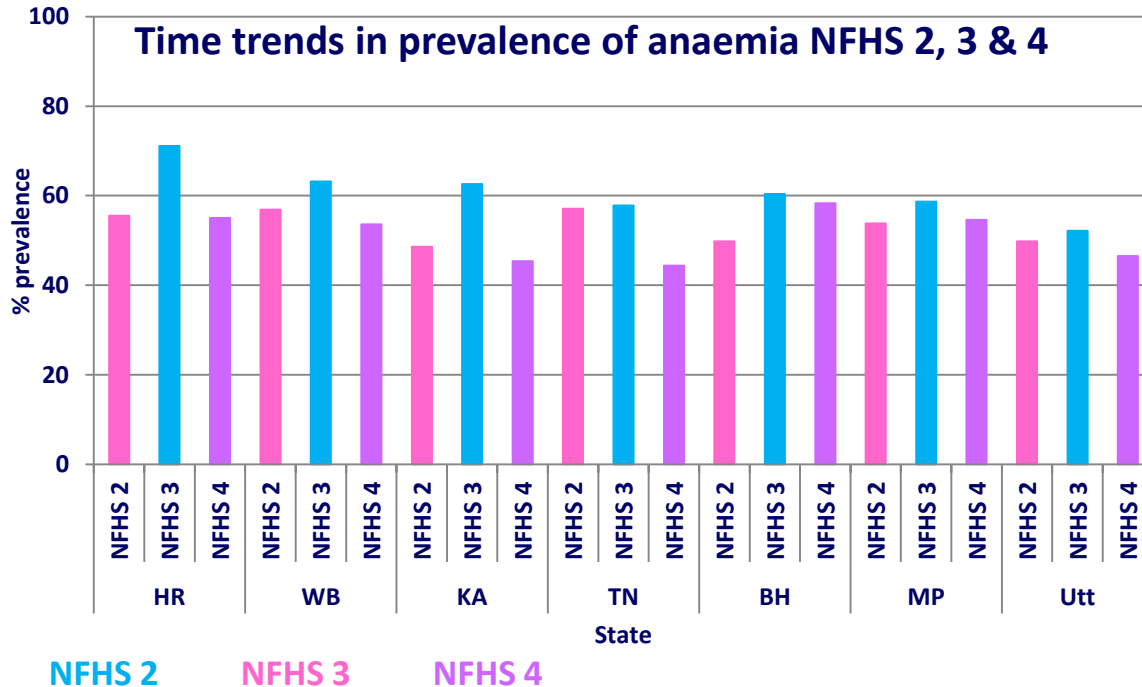


Data on prevalence of anaemia from NFHS 2, 3 & 4 where available are shown in the figure

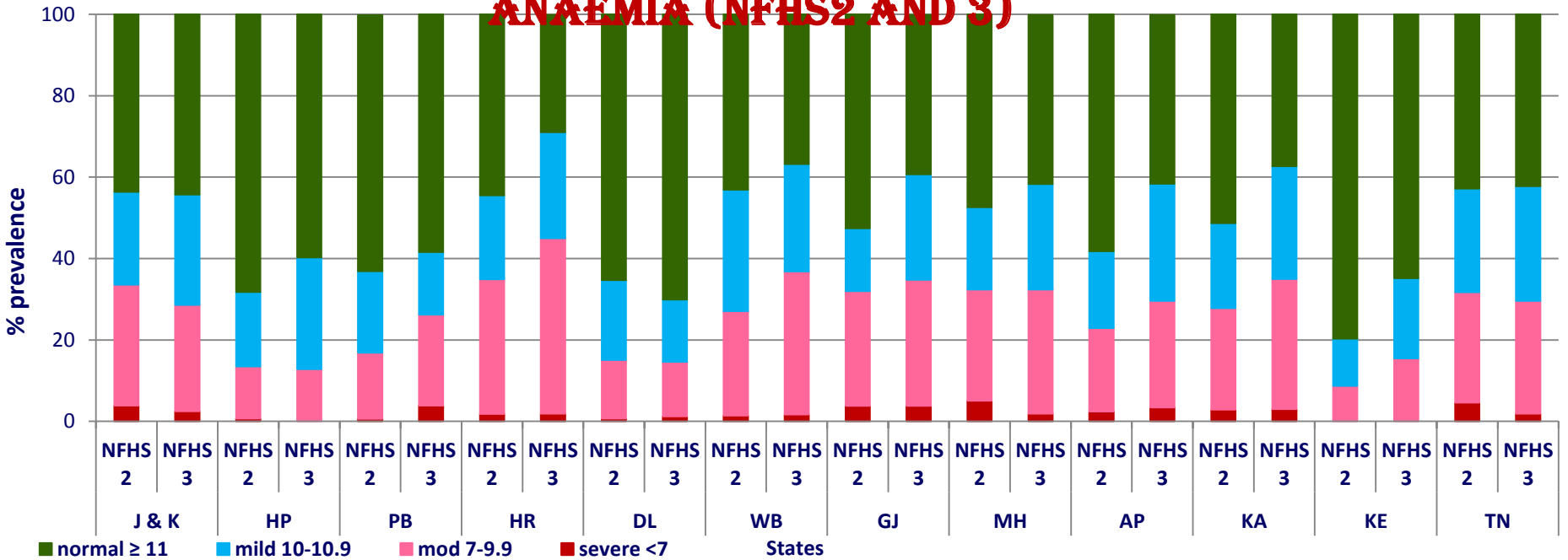
There are no substantial differences in the prevalence of anaemia between good performing and poor performing states between NHFS 2,3 and 4.

There has not been consistent or substantial reduction in the prevalence of anaemia in pregnant women between the three surveys done 15 years apart.

Time trends in prevalence of anaemia NFHS 2, 3 & 4



TIME TRENDS IN PREVALENCE OF DIFFERENT GRADES OF ANAEMIA (NFHS2 AND 3)



Prevalence of severe anaemia was below 5% in all the states both in NFHS 2 and 3.

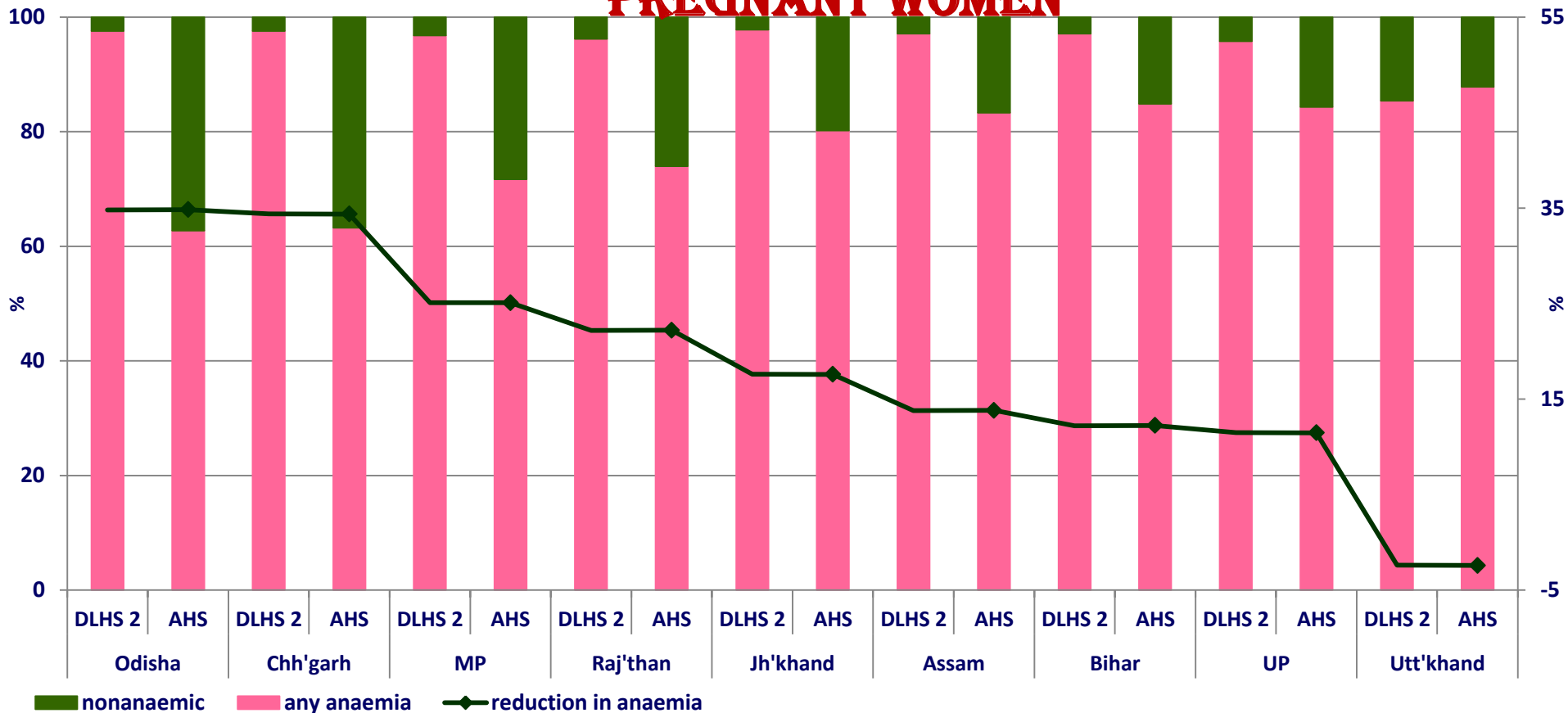
Prevalence of mild anaemia was relatively low as compared to moderate anaemia.

This might be due to the low range of Hb for mild anaemia – only 1 g/dL while that for moderate anaemia was 3 g /dL.

Differences in prevalence of anaemia between states were of a greater magnitude than the differences between NFHS 2 & 3 in the same state.

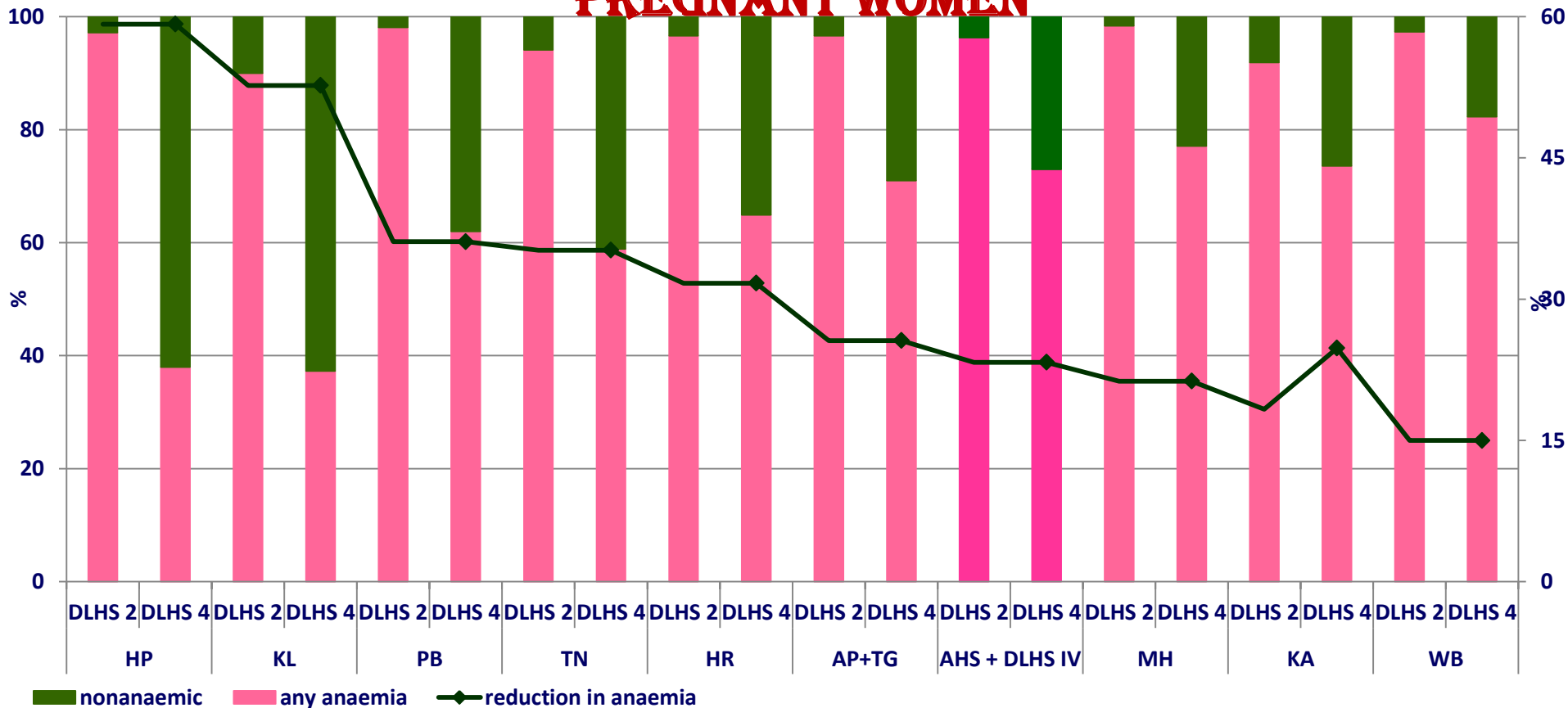
**PREVALENCE OF ANAEMIA IN PREGNANCY BASED ON SURVEYS
USING CYANMETHAEMOGLOBIN METHOD FOR HB ESTIMATION**

TIME TRENDS IN PREVALENCE OF ANAEMIA IN PREGNANT WOMEN



Prevalence of anaemia in all EAG states was very high in 2002
 Comparison of data on state wise prevalence of anaemia in DLHS 2 (2002-04) with AHS CAB (2013-14) showed that all states except Uttarakhand showed significant reduction of between 10 and 35%.

TIME TRENDS IN PREVALENCE OF ANAEMIA IN PREGNANT WOMEN



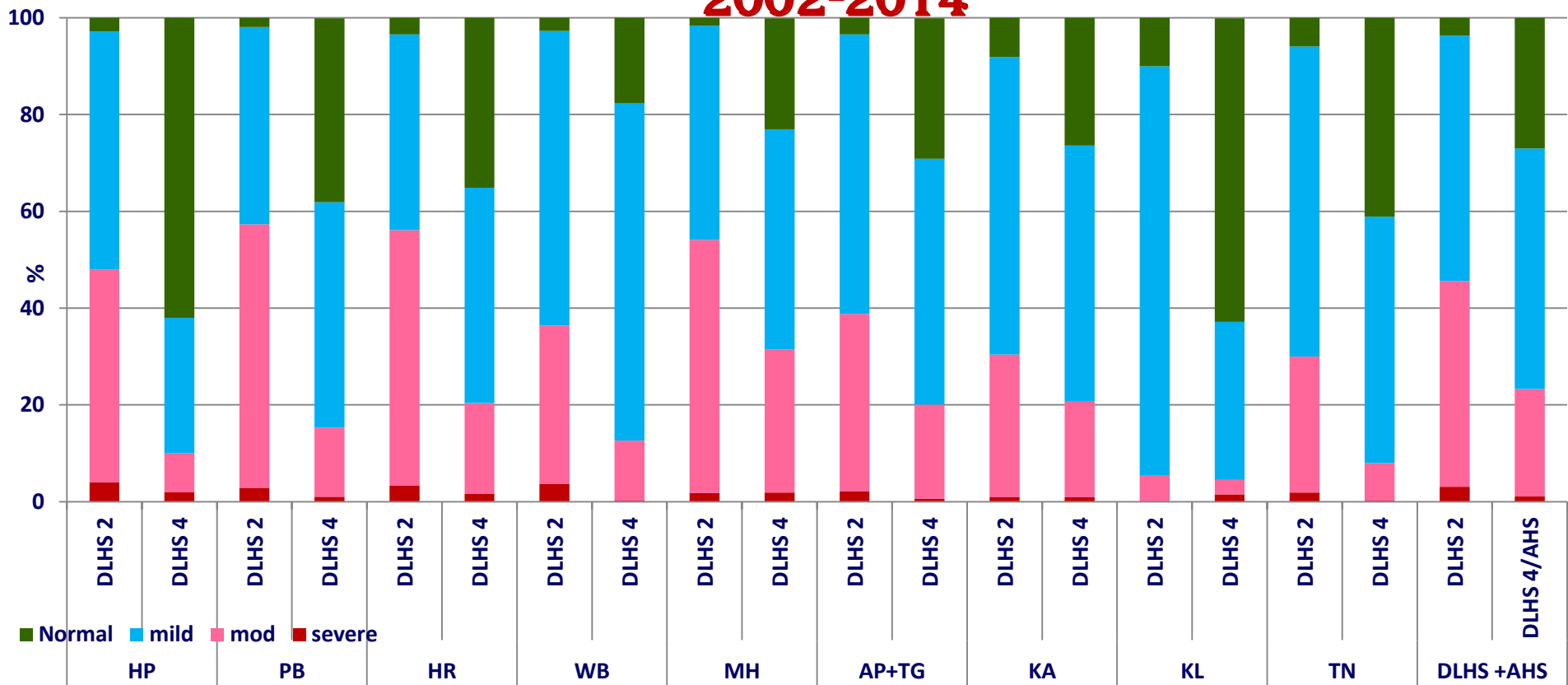
Prevalence of anaemia in better performing states was high in 2002 but not as high as the EAG states.

There was significant reduction in prevalence of anaemia in all states ranging from 15 % in West Bengal to over 50% in Kerala & Himachal.

In Kerala & Himachal over 60% of pregnant women were not anaemic!

CHANGES IN DIFFERENT GRADES OF ANAEMIA

2002-2014



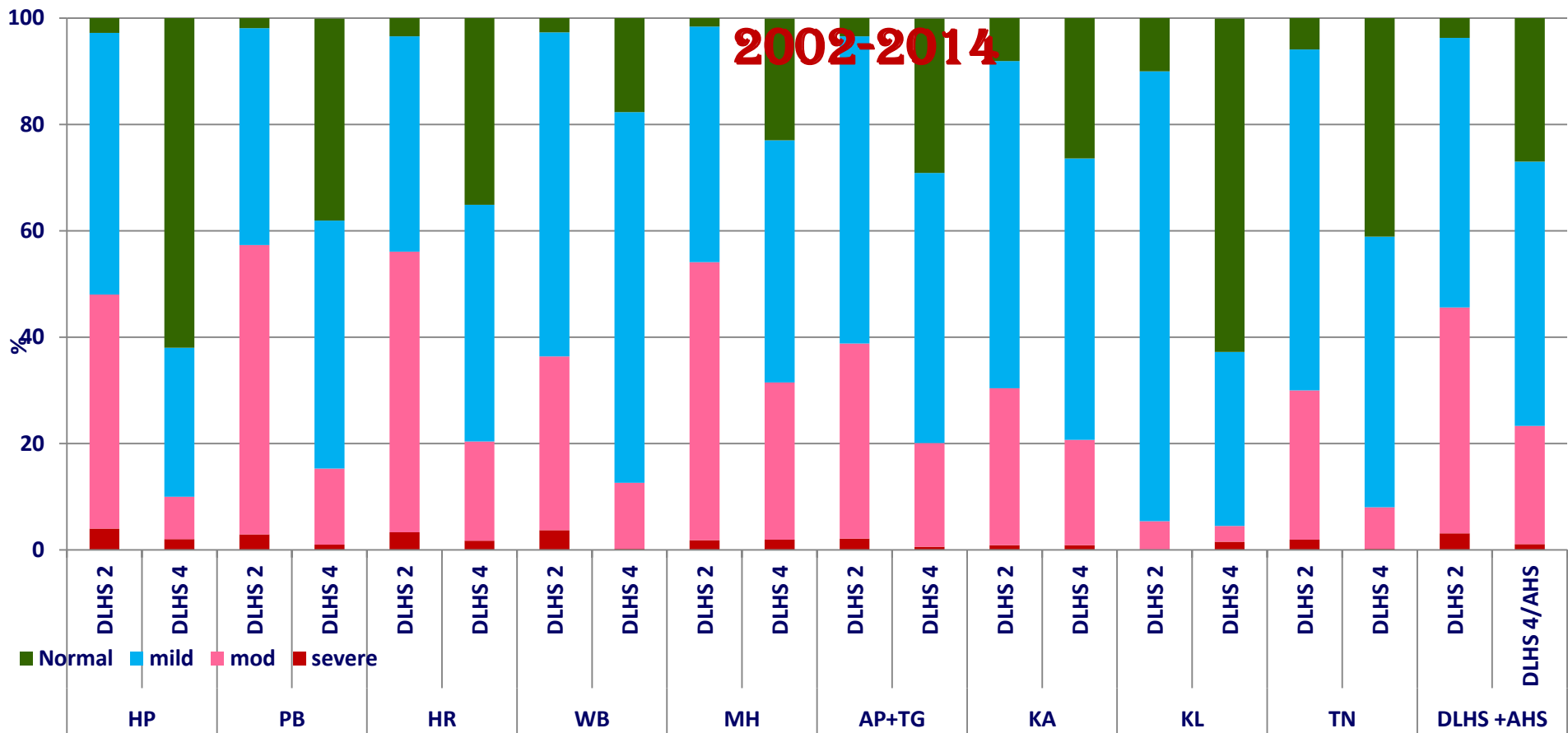
Prevalence of different grades of anemia is computed using Indian cut-off points from DLHS 2 and DLHS 4

There was a shift to the right in prevalence of different grades of anaemia in all states

In better performing states, severe anaemia in pregnancy was rare.

In most states moderate anaemia was seen in only about 10%!

CHANGES IN DIFFERENT GRADES OF ANAEMIA



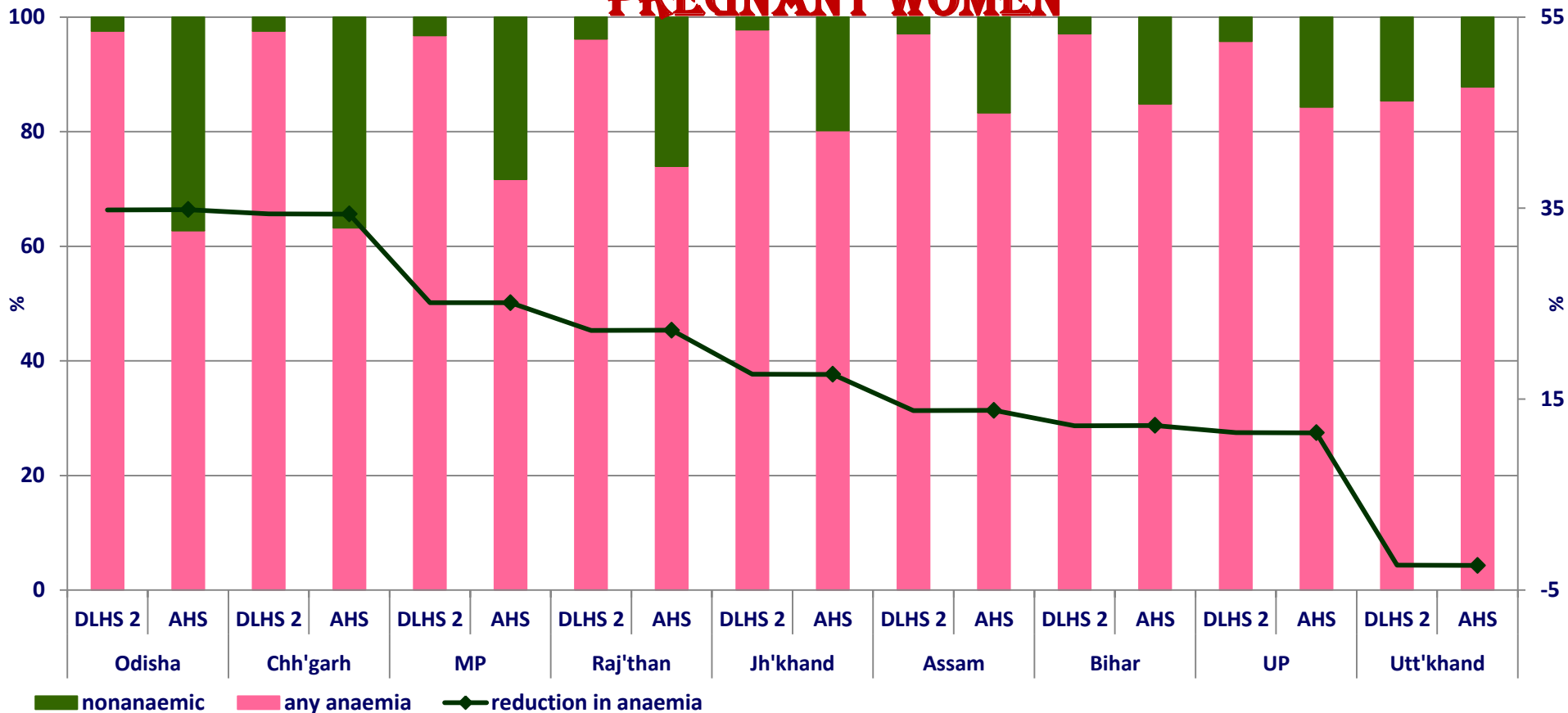
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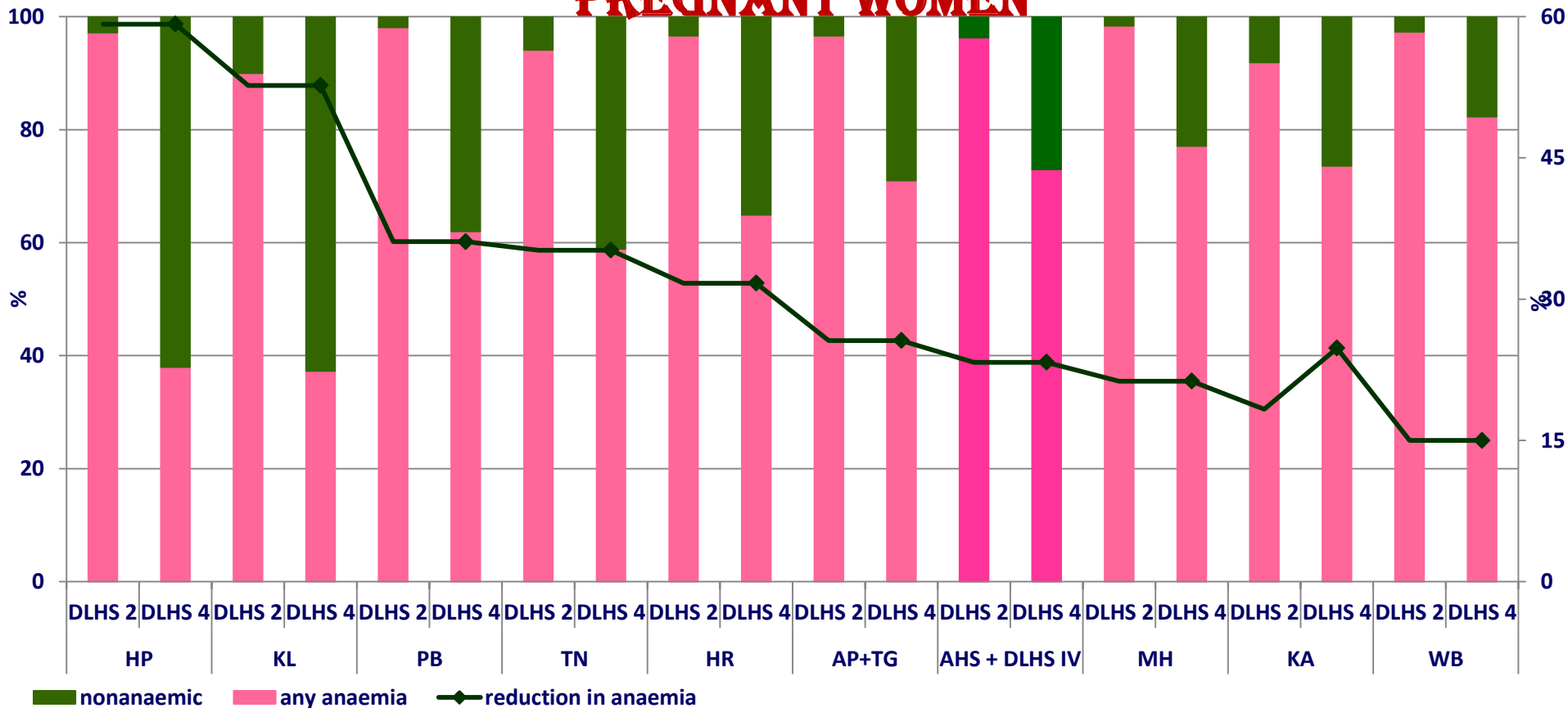
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CHANGES IN GRADES OF ANAEMIA IN PREGNANCY

HOW DO WE GRADE ANAEMIA IN PREGNANCY

In 1972 WHO defined cut off points for anaemia and requested countries to define grades depending upon functional de-compensation

✱ India defined mild anaemia as 8-11 g/dL: (easy fatigability, poor work capacity) – treated by oral iron folic acid

✱ Moderate anaemia 5-7.9 g/dL: (impaired immune function, increased morbidity due to infections, higher preterm and low birth weight rates and IMR) treated with IM iron therapy

✱ Severe anaemia <5g/dl (High perinatal morbidity and mortality High maternal morbidity and mortality) hospitalisation and intensive care

In the 1990s WHO defined grades of anaemia in pregnancy as

Mild 10.0 to 10.9 g/dL

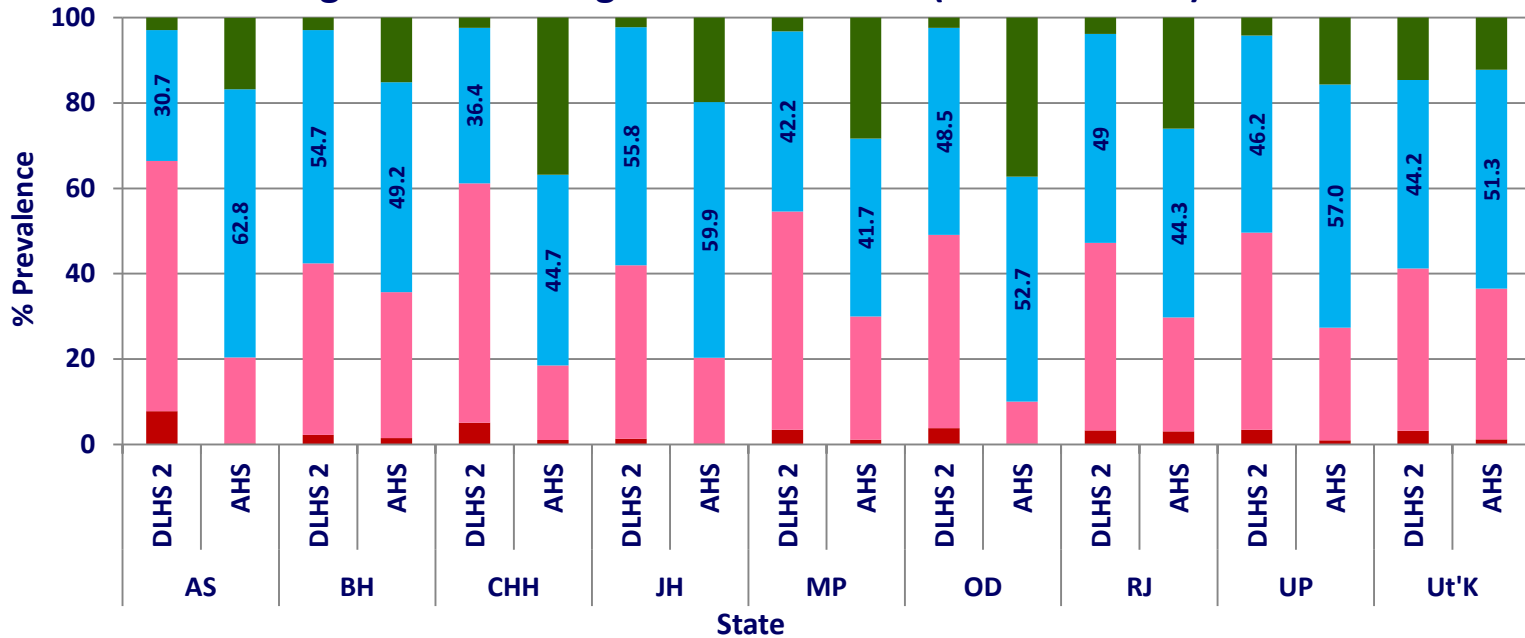
Moderate 7.0 to 9.9 g/dL

Severe < 7.0 g/dL

Iron plus guidelines have used the WHO grading for reporting prevalence of anemia and the existing Indian cut-off for treatment of anaemia

This is a source of confusion.

Changes in different grades of anaemia (DLHS 2 & AHS)



■ non-anaemic ≥ 11 ■ mild 8-10.9
■ moderate 5-7.9 ■ severe < 5

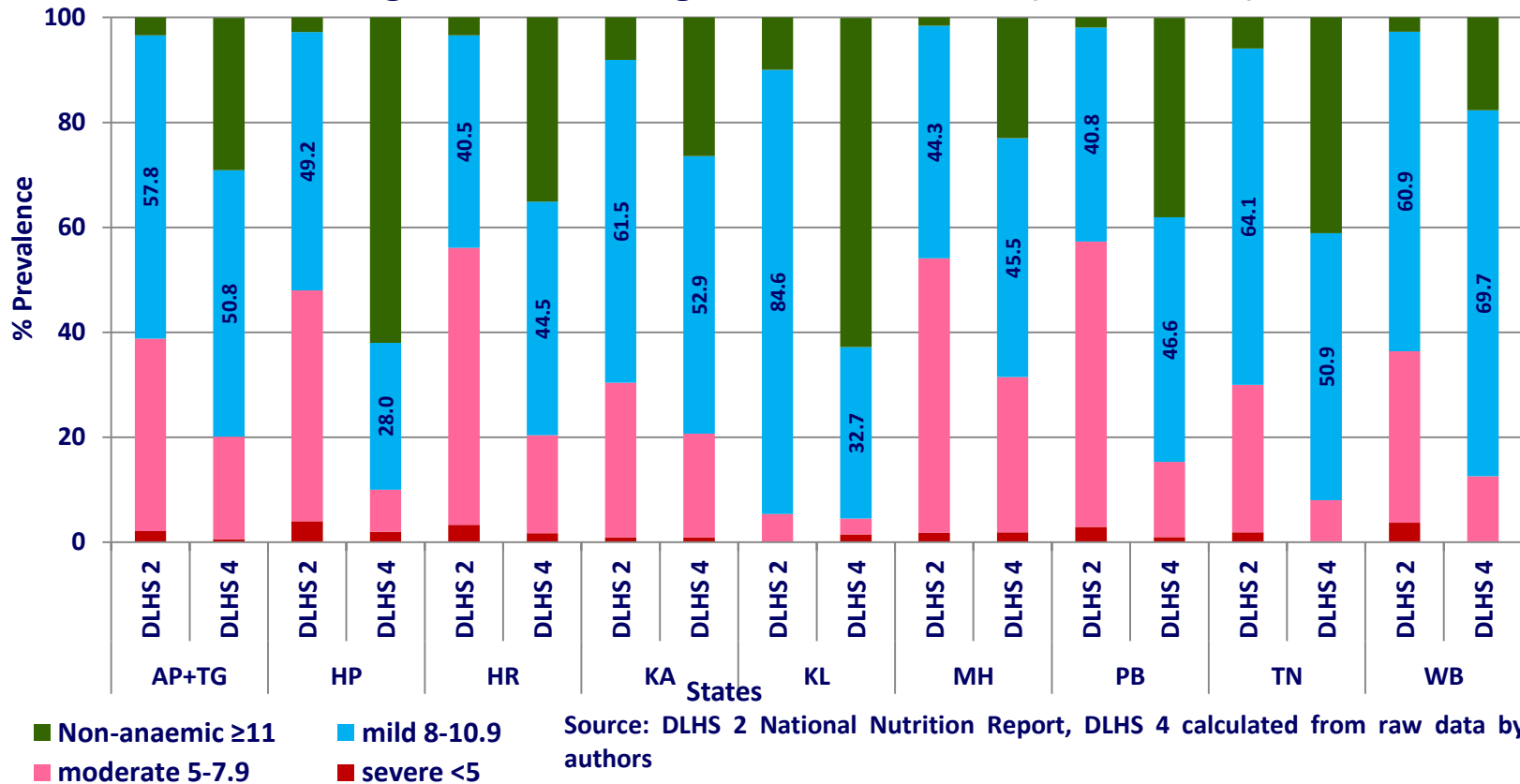
Source: DLHS 2 National Nutrition Report, AHS calculated from raw data by authors

Prevalence of different grades of anaemia is computed using Indian cut-off points

There has been substantial reduction in severe and moderate anaemia even in poorly performing states.

Mild anaemia is now the most common grade of anaemia

Changes in different grades of anaemia (DLHS 2 & 4)



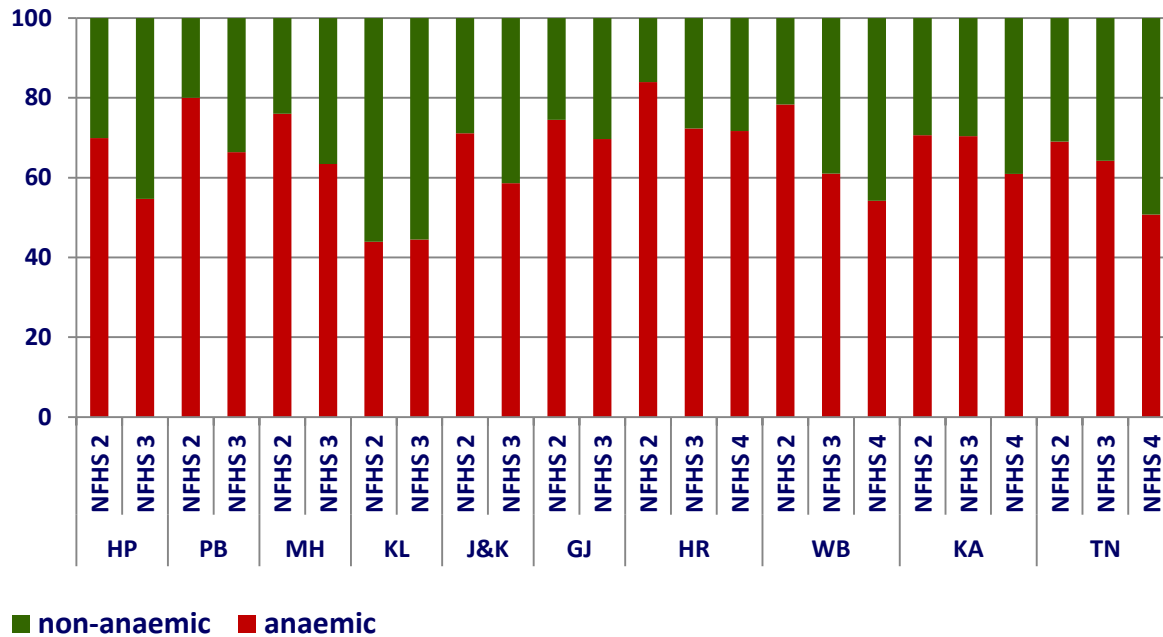
There was a shift to the right in prevalence of different grades of anaemia in all states

In better performing states severe anaemia in pregnancy was rare.

In most states moderate anaemia was seen in only about 10%!

PREVALENCE OF ANEMIA IN UNDER FIVE CHILDREN

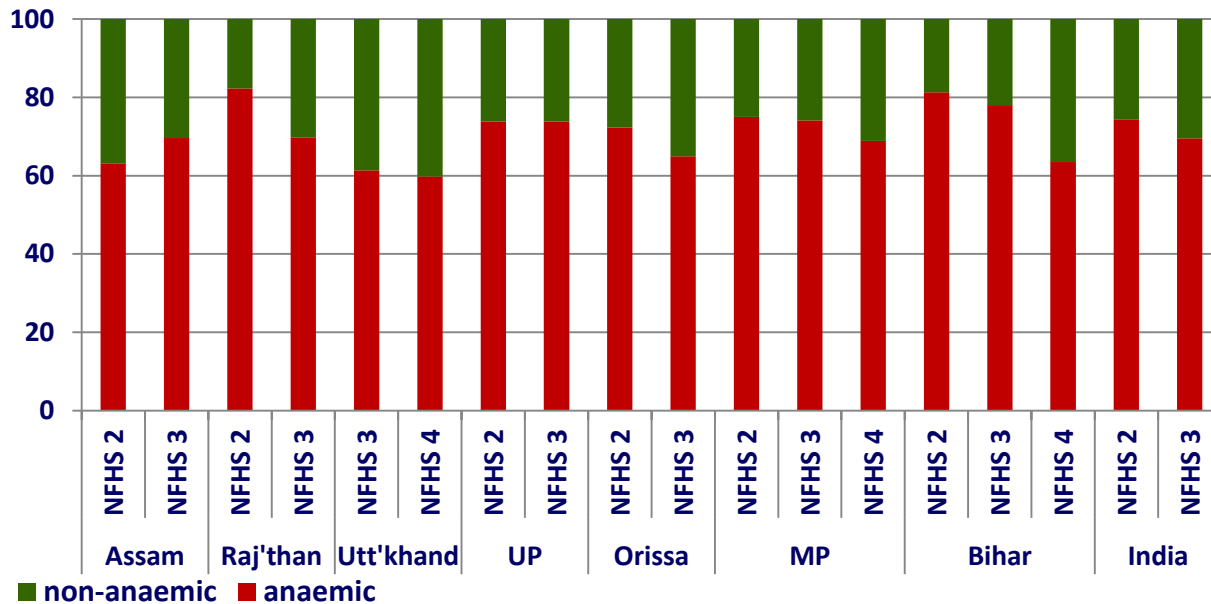
Prevalence of anaemia in U5 (NFHS 2,3,and 4)



Prevalence of anaemia in preschool children was higher than prevalence of anaemia in pregnant women in NFHS 2,3 and 4

Prevalence of anaemia in children varied between states

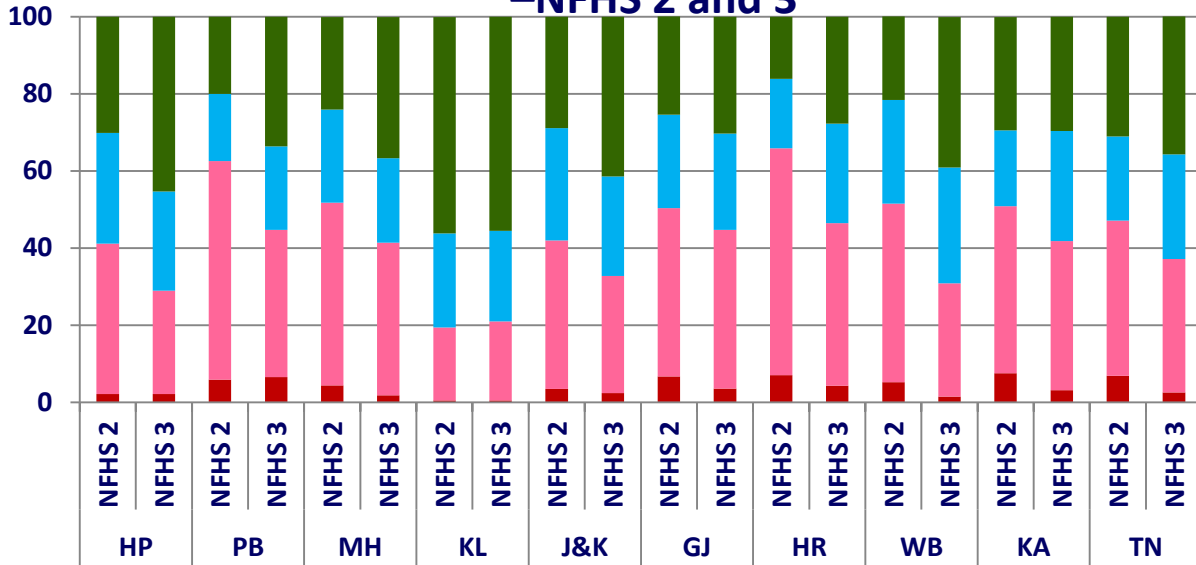
Prevalence of anaemia in U5 (NFHS 2,3,and 4)



There was no substantial or consistent reduction in prevalence of anaemia in children between NFHS 2,3and 4

Prevalence of different grades of anaemia in U5

–NFHS 2 and 3

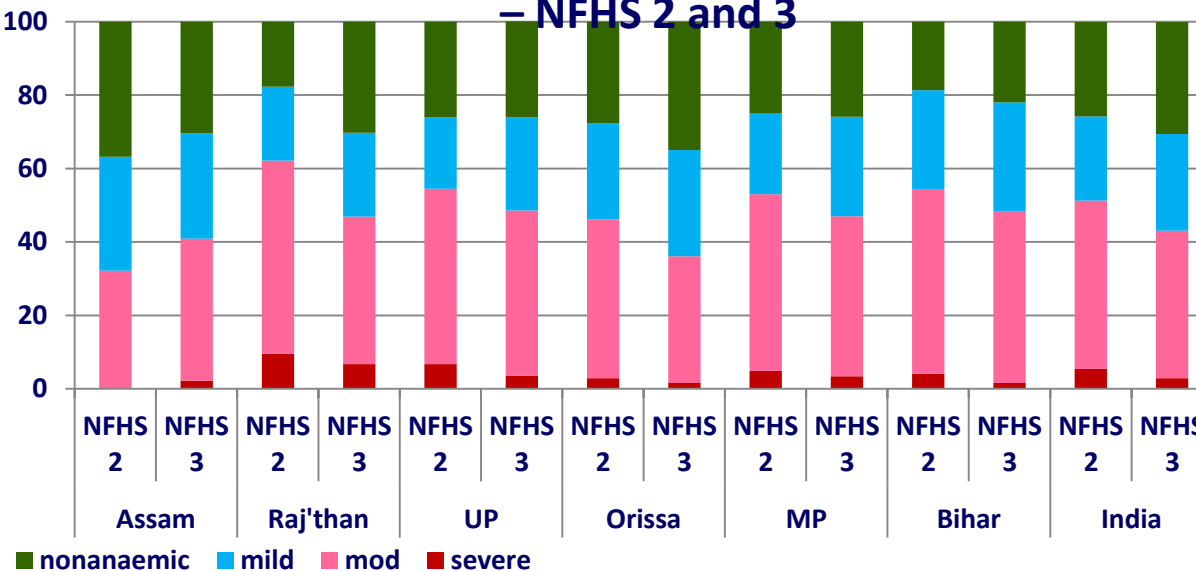


In all states moderate anaemia was the commonest grade of anaemia

There were substantial inter-state differences in the prevalence of anaemia in under-five children

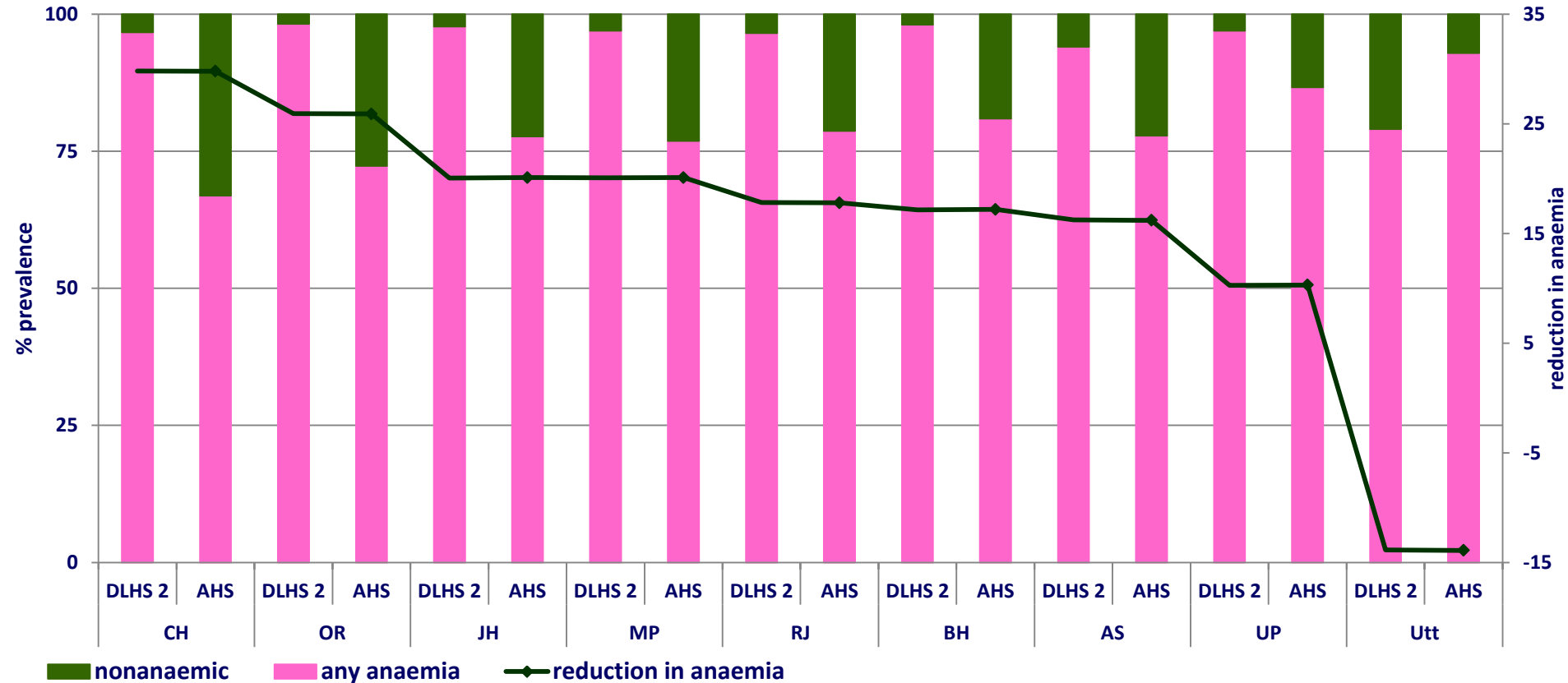
Prevalence of different grades of anaemia in U5

– NFHS 2 and 3



There was no consistent or substantial reduction in different grades of anaemia in under-five children between NFHS 2 and 3

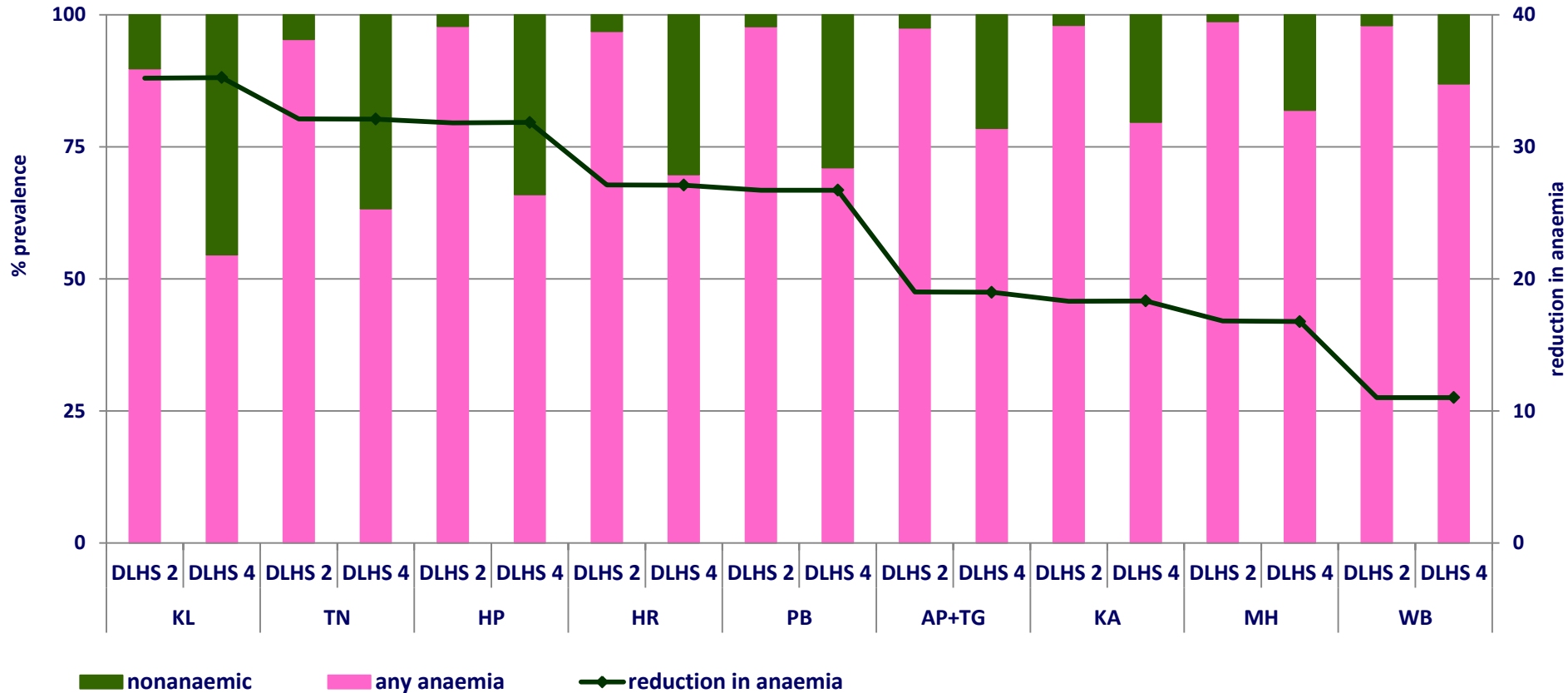
Time trends in prevalence of anaemia in U-5 children DLHS II-AHS 2002-4 to 2013-14



Prevalence of anaemia in all EAG states was very high in 2002
Comparison of data on state wise prevalence of anaemia in DLHS 2 (2002-04) with AHS CAB (2013-14) showed that all states except Uttarakhand showed significant reduction of between 5 – 20%

Time trends in prevalence of anaemia in U-5 children

DLHS II 2002-04 and DLHS IV 2013-14

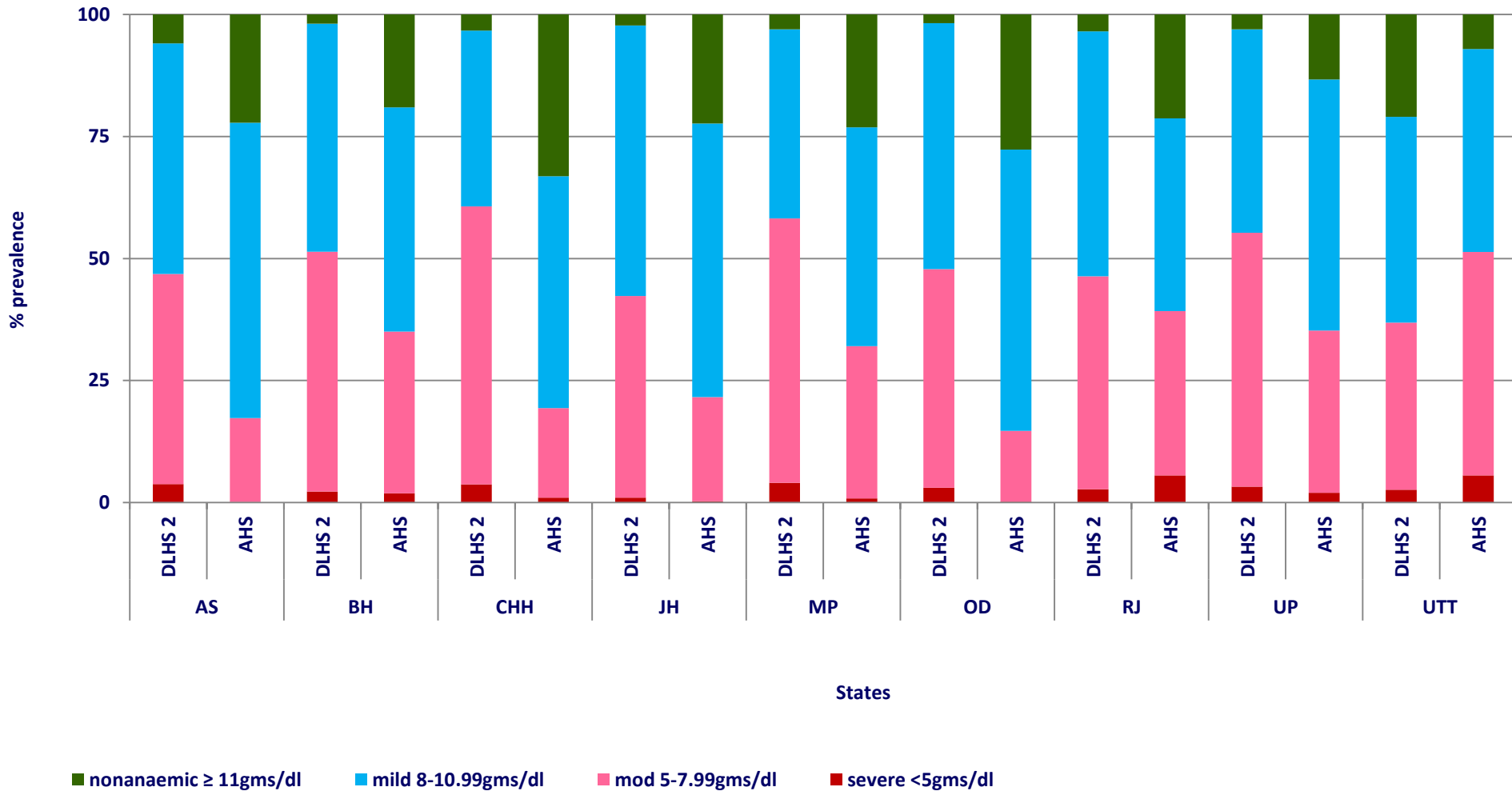


Prevalence of anaemia in better performing states was high in 2002 but not as high as the EAG states.

There was significant reduction in prevalence of anaemia in all states ranging from 11 % in West Bengal to over 30% in Kerala.

In Kerala nearly half the children are not anaemic!

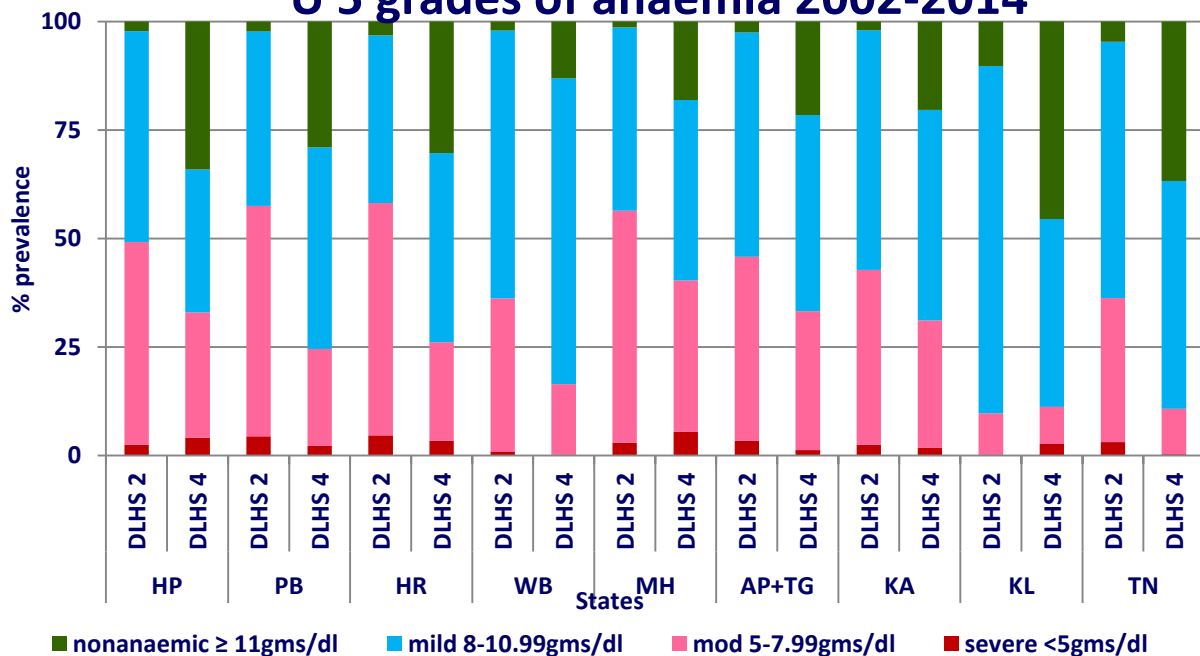
TIME TRENDS IN PREVALENCE OF DIFFERENT GRADES OF ANAEMIA IN PRESCHOOL CHILDREN (DLHS 2 AND AHS)



There has been substantial reduction in severe and moderate anaemia even in poorly performing states.

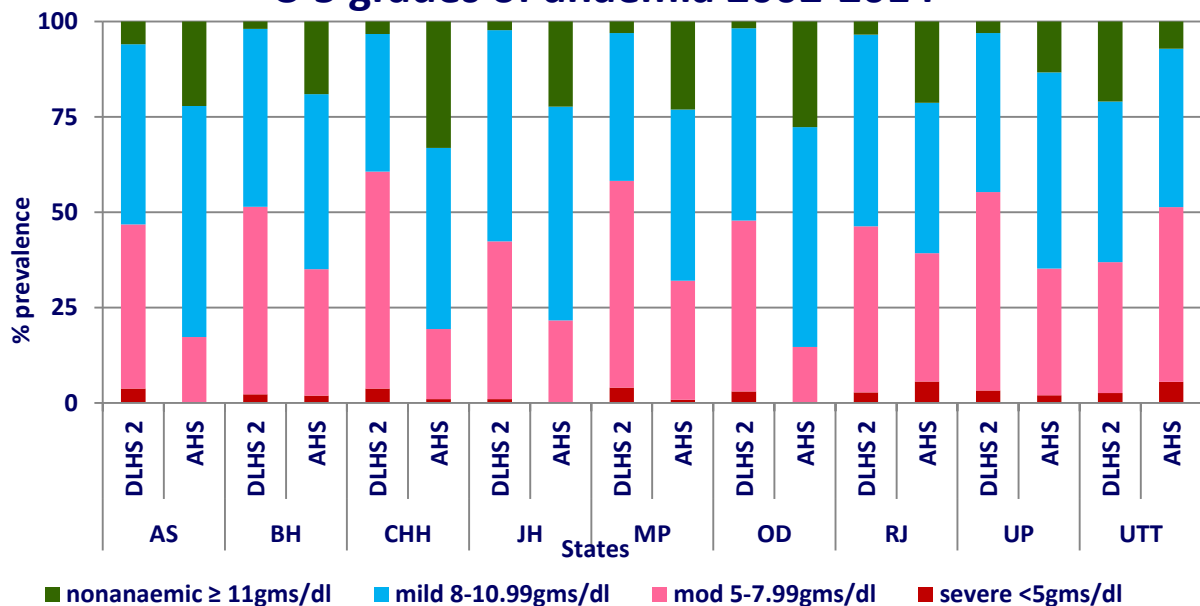
Mild anaemia is now the most common grade of anaemia in children

U 5 grades of anaemia 2002-2014



As can be seen in all states there has been a clear shift to the right and in good performing states like Kerala moderate and severe anaemia is <10%.

U 5 grades of anaemia 2002-2014

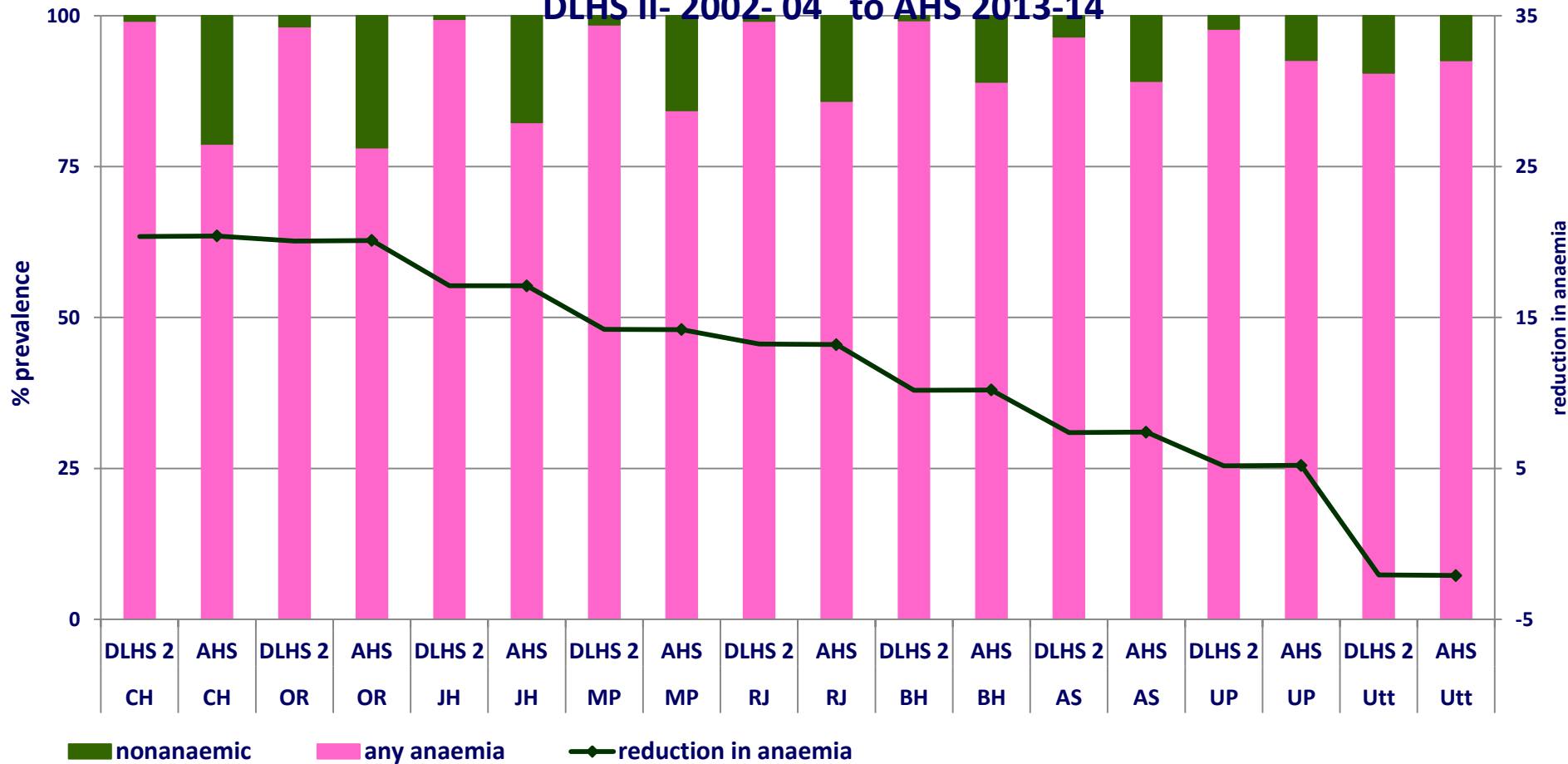


Even in EAG states there has been substantial improvement for eg in Chhattisgarh moderate and severe anaemia account for <25%.

ADOLESCENT GIRLS

Time trends in prevalence of anaemia in adolescent girls

DLHS II- 2002- 04 to AHS 2013-14

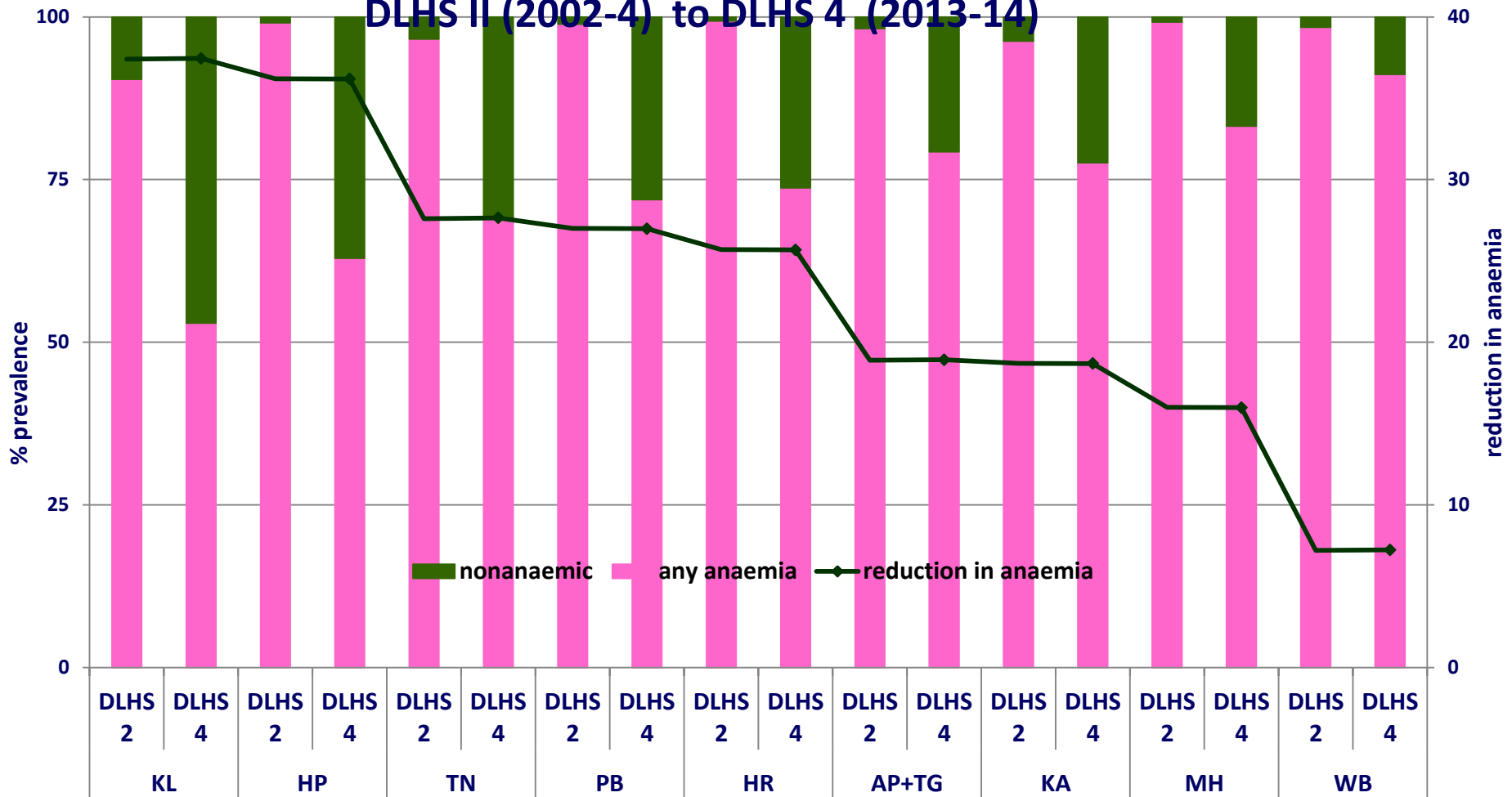


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Time trends in prevalence of anaemia in adolescent girls

DLHS II (2002-4) to DLHS 4 (2013-14)



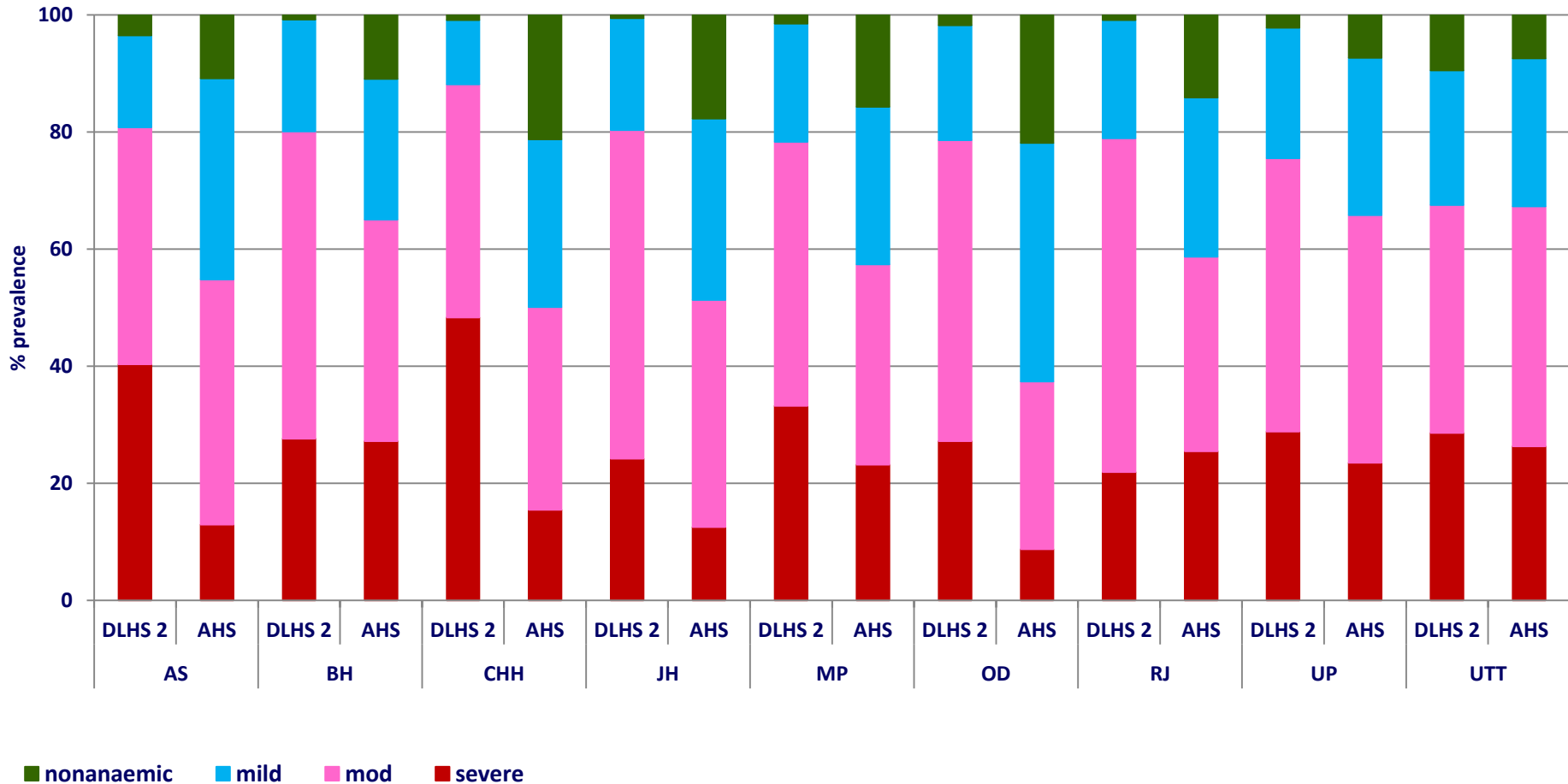
Prevalence of anaemia in better performing states was high in 2002 but not as high as the EAG states.

There was significant reduction in prevalence of anaemia in all states ranging from 8% in West Bengal to over 30% in Kerala

In Kerala nearly 50% of adolescent girls were not anaemic!

Time trends in prevalence of grades of anaemia in adolescent girls

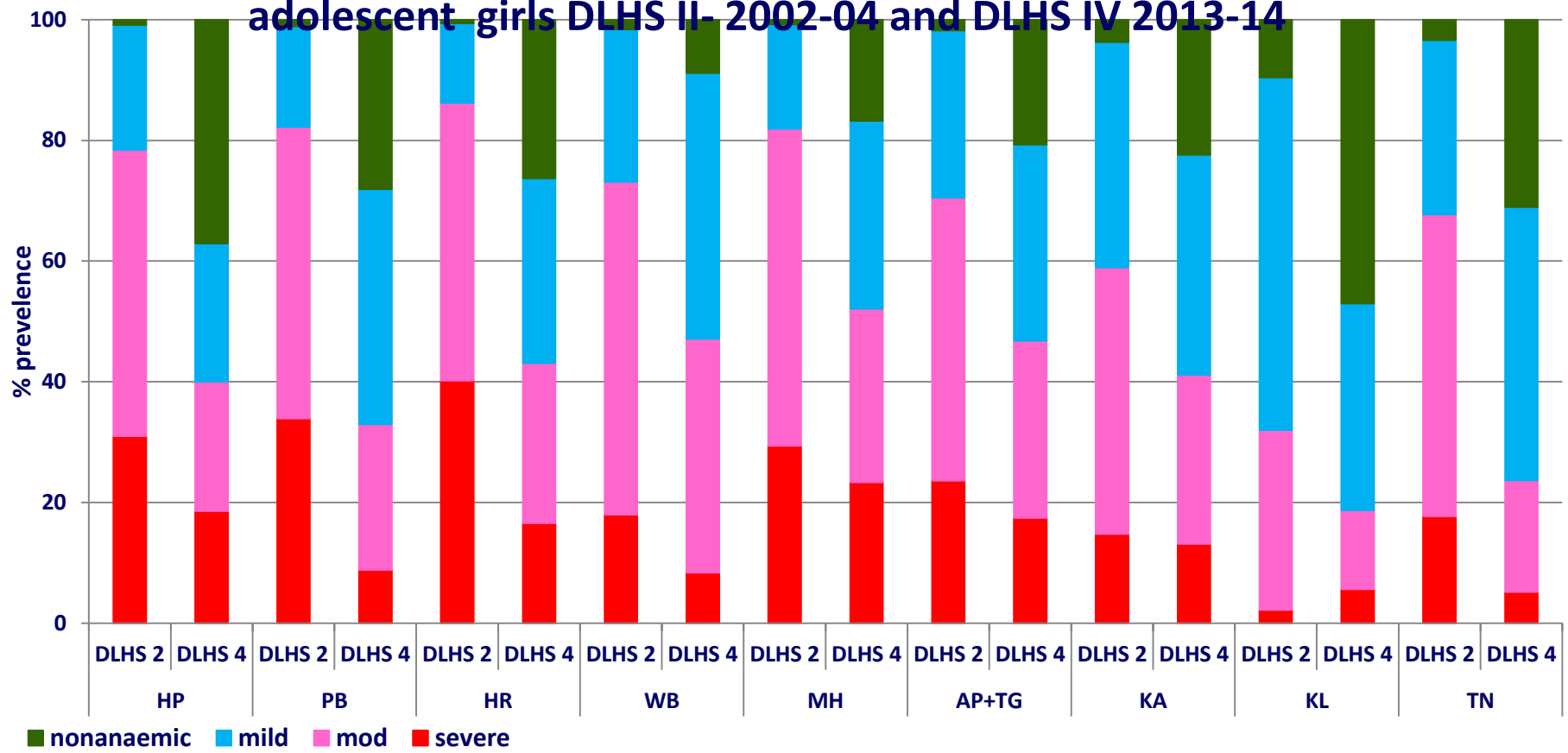
DLHS II-AHS 2002-4 to 2013-14



Prevalence of different grades of anemia is computed using Indian cut-off points from DLHS 2 and AHS

There has been substantial reduction in severe and moderate anaemia even in poorly performing states.

Time trends in prevalence of different grades of anaemia in adolescent girls DLHS II- 2002-04 and DLHS IV 2013-14



Prevalence of different grades of anaemia is computed using Indian cut-off points from DLHS 2 and DLHS 4

There was a shift to the right in prevalence of different grades of anaemia in all states

In better performing states, severe anaemia in adolescent girls is rare.

In most states moderate anaemia was seen in only about 10-30%!

TO SUM UP

Has there been a reduction in prevalence and severity of anaemia?

Clearly yes

In all states except Uttarakhand there has been a reduction in over all prevalence of anaemia in the last ten years in all three groups pregnant women preschool children and adolescent girls. Severe anaemia in all three groups is now rare especially in better performing states

Mild anaemia is by far the commonest grade of anaemia in all states

Programme implications

Antenatal care aims at universal screening for accurate early diagnosis and effective treatment of obstetric problems.

Anaemia is the most common obstetric problem in India.

Accurate diagnosis of anaemia using cyanmethHb estimation in all pregnant women is possible in India without major additional inputs.

The clinicians and people will see that they get accurate results at affordable opportunity cost.

Clinicians will respond by following the treatment protocols and make treatment of anemia effective.

Pregnant women will respond by adhering to treatment and follow-up schedules and benefit.

Programme implications

The two pronged strategy of increasing iron intake (dietary diversification and use of DFS) will provide a sustainable method to improve iron folate intake.

WIFS may also improve the intake

Detecting and treating children and adolescents with mild and moderate anaemia can deliver good results in terms of reduction in anaemia and its adverse health consequences.

COUNTRY WILL BE HAPPY

LOSING GLOBAL NO 1 STATUS IN ANAEMIA BY 2025

Thank You

The image features the words "Thank You" in a bold, sans-serif font. Each letter is filled with a different color from a rainbow spectrum, creating a vibrant, multi-colored effect. The letters are slightly raised, casting soft, grey shadows on the white background below them. The overall style is clean and modern.