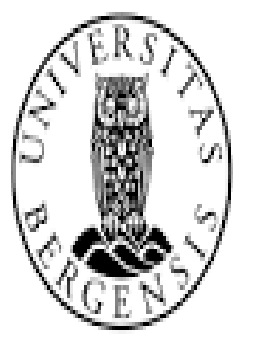


Multivitamin supplementation and anemia prevalence among children in Bhaktapur, Nepal

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Background

According to the latest demographic health survey of Nepal, anemia is a severe public health problem affecting more than 2/3 of infants. However, there is neither regular screening program nor universal iron or multivitamin supplementation targeting these vulnerable infants.

Aim

To describe the burden of anemia among infants 6-11 months of age and effect of one year multivitamin supplementation at 18-23 months of age.

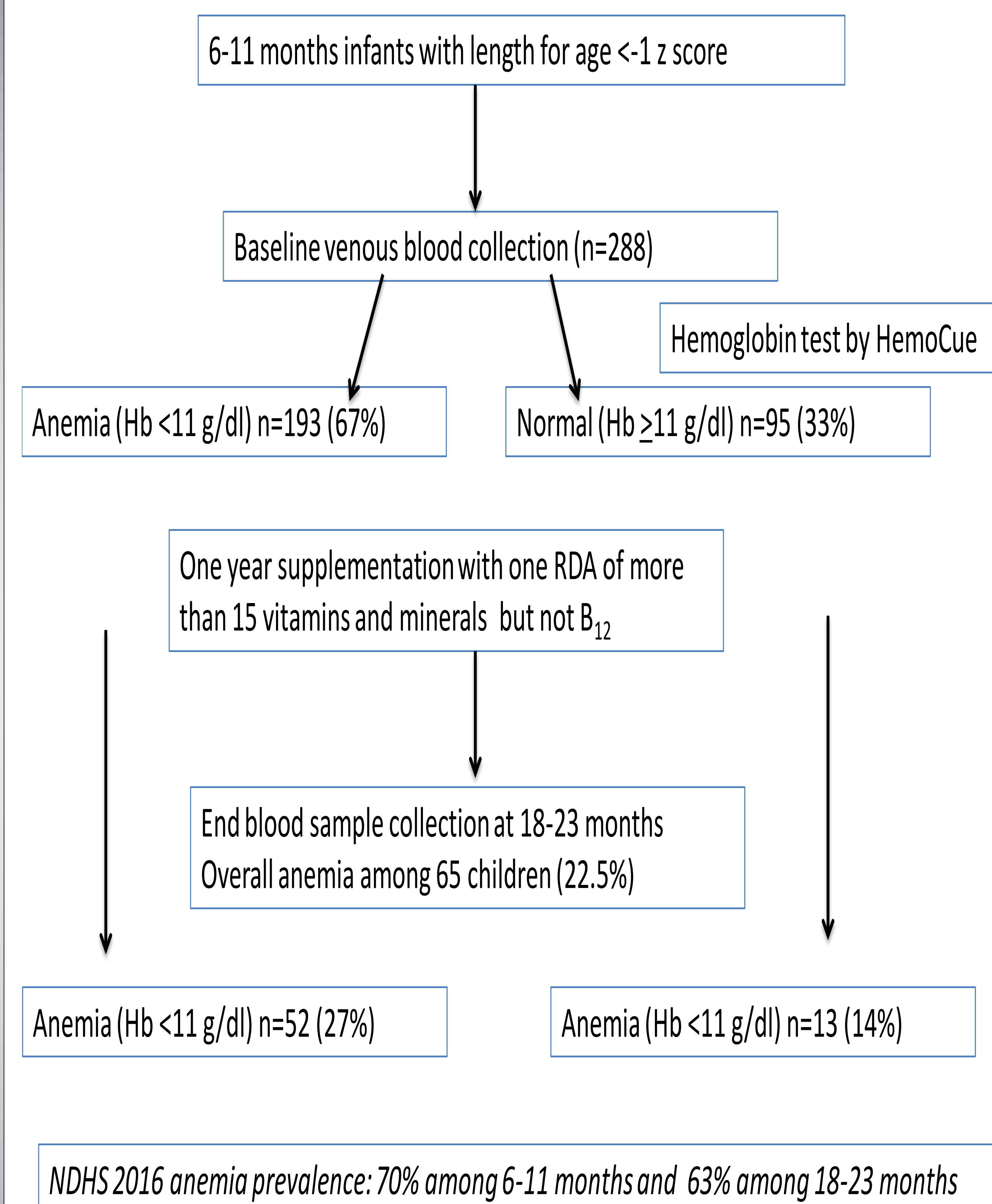
Method

We analyzed the hemoglobin concentration in venous blood samples of 288 infants using HemoCue when they were 6-11 and 18-23 months of age. All children, irrespective of their baseline anemia status, were given micronutrients daily for a year. The nutrients were provided in a lipid based paste (eeZee20) containing 1 RDA of more than 15 vitamins and minerals but without vitamin B₁₂.

Results

The prevalence of anemia (hemoglobin <11 g/dL) among infants during 6-11 months of age was 67% and decreased to 22.5% when they reached 18-23 months. Among the 193 infants with anemia at baseline, 27% continued to have anemia one year after multivitamin supplementation. Among the 95 infants without anemia at baseline, 14% developed anemia during the follow-up period.

Figure: study profile and anemia prevalence



Baseline characteristics	
Mean age (month), SD	7.9 (1.8)
Male child, n(%)	147 (51%)
Low birth weight	58 (20%)
Stunted (<-2 z score)	96 (33%)
Exclusive breastfeeding for 3 or more months	131 (45%)
Bed room and kitchen same	141 (48%)
Illiterate or only informal education mother	113 (38%)
Marginal B12 deficiency (148-221 pmol/L)	69 (24%)
Folate deficiency (<10 nmol/L)	0



Multivitamin Supplementation

Micronutrients Contents	Per 20 gram
Carbohydrate (g)	8.4
Fat (g),	7.0
Protein (g)	2.6
Energy, Kcal	108
Vitamin A (µg)	400
Vitamin C(mg)	40
Vitamin B1 (mg)	0.3
Vitamin B2 (mg)	0.4
Niacin (mg)	4.0
Folic acid (µg)	80
Calcium(mg)	104
Iron(mg)	8.6
Zinc(mg)	3.8
Iodine(µg)	84.5
Calcium(mg)	104
Magnesium(mg)	15.2

Conclusion

The prevalence of anemia was very high during infancy and decreased by two thirds following one year of micronutrient supplementation. Daily supplementation of multivitamins starting during the second half of infancy could have had an important role in this reduction. However, persistence of anemia prevalence at 18-23 months of age indicated other causes of anemia also may prevalent in this population.