



Photo © HKI / George Pigdor

ADDING MICRONUTRIENT POWDERS TO AN INTEGRATED FOOD SECURITY AND NUTRITION PROJECT TO FURTHER REDUCE MALNUTRITION, NEPAL



Helen Keller
INTERNATIONAL

WHY THIS STUDY



Agriculture sensitive nutrition interventions have shown consistent improvement in the :

- **volume and diversity of vegetables and fruits produced**
- **diversity of foods consumed**
- **women's involvement in household decision making**
- **However, there has been inconsistent impact of such interventions on anemia and growth among children**

Masset, BMJ 2012

STUDY HYPOTHESIS



Helen Keller
INTERNATIONAL

Does adding a micronutrient powder (MNP) distribution to an enhanced homestead food production program (EHFP), lead to a higher reduction in anemia among children, compared to providing only the EHFP program?

STUDY DESIGN



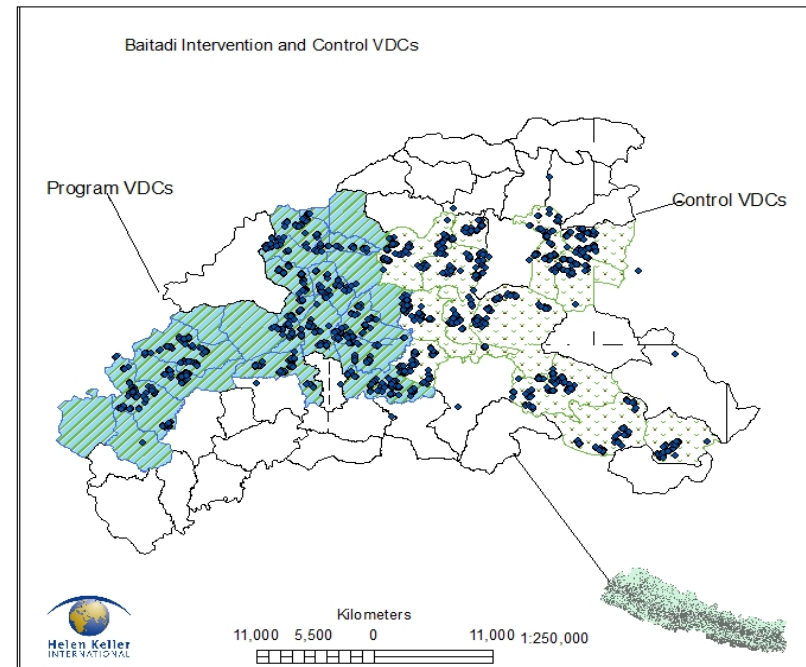
- **Children 6 – 9 months old, without severe anemia (hemoglobin < 70 g/L) were randomized into one of 3 groups:**
 - **EHFP + MNP group**
 - **Who received the enhanced homestead food production program and micronutrient powders**
 - **EHFP**
 - **Who received only the enhanced homestead food production program**
 - **Control**

STUDY CONTEXT

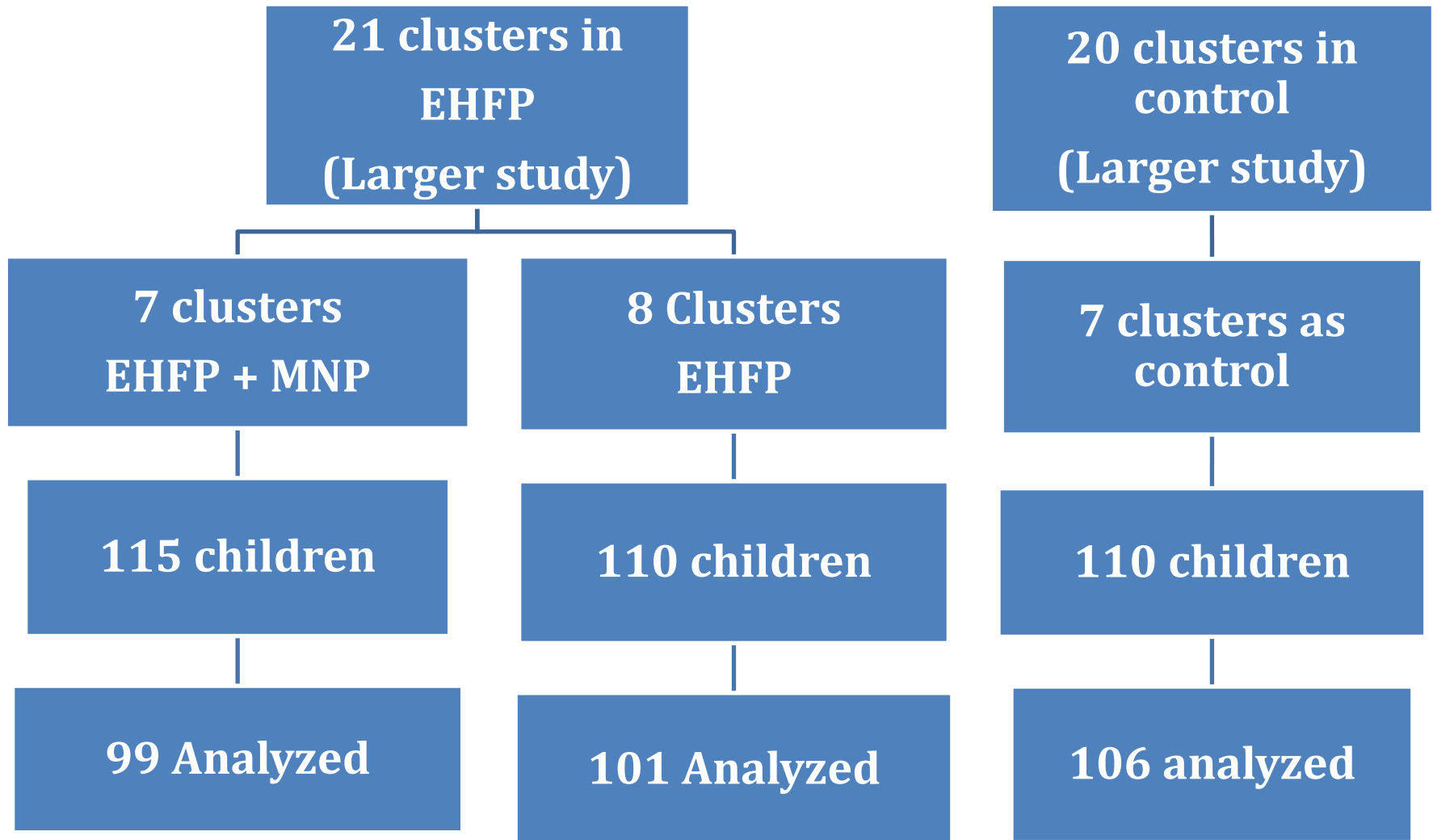


Helen Keller
INTERNATIONAL

- The study was conducted in Baitadi, district of Nepal
- This MNP study was nested within a larger cluster randomized controlled study that aimed at assessing the impact of enhanced homestead food production program on child growth and anemia.



FLOW DIAGRAM



INTERVENTIONS PROVIDED



ENHANCED HOMESTEAD FOOD PRODUCTION (EHFP)

- Home garden
- Backyard poultry
- Nutrition Education on infant and young child feeding practices
 - Home visits
 - Monthly group meetings
 - Cooking demonstrations

MICRONUTRIENT POWDER (MNP)

- MNP contained 15 vitamins and minerals per sachet including: 10 *mg* iron.
- “Flexible” administration
- 120 sachets of MNP over 11 months
- Distributed by Female Community Health volunteers

DATA COLLECTION



- **Pre and post surveys with same children**
 - **Baseline, September 2010**
 - **MNP was distributed in March 2011 and August 2011**
 - **Biweekly monitoring visits**
 - **Follow-up, February 2012**

Data collected

- **Socio-demographic and household food insecurity status**
- **Breastfeeding and complementary feeding practices**
- **Hemoglobin and anthropometric measurements.**

DATA COLLECTED AND STATISTICAL ANALYSIS



Statistical Analysis

- **Mixed effects ANCOVA and logistic regressions**
- **Analysis were adjusted for clustering, age, sex and baseline differences**
- **$P < 0.05$, for statistical significance**



Photo © HKI/ Bartay

RESULTS



Helen Keller
INTERNATIONAL

ESTIMATED COMPLIANCE WITH MNP INTAKE



- **103 of the 108 age eligible children received the required 120 sachets of MNP during the 11 month supplementation period**
- **Estimated compliance with MNP intake was 97%.**

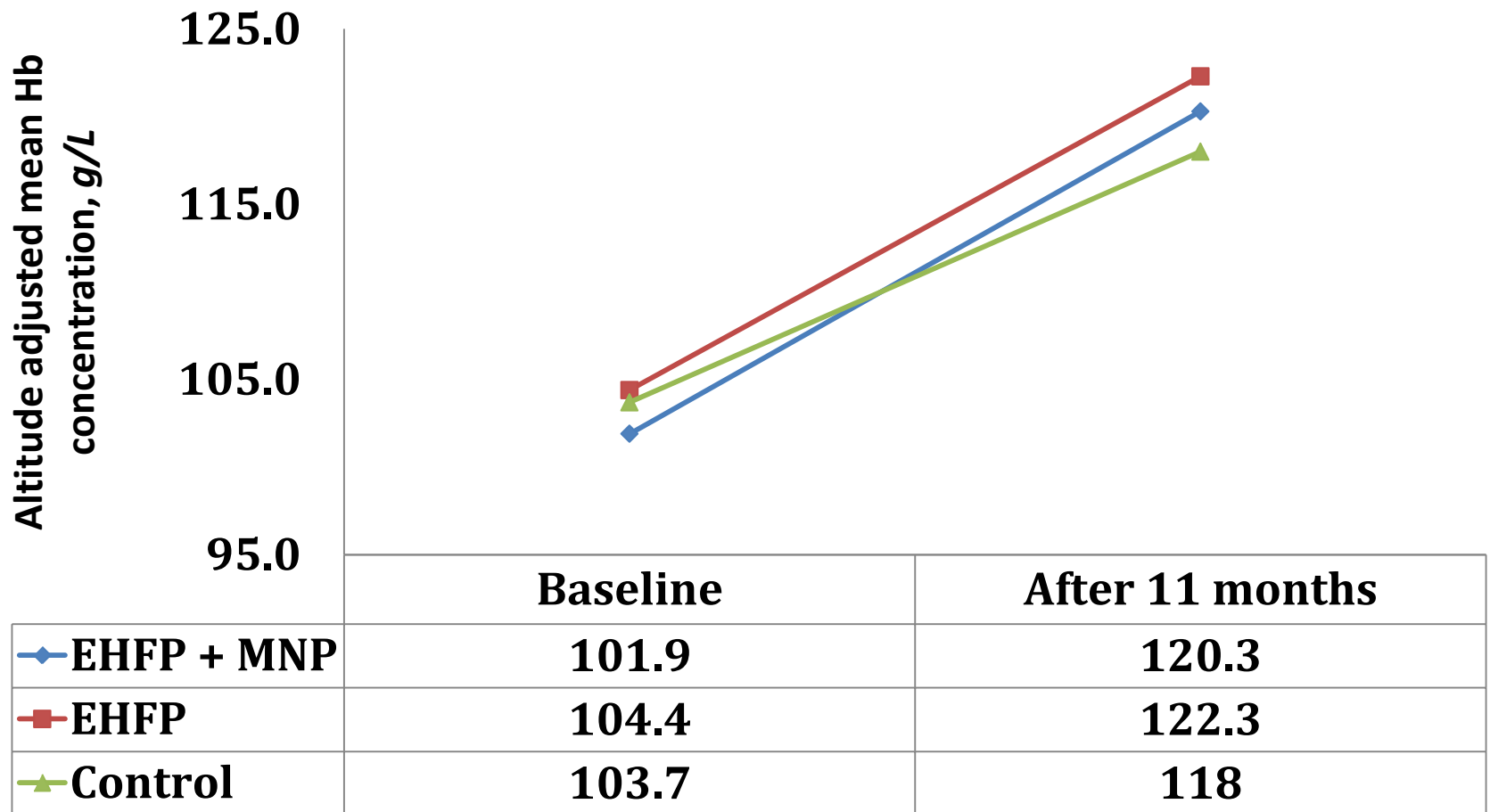
BASELINE CHARACTERISTICS



	EHFP + MNP	EHFP	Control
Age, mean \pm SD, mo	7.3 \pm 1.2	7.2 \pm 1.1	7.1 \pm 0.9
Sex, %	50.0	46.4	44.5
Mothers with no education, %	54.6^a	47.3^a	80.0^b
Households in lowest wealth tercile	25.9^a	28.2^a	43.6^b

Values with different letters in the same row denote significant between group difference, $P < 0.05$

IMPACT ON MEAN HEMOGLOBIN CONCENTRATION



IMPACT ON MEAN HEMOGLOBIN CONCENTRATION

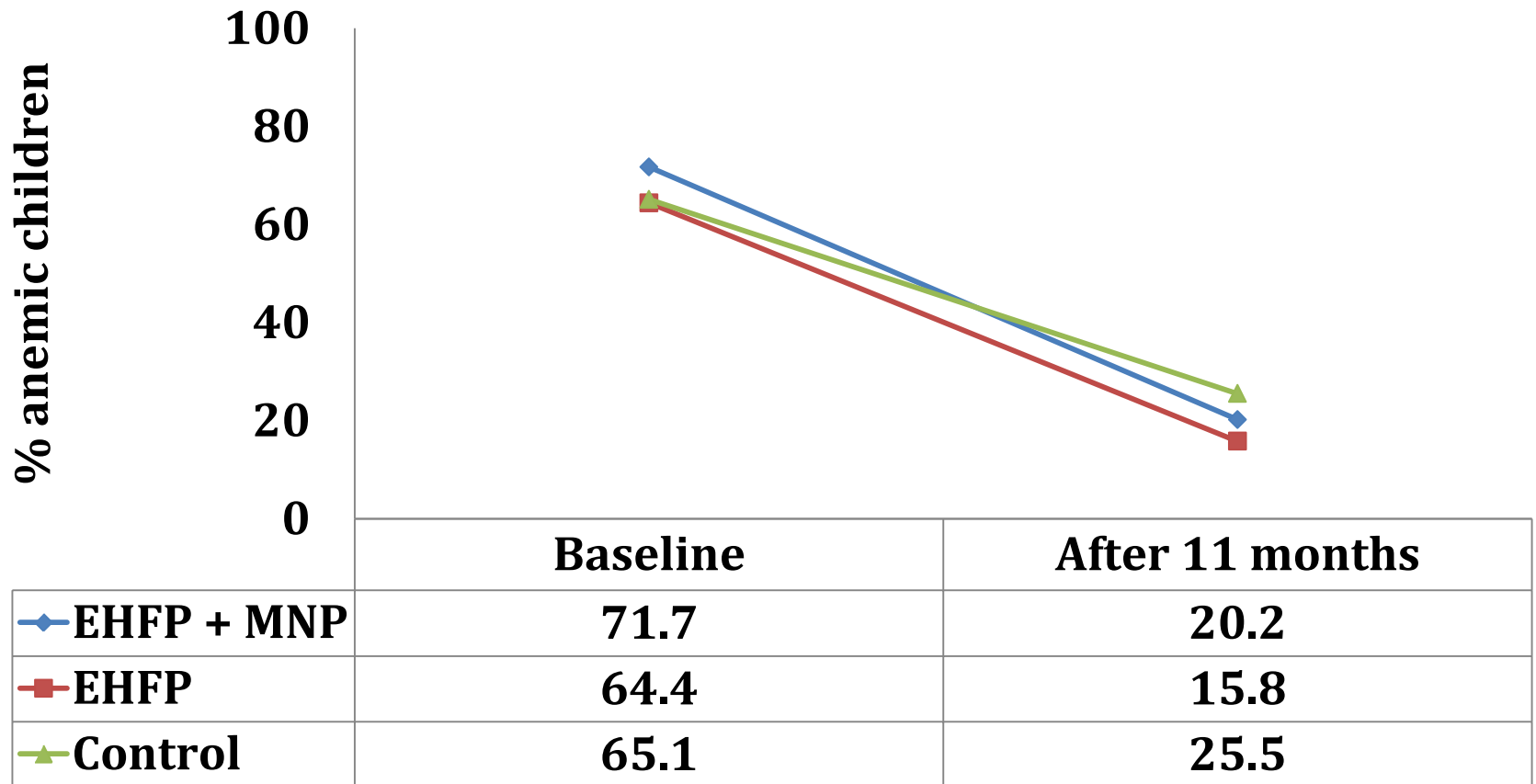


	Difference in Difference of mean adjusted hemoglobin, <i>g/L</i>	<i>P</i> value
EHFP + MNP vs. Control	4.1	0.094
EHFP vs. control	3.5	0.156
EHFP + MNP vs. EHFP	0.6	0.795

IMPACT ON ANEMIA AMONG CHILDREN



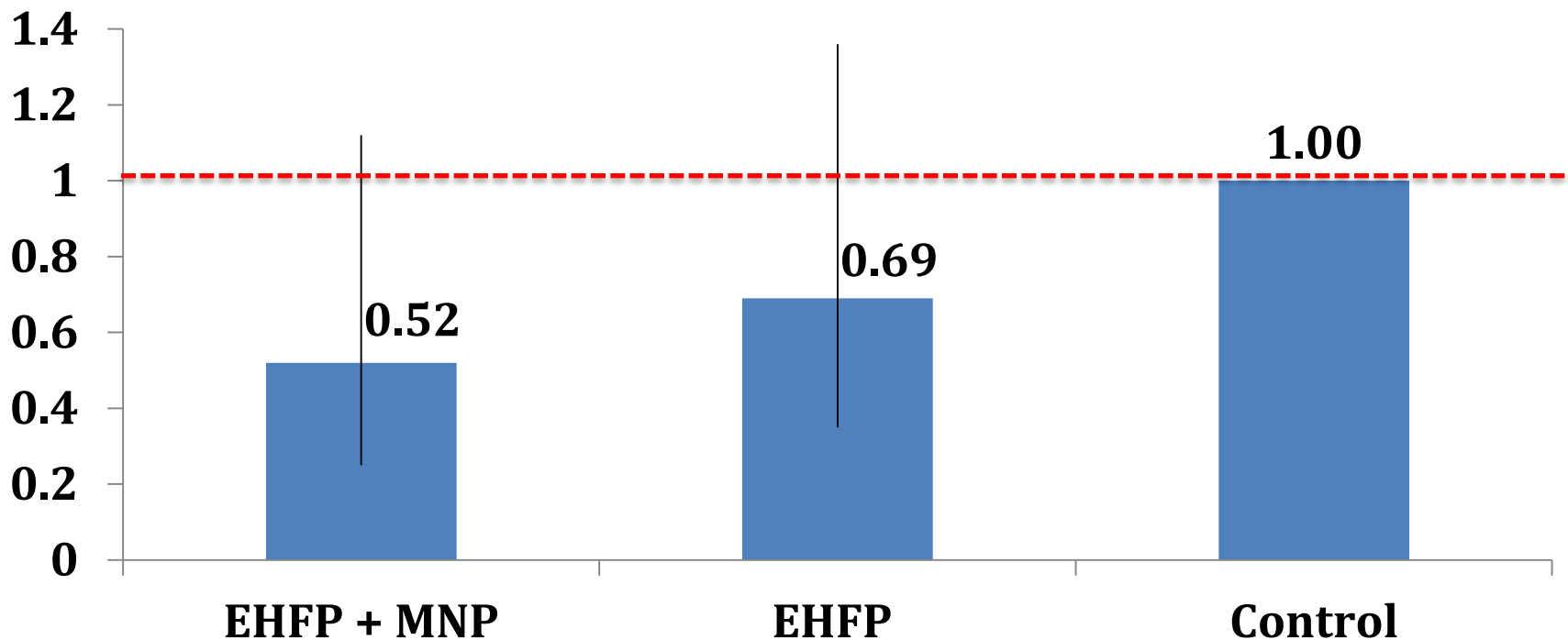
Helen Keller
INTERNATIONAL



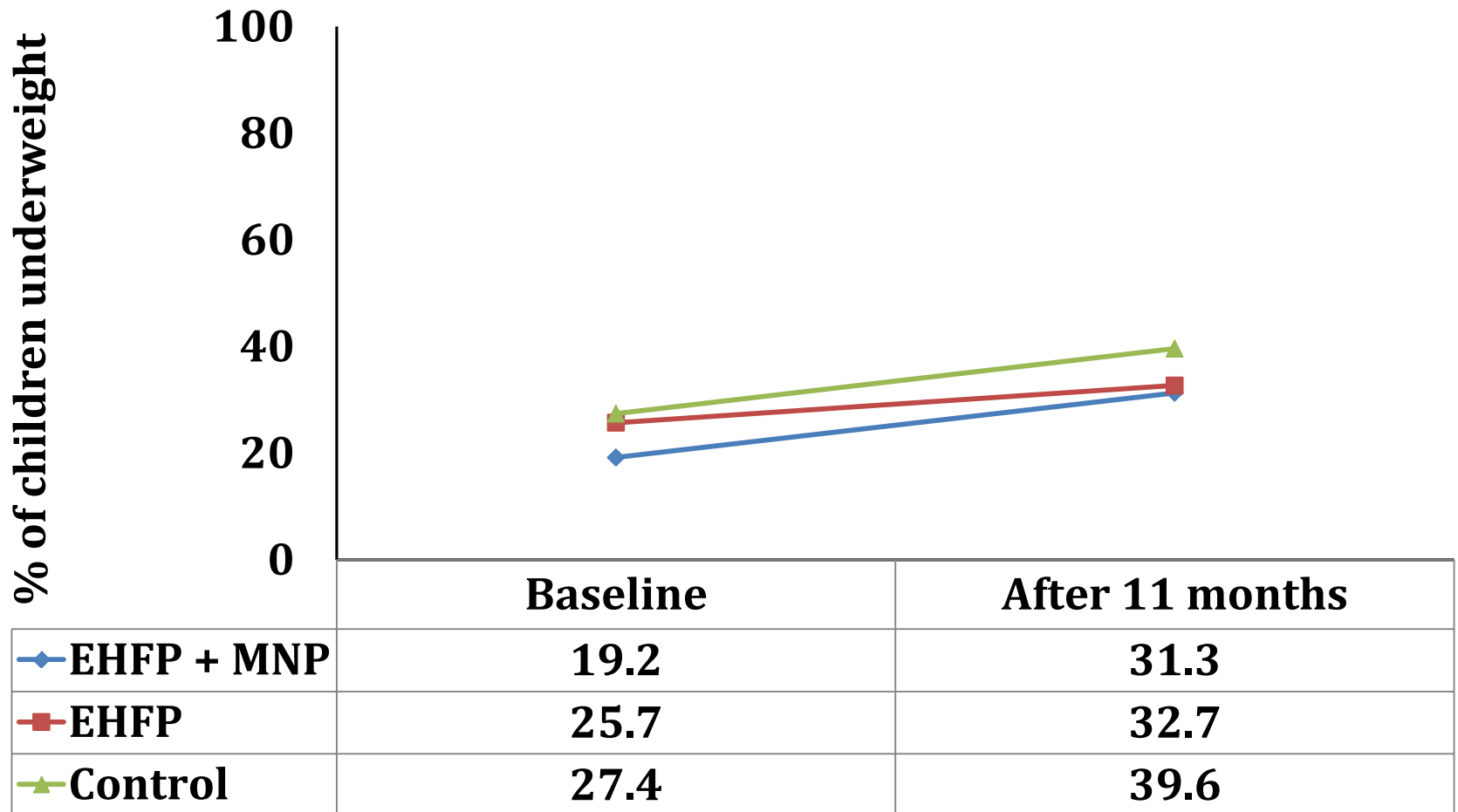
IMPACT ON ANEMIA – MULTIVARIATE LOGISTIC REGRESSION



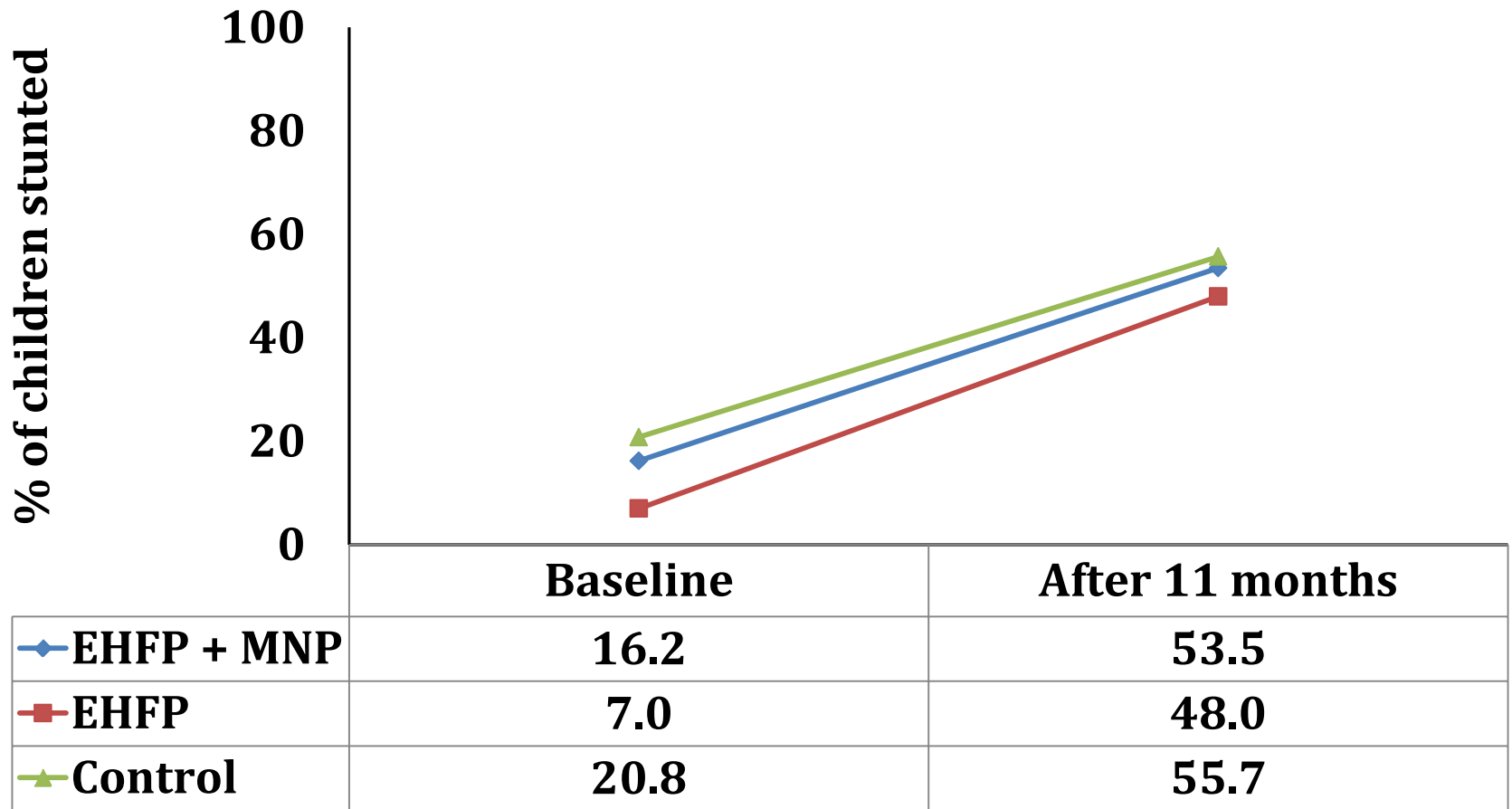
Adjusted Odds ratio, with 95% CI



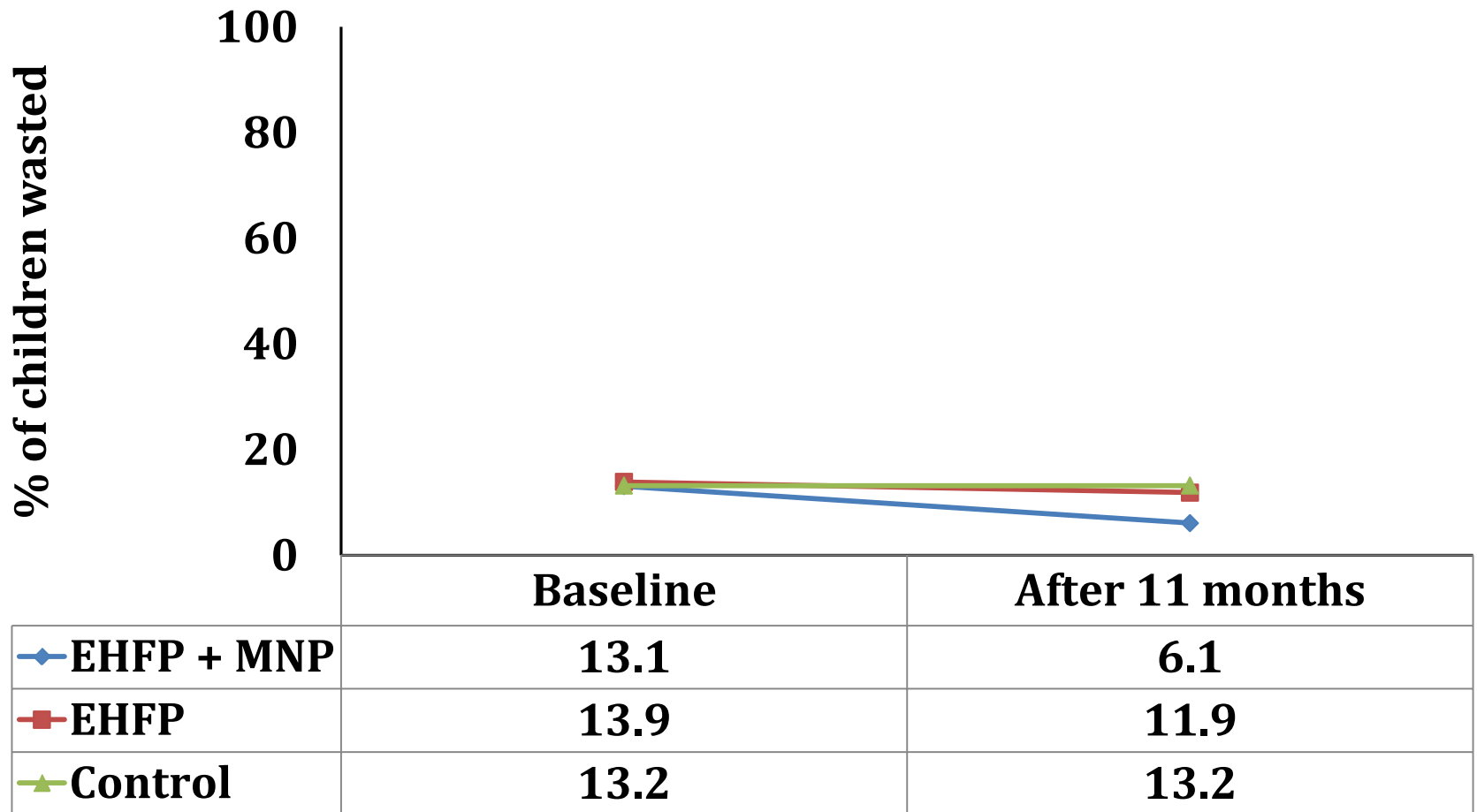
IMPACT ON CHILD UNDERWEIGHT



IMPACT ON CHILD STUNTING



IMPACT ON CHILD WASTING



SUMMARY OF FINDINGS



- **It may be feasible to use EHFP as a platform for MNP distribution**
 - **Higher compliance with MNP intake by children**
- **There was no impact of EHFP + MNP or EHFP on anthropometric indicators of children**
- **The EHFP alone had a potential of yielding similar benefits on anemia reduction as the EHFP + MNP**

ACKNOWLEDGEMENTS



Funding:

Bill and Melinda Gates Foundation through FHI 360, through the Alive & Thrive Small Grants Program managed by UC Davis





THANK YOU



Helen Keller
INTERNATIONAL