

# Home- and Community-Based Interventions to Improve Child Growth and Development in Zambia

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*Overview of:*

Fink G, Levenson R, Tembo S, Rockers PC. Home-and community-based growth monitoring to reduce early life growth faltering: an open-label, cluster-randomized controlled trial. *American Journal of Clinical Nutrition* 2017;106(4):1070-7.

Rockers PC, Zanolini A, Banda B, Chipili MM, Hughes RC, Hamer DH, Fink G. Two-year impact of community-based health screening and parenting groups on child development in Zambia: Follow-up to a cluster-randomized controlled trial. *PLoS Medicine* 2018;15(4):e1002555.

# Home-Based Growth Charts

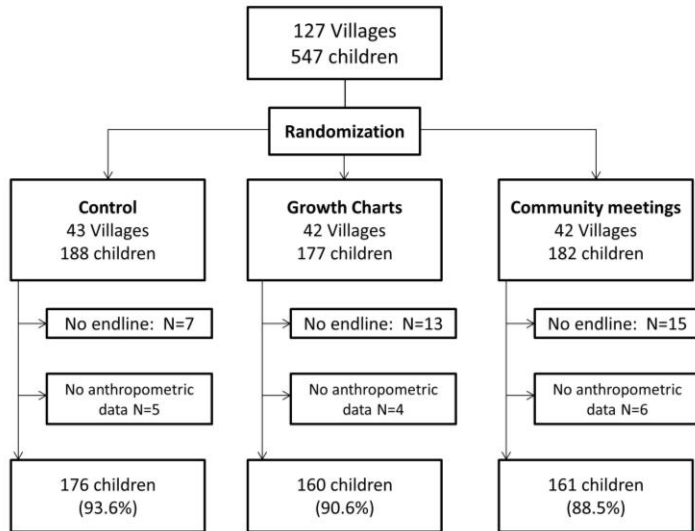


- Inexpensive and easy-to-use growth charts installed in homes
- Locally developed and pilot tested different versions
- Separate poster for boys and for girls

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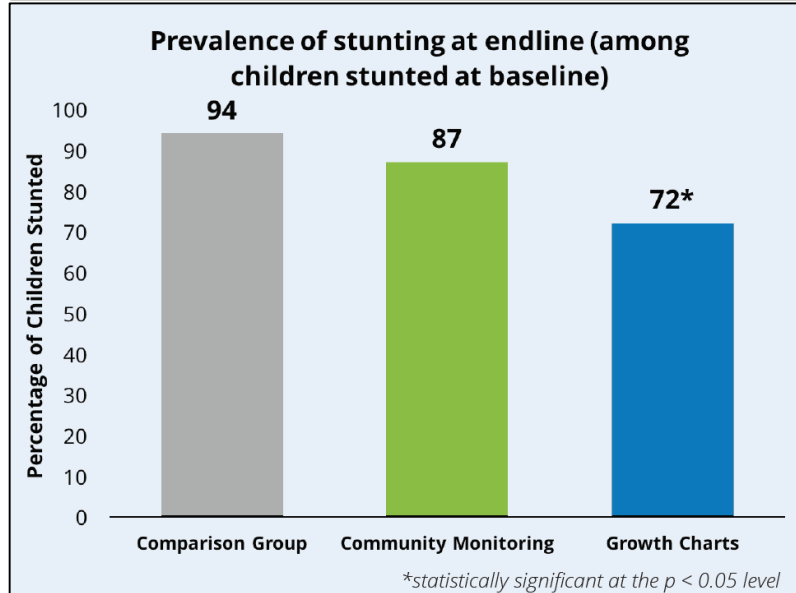
# Study Design



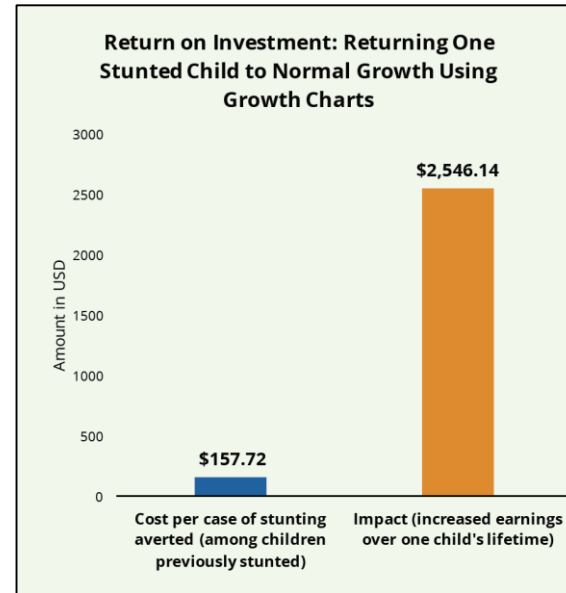
- Cluster-randomized trial
- Two treatment arms:
  1. Growth charts
  2. Community meetings with growth monitoring
- Children 6-18 months at enrollment
- Intervention period 1 year
- Primary outcomes:
  - Height-for-age z-score
  - Stunting

# Key Results

- After one year, significant reduction in stunting among children stunted at baseline



- Low cost
- Highly cost-effective



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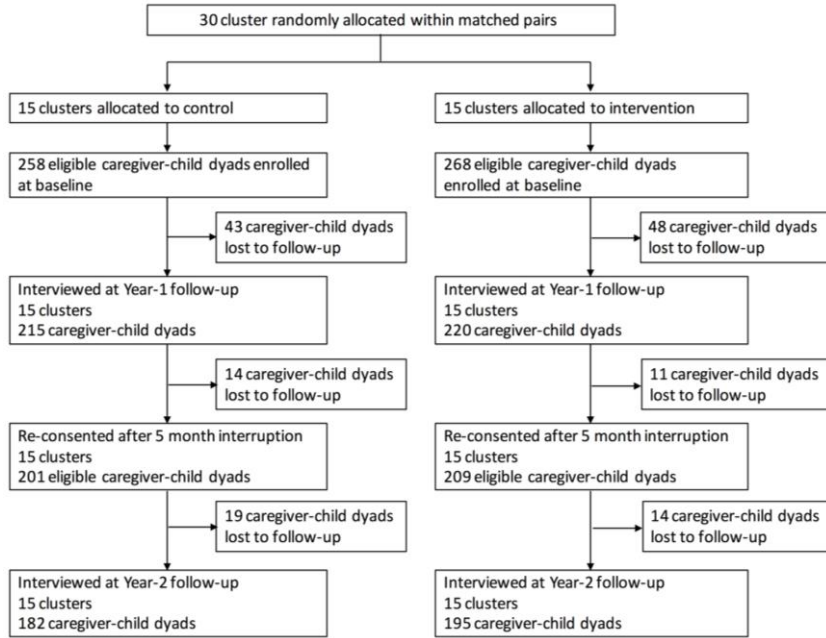


# Community-Based Parenting Groups



- Fortnightly group meetings
- Train-the-trainer model with group selected ‘head mother’
- Each meeting focused on different aspect of parenting:
  - Cognitive stimulation and play practices
  - Child nutrition and cooking practices
  - Self-care for good mental health

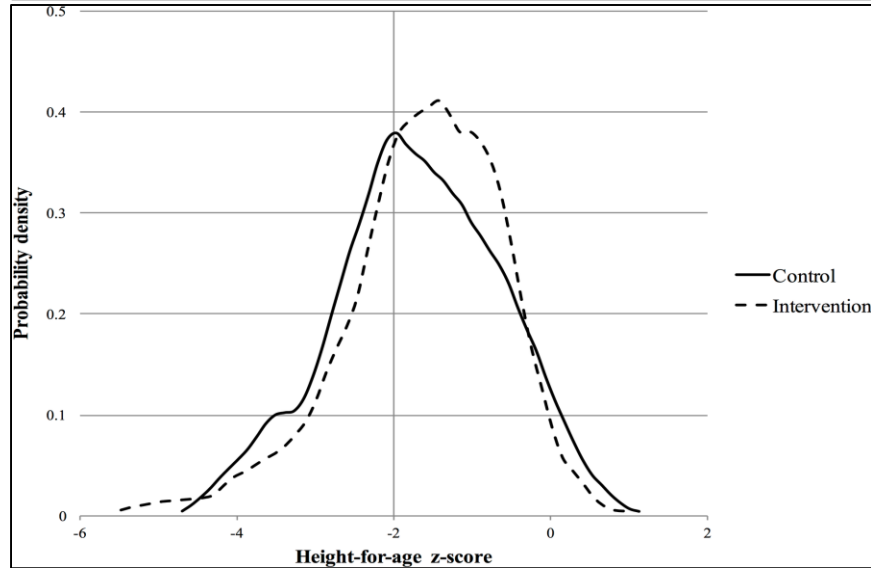
# Study Design



- Cluster-randomized trial
- Children 6-12 months at enrollment
- Initially funded for one year; extended to second year with additional funding
- Primary outcomes:
  - Height-for-age z-score
  - Stunting
  - Bayley Scale for Infant and Toddler Development, Third Edition

# Key Results

- Improved linear growth and reduced stunting



- Improved language skills

	Adjusted $\beta$ (95% CI)	p value
<b><i>BSID-III z-scores</i></b>		
Cognition	0.11 (-0.06, 0.29)	0.196
Language	0.14 (0.01, 0.27)	0.039
Motor	-0.01 (-0.25, 0.24)	0.964
Adaptive behavior	0.21 (-0.03, 0.44)	0.088
Social-emotional	0.20 (-0.04, 0.44)	0.098

BSID-III: Bayley Scale for Infant and Toddler Development, Third Edition

Notes:  $\beta$  estimates for all BSID-III z-scores are equivalent to *Cohen's d* values. All standard errors are adjusted to account for clustering.

# Ongoing Project with CHWs in South Africa

**Child Health**

- Ngwana o hloka maphetho a mabolise
- Dira gore go tene moye wo o hwelelego ka gae
- Child needs good hygiene
- Ventilate home to keep air clean
- Xhongi xi lava navelamavabyi wa vane
- Vana lewaku yindlu xi ngwana moye wo tenna na ku vana lewaku moye wo tabama wu tenna

**Child Nutrition**

- Go nyarisha letswale + go la dipa malaga a 5
- Leka motswalo o moswa
- Breastfeeding + 5 meals
- Tyi a new recipe
- Ku mamisa vete + miphameo ya mibano
- Ringela mesipi yintwa

**Child Milestones**

- Ngwana o ka ganetla ka go tsinyisa hlogo
- Ngwana o ka sepele a thelgwe
- Child might shake head 'no'
- Child might walk with support
- Xhongi xi naga kombata ku 'da' hi ku dlangelata rhoko
- Xhongi xi naga deyitwa

**Child Activity**

- Botlisa ngwana dipatliso tse banelo le go ma aana
- Dira papa gore a botlisa dipatliso le go akana ngwana
- Go nyane tulla ngwana melao
- Ask child simple questions and give hugs
- Have father ask questions and give hugs
- Gently teach child rules
- Vutisa n wana swivutiso tswa olawa i xi u nei vutaha
- Endla papa o vutisa swivutiso xi a mae vutaha
- Hi ku olawa dyondisa mibawu ya vana

SOCIAL-EMOTIONAL CHILD DEVELOPMENT MONTH 11

- Developed a job aid to guide CHW monthly home visits with age-specific information on:
  - Child health/infection
  - Child nutrition
  - Developmental milestones
  - Psychosocial stimulation activities
- Ongoing cluster-randomized controlled trial with 1,092 caregiver-child pairs and 490 CHWs in Mopani District, Limpopo Province
  - Enrolment at birth; endline at 24 months
  - CHWs attend training every 6 months



# Measurement of Neurocognitive Development

- Subsample of 300 children invited to attend centrally located project lab at 7, 15, and 24 months old
- Assessed using
  - Electroencephalogram (EEG)
  - Eye-tracking



Fig 1. EEG



Fig 2. Eye-tracking