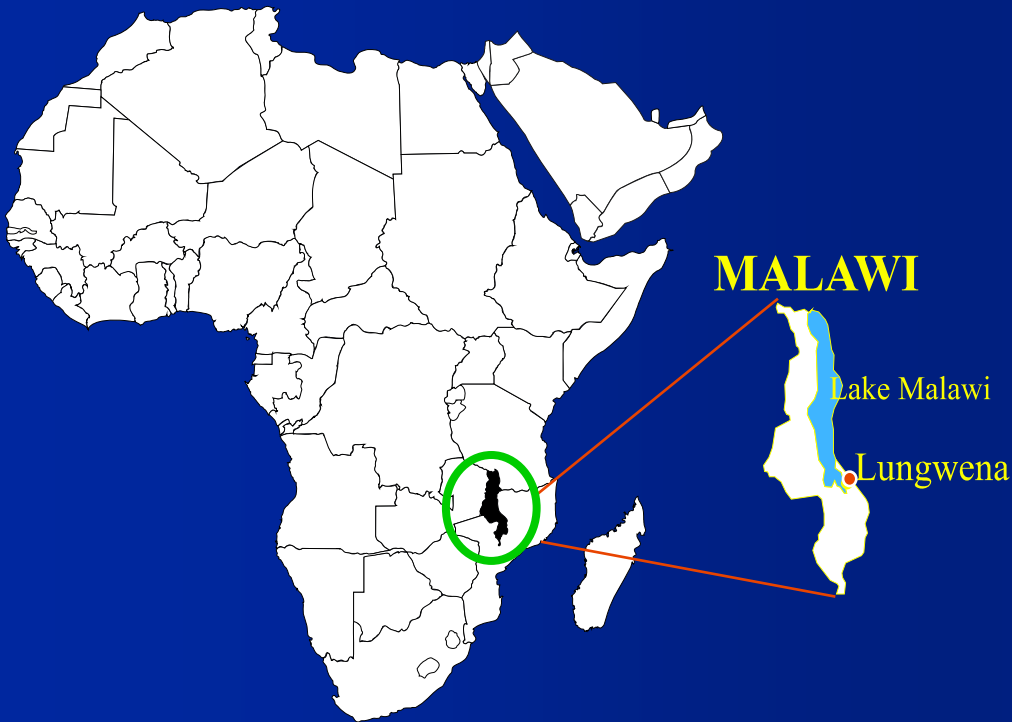
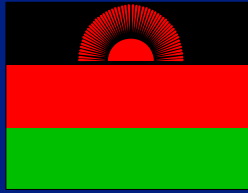


Impact of LNS supplementation on early childhood growth and health in rural Malawi

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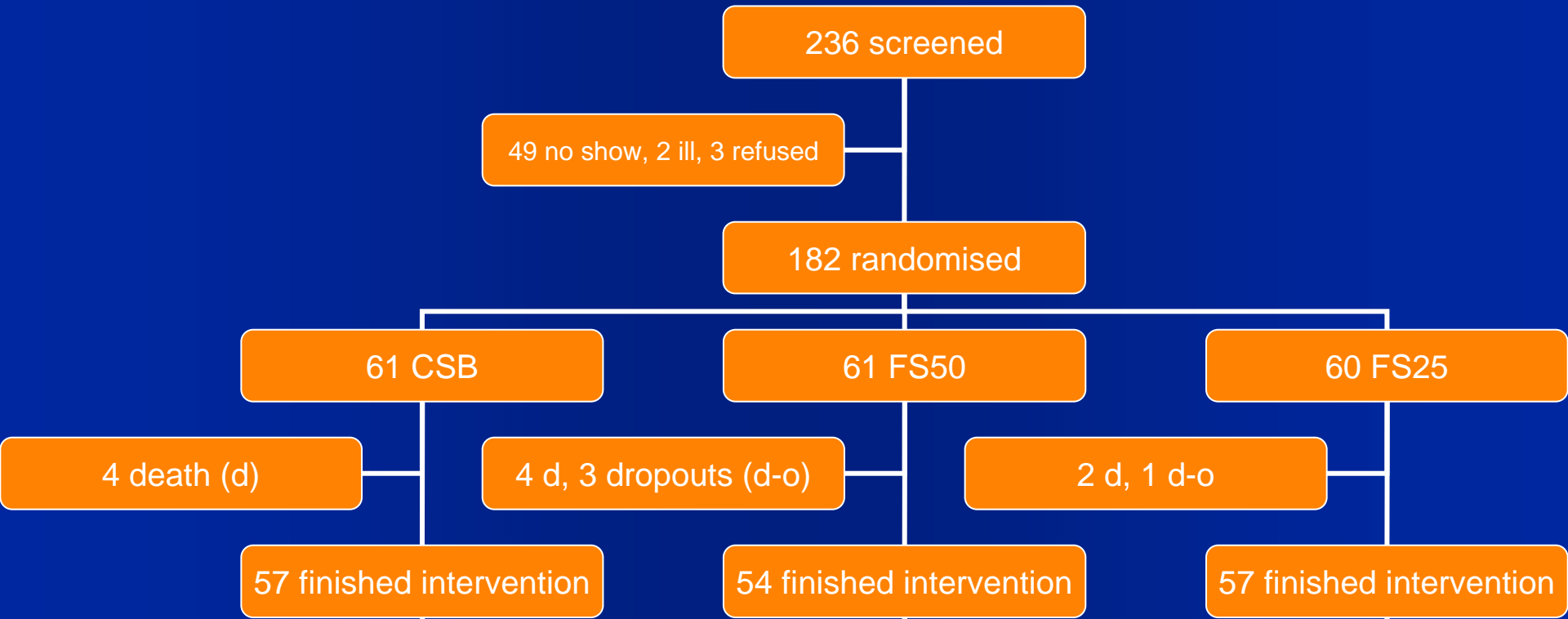
Lungwena Maternal and Child Health Project
College of Medicine, University of Malawi



- 6 mo old healthy Malawians
- Interventions
 - 6 to 18 mo with CSB, FS, ½ dose FS
- Assessments
 - Weigh and length gain
 - Change in WAZ, HAZ, WHZ
 - Blood-Hb
 - Incidence of severe underweight, wasting, and stunting

Nutrient	CSB	FS50	FS25
Weight (g)	71	50	25
Energy (kcal)	282	264	130
Protein (g)	10.3	7.6	3.8
Fat (g)	3.1	15.4	8.3
Folate (µg)	19	160	160
Niacin (mg)	3	6	6
Riboflavin (mg)	0.3	0.5	0.5
Thiamin (mg)	0.1	0.5	0.5
Vit. B6 (mg)	0.3	0.5	0.5
Vit. B12 (µg)	0.9	0.9	0.9
Fe (mg)	5	8	8
Zn (mg)	3.6	8.4	8.4

Participant flow



Baseline characteristic

<u>Variable</u>	<u>CSB</u>	<u>FS50</u>	<u>FS25</u>
Number	61	61	60
Age	5.91 (0.41)	5.93 (0.44)	5.89 (0.36)
Male sex (%)	24(39.3)	33 (54.1)	34 (56.7)
Weight, kg	6.92 (0.93)	7.05 (0.90)	7.30 (0.92)
Length, cm	62.8 (2.1)	63.2 (2.6)	63.5 (2.4)
Hb, g / l	114 (16)	106 (17)	113 (15)
WAZ	-0.65 (1.07)	-0.62 (1.04)	-0.33 (0.94)
LAZ	-1.20 (0.82)	-1.20 (1.01)	-1.00 (0.77)
WLZ	0.48 (1.08)	0.55 (0.90)	0.75 (0.86)

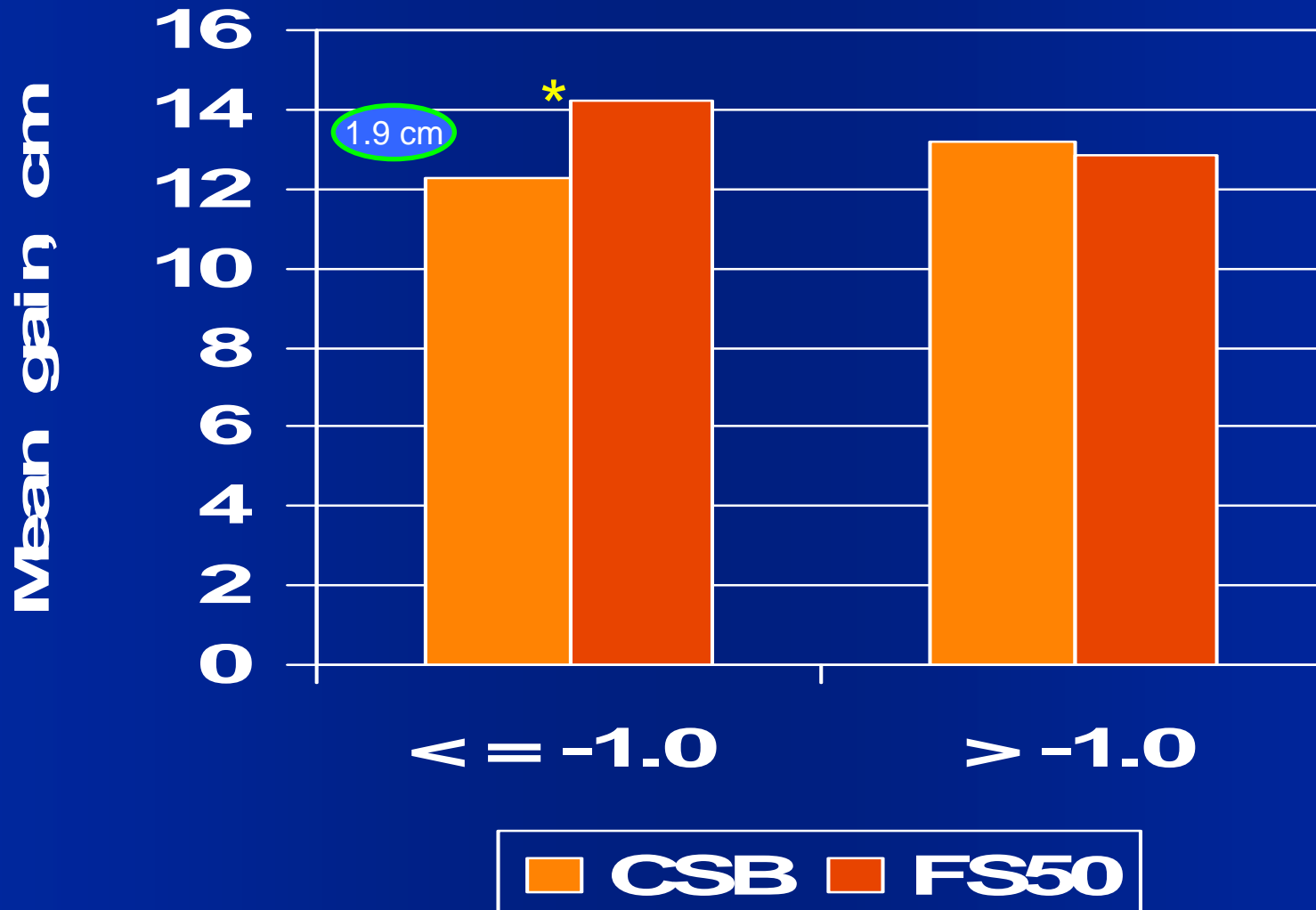
Changes by age 18 mo

<u>Variable</u>	<u>CSB</u>	<u>FS 50</u>	<u>FS 25</u>	<u>P - Anova</u>
Weight, kg	2.37 (0.60) ^{0.1 kg}	2.47 (0.77)	2.37 (0.61)	0.66
Length, cm	12.7 (1.7) ^{0.8 cm}	13.5 (2.9)	13.2 (2.9)	0.23
Hb, g / dl	-0.68 (2.06)	-0.4 (2.21)	-0.38 (1.82)	0.53
WAZ	-1.29 (0.63)	-1.18 (0.90)	-1.32 (0.65)	0.53
LAZ	-0.74 (0.95)	-0.59 (1.22)	-0.64 (0.86)	0.71
WLZ	-0.98 (0.83)	-1.05 (0.86)	-1.13 (0.75)	0.62

Interaction between baseline LAZ and intervention group
 Length, $p=0.04$, Weight, $p=0.002$

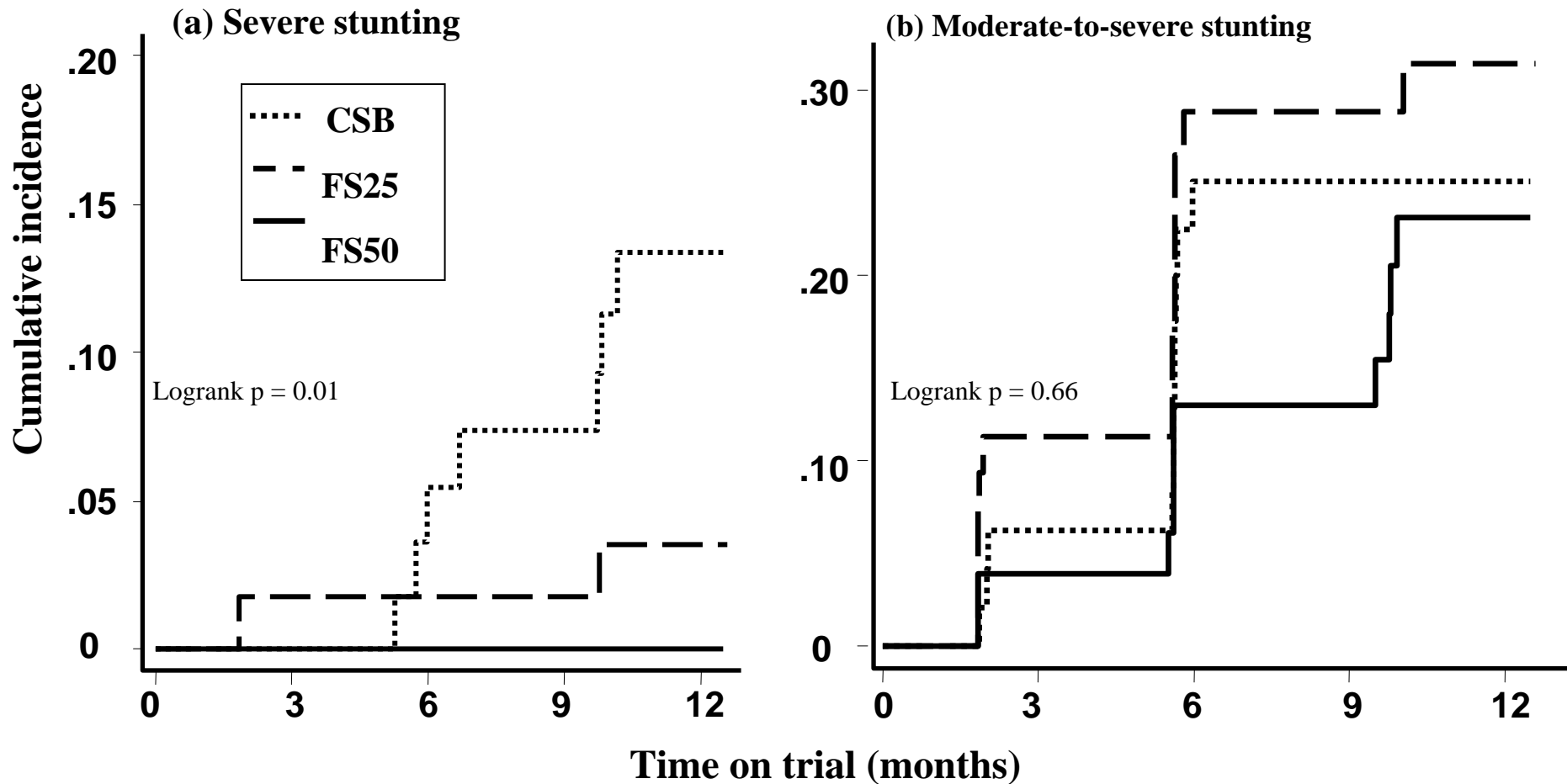
Stratified analysis

Length gain by median baseline LAZ score



Cumulative Incidence of stunting

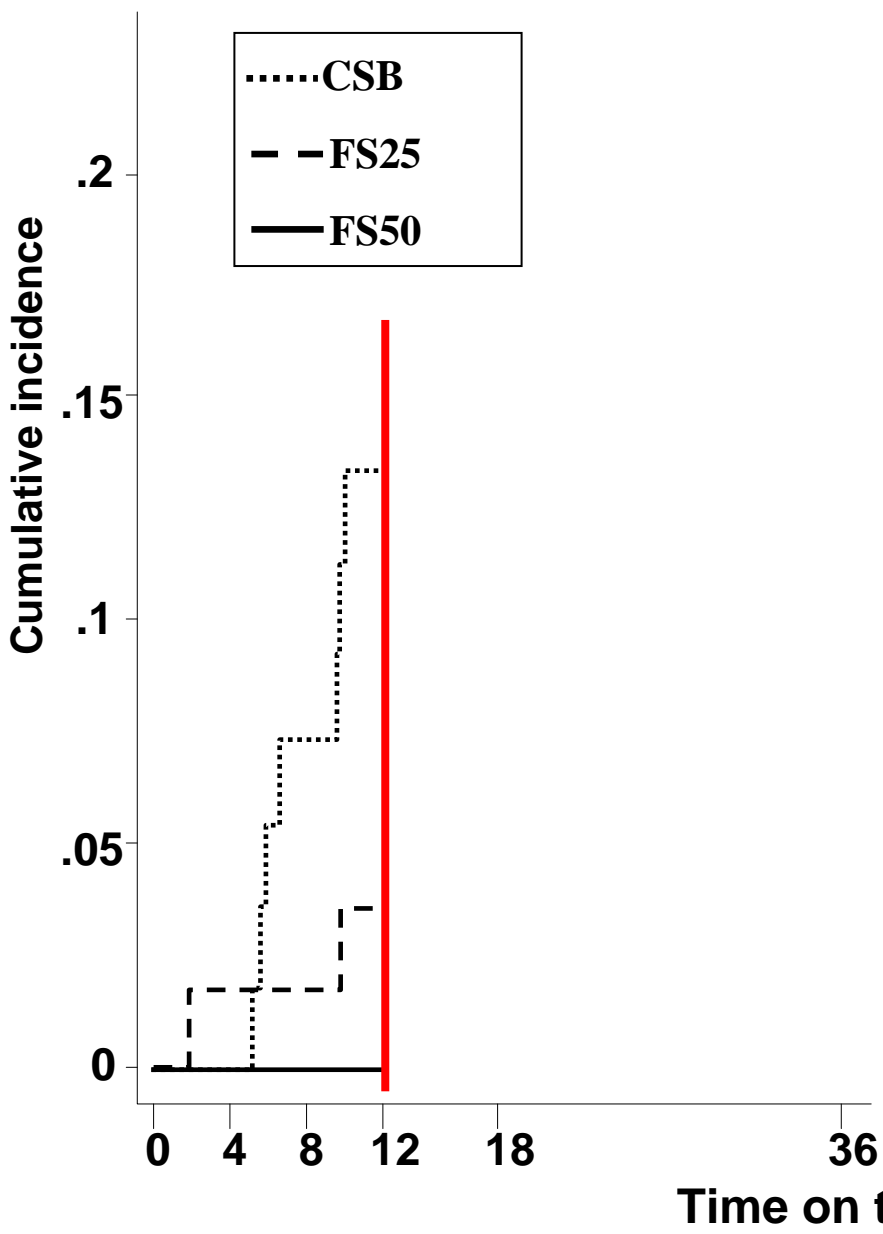
Source: Arch Pediatr Adolesc Med. 2008;162(7):619-626



Cumulative incidence, functions of severe stunting (A) and moderate to severe stunting (B) in children in the CSB, fortified spread, 25 g/d (FS25), and fortified spread, 50 g/d (FS50) groups.

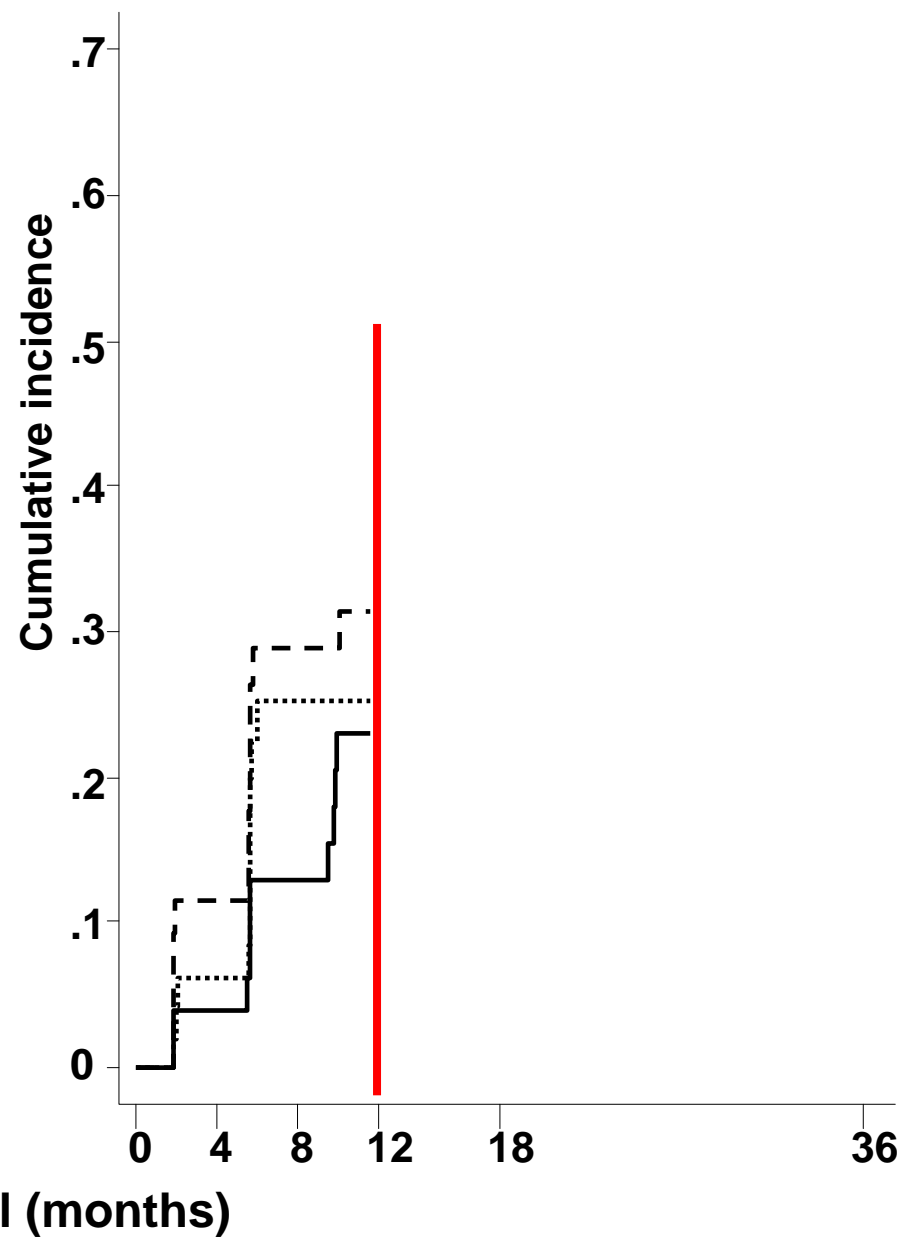
(a) Severe stunting incidence cases

Logrank p = 0.0293

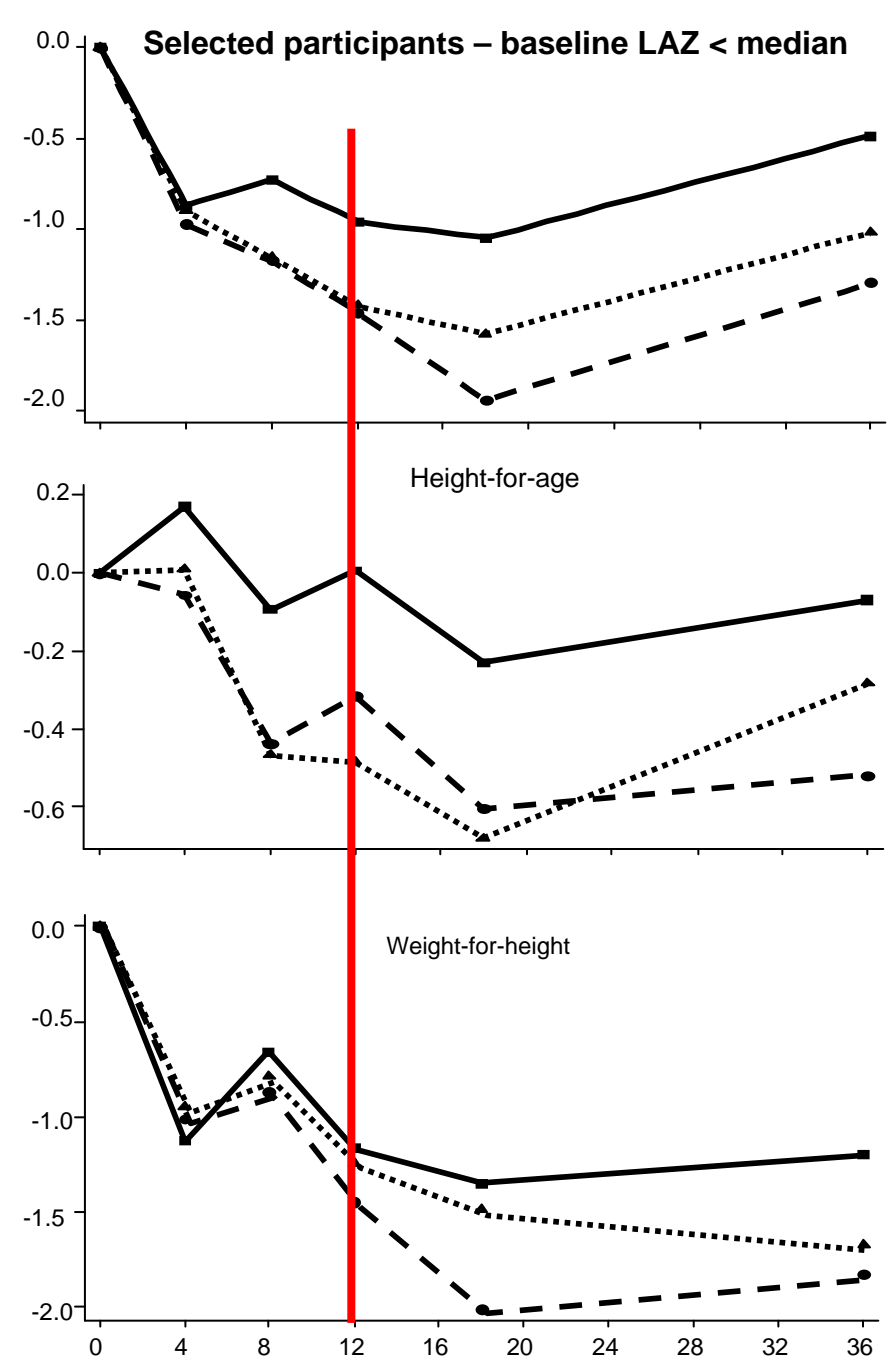
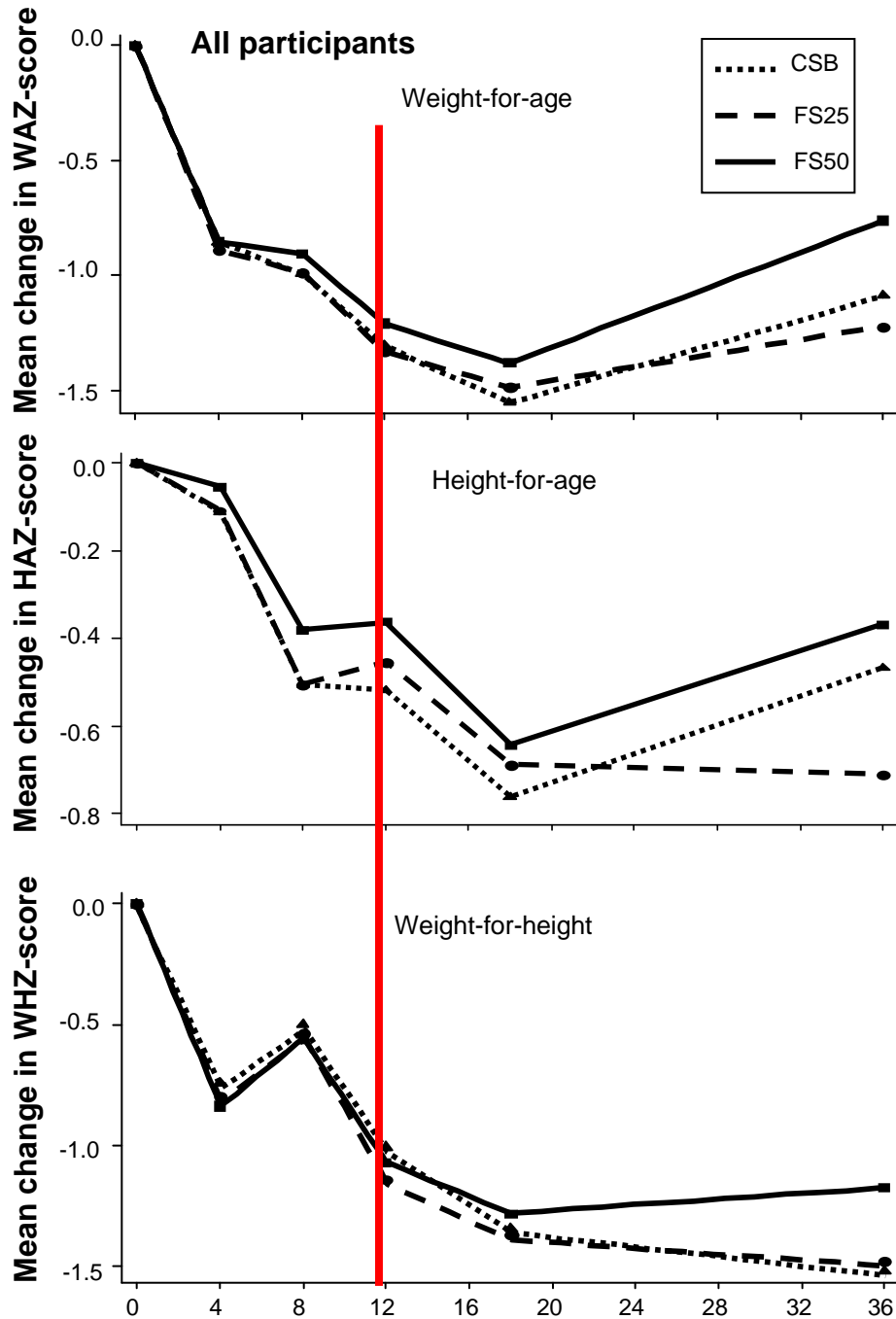


(b) Moderate-to-severe stunting

Logrank p = 0.5043



Mean cumulative anthropometric gains by food groups



Conclusions

- FS supplementation may promote linear growth and prevent the development of severe stunting
 - Impact better among initially disadvantaged infants
 - 50 g / day better than 25 g / day
- The effect is sustained and weight gain difference increases after the intervention

So What?

- Hypothesis testing trial
 - Bigger sample size (840)
 - Primary outcome severe stunting
 - 4 group trial
 - unsupplemented control group
 - 2 FS versions
 - CSB

Breast milk intake (BMI) before and after 1 mo complementary feeding (CF)

