

Improving care of children with moderate acute malnutrition

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Background

In Bangladesh:

- ~13.5% under-five children suffer from MAM
[weight-for-length (WLZ) <-2 to -3]
- Very few nutrition follow up units
- Follow up rate is extremely poor
- Suitable supplementary food is not available

Improved management regimens need to be developed & evaluated for the management of children suffering from MAM.

Objective

To assess the effect of community-based follow-up care, with or without food supplementation &/or psychosocial stimulations alternatives to current hospital-based follow-up of children suffering from MAM

Hypothesis

Children aged 6-24 mo with MAM, who were managed in their community would return for scheduled follow up visits more often & gain more weight during the 3 mo of treatment (*is described in next slide*) compared to children in the control group who received the routine hospital-based outpatient Mx.

We further hypothesized that provision of food supplementation &/or psycho-social stimulation would enhance these outcomes.

Treatment group

H-C: Fortnightly follow up (with standard Mx at hospital OPD)

C-C: Mx like H-C group, but follow up at community clinic

C-SF: All Mx like C-C group supplementary food (SF)

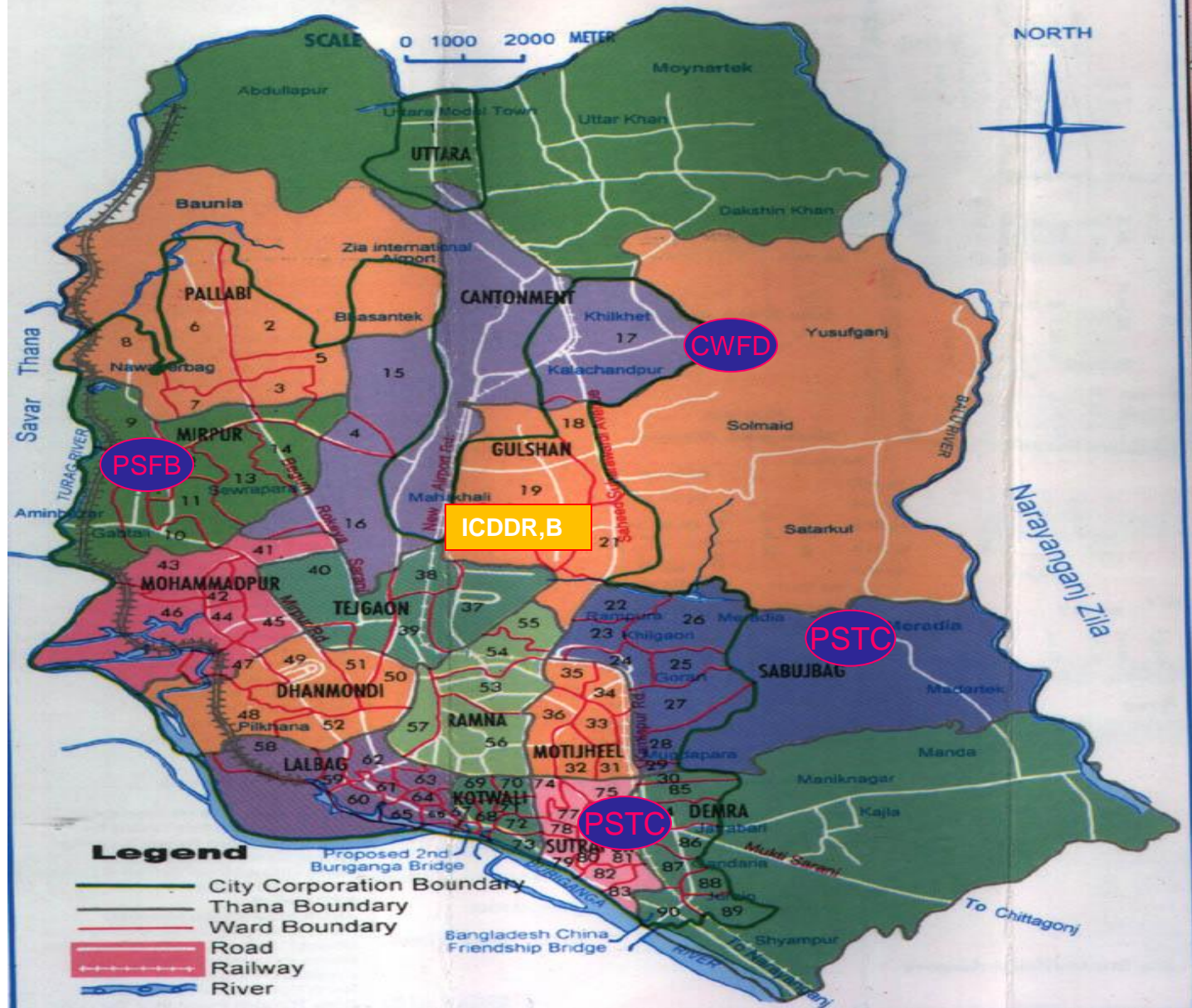
C-PS: All Mx like C-C group psychosocial stimulation (PS)

C-SF+PS: All Mx like C-C plus both SF & PS

Methods

- Design:** Randomized, non-masked intervention trial with block length of 5 & 10
- Study location:** Dhaka Hospital of the ICDDR,B & 4 community clinics in outlying areas of the city, where ~70% of the MAM children admitted to the hospital reside.
- These communities are located ~ 5 -10 km from the hospital & travel times range from 30 to 60 minutes to reach the hospital, at a cost of 0.5-1.0 US\$.
- Duration:** September 2005 to June 2007
- Trial reg #:** **NCT01157741**

DHAKA CITY



Inclusion Criteria

- Age 6 - 24 mo
- Either sex
- Moderate wasting [WLZ < -2 to -3]
- Resolution of acute illnesses
- Not planning to leave the current residence within next 3 mo (for follow up)
- Informed consent granted from the guardian

Exclusion Criteria

- Fever or diarrhea
- WHZ score < -3 or edema
- Clinically apparent congenital/acquired disorders that may affect growth
- Other acute or chronic diseases requiring hospitalization &/or affecting growth
- Lack of fixed address

Standard therapy for all groups

Growth monitoring & promotion

Health education of mothers/caregivers

Micronutrient supplementation

- Zinc
- Iron + Folic acid
- Multivitamin drop

Other services: Immunization, deworming, etc.

Supplementary food (SF)

- Groups C-SF & C-SF+PS received for 3 month
- SF packets were distributed on recruitment & at each follow up visit
- Composition of each SF packet (as BINP/NNP-SF):
 - 1) roasted rice powder 20g
 - 2) roasted lentil powder 10g
 - 3) molasses 5g
 - 4) soy bean oil 3ml
 - Energy per packet: ~ 150 kcal (~ 630 k joules)
 - PER: ~ 11%
- Ration: 6-12 mo age: 1 pack/d
13-24 mo age: 2 packs/d
- All under -5 siblings also received 1 pack/d



Psychosocial stimulation

- For C-PS & C-SF+PS groups
- ½ hour play session with every child & mother with homemade toys
- Group sessions for attending mothers/caregivers:
- Mothers/caregivers were encouraged to give stimulation (3-4 times/d)



Outcome

Main/primary outcomes:

- Follow up rate
- Weight gain

Other/secondary outcomes:

- Changes in length
- Changes in WA WL
- Morbidity & Mortality

Follow up visit

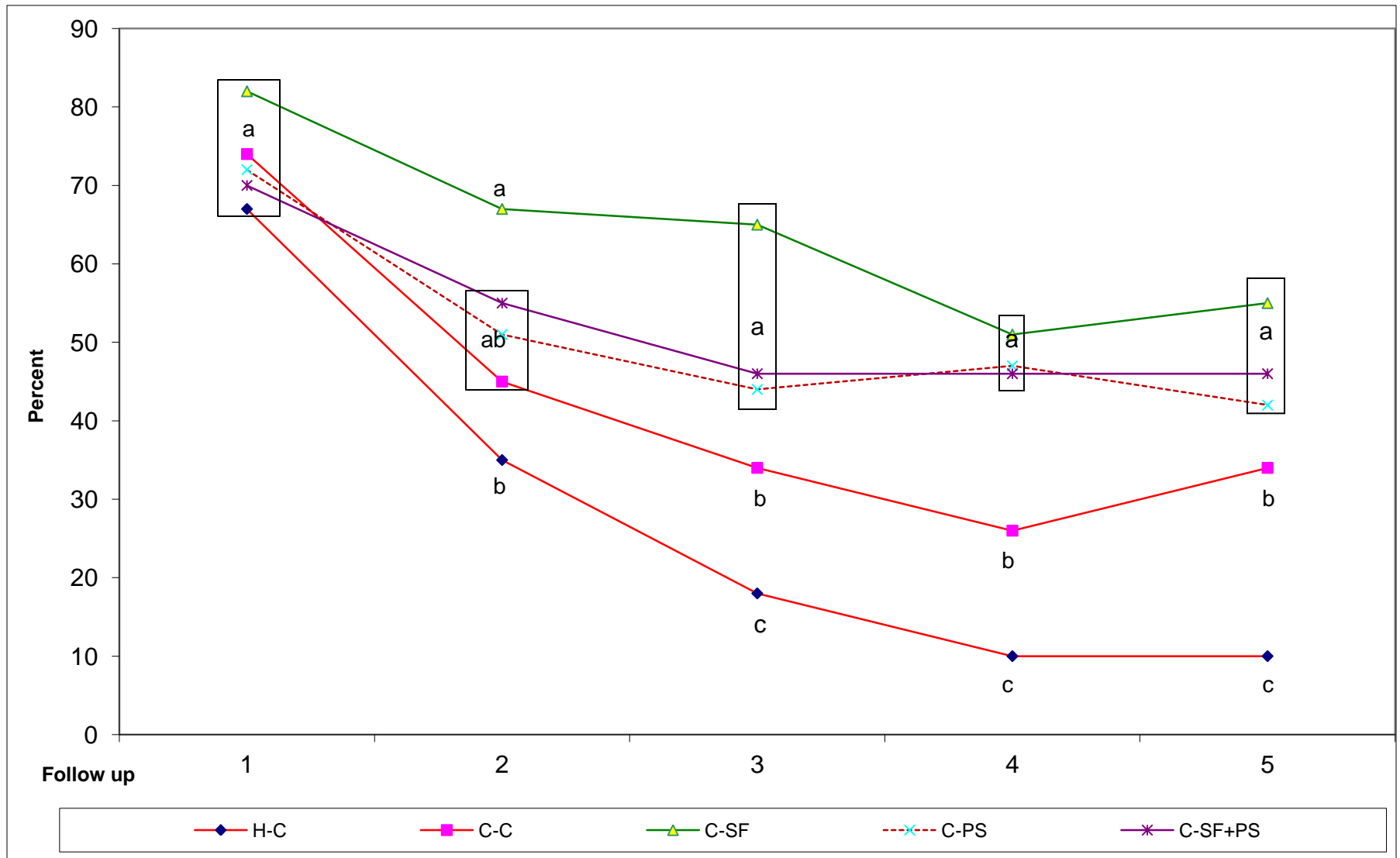


Baseline characteristics of the children

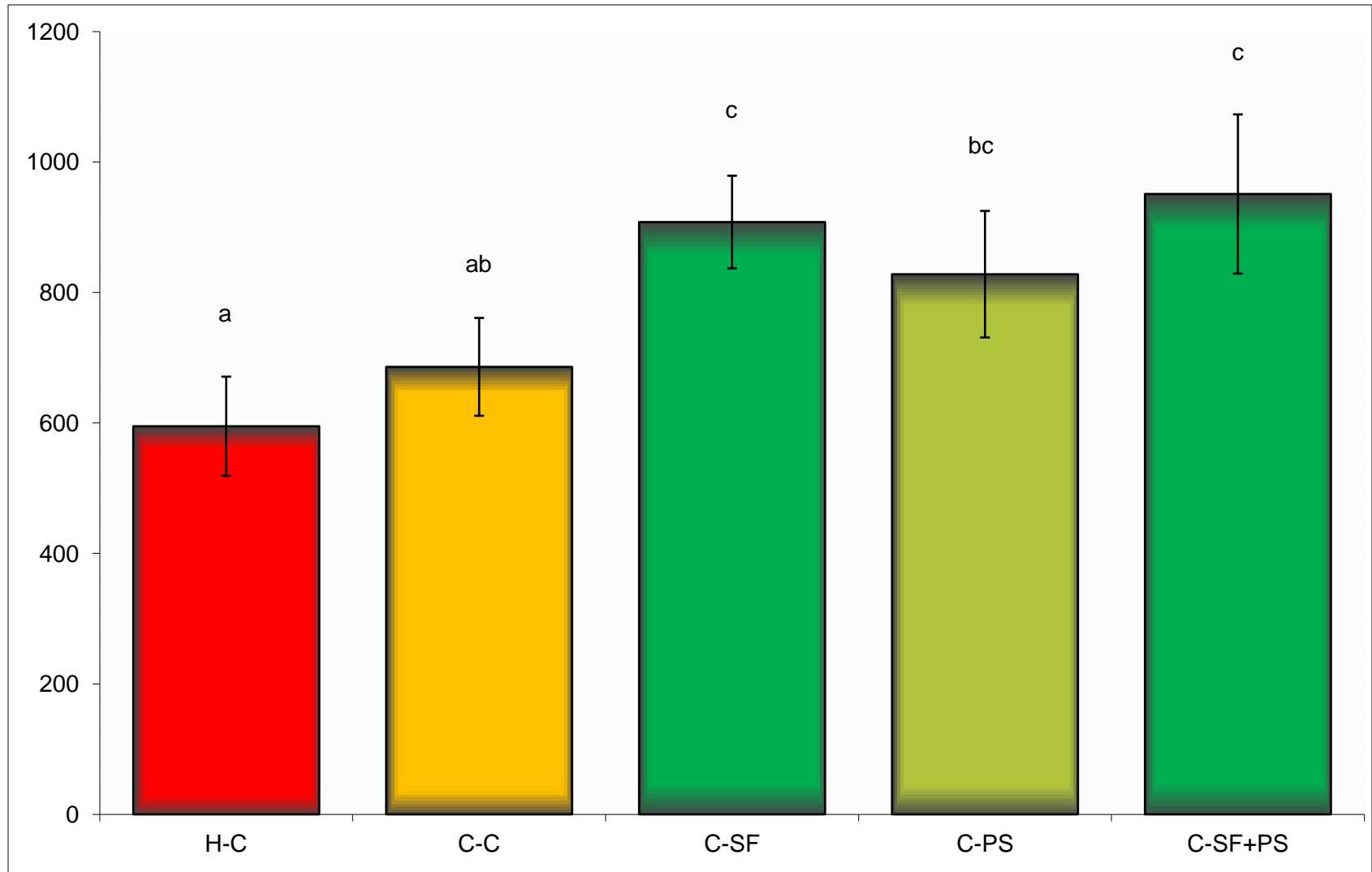
	H-C N = 49	C-C N = 53	C-SF N = 49	C-PS N = 43	C-SF+PS N = 33
Age (month)	13.1 ± 4.1	12.7 ± 3.5	12.4 ± 4.2	12.1 ± 2.9	12.4 ± 4.1
Girls: n (%)	21 (43)	26 (49)	25 (51)	20 (47)	18 (55)
Child's body weight (kg)	6.19 ± 0.88	6.20 ± 0.86	5.95 ± 0.72	6.19 ± 0.84	6.20 ± 0.79
Child's length (cm)	67.3 ± 4.7	67.0 ± 4.3	66.0 ± 4.1	67.0 ± 3.9	67.4 ± 4.2
Weight for length Z-score	-2.60 ± 0.28	-2.48 ± 0.30	-2.53 ± 0.27	-2.50 ± 0.27	-2.57 ± 0.27
Weight for age Z-score	-3.75 ± 0.52	-3.63 ± 0.53	-3.83 ± 0.48	-3.53 ± 0.53	-3.49 ± 0.49
Length for age Z-score	-3.47 ± 0.71	-3.38 ± 0.90	-3.60 ± 0.83	-3.19 ± 0.89	-3.00 ± 0.82
Predominant breastfeeding (mo)	3.9 ± 2.5	3.8 ± 2.4	3.4 ± 2.6	3.6 ± 2.3	4.1 ± 2.1
Currently breastfeeding: n (%)	42 (86)	47 (89)	45 (92)	39 (91)	27 (82)
Total # of children	1.8 ± 1.0	1.9 ± 0.9	1.9 ± 1.4	1.9 ± 1.2	1.9 ± 1.1
Mothers age (yr)	22.6 ± 4.3	23.9 ± 5.8	23.3 ± 4.9	23.5 ± 4.7	23.7 ± 5.1
Mother's height (m)	1.48 ± 0.04	1.47 ± 0.05	1.47 ± 0.05	1.47 ± 0.05	1.49 ± 0.06
Mother's BMI	19.3 ± 2.3	19.4 ± 2.6	19.8 ± 3.5	19.9 ± 3.7	19.9 ± 3.2
Mother's schooling (yr)	3.8 ± 3.5	3.9 ± 3.3	3.6 ± 3.2	3.8 ± 3.2	3.4 ± 3.9
Mother working outside home: n %	5 (10)	5 (9)	5 (10)	4 (9)	4 (12)
Father's age (yr)	29.3 ± 6.6	30.3 ± 7.7	30.3 ± 6.7	32.0 ± 7.7	30.5 ± 7.7
Father's schooling (yr)	5.9 ± 4.2	5.1 ± 4.4	4.3 ± 3.9	4.8 ± 4.5	4.1 ± 4.5
Day labor/rickshaw puller father: (%)	20 (41)	19 (57)	22 (45)	23 (53)	14 (42)
Total family income/month in taka	5493 ± 3176	5556 ± 6369	4748 ± 3051	5289 ± 2255	5478 ± 4792
House rent/month (taka)	1221 ± 569	1249 ± 548	1186 ± 963	1183 ± 416	1161 ± 899

Data are mean ± SD if not otherwise indicated, **No significant differences by treatment group for any of the variables**

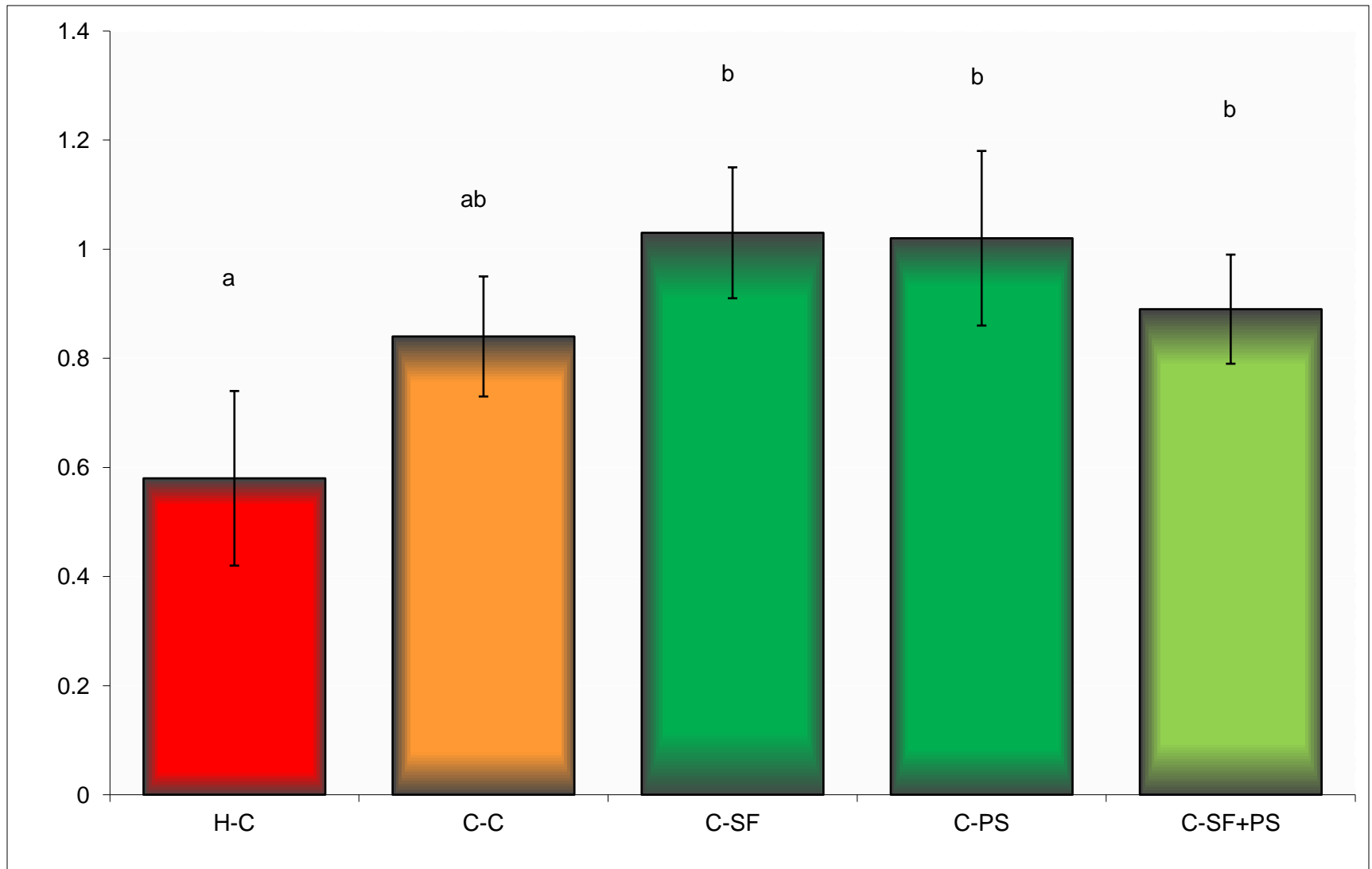
Follow up rate at different periods by treatment group



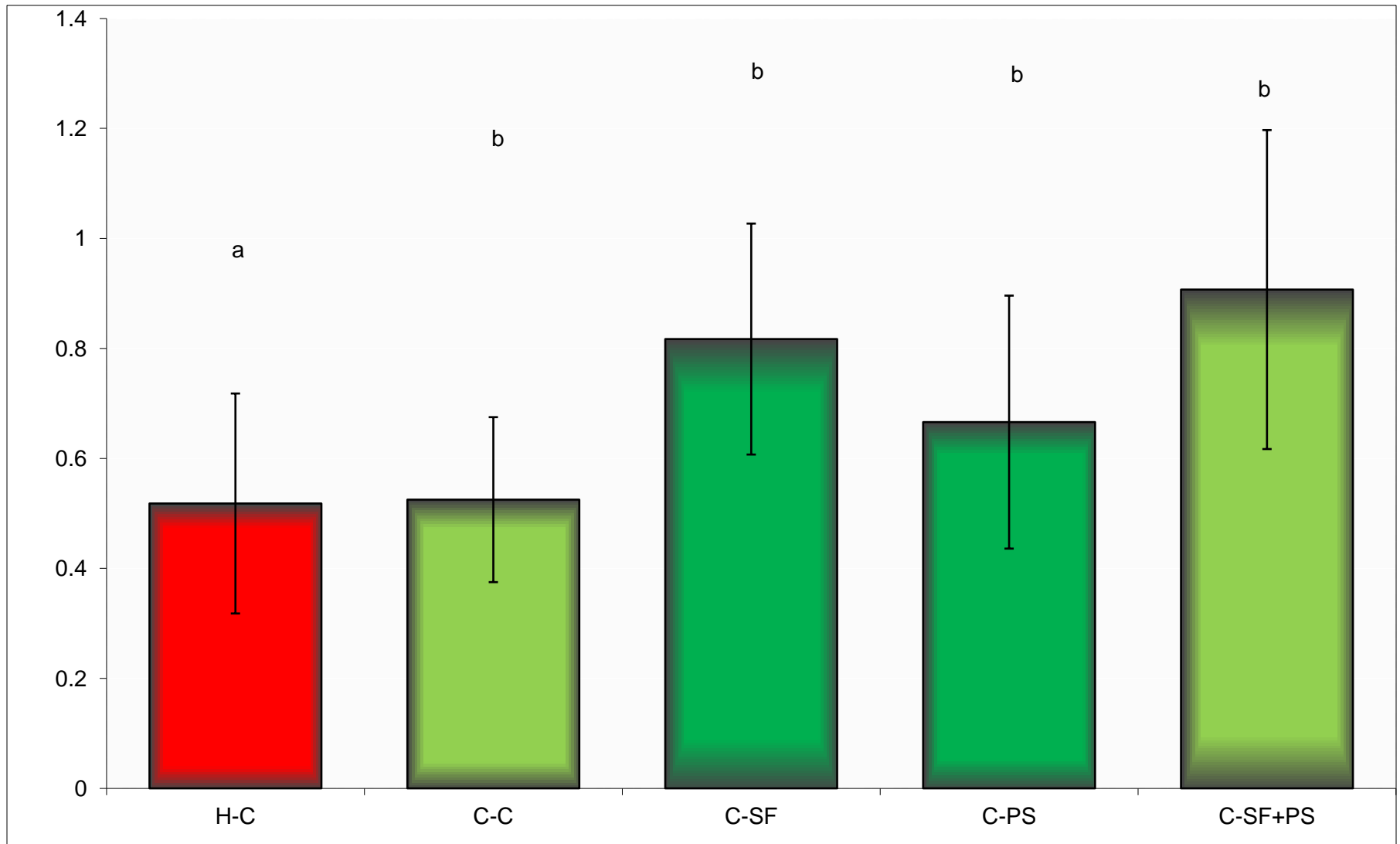
Gain in weight (g), mean±SE



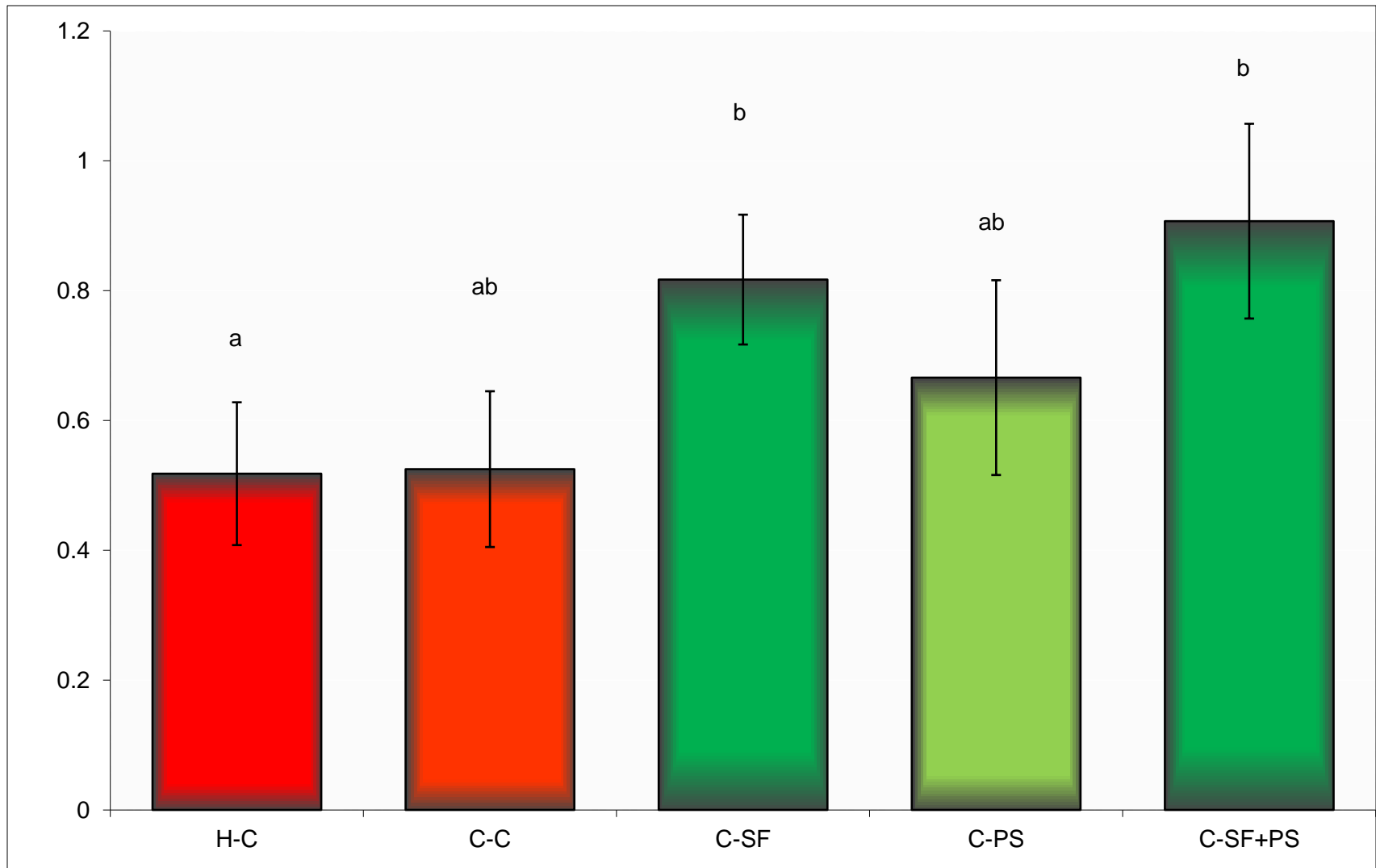
Difference in WAZ, mean±SE



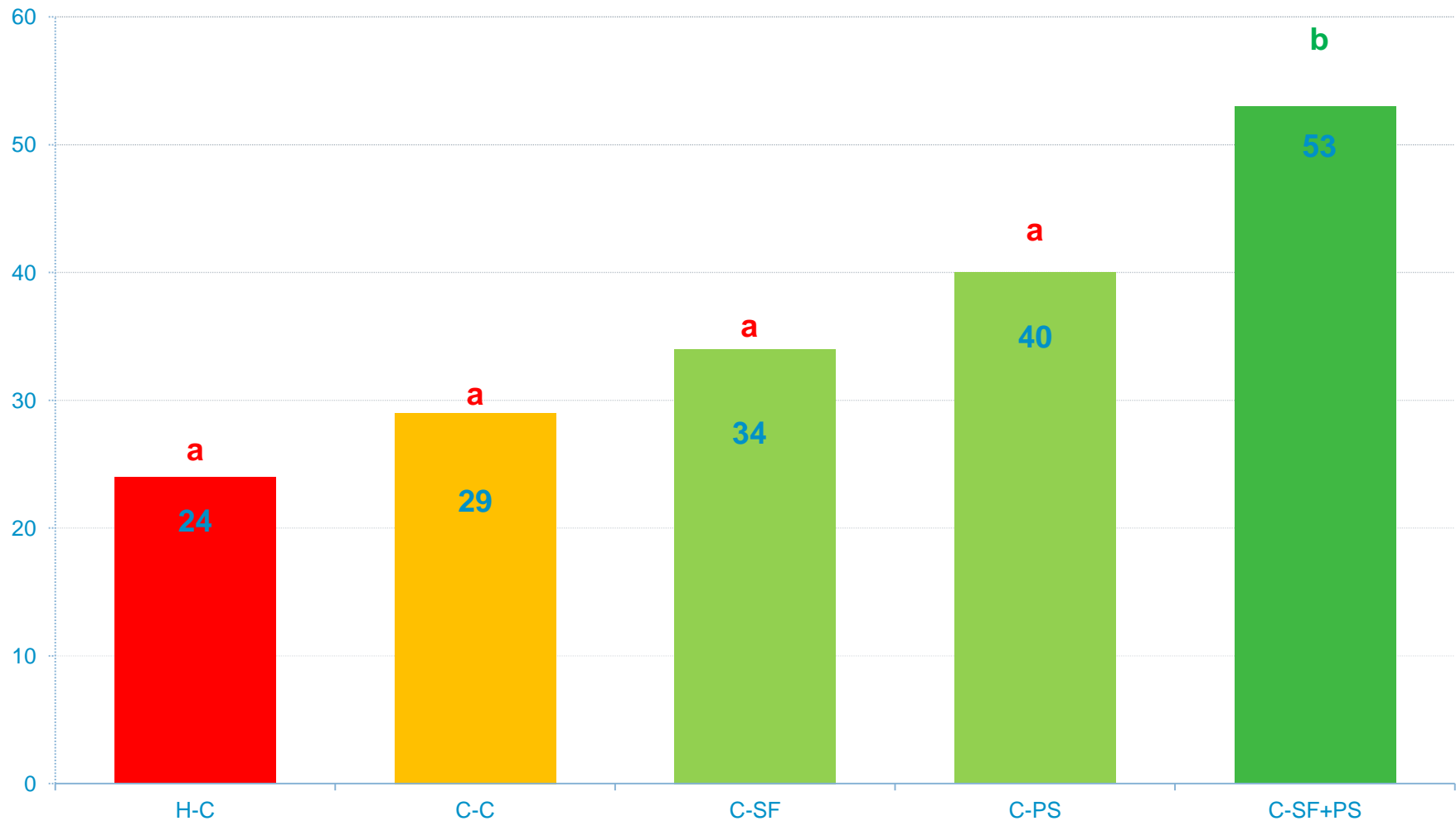
Length increment (cm), mean \pm SE



Difference in WLZ, mean \pm SE



Percent of children recovered from moderate wasting (MAM)



Summary/conclusion

Provision of follow up services in the community increases adherence to the follow up schedule & physical growth, & provision of SF with or without PS enhances the rate of nutritional recovery.

All of the interventions provided in this study can be delivered through existing primary health care services in the local communities.

This would require a small amount of additional funding for:

- SF (each packet of 150 kcal costs ~ 5 taka (~ 7 cents))
- Micronutrient supplements (20 taka, ~ 30 cents/child/2 weeks), &
- Training of existing health workers.

Thus, community-based service delivery, including supplementary food, could be scaled up through existing community clinics to permit better nutritional rehabilitation of greater numbers of MAM children at reasonable cost.

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