

Supplemental Table 1: List of food groups and subgroups as defined by Optifood software

	Food group/ sub-food group
1	Added fats
	Butter, ghee, margarine non-fortified
	Vegetable oil non-fortified
2	Added sugars
	Sugar non-fortified
3	Bakery & breakfast cereals
	Biscuits, sweet cookies
	Ready-to-eat cereals, fortified (commercial infant food)
4	Dairy products
	Fluid milk non-fortified
	Other dairy excluding butter
5	Fruits
	Other fruits
6	Grains & grain products
	Refined grains and products non-fortified
	Whole grains and products non-fortified
7	Legumes, nuts & seeds
	Cooked beans, lentils, peas
8	Vegetables
	Other vegetables
	Vitamin A source dark leafy greens
	Vitamin C rich vegetables
9	Starchy roots and plants
	Other starchy plant
10	Meat, fish and eggs
	Egg whole, raw

Supplemental Table 2. Reported intake and feeding practices by Ethiopian Children, by age group and region.

Age group		Tigray	Amhara	Oromia	SNNPR	Average of all regions
6-8 months	Breast milk %	99	97	95	98	97
	Foods consumed (n)	74	82	93	70	80
	Foods consumed by >3% of children(n)	28	26	24	33	28
9-11months	Breast milk%	95	93	89	94	93
	Foods consumed (n)	78	99	100	94	93
	Foods consumed by >3% of children(n)	29	35	40	47	38
12-23 months	Breast milk%	86	90	85	91	88
	Foods consumed (n)	138	196	196	159	172
	Foods consumed by >3% of children(n)	48	52	53	56	52

Supplemental Table 3.

Table 3. List of Foods consumed by >3% of children, median serving sizes (g/d), in Tigray, Amhara, Oromia, SNNP regions in Ethiopia

	Tigray			Amhara			Oromia			SNNPR		
	Age of children in months											
	6-8	9-11	12-23	6-8	9-11	12-23	6-8	9-11	12-23	6-8	9-11	12-23
Added fats												
Butter, spiced, clarified	-	-	-	-	-	-	6	8	2	3	3	5
Butter, un-spiced, raw	-	-	-	-	-	-	-	-	-	7	-	8
Oil, liquid	1	3	4	1	2	3	3	4	4	-	1	2
Shortening, fractionated, palm	3	5	3	-	2	3	4	6	4	-	4	3
Added sugars												
Sugar, refined	5	5	8	7	7	12	12	14	11	9	11	13
Bakery and breakfast cereals												
Biscuits, sweet cookies	-	-	-	-	-	-	18	16	-	-	-	-
Fortified infant cereal food	7	-	-	4	-	-	-	-	-	-	-	-
Dairy products												
Buttermilk, cow	-	-	-	-	-	-	-	-	-	307	154	173
Milk, cow, boiled	-	-	-	221	94	129	94	253	188	-	261	204
Milk, cow, fresh	52	137	126	134	162	129	218	267	234	148	113	173
Sour milk, cow	-	-	-	-	-	-	-	-	-	-	173	140
Fruits												
Avocado, fresh	-	-	-	-	-	-	-	-	-	-	-	74
Banana, fresh	-	-	-	-	-	-	-	-	-	-	-	105
Prickly pear	-	-	139	-	-	-	-	-	-	-	-	-
Grain and grain products												
Barley black, flour	-	-	16	1	3	3	14	16	5	1	3	3
Barley white, flour	9	13	26	2	9	6	9	18	10	-	16	5
Corn yellow, flour	-	-	5	-	-	2	3	2	5	-	3	4
Corn white, flour	-	4	14	-	24	13	5	21	47	-	21	39
Emmer wheat, flour	-	-	-	12	18	2	-	9	14	-	3	5
Macaroni, pasta dry	18	17	23	-	20	23	-	17	16	-	-	-
Millet black, flour	-	-	7	-	-	4	-	-	3	1	3	3
Millet mixed, flour	-	-	6	-	-	10	1	-	6	1	3	3
Millet white, flour	-	-	4	-	-	2	-	-	-	-	3	3
Rice, wholegrain	-	-	45	-	-	-	-	-	-	-	-	-
Sorghum red, flour	8	14	16	-	12	7	4	17	28	2	3	5
Sorghum mixed, flour	3	3	11	1	8	13	7	6	17	-	4	10
Sorghum white, flour	9	16	20	6	14	19	13	25	20	-	10	25
Tef red, flour	10	15	29	8	21	9	11	14	25	3	3	8
Tef mixed, flour	4	17	20	11	21	36	12	5	11	2	3	9
Tef white, flour	33	17	21	4	4	23	14	9	19	14	17	16
Wheat black, flour	5	20	69	-	-	10	4	-	3	-	3	3
Wheat mixed, flour	-	5	6	2	16	13	6	29	21	-	3	3

Online Supporting Material

Wheat white, flour	15	31	39	14	10	21	12	29	40	1	8	25
Wheat wholegrain, flour	-	-	-	-	13	59	-	45	62	-	-	73
Legumes, nuts and seeds												
Broad beans, flour	1	-	4	3	2	6	-	9	8	1	3	3
Broad beans, split	-	-	7	-	-	16	-	-	9	-	-	-
Broad beans, whole fresh roasted	-	-	8	-	-	-	-	-	10	-	-	-
Chickpeas, flour	-	12	3	1	-	4	-	-	4	1	3	3
Kidney beans, whole, dried	-	-	-	-	-	2	-	-	-	1	3	8
Lentil, flour	-	-	-	1	-	2	-	-	-	1	3	3
Lentil, split	-	-	-	-	4	12	-	-	-	-	-	-
Lupine, raw	-	-	-	-	-	2	-	-	-	1	3	3
Partially ground grass pea	-	-	-	-	-	9	-	-	-	-	-	-
Peas, flour	4	4	6	2	-	5	2	5	7	1	2	4
Peas, split	-	-	14	-	-	20	-	-	-	-	-	-
Peas whole, fresh, roasted	3	12	10	-	-	-	-	15	11	-	-	-
Vetch, flour	1	4	7	7	6	9	-	4	7	1	3	4
Meat, fish and eggs												
Egg whole, raw	-	35	16	-	16	-	28	43	43	-	22	25
Starchy roots and plants												
False banana, flour	-	-	-	-	-	-	-	-	-	-	39	48
False banana, kocho	-	-	-	-	-	-	-	-	69	-	70	55
Potato Irish, boiled	-	-	-	-	-	40	-	-	142	-	106	120
Potato Irish, raw	-	-	-	-	38	32	13	41	48	-	79	43
Taro, boiled	-	-	-	-	-	-	-	-	-	-	-	104
Vegetables												
Chili, boiled	-	-	-	-	1	2	-	-	-	-	-	-
Ethiopian kale, raw	-	-	-	-	-	-	-	-	45	-	29	27
Green pepper, raw	-	-	1	-	-	7	-	4	6	-	11	4
Onion bulb, raw or boiled	-	2	8	-	-	9	-	9	12	-	-	-
Onion shallot, raw	4	6	7	10	4	15	13	12	9	-	4	5
leek, raw	-	-	-	-	8	-	-	-	-	-	-	4
Tomato, raw	8	7	12	-	6	18	-	18	15	-	-	-

Supplemental Table 4-Table 15

Supplemental Table 4. The optimal¹, best-case scenario² and worst-case scenario³ of the baseline diet, the worst-case scenario for the food based recommendations and each alternative combination expressed as a percentage of the recommended nutrient intake in 6 to 8 mo. infants of Tigray region.

	Protein	Fat	Calcium	Vit. C	Vit B-1	Vit. B-2	Niacin	Vit. B-6	Folate	Vit. B-12	Vit. A	Iron ⁴	Zinc ⁵	N ⁶
Baseline diet ⁷	129.7	160.5	82.4	124.5	126.1	147.7	104.1	100	111.6	122.1	114.6	37.1	24.1	11
best-case scenario ⁸	137.4	169.8	82.7	125.1	127.5	148.6	106.3	101.3	112.8	122.2	114.9	37.4	25.1	11
worst-case scenario	107.2	145.4	54.4	109.9	44.4	66.1	39.2	40.9	48.7	47.6	100.5	5.4	17.4	4
FBDR ⁹	115.1	159.5	80.7	113.7	111.7	140.9	93.7	80.8	98.4	121.9	114	31.5	22.4	11
CF 3.5 s/wk. ¹⁰	114.7	145.2	56	110.2	56.3	71.8	48.1	52.2	78.2	47.6	100.5	14.6	18.1	6
CF 7 s/wk.	134.7	145.8	58.5	110.5	74.8	80.6	61.8	69.7	110.6	47.7	100.6	26.7	21.1	7
MNP 3.5 s/wk.	107.2	145.4	54.4	159.9	127.7	128.6	114.2	124.2	142.5	111.9	100.5	21.5	41.8	10
MNP 7 s/wk.	107.2	145.4	54.4	209.9	211.1	191.1	189.2	207.6	236.2	176.2	100.5	37.6	66.2	10
sq-LNS 3.5 s/wk.	101.6	167.4	88.3	159.8	85.2	111.6	82.6	80.9	94.2	83.1	150.5	18.2	62.4	11
sq-LNS 7 s/wk.	104.3	189.9	122.7	209.8	130.9	159.4	129.2	124.3	141.2	118.6	200.5	33.3	108.6	12
FBDR+ CF 2 s/wk.	129.6	159.9	82.3	113.9	122.9	146.3	102.2	91.9	117.5	121.9	114	38.6	24.4	11
FBDR+MNP 3.5 s/wk.	115.1	159.5	80.7	163.7	194.9	203.4	168.7	164.1	192.2	186.2	114	47.7	46.8	11
FBDR+ MNP 7 s/wk.	115.1	159.5	80.7	213.7	278.3	265.9	243.7	247.4	285.9	250.5	114	63.8	71.2	12
FBDR+ sq-LNS 2 s/wk.	97.4	120.9	172.5	100.6	142.3	138.9	121.4	107.5	126.3	142.2	142.5	40.5	49.4	11
FBDR+CF2 s/wk.+ MNP 3.5 s/wk.	129.6	159.9	82.3	163.9	206.2	208.8	177.2	175.3	211.3	186.2	114	54.7	48.8	11

¹ The optimal diet formulated by using goal programming (Optifood module II)

² Each diet sequentially maximizes each micronutrient (Optifood module III)

³ Each diet sequentially minimizes each micronutrient (Optifood module III)

⁴ Recommended nutrient intake for iron assuming 5% absorption

⁵ Recommended nutrient intake for zinc assuming low absorption.

⁶ Number of nutrients to cover at least 70% of the recommended nutrient intake in the worst-case scenario.

⁷ Nutritionally best possible diet (Optifood module II).

⁸ Diet sequentially maximizes each nutrient (Optifood module III).

⁹ Set of food based dietary recommendations selected.

¹⁰ s/wk.=number of servings per week.

Online Supporting Material

FBDR+CF 2 s/wk. +MNP 7 s/wk. ¹	129.6	159.9	82.3	213.9	289.5	271.3	252.2	258.6	305	250.5	114	70.9	73.2	13
FBDR+ CF1 s/wk. + sq-LNS 1 s/wk.	125.2	166.2	91.5	128.1	130.9	157.6	111.8	99.7	121.9	132.1	128.3	39.6	36.9	11

Supplemental Table 5. The optimal², best-case scenario³ and worst-case scenario⁴ of the baseline diet, the worst-case scenario for the food based recommendation and alternative combinations expressed as a percentage of the recommended nutrient intake in 9 to 11 mo. infants of Tigray region.

	Protein	Fat	Calcium	Vit C	Vit B-1	Vit B-2	Niacin	Vit B-6	Folate	Vit B-12	Vit A	Iron ⁵	Zinc ⁶	N ⁷
Baseline diet ⁸	177.3	153.5	75.9	121.8	100	134.5	57.6	105	148.6	122	132.7	71.9	33.2	11
best-case scenario ⁹	194.3	187.9	92.9	130.1	108.5	174.9	71.1	119.1	157	164.6	139.6	74.1	35.7	12
worst-case scenario	112.5	124.3	52.3	102.5	59.8	68.3	38.9	55.4	53	44.8	93.8	11.3	18.6	4
FBDR ¹⁰	153.6	156.1	88.9	127.5	82.3	145.8	47.2	80.4	125.6	115.6	106.2	60	29.5	10
CF 3.5 s/wk. ¹¹	118.1	123.6	53.5	102.9	67	72.4	50.5	64.2	81.7	44.8	93.8	19	19.2	6
CF 7 s/wk.	126.8	123.7	55.3	103.2	77.3	79	62.4	75.1	110.8	44.8	93.9	27.6	21.1	8
MNP 3.5 s/wk.	112.5	124.3	52.3	152.5	143.1	130.8	113.9	138.7	146.8	109.1	93.8	27.5	43.1	10
MNP 7 s/wk.	112.5	124.3	52.3	202.5	226.5	193.3	188.9	222	240.5	173.4	93.8	43.6	67.5	10
sq-LNS 3.5 s/wk.	104.9	143.8	85.9	152.5	97.1	112.6	84.9	93.6	98	80.3	143.8	23.1	63.5	11
sq-LNS 7 s/wk.	104.9	163.5	119.9	202.5	136.4	158.7	131.1	132.7	143	115.8	193.8	35.2	109.1	12
FBDR+ CF 1 s/wk.	161.2	156.3	89.7	127.6	88.5	148.8	51.9	86.8	135.5	115.6	106.2	63.7	30.6	10
FBDR+MNP 3.5 s/wk.	153.6	156.1	88.9	177.5	165.7	208.3	122.2	163.7	219.4	179.9	106.2	76.2	53.9	12
FBDR+ MNP7 s/wk.	153.6	156.1	88.9	227.5	249	270.8	197.2	247	313.1	244.2	106.2	92.3	78.3	13

¹Best alternative option

² The optimal diet formulated by using goal programming (Optifood module II)

³ Each diet sequentially maximizes each micronutrient (Optifood module III)

⁴ Each diet sequentially minimizes each micronutrient (Optifood module III)

⁵ Recommended intake for iron assuming 5% absorption.

⁶ Recommended intake for zinc assuming low absorption.

⁷ Number of nutrients that cover at least 70% of the recommended nutrient intake in the worst case scenario.

⁸ Nutritionally best possible diet (Optifood module II)

⁹ Diet sequentially maximizes each nutrient (Optifood module III).

¹⁰ Set of food based dietary recommendations selected.

¹¹ s/wk.=number of servings per week.

¹⁰ NP= Combination not possible due to energy constraints

Online Supporting Material

FBDR+ MNP 6 s/wk. ¹	153.6	156.1	88.9	213.2	225.2	252.9	175.8	223.2	286.3	225.8	106.2	87.7	71.4	13
FBDR+ sq-LNS 1 s/wk.	157.3	162	98.9	141.8	96.6	160	61.5	94.6	139.9	125.8	120.5	64.7	43.1	10
FBDR+ CF1 s/wk. + MNP3.5 s/wk.	188.2	170.2	89.4	170.8	167.9	225.6	121.4	171.1	241.9	228.6	139.1	75.1	54.5	12
FBDR+ CF1 s/wk. + MNP 7 s/wk.	188.2	170.2	89.4	220.8	251.2	288.1	196.4	254.4	335.7	292.9	139.1	91.2	78.9	13
FBDR+ CF 1 s/wk. + MNP 6 s/wk.	188.2	170.2	89.4	206.5	227.4	270.3	175	230.6	308.9	274.5	139.1	86.6	71.9	13
FBDR+ CF+ sq-LNS	NP ²	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP

Supplemental Table 6. The optimal³, best-case scenario⁴ and worst-case scenario⁵ of the baseline diet; the worst-case scenario for the food based recommendations and alternative combinations expressed as a percentage of the recommended nutrient intake in 12 to 23 mo. infants of Tigray region.

	Protein	Fat	Calcium	Vit C	Vit B-1	Vit B-2	Niacin	Vit B-6	Folate	Vit B-12	Vit A	Iron ⁶	Zinc ⁷	N ⁸
Baseline diet ⁹	212.3	121.6	100	177.6	95.7	146.4	59.4	108	81.7	100	111.2	100	64.8	11
best-case scenario ¹⁰	223.2	137.8	109.9	193.9	117.3	161.4	86.1	127.7	87.1	101.4	111.8	144.3	70.4	13
worst-case scenario	143.4	90.5	40.9	91.4	59.5	61.1	37.1	65.8	35.7	31.9	83.6	39.9	24.4	4
FBDR ¹¹	213.4	119.5	70.6	114.8	99.8	140	70.4	89.8	74.5	99.9	110.2	86.3	45.7	12
CF 3.5 s/wk. ¹²	152.1	89.5	41.6	91.9	62.1	66	45.2	67.65	57.45	31.9	83.7	57.25	24.25	4
CF 7 s/wk.	165.1	89.7	43.4	92.4	68.5	72.4	55.7	72	80.4	31.9	83.7	76.7	26.7	8
MNP 3.5 s/wk.	143.4	90.5	40.9	141.4	109.5	111.1	87.1	115.8	85.7	81.9	83.6	65.7	49.1	10
MNP 7 s/wk.	143.4	90.5	40.9	191.4	159.5	161.1	137.1	165.8	135.7	131.9	83.6	91.6	73.8	12
sq-LNS 3.5 s/wk.	136.1	105.6	67.3	141.4	79.6	96.1	65.7	85.1	58.5	59.4	133.6	57.7	69.1	7
sq-LNS 7 s/wk.	136.1	120.8	93.8	191.4	100.3	132.5	94.6	105	82.5	87	183.6	76.7	114.2	13

¹ Best alternative option

² NP= Combination not possible due to energy constraints

³ The optimal diet formulated by using goal programming (Optifood module II)

⁴ Each diet sequentially maximizes each micronutrient (Optifood module III)

⁵ Each diet sequentially minimizes each micronutrient (Optifood module III)

⁶ Recommended nutrient intake for iron assuming 5% absorption.

⁷ Recommended nutrient intake for zinc assuming low absorption.

⁸ Number of nutrients that cover at least 70% of the recommended nutrient intake in the worst-case scenario

⁹ Nutritionally best possible diet (Optifood module II)

¹⁰ Diet sequentially maximizes each nutrient (Optifood module III).

¹¹ Set of food based dietary recommendations selected.

¹² s/wk.=number of servings per week

Online Supporting Material

FBDR+ CF	NP ¹	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	0
FBDR+ MNP 3.5 s/wk. ²	213.4	119.5	70.6	164.8	149.8	190	120.4	139.8	124.5	149.9	110.2	112.1	70.4	13
FBDR+ MNP 7 s/wk.	213.4	119.5	70.6	214.8	199.8	240	170.4	189.8	174.5	199.9	110.2	138	95.1	13
FBDR+ sq-LNS 1 s/wk.	216.8	124.2	78.6	129.1	108.3	151.4	79.9	98.3	82.1	107.8	124.5	93.7	59.4	12
FBDR+CF +MNP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	0
FBDR+ CF+ sq-LNS	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	0

Supplemental Table 7. The optimal,³ best-case scenario⁴ and worst-case scenario⁵ of the baseline diet; the worst-case scenario for the food based recommendations and alternative combinations expressed as a percentage of the recommended nutrient intake in 6 to 8 mo. infants of Amhara region.

	Protein	Fat	Calcium	Vit. C	Vit B-1	Vit B-2	Niacin	Vit. B-6	Folate	Vit. B-12	Vit. A	Iron ⁶	Zinc ⁷	N ⁸
Baseline ⁹	133.3	159.8	78	116.6	102.1	130.6	81	91.9	99.1	103.6	110.4	34	21.4	11
best-case scenario ¹⁰	150.4	189.7	97.8	123.6	103.8	173.9	81.5	93.2	99.2	157	119.2	34.6	24.1	11
worst-case scenario	110.1	147.4	61.3	111.1	51.5	82.5	36.7	45.4	50.8	55.1	101.8	9.1	17.2	5
FBDR ¹¹	148	184.3	96.7	121	91.3	172.3	71.1	70.2	89	156.7	118.9	21.6	22.8	11
CF 3.5 s/wk. ¹²	114.1	144.9	55.5	110.8	58.3	72.6	46.6	52.5	77.2	47.6	100.6	12.3	18	6

¹ NP= Combination not possible due to energy constraints

² Best alternative option

³ The optimal diet formulated by using goal programming (Optifood module II)

⁴ Each diet sequentially maximizes each micronutrient (Optifood module III)

⁵ Each diet sequentially maximizes each micronutrient (Optifood module III)

⁶ Recommended nutrient intake for iron assuming 5% absorption

⁷ Recommended nutrient intake for zinc assuming low absorption

⁸ Number of nutrients to cover at least 70% of the recommended nutrient intake in the worst-case scenario.

⁹ Nutritionally best possible diet (Optifood module II)

¹⁰ Diet sequentially maximizes each nutrient (Optifood module III).

¹¹ Set of food based dietary recommendations selected

¹² s/wk.=number of servings per week

Online Supporting Material

CF 7 s/wk.	133	145.8	57	111.7	70.3	78.1	58.7	65.5	106.2	47.7	100.6	17.8	21.7	7
MNP 3.5 s/wk.	110.1	147.4	61.3	161.1	134.8	145	111.7	128.8	144.6	119.4	101.8	25.5	41.6	10
MNP 7 s/wk.	110.1	147.4	61.3	211.1	218.1	207.5	186.7	212.1	238.3	183.7	101.8	41.4	66	10
sq-LNS 3.5 s/wk.	102.1	166.8	88.6	159.9	90.8	115.7	82.7	84.2	95.8	83.1	150.5	20.9	61.7	11
sq-LNS 7 s/wk.	103.9	188.9	122.7	209.8	131	159.5	129.2	124.4	141.2	118.6	200.5	33.3	108.6	12
FBDR+ CF	NP ¹	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	0
FBDR+ MNP 3.5 s/wk.	148	184.3	96.7	121	91.3	172.3	71.1	70.2	89	156.7	118.9	21.6	22.8	11
<i>FBDR+ MNP 7 s/wk.²</i>	148	184.3	96.7	221	257.9	297.3	221.1	236.9	276.5	285.3	118.9	53.8	71.6	12
FBDR+ sq-LNS	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	0
FBDR+CF +MNP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	0
FBDR+ CF+ sq-LNS	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	0

¹ NP= Combination not possible due to energy constraints

² Best alternative option

Supplemental Table 8. The optimal¹, best-case scenario² and worst-case scenario³ of the baseline diet; the worst-case scenario for the food based recommendations and alternative combinations expressed as a percentage of the recommended nutrient intake for 9 to 11 mo. infants of Amhara region.

	Protein	Fat	Calcium	Vit. C	Vit B-1	Vit B-2	Niacin	Vit. B-6	Folate	Vit. B-12	Vit. A	Iron ⁴	Zinc ⁵	N ⁶
Baseline ⁷	152.4	145.3	74.4	130.1	98.4	132.6	68.4	128.6	100	100	114.8	51.7	26.9	10
best-case scenario ⁸	179	171.6	90.2	138.5	107.8	164.4	76.5	140.2	108.3	136.4	120.9	54.5	32.9	11
worst-case scenario	104.1	122.9	51.6	102.5	59.7	68.3	42	55.4	53	44.8	93.8	11.3	18.3	4
FBDR ⁹	144.6	153.6	86.8	129.3	91.1	153.4	62.9	117.3	82	113.8	104.8	42.8	24.7	10
CF 3.5 s/wk. ¹⁰	115.5	123.3	53	103.7	66.7	72.1	52.8	64.2	86.1	44.9	93.9	15.2	19.7	6
CF 7 s/wk.	131.4	124	54.7	104.9	80.4	80	65.3	77.5	120.7	44.9	93.9	22.3	22.9	8
MNP 3.5 s/wk.	104.1	122.9	51.6	152.5	143	130.8	117	138.7	146.7	109.1	93.8	27.4	42.7	10
MNP 7 s/wk.	104.1	122.9	51.6	202.5	226.4	193.3	192	222.1	240.5	173.4	93.8	43.5	67.1	10
sq-LNS 3.5 s/wk.	102.4	142.7	85.7	152.5	97.4	112	86.4	94.2	98	80.3	143.8	23.1	63.2	11
sq-LNS 7 s/wk.	102.4	162.8	119.9	202.5	136.7	159.1	132.4	133.6	143.1	115.8	193.8	35.2	108.8	12
FBDR+ CF	NP ¹¹	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	0
FBDR+ MNP 3.5 s/wk.	144.6	153.6	86.8	179.3	174.4	215.9	137.9	200.7	175.7	178.1	104.8	59	49.1	11
FBDR+ MNP 7 s/wk. ¹²	144.6	153.6	86.8	229.3	257.7	278.4	212.9	284	269.5	242.4	104.8	75.1	73.5	13
FBDR+ sq-LNS	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	0
FBDR+CF +MNP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	0
FBDR+ CF+ sq-LNS	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	0

¹ The optimal diet formulated by using goal programming (Optifood module II).² Each diet sequentially maximizes each micronutrient (Optifood module III).³ Each diet sequentially minimizes each micronutrient (Optifood module III).⁴ Recommended nutrient intake for iron assuming a 5% absorption⁵ Recommended nutrient intake for zinc assuming low absorption⁶ Number of nutrient to cover at least 70% of the recommended nutrient intake in the worst-case scenario.⁷ Nutritionally best possible diet (Optifood module II)⁸ Diet sequentially maximizes each nutrient (Optifood module III).⁹ Set of food based dietary recommendation selected¹⁰ s/wk=number of Servings per week¹¹ NP= Combination not possible due to energy constraints¹² Best alternative option

Supplemental Table 9. The optimal¹, best-case scenario² and worst-case scenario³ of the baseline diet; the worst-case scenario for the food based recommendations and alternative combinations expressed as a percentage of the recommended nutrient intake for 12 to 23 mo. children from Amhara region.

	Protein	Fat	Calcium	Vit. C	Vit B-1	Vit B-2	Niacin	Vit. B-6	Folate	Vit. B-12	Vit. A	Iron ⁴	Zinc ⁵	N ⁶
Baseline ⁷	214.5	117.2	77.7	135.3	98.5	145.6	67.8	111.5	99.1	84.2	95.6	168.1	37.1	11
best-case scenario ⁸	224.4	130.7	78.4	141.2	106.1	148.9	71.8	125.5	99.8	84.3	95.7	173.9	42.4	12
worst-case scenario	151.9	91.1	45.8	94.3	65.1	72.9	41.6	64.6	40.3	31.9	83.6	45.7	24.1	5
FBDR ⁹	192.6	113.7	74.1	134.2	82.3	136.9	60.4	101	88.1	84.2	95.5	143.7	29.2	11
CF 3.5 s/wk. ¹⁰	147.5	90.2	41.7	93.1	63.2	68.1	47.4	62.5	56.4	31.9	83.7	48.3	24.2	4
CF 7 s/wk.	159.2	90.3	41.9	94.3	65.6	69.6	54.2	66.3	77.5	31.9	83.8	54.9	26.1	6
MNP 3.5 s/wk.	151.9	91.1	45.8	144.3	115.1	122.9	92.6	114.6	90.3	81.9	83.6	71.6	48.8	11
MNP 7 s/wk.	151.9	91.1	45.8	194.3	165.1	172.9	141.6	164.6	140.3	131.9	83.6	97.4	73.5	12
sq-LNS 3.5 s/wk.	132.1	106	69.1	142.7	83.7	104.2	70	83.2	60.4	59.4	133.6	61	68.8	8
sq-LNS 7 s/wk.	132.1	121.2	95	191.6	103.7	136	98.4	102.2	83.2	87	183.6	78.3	113.7	13
FBDR+ CF 2 s/wk.	213.4	114.6	75.5	135	92.2	143.1	68.8	111.4	103	84.2	95.5	155.2	32.8	11
FBDR+ MNP 3.5 s/wk.	192.6	113.7	74.1	184.2	132.3	186.9	110.4	151	138.1	134.2	95.5	169.6	53.9	12
FBDR+MNP 7 s/wk.	192.6	113.7	74.1	234.2	182.3	236.9	160.4	201	188.1	184.2	95.5	195.4	78.6	13
FBDR+ MNP 6 s/wk.	192.6	113.7	74.1	219.9	168	222.6	146.1	186.7	173.8	169.9	95.5	188	71.5	13
<i>FBDR+ sq-LNS 3 s/wk.¹¹</i>	202.9	127.7	98.1	177.1	107.8	171	88.9	126.5	111	107.8	138.3	165.9	70.5	13
FBDR+CF 2 s/wk. +MNP 3.5 s/wk.	213.4	114.6	75.5	185	142.2	193.1	118.8	161.4	153	134.2	95.5	181.1	57.5	12

¹ The optimal diet formulated by using goal programming (Optifood module II).

² Each diet sequentially maximizes each micronutrient (Optifood module III)

³ Each diet sequentially minimizes each micronutrient (Optifood module III)

⁴ Recommended nutrient intake for iron assuming 5% absorption

⁵ Recommended nutrient intake for zinc assuming low absorption

⁶ Number of nutrients to cover at least 70% of the recommended nutrient intake of the worst-case scenario.

⁷ Nutritionally best possible diet (Optifood module II)

⁸ Diet sequentially maximizes each nutrient (Optifood module III).

⁹ Set of food based dietary recommendations selected

¹⁰ s/wk=number of servings per week

¹¹ Best alternative option

Online Supporting Material

FBDR+CF 2 s/wk. +MNP 7 s/wk.	213.4	114.6	75.5	235	192.2	243.1	168.8	211.4	203	184.2	95.5	206.9	82.2	13
FBDR+CF 2 s/wk. +MNP 6 s/wk.	213.4	114.6	75.5	220.7	177.9	228.8	154.5	197.1	188.7	169.9	95.5	199.5	75.1	13
FBDR+ CF1 s/wk. + sq-LNS 2	209.9	123.5	90.8	163.2	104.3	162.7	83.6	123.2	110.8	100	124.1	164.2	58.6	13

Supplemental Table 10. The optimal¹, best-case² and worst-case scenario³ of the baseline diet; the worst-case scenario for the food based recommendations and alternative combinations expressed as a percentage of the recommended nutrient intake in children from 6 to 8 mo. of Oromia region.

	Protein	Fat	Calcium	Vit. C	Vit B-1	Vit B-2	Niacin	Vit. B-6	Folate	Vit. B-12	Vit. A	Iron ⁴	Zinc ⁵	N ⁶
Baseline ⁷	144.6	164.3	69.1	125.3	74.5	105.8	45.9	100	90.2	100	129.3	38.4	23.3	9
best-case scenario ⁸	168	205.3	97.8	134.3	81	165.5	61	109.2	94.3	161.5	139.3	45.2	28.8	10
worst-case scenario	83.8	143.7	53.2	109.9	34.9	62.1	31.6	29.3	44.3	47.6	100.5	2.3	13.8	4
FBDR ⁹	130	167.3	78.4	126.8	67.9	118.3	46.5	77.7	67.3	95	108.1	30.5	21.2	8
CF3.5 s/wk. ¹⁰	98.9	144.6	54.7	111.6	51.2	65.5	36.6	42.3	68	47.6	100.6	12.6	16.2	4
CF 7 s/wk.	122.6	147.1	56.6	113.3	71.3	71.3	44	59.8	94.8	47.6	100.7	24.2	19.2	7
MNP 3.5 s/wk.	83.8	143.7	53.2	159.9	118.3	124.6	106.6	112.7	138.1	111.9	100.5	18.5	38.2	10
MNP 7 s/wk.	83.8	143.7	53.2	209.9	201.6	187.1	181.6	196	231.8	176.2	100.5	34.6	62.6	10
sq-LNS 3.5 s/wk.	89.6	165.7	87.8	159.8	81.1	109.6	79.2	74.6	91.4	83.1	150.5	17.2	61	11
sq-LNS 7 s/wk.	103.9	188.8	122.7	209.8	130.8	159.4	129.2	124.2	141.2	118.6	200.5	33.3	108.6	12
FBDR+ CF	NP ¹¹	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	0
FBDR+ MNP 3.5 s/wk.	130.2	167.3	78.5	176.8	151.6	180.5	121.6	161.2	161.2	159.3	108.1	46.3	46.1	11
FBDR+ MNP 7 s/wk. ¹²	130.2	167.3	78.5	226.8	234.9	243	196.6	244.5	254.9	223.5	108.1	62.4	64.8	11
FBDR+ sq-LNS	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	0
FBDR+CF +MNP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	0
FBDR+ CF+ sq-LNS	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	0

¹ The optimal diet formulated by using goal programming (Optifood module II).

² Each diet sequentially maximizes each micronutrient (Optifood module III).

³ Each diet sequentially minimizes each micronutrient (Optifood module III).

⁴ Recommended nutrient for iron intake assuming 5% absorption

⁵ recommended nutrient intake for zinc assuming low absorption

⁶ Number of nutrient to cover at least 70% of the recommended nutrient intake in the worst-case scenario.

⁷ Nutritionally best possible diet (Optifood module II)

⁸ Diet sequentially maximizes each nutrient (Optifood module III).

⁹ Set of food based dietary recommendations selected

¹⁰ s/wk=number of servings per week

¹¹ NP= Combination not possible due to energy constraints

¹² Best alternative option

Supplemental Table 11. The optimal¹, best-case scenario² and worst-case scenario³ of the baseline diet; the worst-case scenario for the food based recommendations and alternative combinations expressed as a percentage of the recommended nutrient intake for infants of 9 to 11 mo. in Oromia region.

	Protein	Fat	Calcium	Vit. C	Vit B-1	Vit B-2	Niacin	Vit. B-6	Folate	Vit. B-12	Vit. A	Iron ⁴	Zinc ⁵	N ⁶
Baseline ⁷	181.8	161	80.3	133.3	100	155.1	65.8	111.6	105.8	146.2	142.8	44.8	35.2	10
best-case scenario ⁸	202	218	113.7	167.7	114.2	221.5	99.5	166.8	133.6	232.7	155.8	51	37.9	11
worst-case scenario	75.8	122	49.9	102.5	36.2	59.6	31.6	33.9	43.6	44.8	93.8	2.8	14.2	4
FBDR ⁹	148.2	154	86.5	131.3	87.9	147.6	63.5	91	79.8	113	105.8	31	29.9	10
CF3.5 s/wk. ¹⁰	86.2	123	51.3	104.2	50.5	62.4	35.2	42.5	66	44.8	93.9	12.8	15.4	4
CF 7 s/wk.	105.8	124	53.1	105.9	69.4	67.5	42	58.5	92.1	44.8	94	24.1	18.2	5
MNP 3.5 s/wk.	75.8	122	49.9	152.5	119.5	122.1	106.6	117.3	137.3	109.1	93.8	18.9	38.6	10
MNP 7 s/wk.	75.8	122	49.9	202.5	202.9	184.6	181.6	200.6	231.1	173.4	93.8	35.1	63	10
sq-LNS 3.5 s/wk.	79.6	142	84.4	152.5	81.4	107	78.5	76.4	89.9	80.3	143.8	17.6	60.4	11
sq-LNS 7 s/wk.	89	162	119.3	202.5	129.1	155.7	127.3	123	138.6	115.8	193.8	33.3	107.7	12
FBDR+ CF 1 s/wk.	154.3	154	87	131.8	93.7	149.3	65.6	96.1	87.4	113	105.8	34.3	30.7	10

¹ The optimal diet formulated by using goal programming (Optifood module II).

² Each diet sequentially maximizes each micronutrient (Optifood module III).

³ Each diet sequentially minimizes each micronutrient (Optifood module III).

⁴ Recommended nutrient intake for iron assuming 5% absorption

⁵ Recommended nutrient intake for zinc assuming low absorption

⁶ Number of nutrient to cover at least 70% of the recommended nutrient intake in the worst-case scenario.

⁷ Nutritionally best possible diet (Optifood module II)

⁸ Diet sequentially maximizes each nutrient (Optifood module III).

⁹ Set of food based dietary recommendations selected

¹⁰ s/wk=number of servings per week

Online Supporting Material

FBDR+ MNP 3.5 s/wk.	148.2	153	86.5	181.3	171.2	210.1	138.5	174.3	173.5	177.3	105.8	47.1	54.3	11
FBDR+ MNP 7 s/wk.	148.2	153	86.5	231.3	254.5	272.6	213.5	257.7	267.3	241.6	105.8	63.2	78.7	12
FBDR+ sq-LNS 1 s/wk.	151.9	159	96.5	145.6	102.2	161.8	77.7	105.3	94.1	123.3	120	35.6	43.5	11
FBDR+CF1 s/wk. +MNP 3.5 s/wk.	154.3	154	87	181.8	177	211.8	140.6	179.4	181.2	177.3	105.8	50.4	55.1	11
FBDR+CF 1 s/wk. +MNP 7 s/wk. ¹	154.3	154	87	231.8	260.3	274.3	215.6	262.7	274.9	241.6	105.8	66.5	79.5	12
FBDR+ CF+ sq-LNS	NP ²	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	0

Supplemental Table 12. The optimal³, best-case scenario⁴ and worst-case scenario⁵ of the baseline diet; the worst-case scenario for the food based recommendations and alternative combinations expressed as a percentage of the recommended nutrient intake in 12 to 23 mo. children of Oromia region.

	Protein	Fat	Calcium	Vit. C	Vit B-1	Vit B-2	Niacin	Vit. B-6	Folate	Vit. B-12	Vit. A	Iron ⁶	Zinc ⁷	N ⁸
Baseline ⁹	248.5	130.5	100	159.8	103.4	185.5	75.1	120	100	131.4	223.4	134.9	46.9	12
best-case scenario ¹⁰	265.2	170.3	118.3	192	115.5	225.8	95.5	162.8	104.5	171.4	231.5	162.3	53.4	12
worst-case scenario	120.7	90.7	38.8	91.4	56.5	58.2	32.7	59.7	34.3	31.8	83.6	42.4	22.2	3
FBDR ¹¹	239.3	125.4	92.6	152	99.6	174.2	76.1	112.6	96.7	120.8	221.1	120.5	42.6	12
CF3.5 s/wk. ¹²	126	90.8	39.6	94	58	57	34.3	56.5	50.7	31.8	83.7	55	21.3	4
CF 7 s/wk.	132.7	91.4	40.8	96.5	64.1	59.9	36.7	59.9	67.2	31.8	83.8	69.8	22.5	4
MNP 3.5 s/wk.	120.7	90.7	38.8	141.4	106.5	108.2	82.7	109.7	84.3	81.8	83.6	68.2	46.9	10

¹ Best alternative option

² NP= Combination not possible due to energy constraints

³ The optimal diet formulated by using goal programming (Optifood module II).

⁴ Each diet sequentially maximizes each micronutrient (Optifood module III)

⁵ Each diet sequentially minimizes each micronutrient (Optifood module III)

⁶ Recommended nutrient intake for iron assuming 5% absorption

⁷ Recommended nutrient intake for zinc assuming low absorption

⁸ Number of nutrients that cover at least 70% of the recommended nutrient intake in the worst-case scenario.

⁹ Nutritionally best possible diet (Optifood module II)

¹⁰ Diet sequentially maximizes each nutrient (Optifood module III).

¹¹ Set of food based dietary recommendations selected

¹² Number of servings per week

Online Supporting Material

MNP 7 s/wk.	120.7	90.7	38.8	191.4	156.5	158.2	132.7	159.7	134.3	131.8	83.6	94.1	71.6	12
sq-LNS 3.5 s/wk.	118.8	105.9	65.9	141.4	77.5	92.7	62.6	78.7	58.3	59.4	133.6	60	67.3	7
sq-LNS 7 s/wk.	118.8	121.2	93.2	191.4	99	129.4	93.3	99.7	82.3	87	183.6	78.2	113	13
FBDR+ CF 1 s/wk.	244.4	126.1	93.7	152.7	103.5	173.9	75.1	114.7	102.4	120.8	221.1	131.2	44.6	12
FBDR+MNP3.5 s/wk.	239.3	125.4	92.6	202	149.6	224.2	126.1	162.6	146.7	170.8	221.1	146.4	67.3	12
FBDR+MNP 7 s/wk.	239.3	125.4	92.6	252	199.6	274.2	176.1	212.6	196.7	220.8	221.1	172.3	92	13
FBDR+ MNP 4 s/wk. ¹	239.3	125.4	92.6	209.1	156.8	231.3	133.3	169.8	153.8	177.9	221.2	150.1	70.8	13
FBDR+ sq-LNS 1 s/wk.	242.8	130.2	100.6	166.3	108.2	185.6	85.7	121.2	104.3	128.7	235.4	127.9	56.4	12
FBDR+CF1 s/wk. +MNP 3.5 s/wk.	242.1	126.8	92.9	202.7	151.3	223.3	124.2	162.9	151.2	170.8	221.1	151.5	68.1	12
FBDR+CF1 s/wk. +MNP7 s/wk.	242.1	125.8	92.9	252.7	201.3	273.3	174.2	212.9	201.2	220.8	221.1	177.4	92.8	13
FBDR+ CF+ sq-LNS	NP ²	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	0

Supplemental Table 13. The optimal³, best-case scenario⁴ and worst-case scenario⁵ of the baseline diet; the worst-case scenario for the food based diet recommendations and alternative combinations expressed as a percentage of the recommended nutrient intake in 6 to 8 mo. children of SNNP region

	Protein	Fat	Calcium	Vit. C	Vit B-1	Vit B-2	Niacin	Vit. B-6	Folate	Vit. B-12	Vit. A	Iron ⁶	Zinc ⁷	N ⁸
Baseline ⁹	161.5	155.5	100	110.4	76.8	152.6	44.2	66.4	84.3	121.8	101.2	42.5	30	9
best-case scenario ¹⁰	220.4	201.2	130.6	121.1	85.1	228.6	53.2	76.8	90.2	189.9	118.2	43.7	32.6	10

¹ Best alternative option

² NP= Combination not possible due to energy constraints

³ The optimal diet formulated by using goal programming (Optifood module II).

⁴ Each diet sequentially maximizes each micronutrient (Optifood module III)

⁵ Each diet sequentially minimizes each micronutrient (Optifood module III)

⁶ Recommended nutrient intake for iron assuming 5% absorption

⁷ Recommended nutrient intake for zinc assuming low absorption

⁸ Number of nutrient that cover at least 70% of the recommended nutrient intake in the worst-case scenario.

⁹ Nutritionally best possible diet (Optifood module II)

¹⁰ Diet sequentially maximizes each nutrient (Optifood module III).

Online Supporting Material

worst-case scenario	93.9	144.9	53.6	109.9	43.7	64.5	34	38.1	47.1	47.6	100.5	6.8	16.3	4
FBDR ¹	150.8	154.6	95.1	110.1	71.9	146.1	41.5	59.4	76	118.3	101.1	35.2	28.3	9
CF3.5 s/wk. ²	100.9	145.3	54.3	112	47.9	66.2	37.4	40	67.4	47.6	100.6	6.5	16.9	4
CF 7 s/wk.	124.6	147.4	55.5	114.1	63.9	71.8	45.2	55	93.1	47.6	100.7	11	20.4	7
MNP 3.5 s/wk.	93.9	144.9	53.6	159.9	127.1	127	109	121.4	140.9	111.9	100.5	22.9	40.7	10
MNP 7 s/wk.	93.9	144.9	53.6	209.9	210.4	189.5	184	204.8	234.6	176.2	100.5	39	65.1	10
sq-LNS 3.5 s/wk.	93.7	166.5	88	159.8	83.1	110.7	80.2	76.9	92.1	83.1	150.5	18.6	61.2	11
sq-LNS 7 s/wk.	103.9	188.8	122.7	209.8	130.8	159.4	129.2	124.2	141.2	118.6	200.5	33.3	108.6	12
FBDR+ CF 1 s/wk.	157.9	155.4	95.5	110.7	76.6	147.8	43.7	63.8	83.5	118.3	101.2	26.6	29.3	9
FBDR+ MNP 3.5 s/wk.	150.8	154.6	95.1	160.1	155.2	208.6	116.5	142.7	169.8	182.5	101.1	51.2	52.7	11
FBDR+ MNP 7 s/wk.	150.8	154.6	95.1	210.1	238.5	271.1	191.5	226	263.5	246.8	101.1	67.4	77.1	12
FBDR+ sq-LNS 1 s/wk.	154.9	161.3	105.1	124.4	86.1	160.3	55.7	73.6	90.3	128.4	115.4	39.8	41.9	10
FBDR+CF 1 s/wk. +MNP 3.5 s/wk.	150.8	154.6	95.1	160.1	155.2	208.6	116.5	142.7	169.8	182.5	101.1	51.3	52.7	11
FDBR+CF1 s/wk. +MNP 7 s/wk. ³	150.8	154.6	95.1	210.1	238.5	271.1	191.5	226	263.5	246.8	101.1	67.4	77.1	12
FBDR+ CF s/wk. + sq-LNS s/wk.	NP ⁴	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	0

Supplemental Table 14. The optimal⁵, best-case scenario⁶ and worst-case scenario⁷ of the baseline diet; the worst-case scenario for the food based recommendations and alternative combinations expressed as a percentage of the recommended nutrient in 9 to 11 mo. children of SNNP.

Protein	Fat	Calcium	Vit. C	Vit B-1	Vit B-2	Niacin	Vit. B-6	Folate	Vit. B-12	Vit. A	Iron ⁸	Zinc ⁹	N ¹⁰
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¹ Set of food based dietary recommendations selected.

² s/wk=number of servings per week

³ Best alternative option

⁴ NP= Combination not possible due to energy constraints

⁵ The optimal diet formulated by using goal programming (Optifood module II).

⁶ Each diet maximizes each micronutrient (Optifood module III)

⁷ Each diet minimizes each micronutrient (Optifood module III)

⁸ Recommended nutrient intake for iron assuming 5% absorption

⁹ Recommended nutrient intake for zinc assuming low absorption

¹⁰ Number of nutrient to reach at least 70% of the recommended nutrient intake in the worst case scenario.

Online Supporting Material

Baseline ¹	162.1	138.2	100.6	136	101.5	137.6	66.2	132.9	115.6	100	170.9	76.6	36.1	11
best-case scenario ²	211.8	192.8	130.6	163.5	121.7	219.5	86.5	191.4	161.4	174.7	185.8	81.3	40.4	12
worst-case scenario	84.1	121.3	50.9	102.5	48	63.9	32.6	52.9	49.6	44.8	93.8	10.6	15.5	4
FBDR ³	121.2	127.6	97.4	124.5	70.4	128	49	116.3	93	81.1	149.9	49.8	24.3	10
CF3.5 s/wk. ⁴	92.3	122.4	51.4	104.7	51.9	66.4	37	53.7	69.3	44.8	93.9	9.9	16.8	4
CF 7 s/wk.	108.2	124.4	52.1	106.8	63.3	69.2	43.3	55.3	91	44.8	94	11.3	19.5	5
MNP 3.5 s/wk.	84.1	121.3	50.9	152.5	131.3	126.4	107.6	136.2	143.3	109.1	93.8	26.7	39.9	10
MNP 7 s/wk.	84.1	121.3	50.9	202.5	214.6	188.9	182.6	219.6	237.1	173.4	93.8	42.9	64.3	10
sq-LNS 3.5 s/wk.	85.2	141.4	85.2	152.5	87.8	110.9	79.6	91.2	94.6	80.3	143.8	22.3	61.3	12
sq-LNS 7 s/wk.	90.6	161.9	119.5	202.5	131.8	158.1	127.4	130	140	115.8	193.8	34.2	107.9	12
FBDR+ CF 3.5 s/wk.	143.6	129.9	98.7	128.6	87.5	134.3	57.6	131.1	118.6	81.1	150	54.8	27.9	10
FBDR+ MNP 3.5 s/wk.	121.2	127.6	97.4	174.5	153.8	190.5	124	199.6	186.8	145.4	149.9	65.9	48.7	11
FBDR+ MNP 7 s/wk. ⁵	121.2	127.6	97.4	224.5	237.1	253	199	283	280.5	209.6	149.9	82.1	73.1	13
FBDR+ sq-LNS 1 s/wk.	124.8	133.5	107.4	138.8	84.6	142.2	63.3	130.3	107	91.2	164.2	54.4	37.9	9
FBDR+ sq-LNS 3.5 s/wk.	134	148.5	132.4	174.5	120.2	177.7	99	165.7	142.7	116.6	199.9	65.9	71.9	12
FBDR+CF3.5 s/wk. +MNP 3.5 s/wk.	143.6	129.9	98.7	178.6	170.8	196.8	132.6	214.4	212.4	145.4	150	71	52.3	12
FBDR+CF3.5 s/wk. +MNP 7 s/wk.	143.6	129.9	98.7	228.6	254.2	259.3	207.6	297.8	306.1	209.7	150	87.1	76.6	13
FBDR+ CF2 s/wk. + sq-LNS2 s/wk.	141.6	140.9	118.1	157.1	109.3	160.5	83.1	153.1	136.1	101.4	178.5	61.9	53.7	11

¹ Nutritionally best possible diet (Optifood module II)

² Diet sequentially maximizes each nutrient (Optifood module III).

³ Set of food based dietary recommendations selected.

⁴ s/wk=number of servings per week

⁵ Best alternative option

Supplemental Table 15. The optimal¹, best-case scenario² and worst-case scenario³ of the baseline diet; the worst-case scenario for the food based recommendations and alternative combinations expressed as a percentage of the recommended nutrient intake in 12 to 23 mo. children of SNNP region.

	Protein	Fat	Calcium	Vit. C	Vit B-1	Vit B-2	Niacin	Vit. B-6	Folate	Vit. B-12	Vit. A	Iron ⁴	Zinc ⁵	N ⁶
Baseline ⁷	250.7	109.4	100	122.5	109.6	170.8	96	117.5	100	100	141.6	128.1	62.1	1
best-case scenario ⁸	283.4	173	114.1	180.1	125.4	206.8	121.8	216.5	130.3	135.2	182.3	201.6	65.1	1
worst-case scenario	89.9	88.1	38.4	91.4	42.8	54.4	26.9	61	33.9	31.8	83.6	33	17	4
FBDR ⁹	243.6	113.6	77.7	93.4	100	159.6	81.4	101.1	96.6	120.9	111.6	108.4	57.9	12
CF3.5 s/wk. ¹⁰	102.6	88.9	38.7	94.6	45.6	56.7	29.5	52.5	49.6	31.8	83.7	33	19.4	4
CF 7 s/wk.	121.5	90.4	39.2	97.8	50.7	60	33.5	53.3	65.4	31.8	83.9	34.1	22.4	4
MNP 3.5 s/wk.	89.9	88.1	38.4	141.4	92.8	104.4	76.9	111	83.9	81.8	83.6	58.8	41.7	10
MNP 7 s/wk.	89.9	88.1	38.4	191.4	142.8	154.4	126.9	161	133.9	131.8	83.6	84.7	66.4	11
sq-LNS 3.5 s/wk.	90.9	103.6	65.5	141.4	66.4	91.3	57.2	70	57.9	59.4	133.6	51.9	63.6	6
sq-LNS 7 s/wk.	94.8	119.2	93	191.4	90.1	129	87.9	99	81.9	87	183.6	71.8	110.3	13
FBDR+ CF 1 s/wk.	252.5	114.4	78.2	94.4	104.2	161.7	83.7	105.1	102.5	120.9	111.6	111.9	59.5	12
FBDR+ MNP 3.5 s/wk. ¹¹	243.6	113.6	77.8	143.4	150	209.6	131.4	151.1	146.6	170.9	111.6	134.3	82.6	13
FBDR+ MNP 7 s/wk.	243.6	113.6	77.8	193.4	200	259.6	181.4	201.1	196.6	220.9	111.6	160.1	107.3	13
FBDR+ sq-LNS 1 s/wk.	254.6	120.8	92.9	110.3	111.1	178.1	93.3	112.7	106.2	134.5	127.1	125.5	73.7	13
FBDR+CF 1 s/wk. +MNP 3.5 s/wk.	252.2	114.4	78.2	144.4	154.2	211.7	133.7	155.1	152.5	170.9	111.6	137.8	84.2	13
FDBR+CF1 s/wk. +MNP 7 s/wk.	252.2	114.4	78.2	194.4	204.2	261.7	183.7	205.1	202.5	220.9	111.6	163.6	108.8	13
FBDR+ CF1 s/wk. + sq-LNS1 s/wk.	259.6	122	94.4	121	113.2	179.3	97	115.4	110.4	135.7	137.7	131.2	70.4	13

¹ The optimal diet formulated by using goal programming (Optifood module II).² Each diet maximizes each micronutrient (Optifood module III)³ Each diet minimizes each micronutrient (Optifood module III)⁴ Recommended nutrient intake for iron assuming 5% absorption⁵ Recommended nutrient intake for zinc assuming low absorption⁶ Number of nutrients to cover at least 70% of the recommended nutrient intake in the worst-case scenario⁷ Nutritionally best possible diet (Optifood module II)⁸ Diet sequentially maximizes each nutrient (Optifood module III).⁹ Set of food based dietary recommendations selected.¹⁰ s/wk=number of servings per week¹¹ Best alternative option

