Table 1 Baseline characteristics amongst the children

Characteristics	Fe Group (n=894)[a]	Non-Fe Group (n=912)[a]	p-value
Number of clusters	736	721	
Cluster size, mean (range)	1.6 (1-4)	1.5 (1-5)	0.13
Age, mean (SD), mo	19.3 (8.7)	19.1 (8.6)	0.66
Gender, n (%)	894 (100)	912 (100)	0.97
Male	458 (51.2)	457 (50.1)	
Female	436 (48.8)	455 (49.9)	
Anthropometric status			0.55
Wasting, n (%) [95% CI]	83 (9.3) [7.3-11.0]	65 (7.1) [5.7-9.1]	
Weight for length Z-score mean (SD)[b]	-0.54 (3.5)	-0.50 (3.4)	
Stunted growth, n (%) [95% CI]	64 (14.7) [12.4-17.1]	60 (13.8) [11.5-16.1]	
Length for age Z-score, mean (SD)[b]	-0.79 (1.6)	-0.68 (3.6)	
Underweight, n (%) [95% CI]	56 (12.9) [10.7-15.4]	46 (10.6) [8.5-12.6]	
Weight for age Z-score mean (SD)[b]	-0.87 (1.2)	-0.75 (3.5)	
A*symptomatic malaria* prevalence, n (%)	894 (24.2 %)	912 (24.6 %)	0.44
Bednet used the previous night, n (%)	722 (100)	732 (100)	0.23
Yes	655 (90.7)	681 (93.0)	
No	67 (9.3)	52 (7.0)	
Malaria Parasitaemia, n, geometric mean, 95 % CI count/µL	209, 2713.0 (2197.9 – 3349.0)	218, 2806.6 (2236.4 – 3522.3)	0.78
Household head education, n (%)	723 (100)	734 (100)	0.02
None	241 (33.3)	228 (31.1)	
Basic education	442 (61.1)	439 (59.8)	
Secondary education and above	40 (5.6)	67 (9.1)	
Iron deficiency (ZPP > 52 µmol / mol of heme), n (%)	894 (74.1)	912 (73.8)	0.41
Moderate a*naemia* prevalence, n (%)	894 (36.4)	912 (35.1)	0.57
Socioeconomic status of household heads, n (%)	855 (100)	890 (100)	0.06
High	250 (29.2)	297 (33.4)	
Low	605 (70.8)	593 6.6)	

Frequency (n) and percentages (%) of participants, age in months (mo), standard deviation (SD) Fe (iron), Non-Fe (Non-iron), 95 % confidence interval (95 % CI)

[a] Unit of analysis represents individual participant unless if not stated.

[b] Applying approximated WHO growth reference charts (±2 SD)

Two-sample Wilcoxon rank-sum (Mann-Whitney) was used for continuous variables and Chi-squared test was used for categorical variables

Table 2 Effect of MNP on haemoglobin, anaemia, iron biomarkers and acute phase status among study participants

Characteristics	Baseline			Endline		
	Fe Group (n=894)[a]	Non-Fe Group (n=912)[a]	p-value	Fe Group (n=894)[a]	Non-Fe Group (n=912)[a]	p-value
Haemoglobin status						
Haemoglobin, mean (SD) g/dL	10.3 (± 1.26)	10.3 (± 1.27)	0.69	9.7 (± 1.70)	9.3 (± 1.52)	0.0001
Anaemic status	894 (100)	912 (100)		894 (100)	912 (100)	
Non anaemia, n (%)	568 (63.5)	592 (64.9)		401 (44.9)	346 (37.9)	
Moderate anaemia, n (%)	326 (36.5)	321 (35.1)	0.56	455 (50.9)	496 (54.4)	0.03
Severe anaemia, n (%)	-	-		38 (4.2)	70 (7.7)	
Iron biomarkers status						
Ferritin, n, geometric mean (95 % CI) µg/L	894, 35.6 (32.6 – 38.8)	912, 34.3 (31.6 – 37.3)	0.51	894, 84.9 (78.1 – 92.1)	912, 68.1 (62.5 – 74.3)	0.0004
Ferritin, adjusted n, geometric mean (95 % CI) µg/L	722, 29.7 (27.1 – 32.6)	743, 29.8 (27.2 – 32.6)	0.94	667, 67.9 (62.0 – 74.4)	713, 53.4 (48.6 – 58.7)	0.0002
Transferrin, n, geometric mean (95 % CI) ng/m/L	894, 265.0 (240.5 - 291.9)	912, 256.0 (233.0 - 281.3)	0.65	894, 161.1 (142.3 - 182.4)	912, 202.8 (180.7 - 227.7)	0.012
Zinc protoporphyrin, n, geometric mean (95 % CI) µmol ZPP/mol heme	894, 90.2 (85.6 - 95.1)	912, 92.6 (87.9 - 97.5)	0.54	894, 139.3 (134.6 - 144.2)	912, 162.0 (156.2 - 168.1)	< 0.0001
Zinc protoporphyrin, adjusted n, geometric mean (95 % CI) µmol ZPP/mol heme	677, 85.2 (80.1 - 90.5)	712, 88.3 (83.3 - 93.6)	0.37	677, 130.7 (125.7 - 136.0)	713, 152.7 (146.6 - 159.0)	< 0.0001
Iron deficiency, n (%)	396 (44.3)	422 (46.3)	0.41	178 (19.9)	265 (29.1)	< 0.0001
Iron deficiency anaemia, n (%)	163 (18.2)	163 (17.9)	0.84	85 (9.5)	158 (17.3)	< 0.0001
Inflammation						
C-reactive protein, n, geometric mean (95 % CI) mg/L	450, 4.8 (4.4 - 5.2)	438, 4.7 (4.3 - 5.1)	0.31	450, 4.6 (4.3 - 5.0)	438, 4.5 (4.2 - 4.9)	0.54

[a] Unit of analysis represents individual participant unless if not stated, Fe (iron), Non-Fe (Non-iron), standard deviation (SD), number (n), percentage (%), 95 % confidence interval (95 % CI), Two-sample Wilcoxon rank-sum (Mann-Whitney) for continuous variables and Chi squared/ Fisher's exact tests for categorical variables

Table 3 Effect of MNP on anaemia and iron status among study children

Outcome	Study groups	Number (% of children with outcome)	Adjusted odds ratio ɡ (95 % CI)	p-value
Anaemia				
	Fe	493 (55.1 %)	1	
	Non-Fe	566 (62.1 %)	1.38 (1.13 - 1.69)	0.002
Iron deficiency				
	Fe	178 (19.9 %)	1	
	Non-Fe	265 (29.1 %)	1.68 (1.33 - 2.13)	< 0.001
Iron deficiency anaemia				
	Fe	85 (9.5 %)	1	
	Non-Fe	158 (17.3 %)	2.12 (1.56 - 2.88)	< 0.001

Iron (Fe) and non-iron (non-Fe) groups, 95 % confidence interval (95 % CI), percentage (%), ɡ: Adjusted for child's age and sex. Further adjusted for baseline anaemia, baseline iron deficiency and baseline iron deficiency anaemia in the model for anaemia, iron deficiency and iron deficiency anaemia respectively.