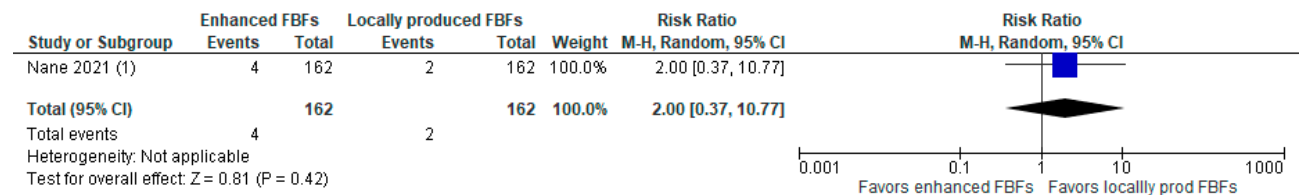


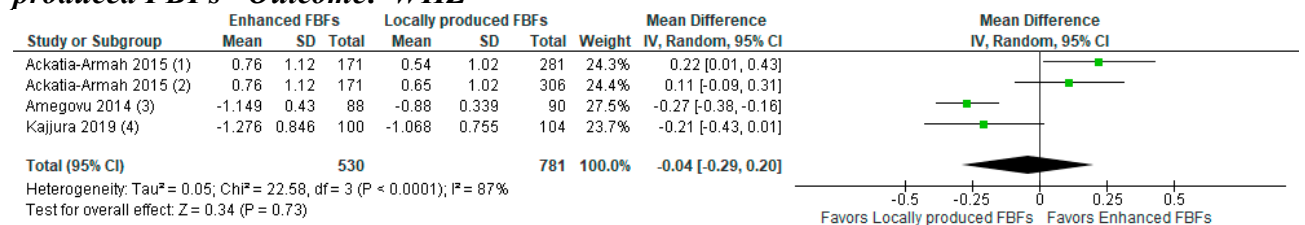
Supplementary Figure S46. Forest plot of Enhanced FBF compared to locally produced FBFs - Outcome: Deterioration to severe wasting during the intervention period



Footnotes

(1) CSB+ vs. local ingredients based supplement (LIBS); Deterioration to severe wasting at any point during the intervention.

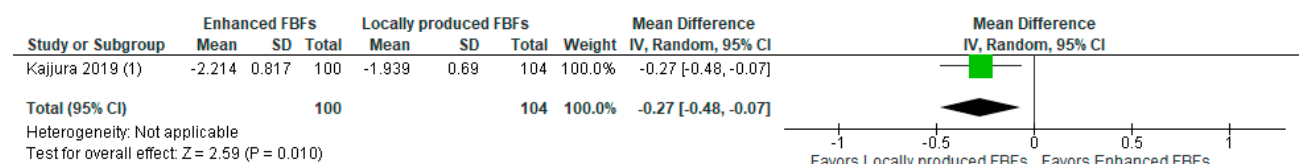
Supplementary Figure S47. Forest plot of Enhanced FBF compared to locally produced FBFs - Outcome: WHZ



Footnotes

- (1) CSB++ vs. locally milled flours (LMF); Change in WHZ during 12 weeks of treatment.
- (2) CSB++ vs. Misola; Change in WHZ during 12 weeks of treatment.
- (3) CSB+ vs. locally produced soy peanut blend (SPB); WHZ at discharge.
- (4) CSB+ vs. Malted sorghum-based porridge (MSBP); WHZ at endline (after 3 months).

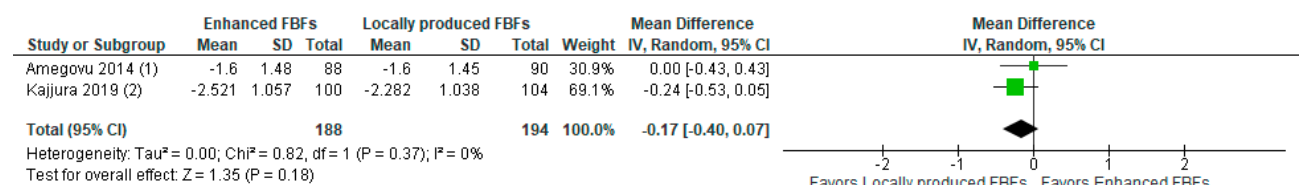
Supplementary Figure S48. Forest plot of Enhanced FBF compared to locally produced FBFs - Outcome: WAZ



Footnotes

- (1) CSB+ vs. Malted sorghum-based porridge (MSBP); WAZ measured at endline (after 3 months).

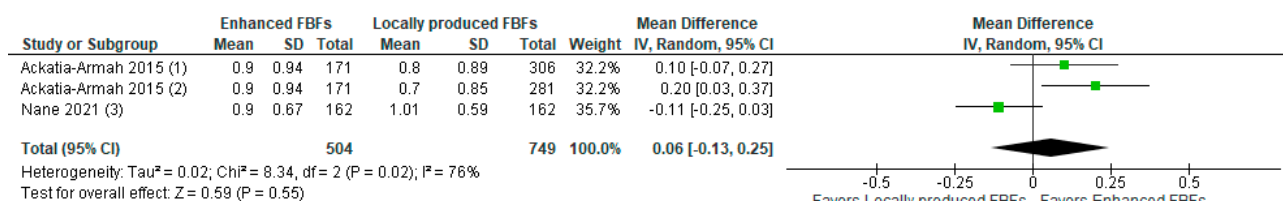
Supplementary Figure S49. Forest plot of Enhanced FBF compared to locally produced FBFs - Outcome: HAZ



Footnotes

- (1) CSB+ vs. locally produced soy peanut blend (SPB); HAZ measured at discharge.
- (2) CSB+ vs. Malted sorghum-based porridge (MSBP); HAZ measured at endline (after 3 months).

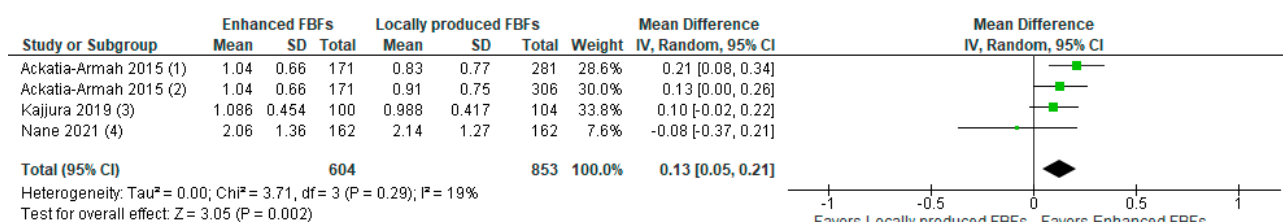
Supplementary Figure S50. Forest plot of Enhanced FBF compared to locally produced FBFs - Outcome: MUAC gain (in cm)



Footnotes

- (1) CSB++ vs. misola; MUAC in cm.
(2) CSB++ vs. locally milled flours (LMF); MUAC in cm.
(3) CSB+ vs. local ingredients based supplement (LIBS); MUAC in cm.

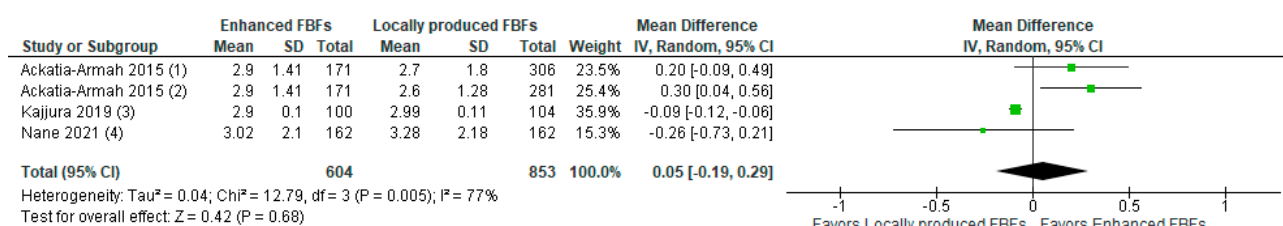
Supplementary Figure S51. Forest plot of Enhanced FBF compared to locally produced FBFs - Outcome: Weight gain



Footnotes

- (1) CSB++ vs. locally milled flours (LMF); Weight gain in kg over the intervention period.
(2) CSB++ vs. misola; Weight gain in kg over the intervention period.
(3) CSB+ vs. malted sorghum-based porridge (MSBP); Weight gain in kg over the intervention period.
(4) CSB+ vs. local ingredients based supplement (LIBS); Weight gain in kg over the intervention period.

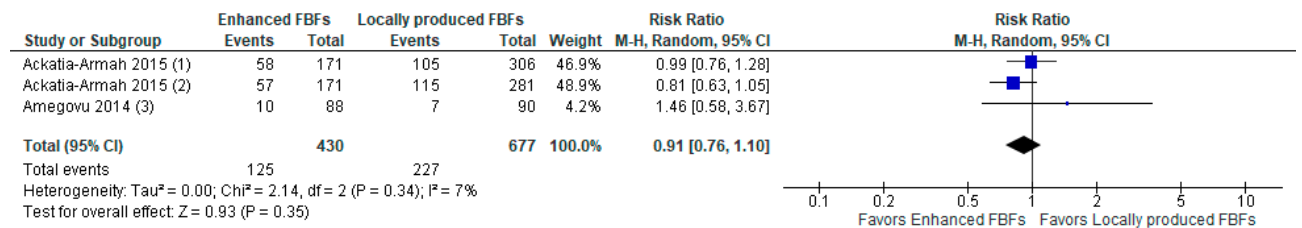
Supplementary Figure S52. Forest plot of Enhanced FBF compared to locally produced FBFs - Outcome: Height gain



Footnotes

- (1) CSB++ vs. misola; Height gain in cm over the intervention period.
(2) CSB++ vs. locally milled flours (LMF); Height gain in cm over the intervention period.
(3) CSB+ vs. Malted sorghum-based porridge (MSBP); mean increase in length in cm
(4) CSB+ vs. local ingredients based supplement (LIBS); increase in height in cm over the intervention period.

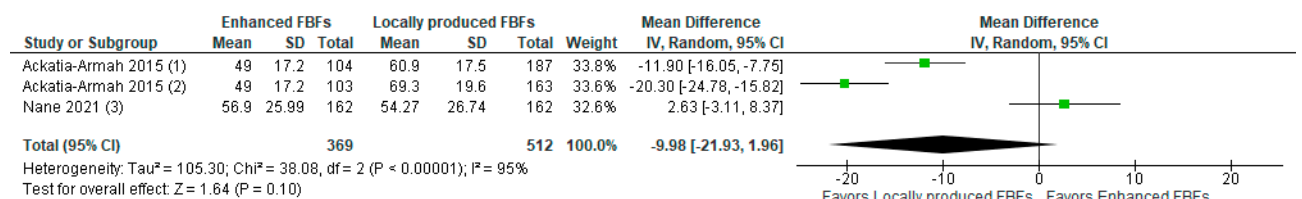
Supplementary Figure S53. Forest plot of Enhanced FBF compared to locally produced FBFs - Outcome: Non-response



Footnotes

- (1) CSB++ vs. Misola; Still MAM after 12 weeks of treatment.
(2) CSB++ vs. locally milled flours (LMF); Still MAM after 12 weeks of treatment.
(3) CSB+ vs. locally produced soy peanut blend (SPB). Still MAM after 12 weeks of treatment.

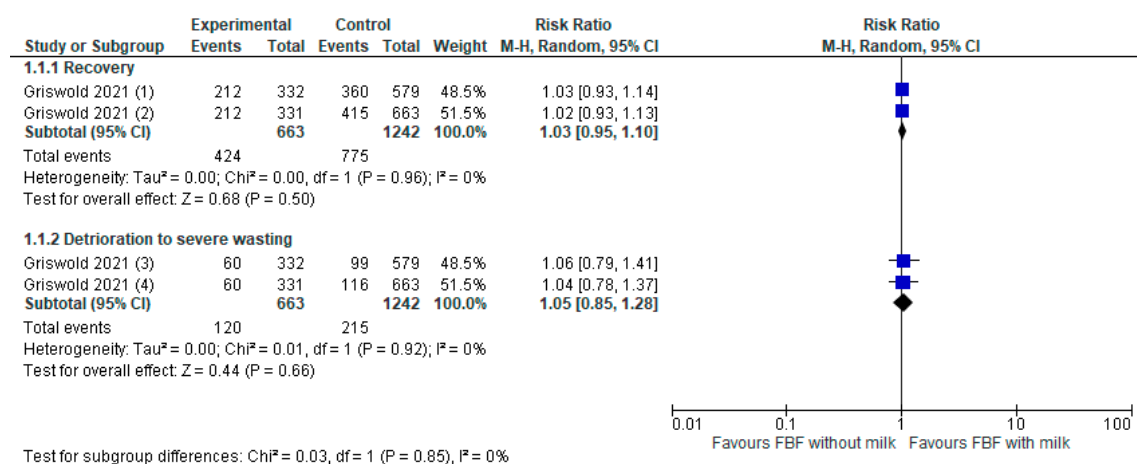
Supplementary Figure S54. Forest plot of Enhanced FBF compared to locally produced FBFs - Outcome: Time to recovery



Footnotes

- (1) CSB++ vs. Misola; Time to recovery in days.
(2) CSB++ vs. LMF; Time to recovery in days.
(3) CSB+ vs. local ingredients based supplement (LIBS); Time to recovery in days.

Supplementary Figure S55. Forest plot of Enhanced FBFs without milk compared to enhanced FBFs with milk - Outcome: Recovery

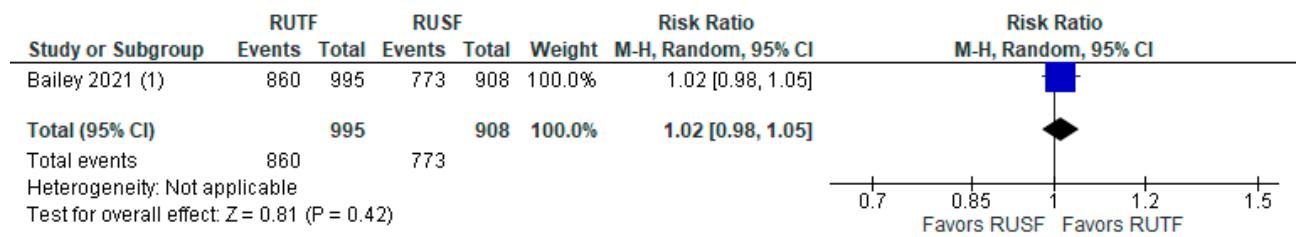


Test for subgroup differences: $\chi^2 = 0.03$, $df = 1$ ($P = 0.85$), $I^2 = 0\%$

Footnotes

- (1) CSB+ with oil vs CSWB
(2) CSB+ with oil vs Supercereal+ with Amylase
(3) CSB+ with oil vs CSWB
(4) CSB+ with oil vs Supercereal+ with Amylase

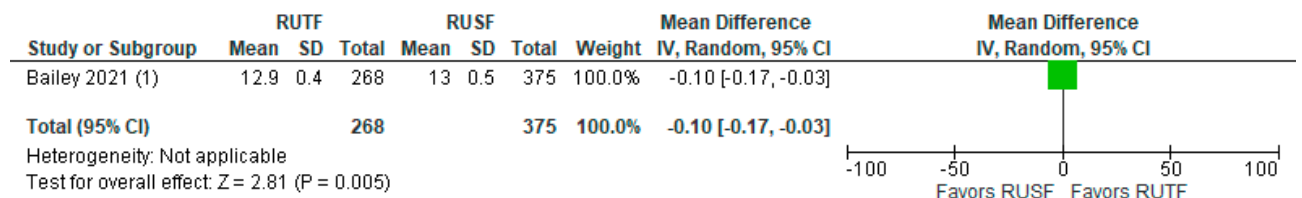
Supplementary Figure S56. Comparison of RUTF vs RUSF - Outcome: Recovery



Footnotes

(1) Standard RUTF and RUSF; MUAC ≥ 125 mm and no oedema

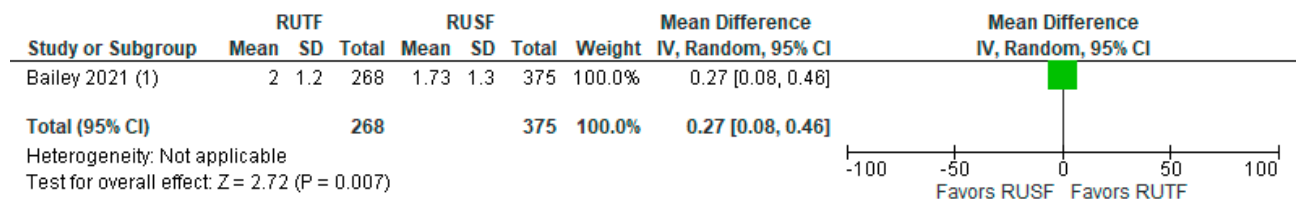
Supplementary Figure S57. Comparison of RUTF vs RUSF - Outcome: MUAC gain



Footnotes

(1) Standard RUTF and RUSF; MUAC in cm at discharge. Data from Kenya subsample only.

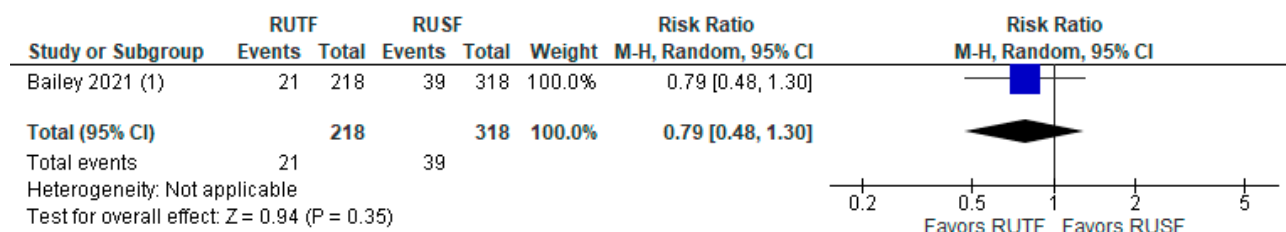
Supplementary Figure S58. Comparison of RUTF vs RUSF - Outcome: Weight gain



Footnotes

(1) Standard RUTF and RUSF; Weight gain in g/kg/day. Data from Kenya subsample only.

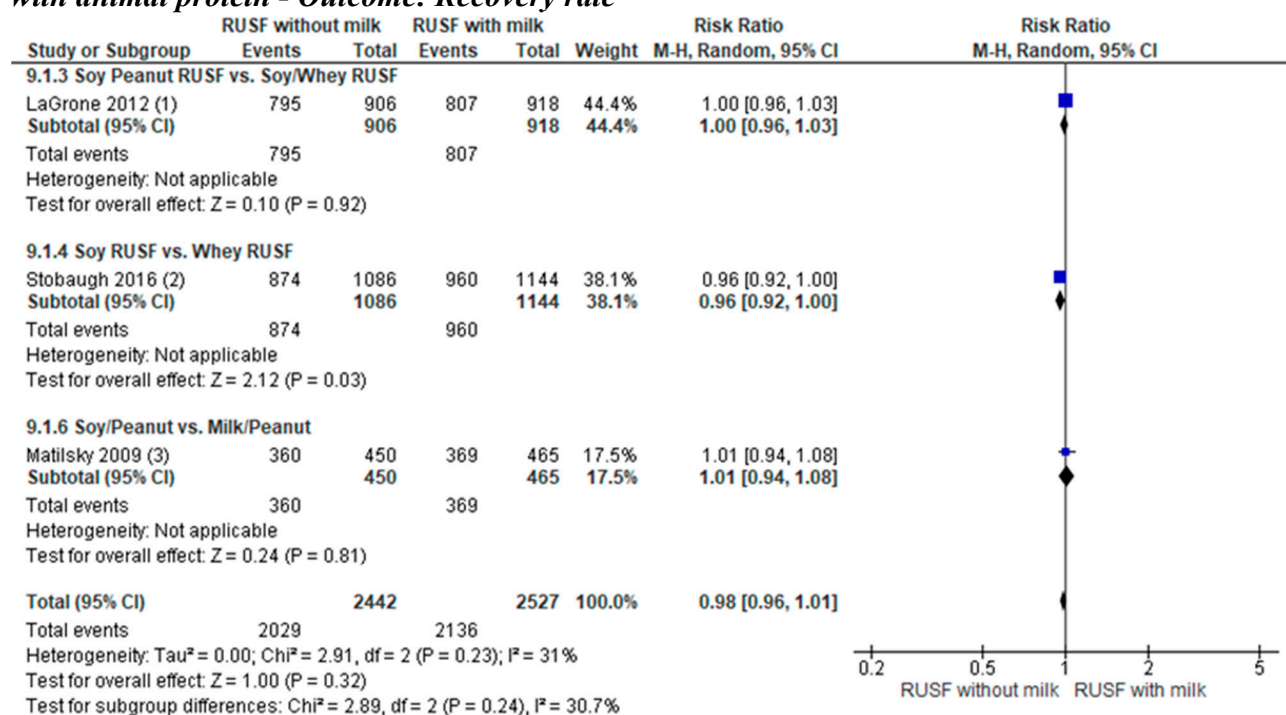
Supplementary Figure S59. Comparison of RUTF vs RUSF - Outcome: Relapse



Footnotes

(1) Standard RUTF and RUSF; relapse was defined as MAM cases that relapsed back to GAM. Data from Kenya subsample.

Supplementary Figure S60. Forest plot of RUSF without animal protein vs RUSF with animal protein - Outcome: Recovery rate



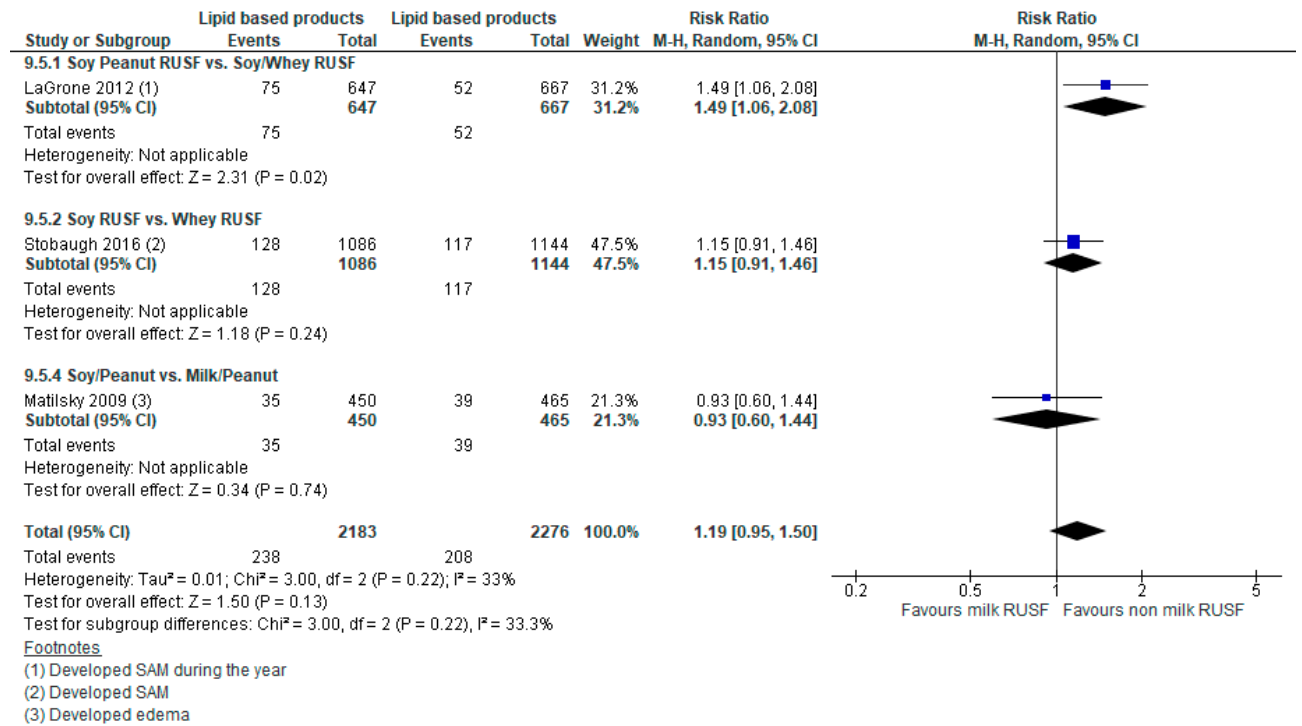
Footnotes

(1) Recovered when they reached a WHZ ≥ -2

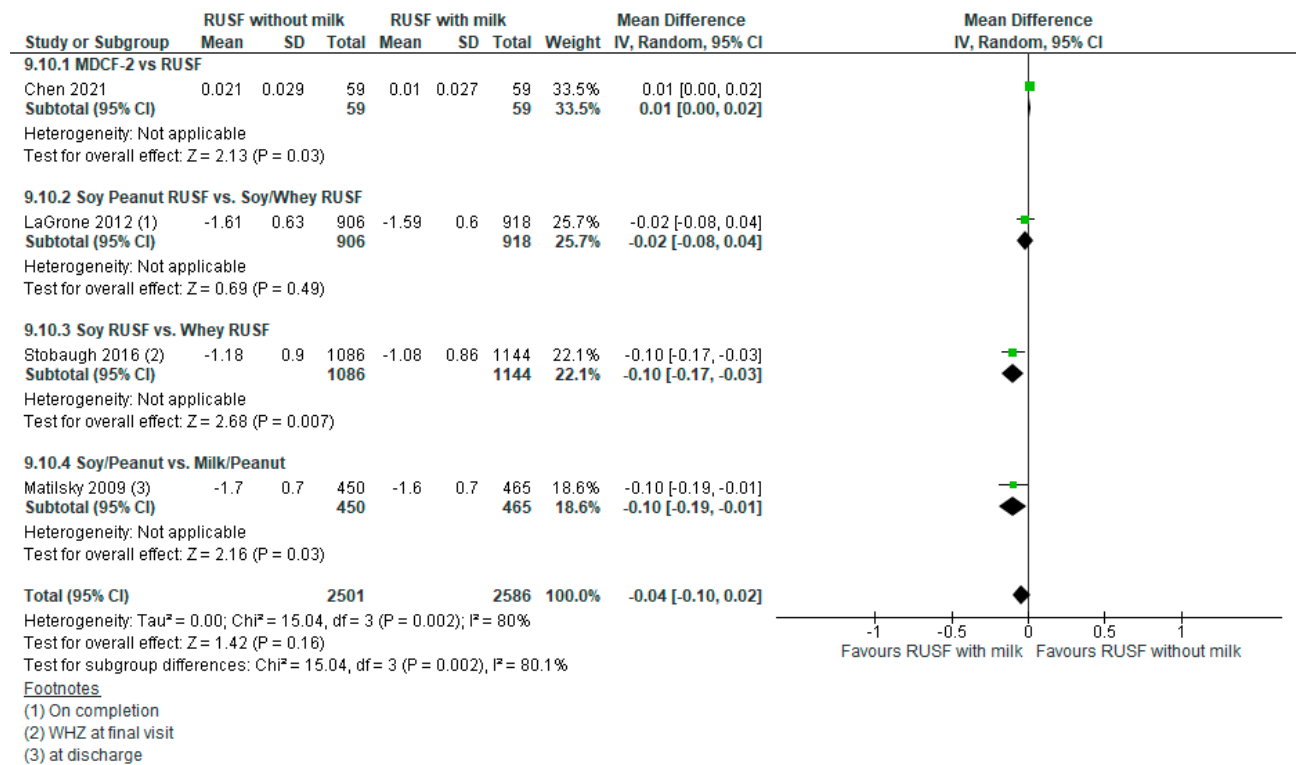
(2) Recovery from MAM, defined as achieving an MUAC of 12.5 cm without bi pedal edema within 12 wk of therapy

(3) Defined as having a WHZ > -2

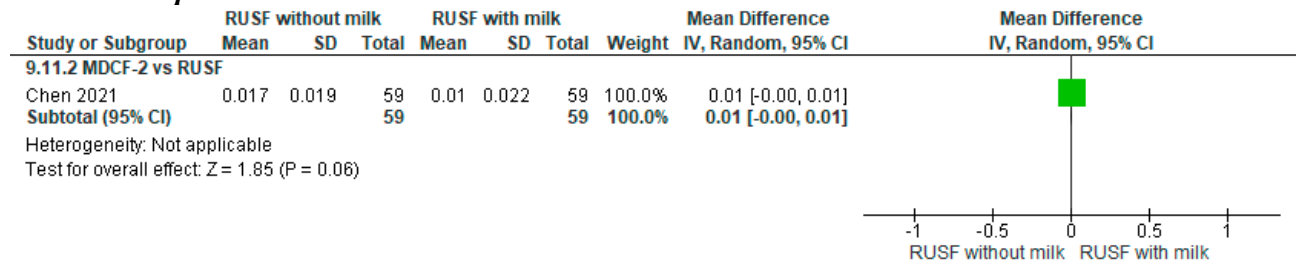
Supplementary Figure S61. Forest plot of RUSF without animal protein vs RUSF with animal protein - Outcome: Deterioration to severe wasting



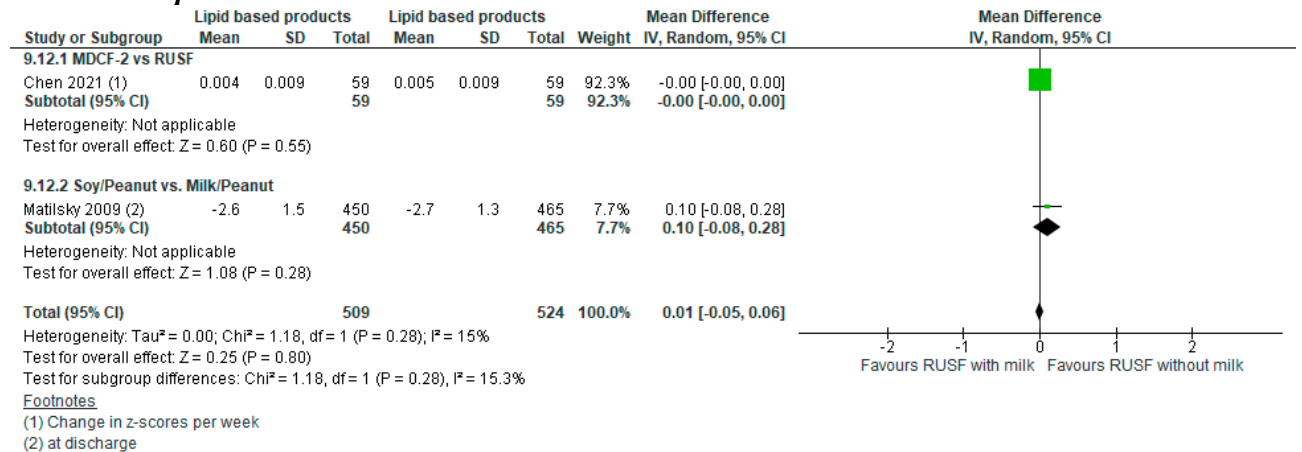
Supplementary Figure S62. Forest plot of RUSF without animal protein vs RUSF with animal protein - Outcome: WHZ score



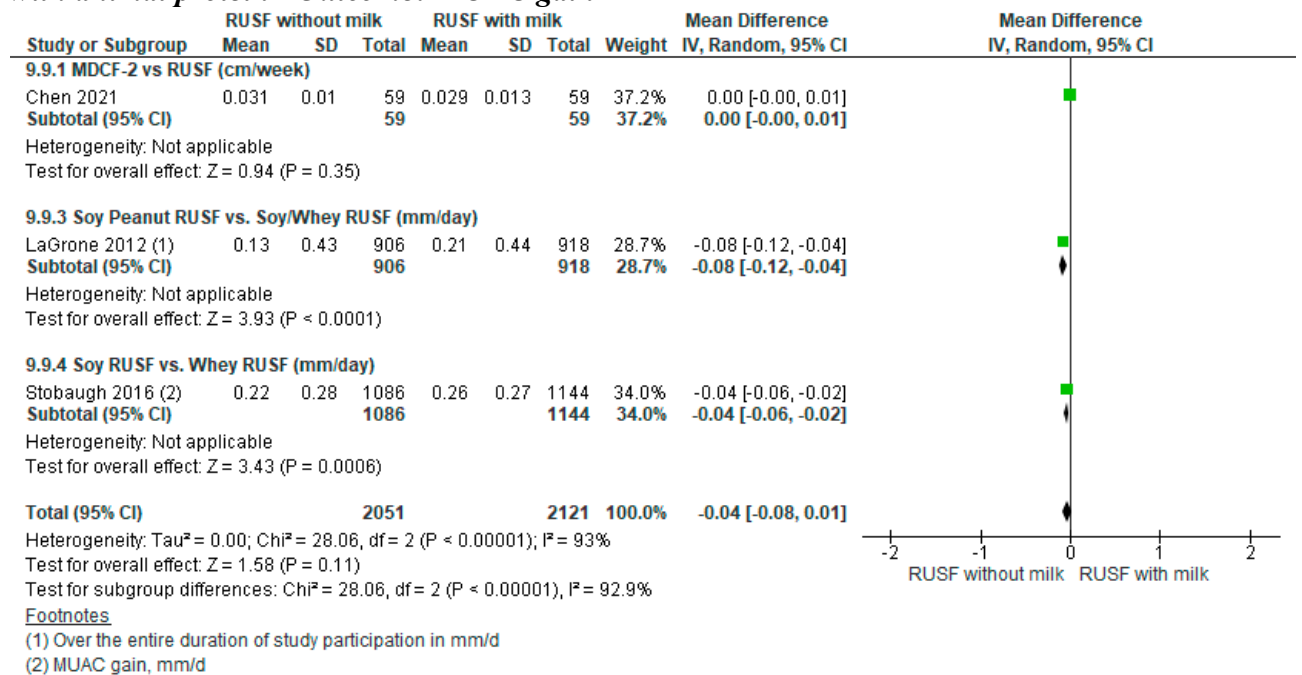
Supplementary Figure S63. Forest plot of RUSF without animal protein vs RUSF with animal protein - Outcome: WAZ



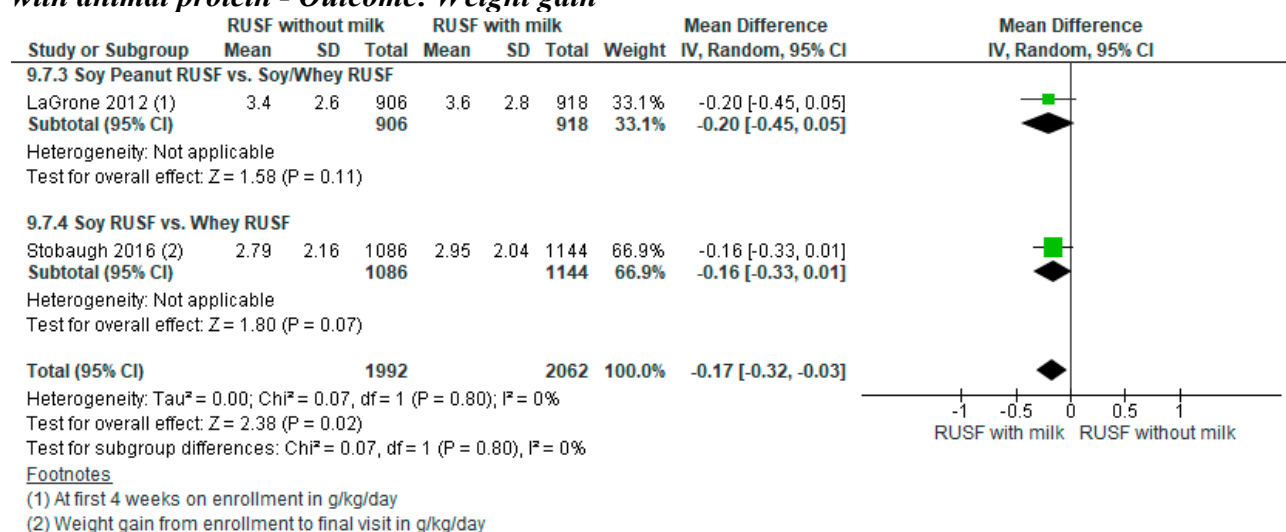
Supplementary Figure S64. Forest plot of RUSF without animal protein vs RUSF with animal protein - Outcome: HAZ



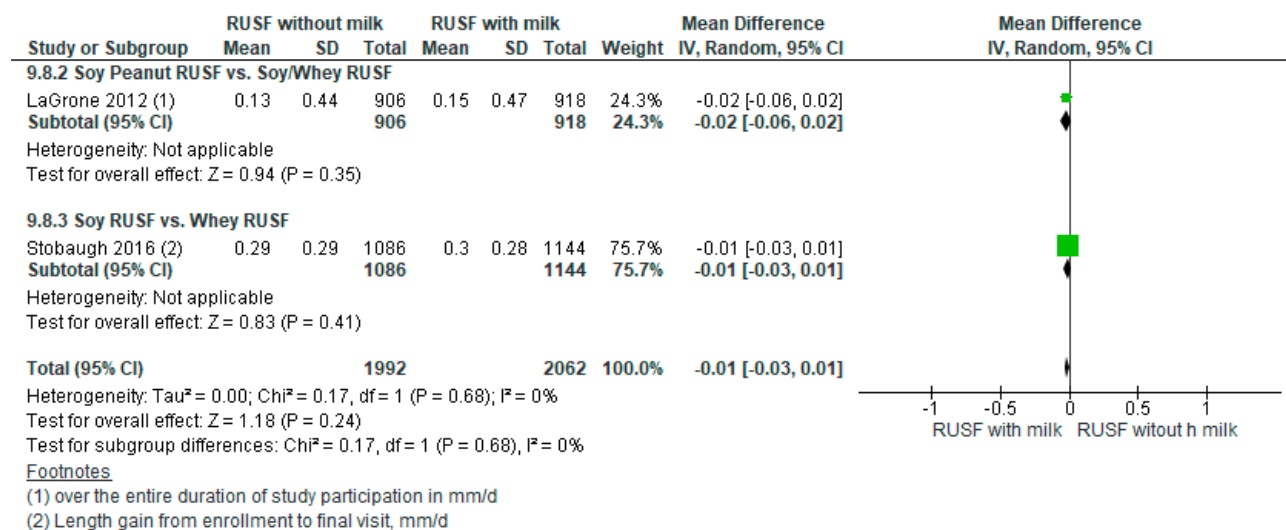
Supplementary Figure S65. Forest plot of RUSF without animal protein vs RUSF with animal protein - Outcome: MUAC gain



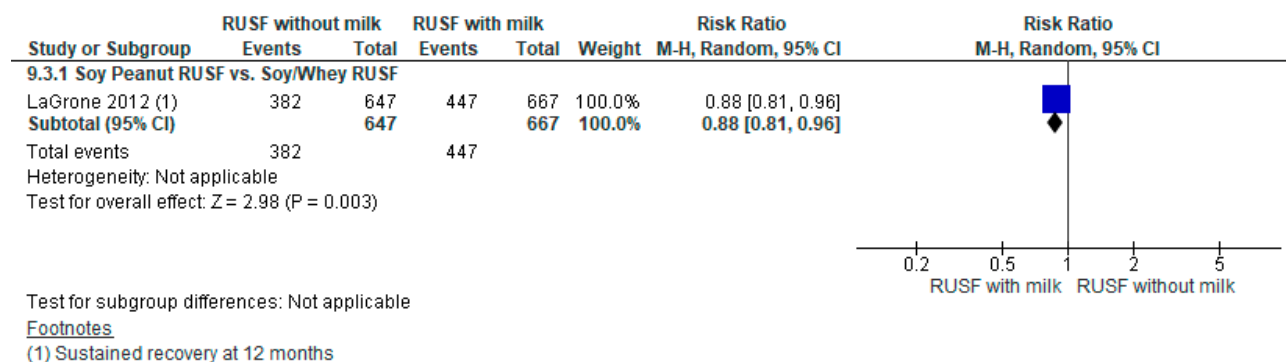
Supplementary Figure S66. Forest plot of RUSF without animal protein vs RUSF with animal protein - Outcome: Weight gain



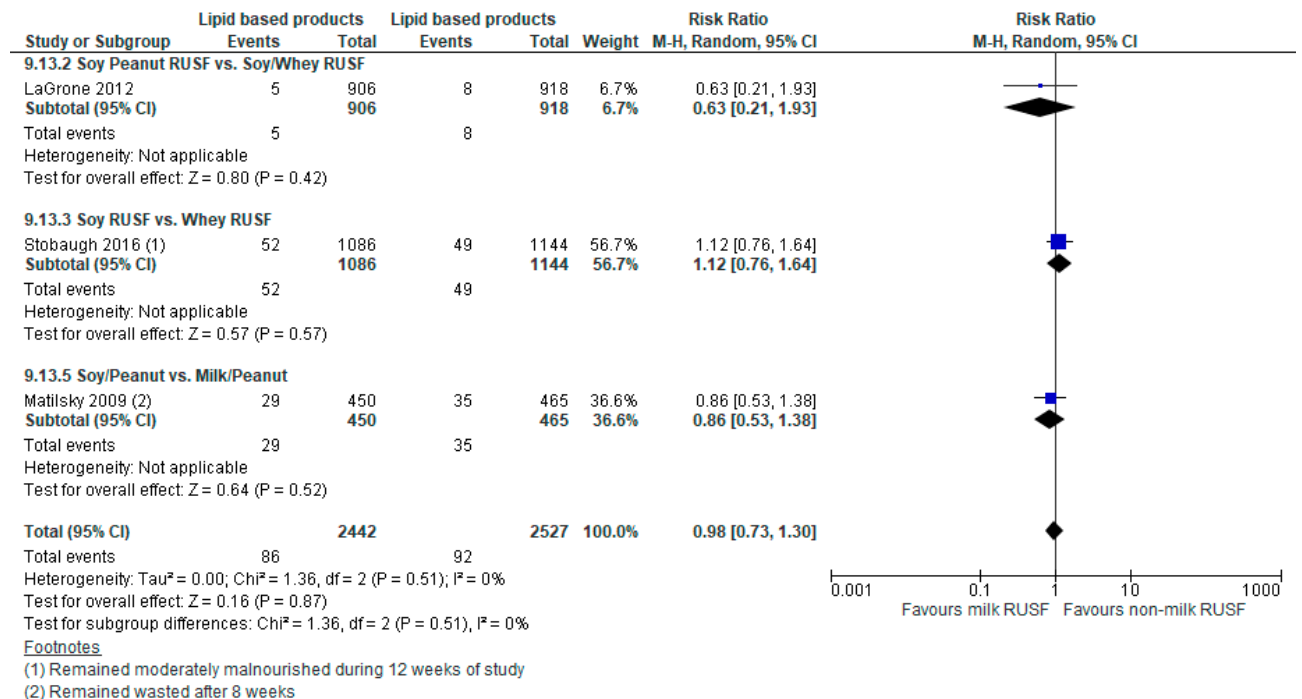
Supplementary Figure S67. Forest plot of RUSF without animal protein vs RUSF with animal protein - Outcome: Height gain



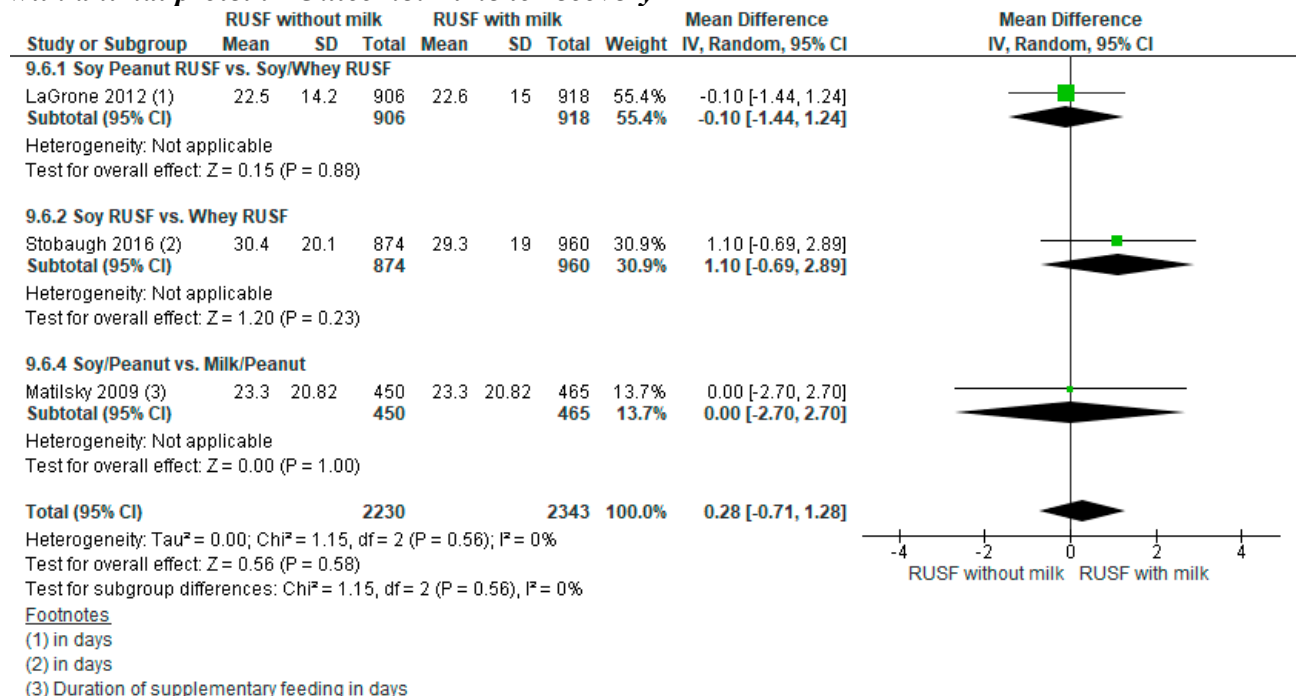
Supplementary Figure S68. Forest plot of RUSF without animal protein vs RUSF with animal protein - Outcome: Sustained recovery



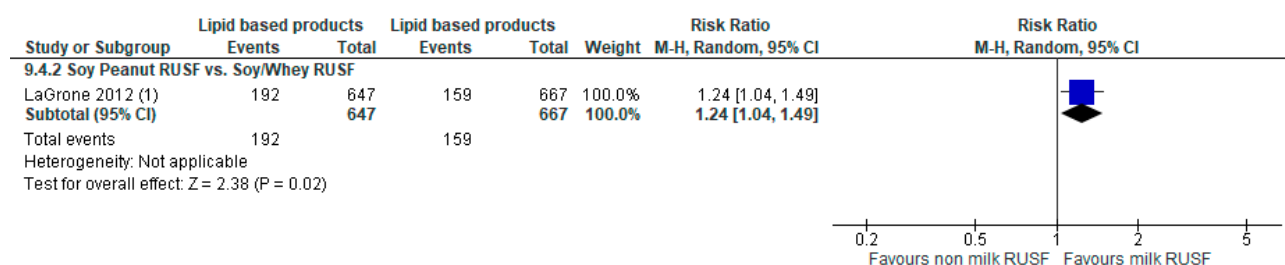
Supplementary Figure S69. Forest plot of RUSF without animal protein vs RUSF with animal protein - Outcome: Non-response



Supplementary Figure S70. Forest plot of RUSF without animal protein vs RUSF with animal protein - Outcome: Time to recovery



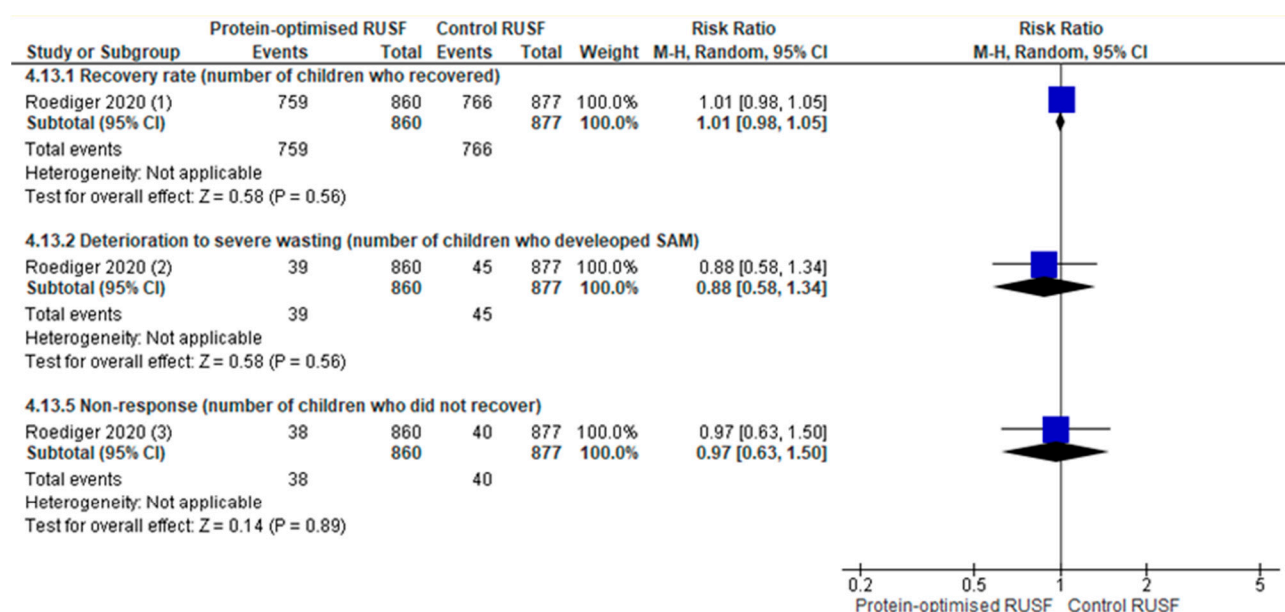
Supplementary Figure S71. Forest plot of RUSF without animal protein vs RUSF with animal protein - Outcome: Relapse



Footnotes

(1) Defined as WHZ <-2, but >= -3 and MUAC <12.5 cm; children who recovered from MAM 12 mo after enrollment plus who deteriorated to SAM

Supplementary Figure S72: Forest plot of protein-optimised RUSF vs RUSF - Dichotomous outcome: Anthropometric recovery rate, deterioration to SAM and non-response



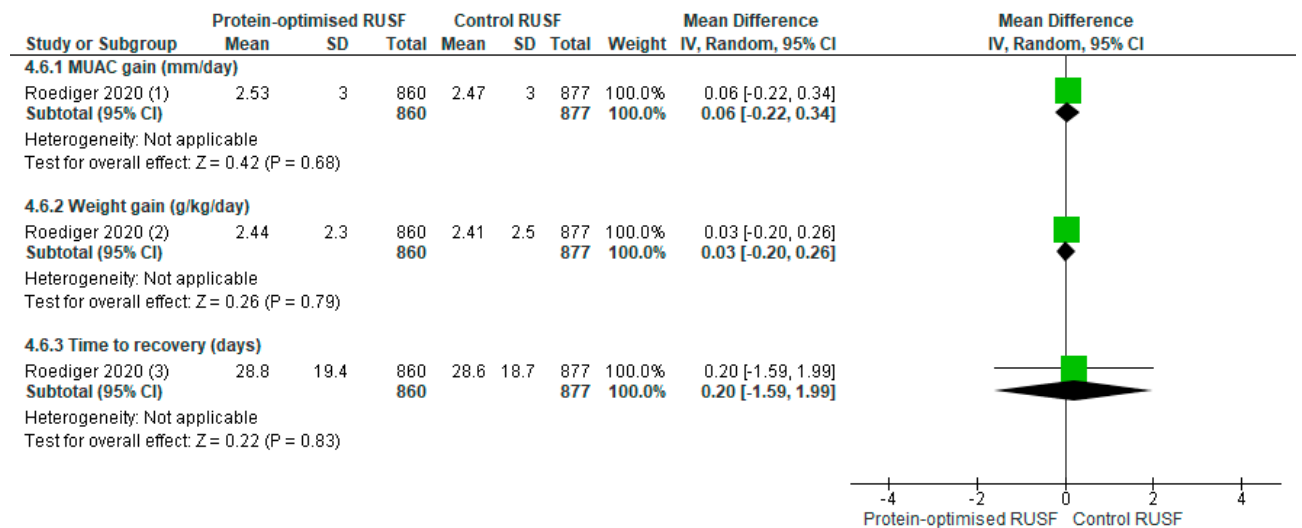
Footnotes

(1) Achieving a MUAC greater than or equal to 12.5 cm or a WHZ greater than or equal to -2 within 12 weeks of treatment

(2) Developed SAM

(3) Remained MAM in 12 weeks

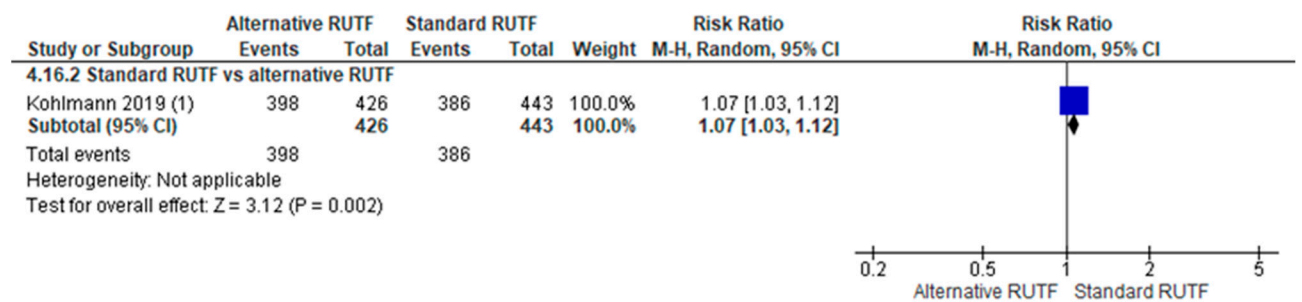
Supplementary Figure S73: Forest plot of protein-optimised RUSF vs RUSF - Dichotomous outcome: MUAC gain, Weight gain, Time to recovery



Footnotes

- (1) average MUAC gain mm
(2) Rate of weight gain at outcome assessment in g/kg/day
(3) in days

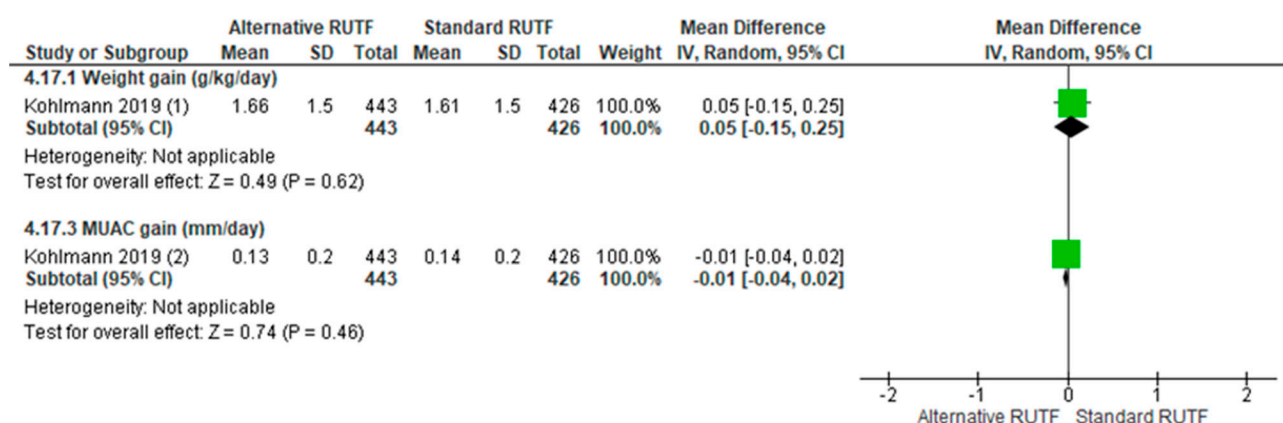
Supplementary Figure S74: Forest plot of RUTF vs alternative RUTF - Outcome: Anthropometric recovery rate



Footnotes

- (1) Proportion of children having achieved either WLZ >-2 or MUAC >12.4 cm at any point during the treatment

Supplementary Figure S75: Forest plot of RUTF vs alternative RUTF - Anthropometric outcome: Weight and MUAC gain

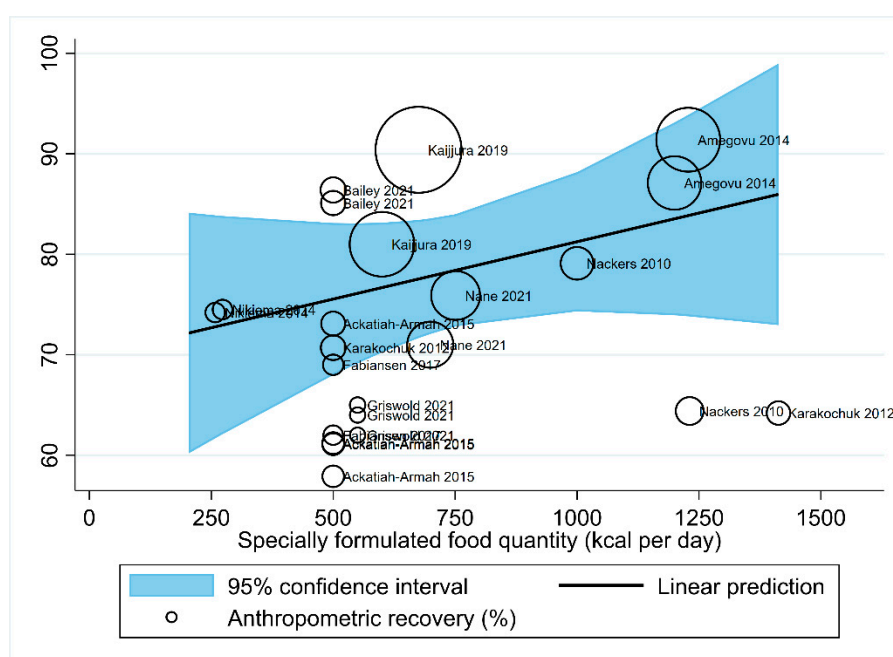


Footnotes

(1) Rate of weight gain in g /kg/ d for first 4 weeks of treatment

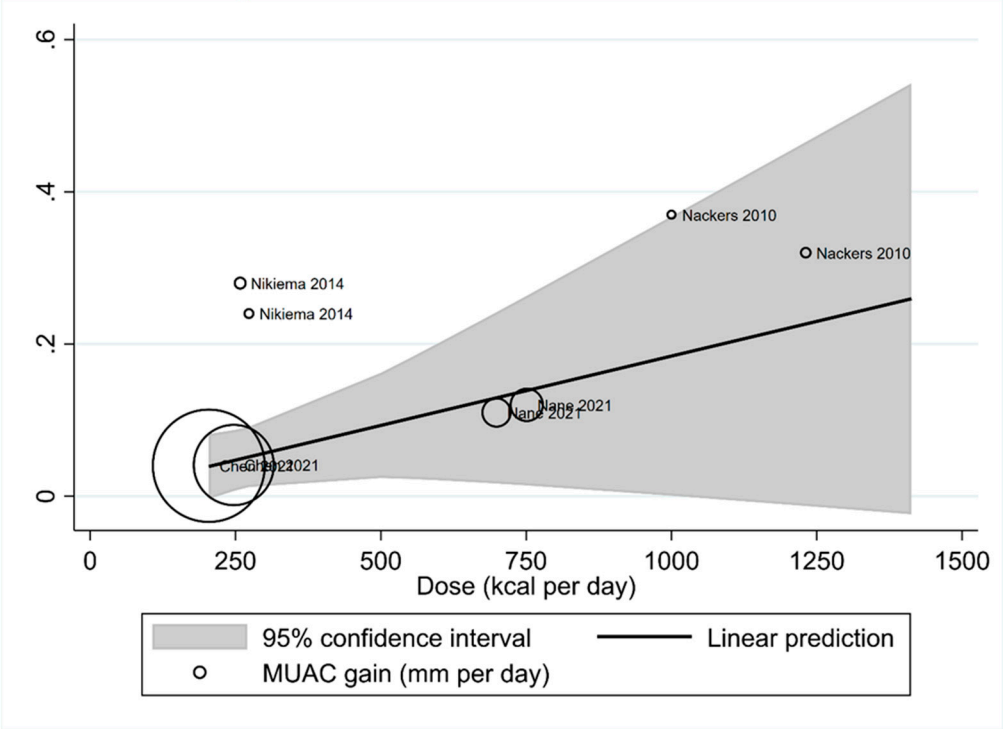
(2) Rate of MUAC gain (mm/d)

Supplementary Figure S76. Meta-regression of the relationship between RUTF dose and anthropometric recovery¹



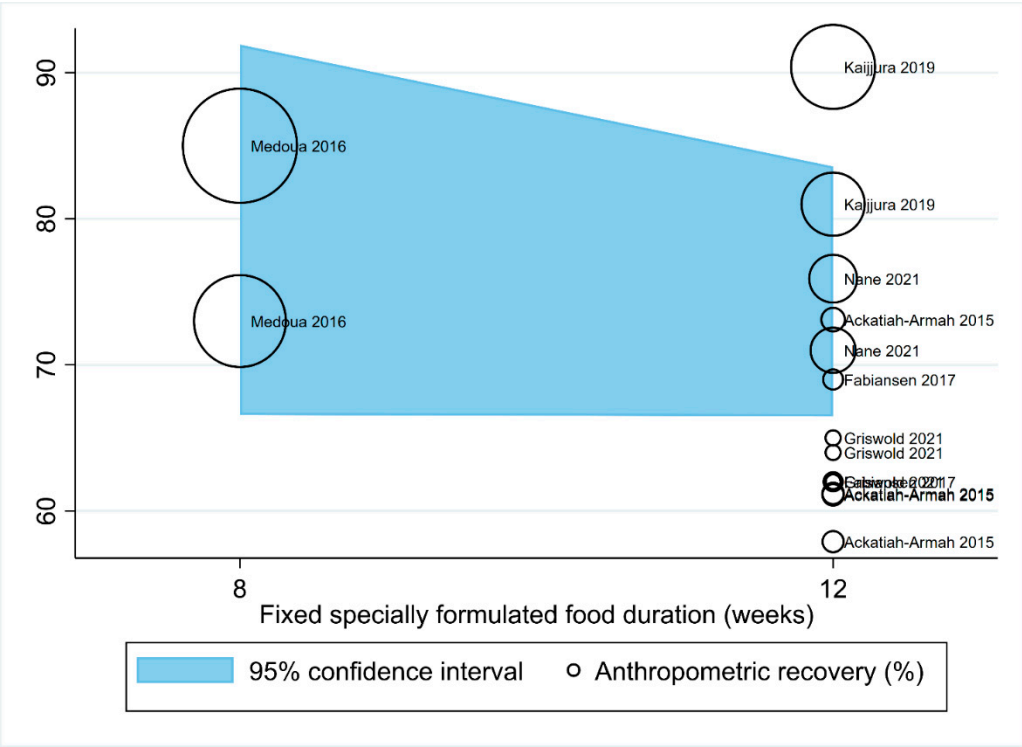
¹The bubble sizes are proportional to the inverse of the study-level variance for anthropometric recovery.

Supplementary Figure S77. Meta-regression of the relationship between RUTF dose and MUAC gain.



The bubble sizes are proportional to the inverse of the study-level variance for MUAC gain.

Supplementary Figure S78. Meta-regression of the relationship between fixed RUTF duration and anthropometric recovery



The bubble sizes are proportional to the inverse of the study-level variance for anthropometric recovery.