**Supplemental Table S1.** Feeding practices and scoring system used to construct the infant and young child feeding index (ICFI)

|  |  |
| --- | --- |
| Practices | Scores allocated to different practices, by age group |
| 6−8 months | 9−11 months | 12−23 months |
| Still breastfeeding  | No= 0Yes= 2 | No= 0Yes= 2 | No= 0Yes= 1 |
| Foods/liquids given before 6 months | No= 1Yes= 0 | No= 1Yes= 0 | No= 1Yes= 0 |
| Dietary diversity score (24 h)  | 0 food groups= 01−2 food groups= 1≥ 3 food groups = 2 | 0 food groups = 01−2 food groups = 1≥ 3 food groups = 2 | 0−1 food group= 02−3 food groups = 1≥ 4 food groups = 2 |
| Meal frequency (24 h)  | 0 times = 01time = 1≥ 2 times= 2 | 0 times= 01−2 times= 1≥ 3 times = 2 | 0−1 time= 02times= 13 times= 2≥ 4 times= 3 |
| Responsive feeding |  |  |  |
| How does the mother response to child food refusal due to loss of appetite? | 1. Nothing (leave child alone)/forces child = 0
2. Other (change types of foods, coax, role model, child has just started eating foods/never refuses foods) = 1
 |
| Does mother restrict foods when child gets diarrhoea? † | No= 1Yes= 0 | No= 1Yes= 0 | No= 1Yes= 0 |
| Minimum−Maximum score | 0–9 | 0–9 | 0–9 |

† a score of 1 was assigned if a child has never had diarrhoea.

**Supplemental Table S2.** Health practices and scoring system used to construct health practices index (HPI)

|  |  |
| --- | --- |
| Practices | Score allocated to different practices |
| Mother attended growth monitoring last month | Yes= 1No= 0 |
| Number of achieved antenatal care visits during pregnancy | 0−1 visit= 02−3 visits= 1≥ 4 visits= 2 |
| How was child diarrhoea treated?1. No treatment/home remedy
2. Child was taken to health centre/health worker/ORS
 | 1. = 0
2. = 1
 |
| Did the child receive vitamin A supplements in the previous 6 months? | Yes= 1No= 0 |
| Did the child receive all age-appropriate vaccines? | Yes= 1No= 0 |
| Minimum−Maximum score | 0 – 6 |

ORS, oral rehydration solution

**Supplemental Table S3.** IYCF practices and child morbidity of 379 children aged 6 – 23 months in Rutsiro district, Rwanda, September 2018 to January 2019.

(Frequencies and percentages; means and standard deviations)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Full sample |  | Non-stunted |  | Stunted |
| n |  | % |  | n |  | % |  | n |  | % |
| Number of children | 379 |  | 100 |  | 233 |  | 61.5 |  | 146 |  | 38.5 |
| Child was exclusively breastfed – yes  | 231 |  | 60.9 |  | 148 |  | 63.5 |  | 83 |  | 56.8 |
| Child is currently breastfeeding – yes  | 362 |  | 95.5 |  | 230 |  | 98.7 |  | 132 |  | 90.4 |
| *Food groups consumed (24 h)* |  |  |  |  |  |  |  |  |  |  |  |
| Grains/roots/tubers | 353 |  | 93.1 |  | 212 |  | 91.0 |  | 141 |  | 96.6 |
| Legumes & nuts | 275 |  | 72.6 |  | 168 |  | 72.1 |  | 107 |  | 73.3 |
| Milk/dairy products  | 35 |  | 9.2 |  | 18 |  | 7.7 |  | 17 |  | 11.6 |
| Flesh foods (meat, fish, poultry, liver/organ meat | 70 |  | 18.5 |  | 49 |  | 21.0 |  | 21 |  | 14.4 |
| Eggs | 8 |  | 2.1 |  | 6 |  | 2.6 |  | 2 |  | 1.4 |
| Vitamin A rich fruits & vegetables | 225 |  | 59.4 |  | 143 |  | 61.4 |  | 82 |  | 56.2 |
| Other fruits & vegetables | 199 |  | 52.5 |  | 120 |  | 51.5 |  | 79 |  | 54.1 |
| Any animal source foods | 101 |  | 26.6 |  | 67 |  | 28.8 |  | 34 |  | 23.3 |
| Minimum dietary diversity a | 136 |  | 35.9 |  | 88 |  | 37.8 |  | 48 |  | 32.9 |
| Number of food groups consumed |  |  |  |  |  |  |  |  |  |  |  |
| Mean |  | 3.1 |  |  |  | 3.1 |  |  |  | 3.1 |  |
| SD |  | 1.2 |  |  |  | 1.3 |  |  |  | 1.1 |  |
| Minimum meal frequency b | 206 |  | 54.4 |  | 121 |  | 51.9 |  | 85 |  | 58.2 |
| Number of meals |  |  |  |  |  |  |  |  |  |  |  |
| Mean |  | 2.6 |  |  |  | 2.5 |  |  |  | 2.9 |  |
| SD |  | 1.3 |  |  |  | 1.3 |  |  |  | 1.3 |  |
| Minimum acceptable diet c | 90 |  | 23.7 |  | 55 |  | 23.6 |  | 35 |  | 24.0 |
| *Morbidity (past 4 weeks)* |  |  |  |  |  |  |  |  |  |  |  |
| Diarrhoea | 179 |  | 47 |  | 105 |  | 45 |  | 74 |  | 51 |
| URI | 297 |  | 78 |  | 179 |  | 77 |  | 118 |  | 61 |
| Fever | 163 |  | 43 |  | 100 |  | 43 |  | 63 |  | 43 |
| Other illnesses | 40 |  | 11 |  | 24 |  | 10 |  | 16 |  | 11 |

IYCF, infant and young child feeding; SD, standard deviation; URI, upper respiratory infection.

aMinimum is defined as the consumption of foods from at least 4 food groups/d; bMinimum is defined as 2 and 3 meals/d for the children of 6−8 months and 9−23 months of age, respectively, in addition to breastmilk feeds, and 3 meals/d for the non-breastfeed children of 6−23 months of age. c Minimum is defined as achieving both minimum meal frequency and minimum dietary diversity (35).

**Supplemental Table S4:** Factors associated with HAZ of children aged 6−23 months in Rutsiro district, Rwanda, by age group, September 2018–January 2019 \*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | HAZ, 6–11 months |  | HAZ, 12–23 months |  | HAZ, 6–23 months |
|  | β | 95% CI | P |  | β | 95% CI | P |  | β | 95% CI | P |
| ICFI tertiles (Ref.= Low) |  |  |  |  |  |  |  |  |  |  |  |
| Mid | 0.10 | −0.78, 1.34 | 0.60 |  | 0.08 | −0.14, 0.51 | 0.26 |  | 0.07 | −0.13, 0.47 | 0.27 |
| High | 0.03 | −0.97, 1.12 | 0.89 |  | 0.16 | 0.06, 0.89 | 0.025 |  | 0.14 | −0.02, 0.72 | 0.039 |
| Age (months) | 0.03 | −0.11, 0.15 | 0.71 |  | −0.23 | −0.12, −0.04 | < 0.001 |  | −0.29 | −0.10, −0.05 | < 0.001 |
| Birthweight (kg) | 0.31 | 0.32, 1.18 | 0.001 |  | 0.21 | 0.21, 0.71 | < 0 .001 |  | 0.22 | 0.29, 0.72 | < 0.001 |
| Child sex - male  | −0.19 | −0.93, −0.04 | 0.034 |  | −0.11 | −0.52, −0.02 | 0.07 |  | −0.12 | −0.53, −0.08 | 0.008 |
| Diarrhoea - yes  | −0.24 | −1.06, −0.12 | 0.014 |  | 0.03 | −0.20, 0.36 | 0.56 |  | −0.04 | −0.32, 0.14 | 0.45 |
| Respiratory infection - yes  | −0.18 | −1.05, 0.00 | 0.048 |  | −0.03 | −0.43, 0.26 | 0.68 |  | −0.08 | −0.51, 0.04 | 0.09 |
| Maternal height (cm) | 0.16 | −0.01, 0.08 | 0.11 |  | 0.32 | 0.04, 0.09 | < 0.001 |  | 0.28 | 0.04, 0.08 | < 0.001 |
| Maternal education (ref.= none/incomplete primary) |  |  |  |  |  |  |  |  |  |  |  |
| Primary  | 0.10 | −0.30, 0.91 | 0.31 |  | 0.03 | −0.27, 0.41 | 0.68 |  | 0.07 | −0.08, 0.49 | 0.16 |
| Secondary | 0.19 | −0.02, 1.19 | 0.06 |  | 0.05 | −0.25, 0.53 | 0.46 |  | 0.09 | −0.05, 0.61 | 0.08 |
| Altitude (1000 m above sea level) | −0.20 | −1.73, −0.04 | 0.04 |  | −0.13 | −1.00, −0.04 | 0.033 |  | −0.15 | −1.06, −0.25 | 0.002 |
| Household hunger level (ref.= little/no hunger) |  |  |  |  |  |  |  |  |  |  |  |
| Mild/severe | −0.15 | −0.97, 0.22 | 0.21 |  | −0.03 | −0.35, 0.23 | 0.67 |  | −0.05 | −0.37, 0.13 | 0.34 |
| Wealth factor scores |  |  |  |  |  |  |  |  |  |  |  |
| 1st factor | −0.07 | −0.35, 0.18 | 0.51 |  | 0.02 | −0.13, 0.18 | 0.75 |  | −0.01 | −0.14, 0.11 | 0.82 |
| 2nd factor | −0.02 | −0.29, 0.24 | 0.86 |  | −0.02 | −0.17, 0.12 | 0.73 |  | −0.03 | −0.16, 0.98 | 0.58 |
| N | 102 |  |  |  | 232 |  |  |  | 334 |  |  |
| Adjusted R2 | 0.28 |  |  |  | 0.25 |  |  |  | 0.31 |  |  |

HAZ, height-for-age *z*-score; β, standardized coefficients; ICFI, infant and child feeding index; Ref., reference category;

\* Regression model included ICFI as the main independent variable.

**Supplemental Table S5:** Factors associated with HAZ of children aged 6−23 months in Rutsiro district, Rwanda, by age group, September 2018–January 2019 \*

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | HAZ, 6–11 months |  |  | HAZ, 12–23 months |  |  | HAZ, 6 – 23 months |
| β | 95% CI | P |  | β | 95% CI | P |  | β | 95% CI | P |
| HPI tertiles (Ref.= Low) |  |  |  |  |  |  |  |  |  |  |  |
| Mid | −0.03 | −0.76, 0.58 | 0.80 |  | 0.08 | −0.25, 0.2 | 0.40 |  | 0.03 | −0.29, 0.42 | 0.71 |
| High | −0.03 | −0.68, 0.54 | 0.82 |  | 0.17 | −0.06, 0.84 | 0.09 |  | 0.09 | −0.13, 0.57 | 0.22 |
| ICFI tertiles (ref.= Low) |  |  |  |  |  |  |  |  |  |  |  |
| Mid | 0.12 | −0.78, 1.44 | 0.57 |  | 0.06 | −0.19, 0.47 | 0.40 |  | 0.06 | −0.16, 0.45 | 0.35 |
| High | 0.04 | −0.98, 1.22 | 0.83 |  | 0.14 | 0.01, 0.84 | 0.047 |  | 0.13 | −0.01, 0.72 | 0.06 |
| Age (months) | 0.04 | −0.11, 0.16 | 0.69 |  | −0.23 | −0.12, −0.04 | < 0.001 |  | −0.30 | −0.10, −0.05 | < 0.001 |
| Birthweight (kg) | 0.31 | 0.31, 1.19 | 0.001 |  | 0.21 | 0.20, 0.70 | 0.001 |  | 0.22 | 0.29, 0.72 | < 0.001 |
| Child sex - male  | −0.20 | −0.94, −0.03 | 0.036 |  | −0.12 | −0.56, −0.02 | 0.037 |  | −0.13 | −0.54, −0.09 | 0.007 |
| Diarrhoea - yes  | −0.23 | −1.06, −0.12 | 0.015 |  | 0.05 | −0.17, 0.39 | 0.44 |  | −0.03 | −0.30, 0.17 | 0.58 |
| Respiratory infection - yes  | −0.18 | −1.06, 0.01 | 0.05 |  | −0.04 | 0.43, 0.23 | 0.55 |  | −0.09 | −0.53, 0.02 | 0.07 |
| Maternal height (cm) | 0.15 | −0.01, 0.08 | 0.12 |  | 0.33 | 0.04, 0.09 | < 0.001 |  | 0.28 | 0.04, 0.08 | < 0.001 |
| Maternal education (ref.= None/incomplete primary) |  |  |  |  |  |  |  |  |  |  |  |
| Primary  | 0.10 | −0.31, 0.82 | 0.33 |  | 0.04 | −0.24, 0.43 | 0.58 |  | 0.08 | −0.07, 0.50 | 0.13 |
| Secondary | 0.19 | −0.04, 1.20 | 0.07 |  | 0.04 | −0.27, 0.53 | 0.52 |  | 0.09 | −0.05, 0.61 | 0.10 |
| Altitude (1000 m above sea level) | −0.20 | −1.74, −0.03 | 0.04 |  | −0.10 | −0.87, 0.13 | 0.14 |  | −0.14 | −1.00, −0.18 | 0.005 |
| Household hunger level (ref.= little/no hunger) |  |  |  |  |  |  |  |  |  |  |  |
| Mild/severe | −0.15 | −0.97, 0.22 | 0.21 |  | −0.02 | −0.34, 0.23 | 0.71 |  | −0.05 | −0.37, 0.14 | 0.37 |
| Wealth factor scores  |  |  |  |  |  |  |  |  |  |  |  |
| 1st Factor | −0.07 | −0.35, 0.19 | 0.51 |  | 0.00 | −0.15, 0.15 | 0.99 |  | −0.02 | −0.16, 0.10 | 0.65 |
| 2nd Factor | −0.02 | −0.29, 0.24 | 0.86 |  | −0.04 | −0.19, 0.10 | 0.55 |  | −0.04 | −0.17, 0.08 | 0.49 |
| N | 102 |  | 232 |  | 334 |
| Adjusted R2 | 0.26 |  | 0.26 |  | 0.31 |

HAZ, height-for-age *z*-score; PHI, health practices index; ICFI, infant and child feeding index; Ref., reference category; β, standardized coefficients.

\* Regression model included HPI (health practices index) as the main independent variable.