Supplemental Table 1: Calculated sample size [Actual p values to be obtained for each target group for difference in the prevalence of subclinical vitamin A deficiency between the baseline (National Micronutrient Survey 2011-12) and follow-up surveys]

|  |  |  |  |
| --- | --- | --- | --- |
|  | Vitamin A deficiency (%) | Sample size | P value |
| Target group | Survey1\* | Survey 2† | 1 stratum | All strata | 1 stratum | All strata |
| PSAC | 25% | 20% | 392 | 1,176 | 0.236 | 0.040 |
| NPNLW | 5% | 2% | 318 | 954 | 0.146 | 0.012 |
| SAC | 25% | 20% | 485 | 1,455 | 0.187 | 0.022 |

PSAC: Preschool Age Children, NPNLW: Non Pregnant Non Lactating Women, SAC: School Age Children

\*Assessment of subclinical vitamin A status in the National Micronutrient Survey 2011-12 is considered as the baseline assessment (Survey 1) prior to implementation of the national oil fortification programme

†The follow up survey (Survey 2) to assess subclinical vitamin A status would take place after the oil fortification programme becomes operational for years

Supplemental Table 2: Serum retinol sorted by strata (unadjusted for infection/inflammation)

|  |  |  |  |
| --- | --- | --- | --- |
| Population | n | Mean | SD |
| PSAC |  |  |  |
| National | 873 | 0.88 | 0.15 |
| Rural | 306 | 0.87 | 0.22 |
| Urban | 305 | 0.93 | 0.28 |
| Slum | 262 | 0.76 | 0.22 |
| SAC |
| National | 1413 | 0.76 | 0.38 |
| Rural | 474 | 0.76 | 0.38 |
| Urban | 479 | 0.79 | 0.38 |
| Slum | 460 | 0.71 | 0.38 |
| NPNLW |  |  |  |
| National | 1412 | 1.13 | 3.19 |
| Rural | 486 | 1.0 | 2.53 |
| Urban | 482 | 1.64 | 5.0 |
| Slum | 444 | 0.94 | 2.3 |

PSAC: Preschool Age Children, NPNLW: Non Pregnant Non Lactating Women, SAC: School Age Children

Supplemental Table 3: Vitamin A supplementation in Preschool Age Children

|  |  |  |  |
| --- | --- | --- | --- |
| Strata | n | % | 95% CI |
| National |  |  |  |
| <=6m\* | 932 | 77.0 | 69.4-84.2 |
| 6-12m† |  | 16.5 | 10.3-22.8 |
| >12m‡ |  | 6.6 | 2.7-10.4 |
| Rural |  |  |  |
| <=6m | 319 | 77.9 | 68.4-87.4 |
| 6-12m |  | 15.6 | 7.4-23.8 |
| >12m |  | 6.4 | 1.5-11.4 |
| Urban |  |  |  |
| <=6m | 320 | 73.1 | 66.1-80.2 |
| 6-12m |  | 19.6 | 13.6-25.6 |
| >12m |  | 7.2 | 2.7-11.6 |
| Slums |  |  |  |
| <=6m | 293 | 72.4 | 63.1-81.7 |
| 6-12m |  | 21.3 | 13.3-29.7 |
| >12m |  | 6.2 | 1.9-10.5 |
| **Asset index** |
| Poorest |  |  |  |
| <=6m | 175 | 76.4 | 62.3-90.4 |
| 6-12m |  | 17.1 | 4.7-29.1 |
| >12m |  | 6.4 | 1.3-11.4 |
| Poorer |  |  |  |
| <=6m | 190 | 69.6 | 58.0-81.2 |
| 6-12m |  | 19.6 | 8.8-30.5 |
| >12m |  | 10.6 | 2.1-19.2 |
| Middle |  |  |  |
| <=6m | 200 | 80.0 | 67.4-92.8 |
| 6-12m |  | 12.3 | 0.9-23.8 |
| >12m |  | 7.6 | 0.3-14.8 |
| Richer |  |  |  |
| <=6m | 176 | 74.5 | 61.6-87.5 |
| 6-12m |  | 22.9 | 9.8-36.0 |
| >12m |  | 2.5 | -0.3-5.3 |
| Richest |  |  |  |
| <=6m | 191 | 87.5 | 81.8-93.1 |
| 6-12m |  | 9.5 | 4.9-14.2 |
| >12m |  | 2.9 | 0.4-5.5 |

CI: Confidence Interval

\*<=6m: Supplemented within 6 month

 †6-12m: Supplemented within 6-12 month

‡ >12m: Supplemented before last 12 month

Supplemental Table 4: Household expenses, consumption of animal origin vitamin A and serum retinol in PSAC, sorted by intake levels of animal source food

|  |  |  |  |
| --- | --- | --- | --- |
| Intake levels of animal source food | Household expensesa | Mean intake of animal source vitamin Ab | Serum retinolc |
|  | (BDT./mo) | µg RAE/7d | μmol/l |
|  | Mean\* | SD | Mean | SD | Mean | SD |
| First quartile (Q1) | 4964.1 | 1.3 | 9.8 | 16.2 | 0.71 | 0.2 |
| Second quartile (Q2) | 5710.1 | 1.7 | 144.4 | 767.5 | 0.84 | 0.22 |
| Third quartile (Q3) | 7785.4 | 1.5 | 956.9 | 2397.2 | 0.88 | 0.23 |
| Fourth quartile (Q4) | 10198.5 | 1.8 | 1542.1 | 3263.8 | 0.96 | 0.24 |

Q: Quartile, BDT: Bangladeshi Taka, RAE: Retinol Activity Equivalents, SD: Standard Deviation

\*Geometric mean

aHousehold expenses: p<0.05 between any two categories, except Q1 vs. Q2 which was p=0.5

bIntake of animal source food: p<0.05 between any two categories except Q1 v. Q2 and Q1 v. Q3 which were non significant

cSerum retinol: p<0.05 between any two categories except Q1 v. Q2 and Q2 v. Q3 which were non significant

Supplemental Table 5: Underlying analyses into the multivariate regression findings for serum retinol

|  |
| --- |
| Regression finding : Consumption of animal source food determining higher status of retinol in PSAC |
|  | Intake of animal source food |
|  | <Median | >=Median |
|  | Mean | SD | Mean | SD |
| Intake of animal source vitamin A (RAE/d) | 80.9 | 279.3 | 189.1\*\*\*\*\*\*\*\*\*\* | 425.3 |
| Serum retinol (μmol/l) |  0.82 | 0.22 | 0.95\*\*\*\*\*\*\*\*\*\* | 0.24 |
| Regression finding: Urban residence of living determines higher level of retinol |
| PSAC | Rural | Urban |
|  | Mean | SD | Mean | SD |
| Intake of animal source vitamin A (RAE/d) | 122.8 | 344.7 | 188.5\*\*\* | 415.5 |
| Serum retinol (μmol/l) | 0.88 | 0.22 | 0.95\*\*\*\*\*\*\*\* | 0.28 |
| NPNLW | Mean | SD | Mean | SD |
| Intake of animal source vitamin A (RAE/d) | 66.6 | 146.9 | 125.8 | 469.4\*\*\*\*\*\*\*\*\* |
| Serum retinol (μmol/l) | 1.0 | 2.5 | 1.7 | 5.0\*\*\*\*\*\*\*\*\*\* |
| Regression finding: Non agricultural profession of household head was associated with higher retinol in SAC |
|  | Household expenses (BDT./mo) | Intake of animal sources food(gm/d) | S. retinol(μmol/l) |
| Non agricultural | 9133.8\*\*\*\*\*\*\* | 130 | 0.79\*\*\*\*\* |
| Agricultural | 7456.8 | 97 | 0.74 |
| Regression finding: Haemoglobin status is positively associated with retinol in SAC |
|  | %Vitamin A deficient (<0.7 μmol/l) | Serum retinol (μmol/l) |
| Non-anemic | 20.3\*\*\*\*\*\*\*\*\*\* | 0.85\*\*\*\*\* |
| Anemic | 31.3 | 0.78 |
| Regression finding: Girl SAC determined higher status of retinol in SAC |
|  | Intake of total vitamin A (µg RAE/d) | Intake of animal vitamin A (µg RAE/d) | Serum retinol (μmol/l) |
|  | Mean | SD | Mean | SD |  |
| Male | 628\*\* | 812 | 137\* | 450 | 0.76\*\*\*\* |
| Female | 584 | 1017 | 122 | 469 | 0.80 |
| Regression finding: Respondents lacking knowledge of source of vitamin A had SAC with lower status of retinol |
|  | Household expenses (BDT./mo) | SD |  | Serum retinol (μmol/l) |
| Mothers knowledgeable |  8955.3\*\*\*\*\*\* | 1.6 |  | 0.86\*\*\*\*\*\*\*\*\*\* | 0.36 |
| Mothers not knowledgeable | 8184.5 | 1.7 |  | 0.72 | 0.41 |

\*p=0.52, \*\*p=0.36, \*\*\*p=0.09, \*\*\*\*p=0.02, \*\*\*\*\*p=0.01, \*\*\*\*\*\*p=0.005, \*\*\*\*\*\*\*p=0.006, \*\*\*\*\*\*\*\*p=0.008, \*\*\*\*\*\*\*\*\*\*p=0.001, \*\*\*\*\*\*\*\*\*\*p<0.001