

Association between milk consumption and child growth for children aged 6-59 months

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Sample description

Table S1. Population weighted summary statistics of covariates, exposure, and outcome variables

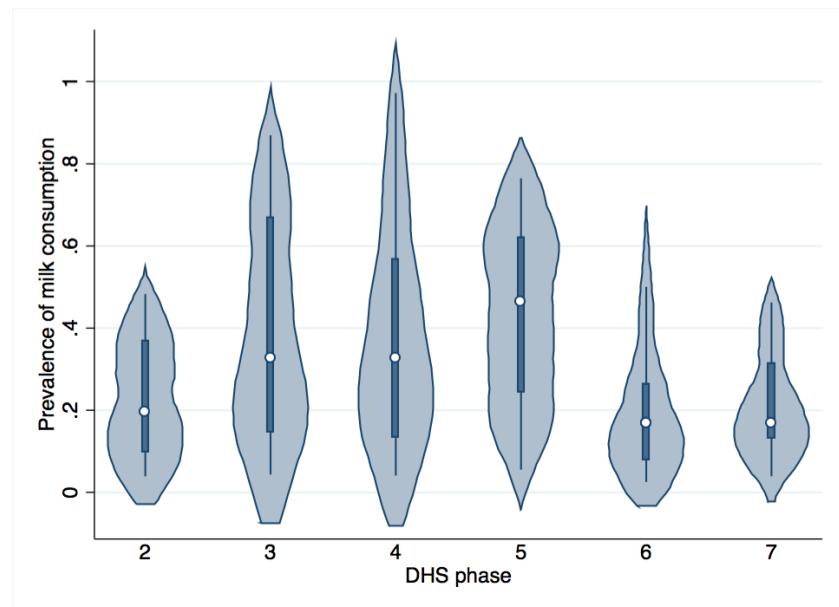
| | Whole sample | Sample of children consuming milk | Sample of children not consuming milk |
|---------------------------------|-----------------------------|-----------------------------------|---------------------------------------|
| Age of child | 24.218 (24.113 - 24.323) | 23.733 (23.599 - 23.866) | 24.946 (24.758 - 25.134) |
| Child is female | 0.491 (0.487 - 0.495) | 0.498 (0.494 - 0.503) | 0.479 (0.473 - 0.486) |
| Birth order: 1st | 0.265 (0.261 - 0.268) | 0.242 (0.238 - 0.246) | 0.299 (0.294 - 0.304) |
| Birth order: 2nd | 0.234 (0.230 - 0.237) | 0.217 (0.214 - 0.221) | 0.258 (0.252 - 0.264) |
| Birth order: 3rd | 0.162 (0.160 - 0.165) | 0.164 (0.160 - 0.167) | 0.160 (0.156 - 0.164) |
| Birth order: 4th or higher | 0.339 (0.335 - 0.344) | 0.377 (0.372 - 0.382) | 0.283 (0.276 - 0.290) |
| Multiple birth | 0.014 (0.014 - 0.015) | 0.013 (0.013 - 0.014) | 0.016 (0.014 - 0.017) |
| Child is currently breastfed | 0.729 (0.724 - 0.734) | 0.785 (0.779 - 0.790) | 0.646 (0.638 - 0.653) |
| Time of breastfeeding in months | 15.875 (15.817 - 15.934) | 16.079 (16.004 - 16.154) | 15.569 (15.474 - 15.665) |
| Mother's education: none | 0.436 (0.431 - 0.442) | 0.493 (0.487 - 0.500) | 0.351 (0.342 - 0.360) |
| Mother's education: primary | 0.250 (0.246 - 0.253) | 0.264 (0.260 - 0.269) | 0.228 (0.222 - 0.233) |
| Mother's education: secondary | 0.257 (0.253 - 0.262) | 0.209 (0.204 - 0.213) | 0.331 (0.324 - 0.338) |
| Mother's education: higher | 0.056 (0.053 - 0.060) | 0.034 (0.031 - 0.036) | 0.090 (0.084 - 0.097) |
| Mother's age | 25.276 (25.224 - 25.328) | 25.383 (25.322 - 25.443) | 25.115 (25.024 - 25.207) |
| Mother has partner | 0.955 (0.954 - 0.956) | 0.951 (0.949 - 0.953) | 0.961 (0.959 - 0.963) |
| Assets: radio | 0.440 (0.436 - 0.445) | 0.407 (0.402 - 0.412) | 0.491 (0.483 - 0.499) |
| Assets: TV | 0.380 (0.375 - 0.386) | 0.300 (0.294 - 0.306) | 0.500 (0.492 - 0.508) |

| | | | |
|------------------------------------|-----------------------------|-----------------------------|-----------------------------|
| Assets: bicycle | 0.352 (0.348 - 0.357) | 0.335 (0.330 - 0.341) | 0.379 (0.371 - 0.386) |
| Assets: car | 0.048 (0.046 - 0.050) | 0.034 (0.033 - 0.036) | 0.067 (0.063 - 0.071) |
| Assets: motorbike | 0.155 (0.149 - 0.160) | 0.137 (0.131 - 0.143) | 0.182 (0.172 - 0.193) |
| Assets: fridge | 0.223 (0.217 - 0.228) | 0.165 (0.159 - 0.171) | 0.307 (0.297 - 0.316) |
| Assets: phone | 0.087 (0.084 - 0.089) | 0.050 (0.048 - 0.053) | 0.140 (0.135 - 0.145) |
| Assets: electricity | 0.535 (0.529 - 0.541) | 0.451 (0.444 - 0.458) | 0.662 (0.655 - 0.670) |
| Assets: drinking water | 0.283 (0.279 - 0.288) | 0.224 (0.219 - 0.230) | 0.372 (0.364 - 0.380) |
| Assets: flush toilet | 0.290 (0.284 - 0.296) | 0.219 (0.213 - 0.226) | 0.396 (0.386 - 0.405) |
| Assets: low quality floor material | 0.555 (0.549 - 0.562) | 0.615 (0.607 - 0.622) | 0.454 (0.444 - 0.465) |
| Assets: low quality wall material | 0.450 (0.441 - 0.458) | 0.517 (0.507 - 0.527) | 0.335 (0.322 - 0.349) |
| Assets: low quality roof material | 0.398 (0.390 - 0.406) | 0.430 (0.421 - 0.439) | 0.343 (0.331 - 0.355) |
| Milk consumption | 0.400 (0.395 - 0.405) | 0.000 | 1.000 |
| Z-score: weight-for-age | -1.300 (-1.313 - -1.287) | -1.393 (-1.409 - -1.377) | -1.161 (-1.182 - -1.140) |
| Z-score: length-for-age | -1.702 (-1.718 - -1.685) | -1.792 (-1.812 - -1.772) | -1.566 (-1.590 - -1.542) |
| Z-score: weight-for-length | -0.474 (-0.485 - -0.463) | -0.520 (-0.535 - -0.506) | -0.405 (-0.423 - -0.388) |
| Stunting | 0.431 (0.427 - 0.436) | 0.457 (0.451 - 0.462) | 0.393 (0.386 - 0.400) |
| Severe stunting | 0.219 (0.215 - 0.222) | 0.239 (0.234 - 0.243) | 0.189 (0.184 - 0.194) |
| Wasting | 0.134 (0.131 - 0.137) | 0.141 (0.138 - 0.145) | 0.122 (0.117 - 0.128) |
| Severe wasting | 0.045 (0.044 - 0.047) | 0.049 (0.047 - 0.051) | 0.040 (0.038 - 0.041) |
| Underweight | 0.301 (0.297 - 0.305) | 0.322 (0.317 - 0.327) | 0.271 (0.264 - 0.277) |
| Severe underweight | 0.116 (0.113 - 0.119) | 0.128 (0.124 - 0.132) | 0.098 (0.095 - 0.102) |

Note: Means of control, exposure, and outcome variables, population weighted. Underlying sample is the stunting sample, reduced for observations with missing exposure, outcome, and controls without minimum acceptable diet (used in model 2). 95%-Confidence intervals are given in brackets.

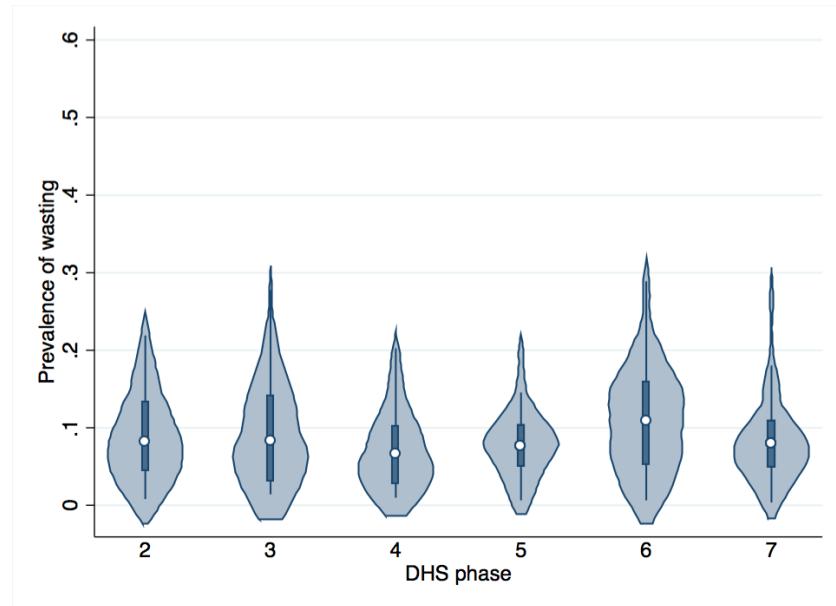
Development of milk consumption and undernutrition over time

Figure S1. Milk consumption



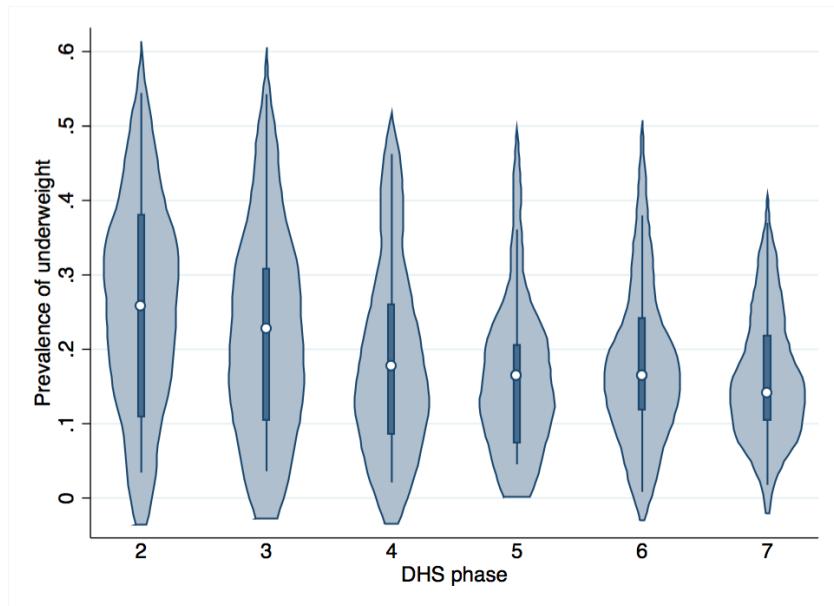
Note: Violin plots showing the prevalence of milk consumption, weighted, by DHS phase. Calculations based on stunting sample of model 2.

Figure S2. Prevalence of wasting



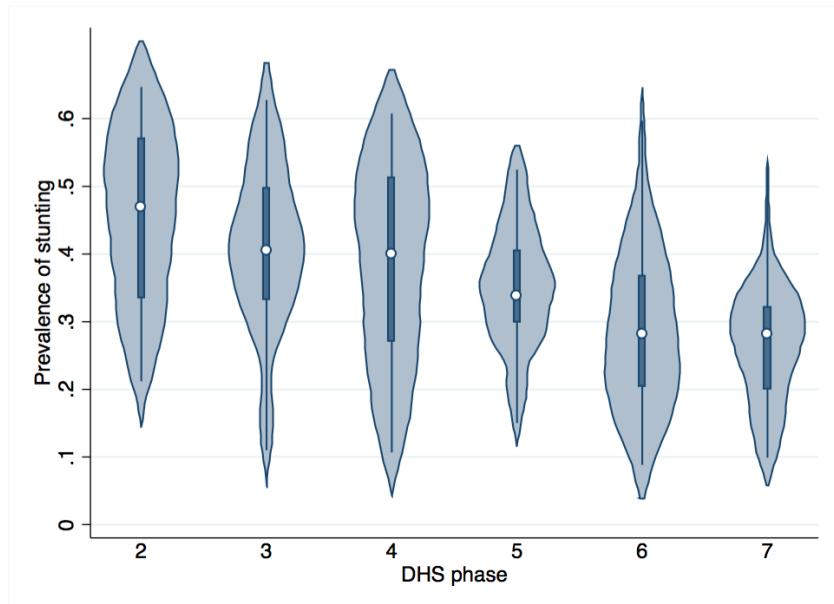
Note: Violin plots showing the prevalence of wasting, weighted, by DHS phase. Calculations based on sample of model 2.

Figure S3. Prevalence of underweight



Note: Violin plots showing the prevalence of underweight, weighted, by DHS phase. Calculations based on sample of model 2.

Figure S4. Prevalence of stunting



Note: Violin plots showing the prevalence of stunting, weighted, by DHS phase. Calculations based on sample of model 2.

Milk consumption and undernutrition across countries

Table S2. Milk consumption and undernutrition by country, most recent surveys

| | Year of survey | Milk consumption | Prevalence of wasting | Prevalence of underweight | Prevalence of stunting | Observations |
|--------------------------|----------------|-----------------------|------------------------|---------------------------|------------------------|--------------|
| Albania | 2017 | 0.33 (0.27 - 0.40) | 0.00 (-0.00 - 0.01) | 0.02 (0.00 - 0.03) | 0.10 (0.06 - 0.14) | 409 |
| Angola | 2015 | 0.09 (0.07 - 0.12) | 0.09 (0.07 - 0.11) | 0.22 (0.20 - 0.25) | 0.36 (0.32 - 0.39) | 1,462 |
| Armenia | 2015 | 0.16 (0.11 - 0.22) | 0.02 (0.00 - 0.04) | 0.02 (0.00 - 0.03) | 0.13 (0.09 - 0.17) | 219 |
| Azerbaijan | 2006 | 0.47 (0.42 - 0.52) | 0.05 (0.03 - 0.07) | 0.08 (0.05 - 0.12) | 0.26 (0.21 - 0.30) | 1,017 |
| Bangladesh | 2014 | 0.29 (0.26 - 0.33) | 0.16 (0.14 - 0.19) | 0.28 (0.26 - 0.30) | 0.32 (0.29 - 0.35) | 1,979 |
| Benin | 2017 | 0.13 (0.11 - 0.15) | 0.08 (0.07 - 0.09) | 0.19 (0.17 - 0.20) | 0.27 (0.25 - 0.28) | 3,014 |
| Bolivia | 2008 | 0.29 (0.27 - 0.31) | 0.01 (0.01 - 0.02) | 0.05 (0.04 - 0.06) | 0.31 (0.29 - 0.33) | 4,978 |
| Brazil | 1996 | 0.54 (0.52 - 0.57) | 0.02 (0.02 - 0.03) | 0.04 (0.03 - 0.05) | 0.12 (0.11 - 0.14) | 3,201 |
| Burkina Faso | 2010 | 0.09 (0.07 - 0.11) | 0.26 (0.23 - 0.28) | 0.33 (0.30 - 0.35) | 0.30 (0.28 - 0.32) | 1,879 |
| Burundi | 2016 | 0.05 (0.04 - 0.06) | 0.09 (0.07 - 0.10) | 0.28 (0.26 - 0.31) | 0.49 (0.47 - 0.52) | 1,723 |
| Cambodia | 2014 | 0.15 (0.12 - 0.18) | 0.11 (0.09 - 0.14) | 0.21 (0.17 - 0.25) | 0.29 (0.25 - 0.32) | 957 |
| Cameroon | 2011 | 0.18 (0.16 - 0.20) | 0.06 (0.05 - 0.07) | 0.17 (0.15 - 0.18) | 0.35 (0.33 - 0.37) | 3,532 |
| Central African Republic | 1994 | 0.07 (0.06 - 0.09) | 0.09 (0.08 - 0.11) | 0.26 (0.23 - 0.28) | 0.45 (0.43 - 0.48) | 1,855 |
| Chad | 2014 | 0.21 (0.19 - 0.24) | 0.18 (0.16 - 0.20) | 0.28 (0.26 - 0.30) | 0.31 (0.28 - 0.33) | 2,244 |
| Colombia | 2009 | 0.50 (0.48 - 0.52) | 0.01 (0.01 - 0.01) | 0.03 (0.03 - 0.04) | 0.14 (0.13 - 0.15) | 9,198 |
| Comoros | 2012 | 0.15 (0.11 - 0.19) | 0.15 (0.12 - 0.19) | 0.16 (0.12 - 0.20) | 0.29 (0.24 - 0.34) | 534 |
| Congo | 2011 | 0.28 (0.24 - 0.33) | 0.10 (0.07 - 0.13) | 0.15 (0.11 - 0.19) | 0.20 (0.16 - 0.24) | 867 |
| Congo, Dem. Republic | 2013 | 0.06 (0.04 - 0.07) | 0.11 (0.08 - 0.13) | 0.20 (0.18 - 0.23) | 0.33 (0.29 - 0.37) | 2,121 |
| Côte d'Ivoire | 2011 | 0.05 (0.03 - 0.07) | 0.12 (0.09 - 0.15) | 0.18 (0.15 - 0.22) | 0.26 (0.22 - 0.29) | 780 |
| Dominican Republic | 2013 | 0.76 (0.72 - 0.79) | 0.02 (0.01 - 0.02) | 0.03 (0.02 - 0.04) | 0.07 (0.05 - 0.09) | 1,217 |
| Egypt | 2014 | 0.18 | 0.12 | 0.08 | 0.21 | 2,713 |

| | | (0.16 - 0.20) | (0.10 - 0.14) | (0.06 - 0.09) | (0.19 - 0.23) | |
|-----------------|-------|-----------------------|-----------------------|------------------------|-----------------------|--------|
| Ethiopia | 2011 | 0.20 (0.17 - 0.23) | 0.15 (0.13 - 0.18) | 0.27 (0.24 - 0.30) | 0.37 (0.34 - 0.40) | 2,260 |
| Gabon | 2012 | 0.24 (0.18 - 0.29) | 0.06 (0.03 - 0.09) | 0.07 (0.04 - 0.09) | 0.15 (0.11 - 0.18) | 502 |
| Gambia | 2013 | 0.11 (0.08 - 0.14) | 0.16 (0.12 - 0.20) | 0.17 (0.14 - 0.21) | 0.19 (0.16 - 0.23) | 881 |
| Ghana | 2014 | 0.14 (0.11 - 0.17) | 0.08 (0.06 - 0.11) | 0.14 (0.11 - 0.17) | 0.14 (0.11 - 0.17) | 689 |
| Guatemala | 2014 | 0.14 (0.13 - 0.15) | 0.01 (0.01 - 0.01) | 0.14 (0.13 - 0.16) | 0.50 (0.47 - 0.52) | 3,495 |
| Guinea | 2012 | 0.08 (0.06 - 0.10) | 0.17 (0.15 - 0.20) | 0.19 (0.16 - 0.22) | 0.21 (0.18 - 0.25) | 874 |
| Guyana | 2009 | 0.76 (0.73 - 0.80) | 0.05 (0.03 - 0.07) | 0.13 (0.09 - 0.16) | 0.23 (0.18 - 0.28) | 984 |
| Haiti | 2016 | 0.13 (0.11 - 0.15) | 0.06 (0.04 - 0.08) | 0.09 (0.07 - 0.11) | 0.15 (0.13 - 0.18) | 1,140 |
| Honduras | 2011 | 0.36 (0.33 - 0.38) | 0.02 (0.01 - 0.03) | 0.08 (0.06 - 0.09) | 0.19 (0.17 - 0.21) | 2,070 |
| India | 2015 | 0.40 (0.40 - 0.41) | 0.24 (0.23 - 0.24) | 0.34 (0.34 - 0.35) | 0.36 (0.35 - 0.36) | 61,196 |
| Jordan | 2012 | 0.42 (0.35 - 0.49) | 0.01 (0.00 - 0.02) | 0.01 (-0.00 - 0.02) | 0.09 (0.05 - 0.12) | 683 |
| Kazakhstan | 1999 | 0.97 (0.95 - 0.99) | 0.02 (0.01 - 0.03) | 0.04 (0.02 - 0.06) | 0.14 (0.10 - 0.18) | 476 |
| Kenya | 2014 | 0.45 (0.42 - 0.48) | 0.05 (0.04 - 0.06) | 0.13 (0.11 - 0.14) | 0.27 (0.25 - 0.29) | 4,326 |
| Kyrgyz Republic | 2012 | 0.23 (0.19 - 0.27) | 0.02 (0.01 - 0.03) | 0.03 (0.01 - 0.04) | 0.15 (0.11 - 0.18) | 829 |
| Lesotho | 2014 | 0.17 (0.11 - 0.22) | 0.05 (0.03 - 0.08) | 0.13 (0.09 - 0.18) | 0.30 (0.23 - 0.36) | 279 |
| Liberia | 2013 | 0.08 (0.04 - 0.12) | 0.11 (0.08 - 0.14) | 0.18 (0.14 - 0.22) | 0.23 (0.19 - 0.28) | 861 |
| Madagascar | 2003* | 0.20 (0.18 - 0.23) | 0.16 (0.15 - 0.18) | 0.39 (0.36 - 0.42) | 0.51 (0.48 - 0.53) | 3,550 |
| Malawi | 2015 | 0.04 (0.03 - 0.05) | 0.04 (0.03 - 0.05) | 0.10 (0.08 - 0.12) | 0.30 (0.27 - 0.33) | 1,379 |
| Maldives | 2016 | 0.45 (0.39 - 0.51) | 0.06 (0.03 - 0.09) | 0.12 (0.08 - 0.16) | 0.22 (0.17 - 0.27) | 533 |
| Mali | 2012 | 0.23 (0.20 - 0.26) | 0.19 (0.17 - 0.22) | 0.24 (0.21 - 0.27) | 0.29 (0.26 - 0.32) | 1,120 |
| Morocco | 2003 | 0.57 (0.55 - 0.60) | 0.10 (0.09 - 0.11) | 0.10 (0.09 - 0.11) | 0.24 (0.22 - 0.26) | 4,533 |
| Mozambique | 2011 | 0.03 | 0.09 | 0.18 | 0.43 | 2,618 |

| | | (0.02 - 0.03) | (0.08 - 0.11) | (0.16 - 0.20) | (0.40 - 0.45) | |
|-----------------------|------|-----------------------|-----------------------|-----------------------|-----------------------|-------|
| Myanmar | 2015 | 0.08 (0.06 - 0.11) | 0.07 (0.05 - 0.09) | 0.14 (0.12 - 0.17) | 0.18 (0.15 - 0.21) | 1,024 |
| Namibia | 2013 | 0.08 (0.05 - 0.12) | 0.12 (0.08 - 0.15) | 0.12 (0.08 - 0.15) | 0.16 (0.12 - 0.20) | 355 |
| Nepal | 2015 | 0.46 (0.42 - 0.51) | 0.14 (0.11 - 0.18) | 0.26 (0.22 - 0.30) | 0.32 (0.28 - 0.37) | 662 |
| Nicaragua | 2001 | 0.33 (0.30 - 0.35) | 0.02 (0.01 - 0.03) | 0.09 (0.07 - 0.10) | 0.27 (0.25 - 0.29) | 3,858 |
| Niger | 2012 | 0.09 (0.07 - 0.12) | 0.29 (0.26 - 0.32) | 0.44 (0.41 - 0.47) | 0.36 (0.33 - 0.40) | 1,173 |
| Nigeria | 2013 | 0.10 (0.09 - 0.11) | 0.26 (0.25 - 0.28) | 0.36 (0.35 - 0.38) | 0.35 (0.33 - 0.36) | 5,703 |
| Pakistan | 2017 | 0.39 (0.32 - 0.45) | 0.10 (0.07 - 0.14) | 0.20 (0.16 - 0.25) | 0.28 (0.22 - 0.33) | 639 |
| Paraguay | 1990 | 0.37 (0.33 - 0.41) | 0.01 (0.00 - 0.01) | 0.03 (0.02 - 0.05) | 0.21 (0.18 - 0.24) | 1,088 |
| Peru | 2012 | 0.53 (0.50 - 0.55) | 0.01 (0.00 - 0.01) | 0.04 (0.03 - 0.05) | 0.20 (0.19 - 0.22) | 4,920 |
| Rwanda | 2014 | 0.19 (0.16 - 0.22) | 0.04 (0.02 - 0.05) | 0.10 (0.09 - 0.12) | 0.35 (0.32 - 0.38) | 1,033 |
| Sao Tome and Principe | 2008 | 0.24 (0.20 - 0.28) | 0.11 (0.09 - 0.14) | 0.14 (0.11 - 0.17) | 0.33 (0.29 - 0.37) | 1,068 |
| Senegal | 2017 | 0.23 (0.20 - 0.25) | 0.11 (0.10 - 0.13) | 0.15 (0.13 - 0.17) | 0.15 (0.13 - 0.17) | 2,649 |
| Sierra Leone | 2013 | 0.07 (0.05 - 0.09) | 0.14 (0.11 - 0.17) | 0.21 (0.18 - 0.24) | 0.35 (0.31 - 0.38) | 1,053 |
| South Africa | 2016 | 0.23 (0.17 - 0.29) | 0.02 (0.01 - 0.04) | 0.06 (0.02 - 0.09) | 0.26 (0.20 - 0.33) | 274 |
| Swaziland | 2006 | 0.31 (0.27 - 0.35) | 0.03 (0.02 - 0.04) | 0.06 (0.04 - 0.07) | 0.30 (0.27 - 0.33) | 1,177 |
| Tajikistan | 2017 | 0.37 (0.34 - 0.41) | 0.08 (0.07 - 0.10) | 0.09 (0.07 - 0.11) | 0.13 (0.11 - 0.15) | 1,134 |
| Tanzania | 2015 | 0.17 (0.15 - 0.19) | 0.06 (0.05 - 0.07) | 0.13 (0.12 - 0.15) | 0.30 (0.27 - 0.32) | 2,352 |
| Timor-Leste | 2016 | 0.07 (0.05 - 0.09) | 0.29 (0.26 - 0.32) | 0.37 (0.34 - 0.40) | 0.39 (0.36 - 0.42) | 1,134 |
| Togo | 2013 | 0.04 (0.03 - 0.06) | 0.13 (0.11 - 0.15) | 0.17 (0.14 - 0.20) | 0.21 (0.18 - 0.24) | 908 |
| Turkey | 1998 | 0.78 (0.75 - 0.80) | 0.02 (0.02 - 0.03) | 0.07 (0.06 - 0.08) | 0.21 (0.18 - 0.23) | 2,340 |
| Uganda | 2016 | 0.26 (0.23 - 0.29) | 0.06 (0.05 - 0.08) | 0.11 (0.09 - 0.13) | 0.23 (0.20 - 0.26) | 1,033 |
| Uzbekistan | 1996 | 0.80 | 0.12 | 0.14 | 0.39 | 869 |

| | | (0.76 - 0.84) | (0.09 - 0.16) | (0.10 - 0.19) | (0.35 - 0.43) | |
|----------|------|-----------------------|-----------------------|-----------------------|-----------------------|-------|
| Yemen | 1991 | 0.37 (0.32 - 0.41) | 0.14 (0.11 - 0.17) | 0.31 (0.28 - 0.34) | 0.57 (0.53 - 0.60) | 1,288 |
| Zambia | 2013 | 0.04 (0.03 - 0.05) | 0.07 (0.06 - 0.08) | 0.15 (0.14 - 0.16) | 0.42 (0.40 - 0.44) | 5,661 |
| Zimbabwe | 2015 | 0.04 (0.03 - 0.05) | 0.08 (0.06 - 0.10) | 0.11 (0.08 - 0.13) | 0.22 (0.19 - 0.25) | 1,039 |

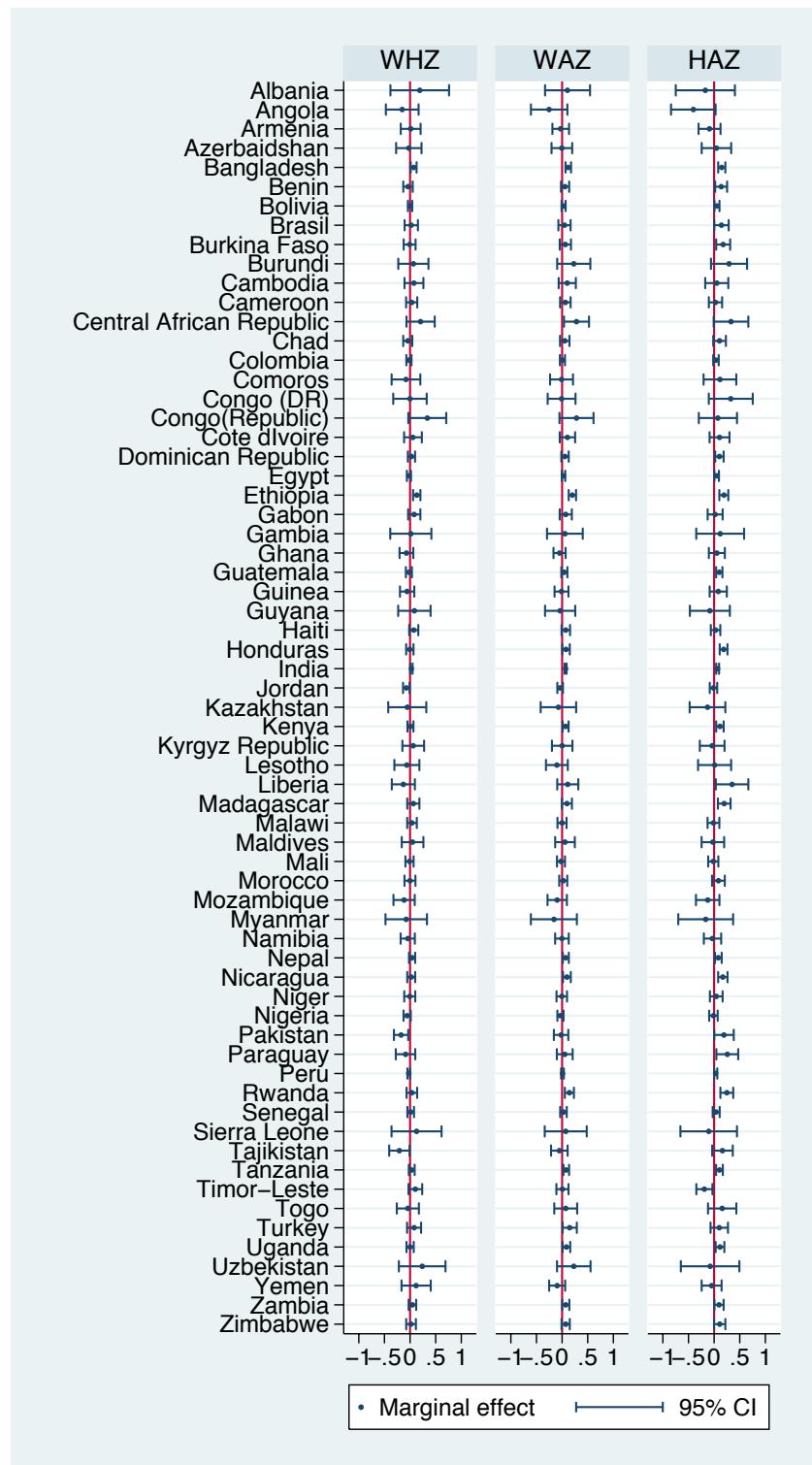
Note: Country-specific percentage of children consuming milk, prevalence of wasting, underweight, and stunting, weighted.

95%-Confidence intervals are given in brackets. Underlying samples are the respective wasting, underweight, and stunting samples used in model 2. Percentage of children consuming milk and number of observations are from stunting sample.

* Survey year of Madagascar for stunting is 2008.

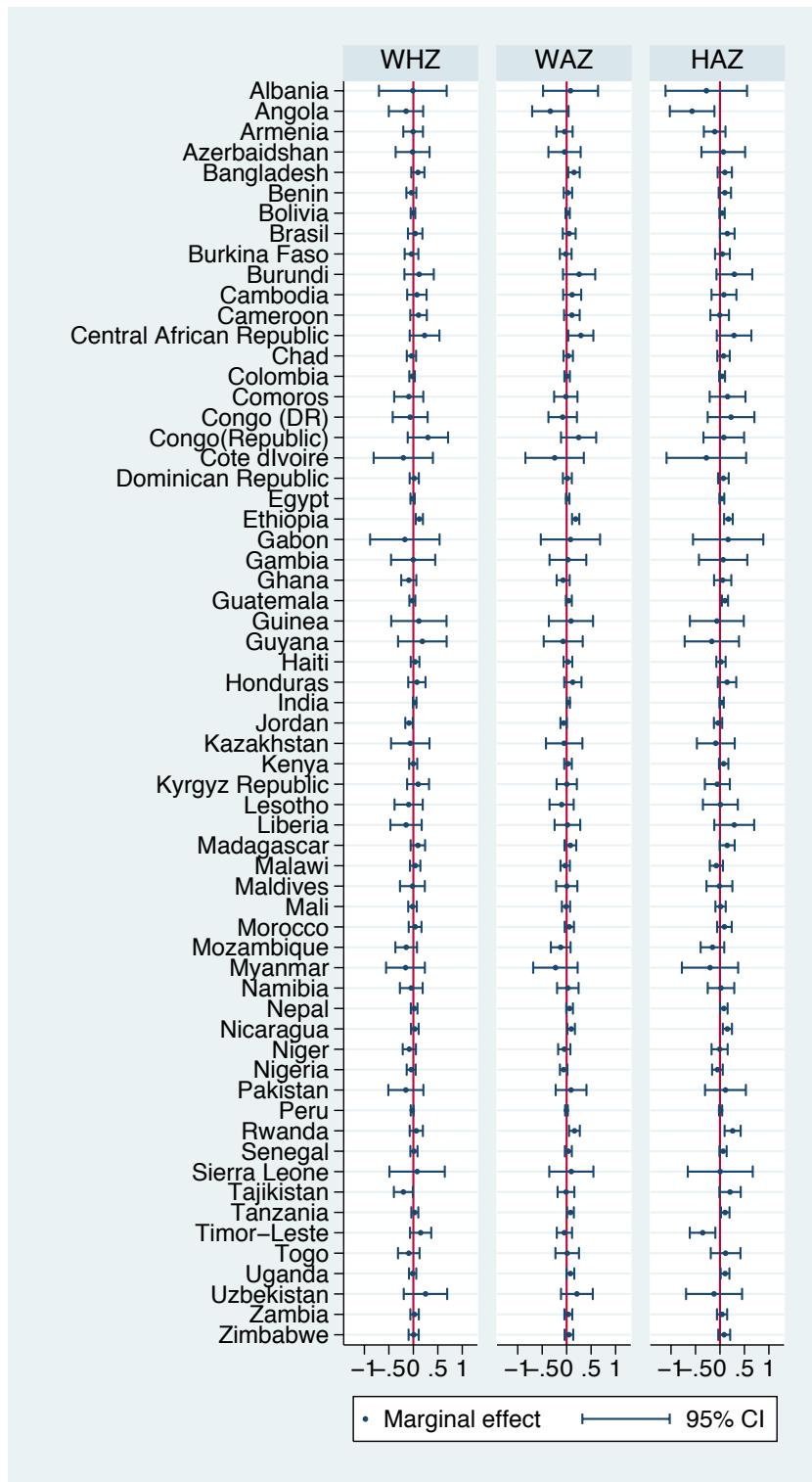
Country-specific associations between milk consumption and undernutrition

Figure S5. Country-specific association between milk consumption and undernutrition
(Adjusted Model 2)



All estimates are marginal effects based on linear regressions for the second model specification (adjusted 2). Covariates: Sex of child, age of child, birth order, part of a multiple birth, child currently breastfed, duration of breastfeeding in months, education of mother, age of mother at birth, current partnership status of mother, wealth quintiles. Fixed effects on the PSU level. Standard errors are clustered on the PSU level.

Figure S6. Country-specific association between milk consumption and undernutrition
(Adjusted Model 3)



All estimates are marginal effects based on linear regressions for the third model specification (adjusted 3). Covariates: Sex of child, age of child, birth order, part of a multiple birth, child currently breastfed, duration of breastfeeding in months, education of mother, age of mother at birth, current partnership status of mother, wealth quintiles, minimum acceptable diet. Fixed effects on the PSU level. Standard errors are clustered on the PSU level.

Alternative specification with additional control variable birth weight

Table S3. Association between milk consumption and undernutrition across all wealth quintiles and age groups, extended controls

| z-scores | Unadjusted | | | Adjusted (2) | | | Adjusted (3) | | |
|--------------------------------|-------------------|-------------------|----------------|-------------------|-------------------|----------------|-------------------|-------------------|----------------|
| | Weight-for-height | Weight-for-age | Height-for-age | Weight-for-height | Weight-for-age | Height-for-age | Weight-for-height | Weight-for-age | Height-for-age |
| Milk consumption | | | | | | | | | |
| | 0.1566*** | 0.3039*** | 0.3063*** | -0.0138 | 0.0335** | 0.0737*** | -0.0216 | 0.0177 | 0.0537*** |
| CI 95% | [0.15,0.16] | [0.30,0.31] | [0.30,0.32] | [-0.04,0.01] | [0.01,0.05] | [0.05,0.10] | [-0.05,0.01] | [-0.00,0.04] | [0.03,0.08] |
| P | 0.0000 | 0.0000 | 0.0000 | 0.2677 | 0.0011 | 0.0000 | 0.1384 | 0.0527 | 0.0002 |
| N | 889,710 | 919,973 | 895,599 | 332,362 | 340,678 | 334,797 | 267,973 | 274,637 | 269,584 |
| Moderate undernutrition | | | | | | | | | |
| | Wasting | Under-weight | Stunting | Wasting | Under-weight | Stunting | Wasting | Under-weight | Stunting |
| Milk consumption (AMEs) | | | | | | | | | |
| | -0.0179*** | -0.0595*** | -0.0921*** | 0.0014 | -0.0048*** | -0.0171*** | 0.0035 | -0.0027 | -0.0113*** |
| CI 95% | [-0.02,-0.02] | [-0.06,-0.06] | [-0.09,-0.09] | [-0.00,0.01] | [-0.01,-0.00] | [-0.02,-0.01] | [-0.00,0.01] | [-0.01,0.00] | [-0.02,-0.01] |
| P | 0.0000 | 0.0000 | 0.0000 | 0.5822 | 0.0001 | 0.0000 | 0.2258 | 0.0667 | 0.0000 |
| N | 889,710 | 919,973 | 895,599 | 90,869 | 146,610 | 210,922 | 66,024 | 108,522 | 160,170 |
| Severe undernutrition | | | | | | | | | |
| | Sev. Wasting | Sev. Under-weight | Sev. Stunting | Sev. Wasting | Sev. Under-weight | Sev. Stunting | Sev. Wasting | Sev. Under-weight | Sev. Stunting |
| Milk consumption (AMEs) | | | | | | | | | |
| | -0.0074*** | -0.0237*** | -0.0565*** | -0.0039 | -0.0054** | -0.0113*** | -0.0068 | -0.0023 | -0.0066* |
| CI 95% | [-0.01,-0.01] | [-0.03,-0.02] | [-0.06,-0.05] | [-0.01,0.00] | [-0.01,-0.00] | [-0.02,-0.01] | [-0.02,0.00] | [-0.01,0.00] | [-0.01,-0.00] |
| P | 0.0000 | 0.0000 | 0.0000 | 0.3149 | 0.0038 | 0.0000 | 0.1122 | 0.2344 | 0.0277 |
| N | 889,710 | 919,973 | 895,599 | 41,107 | 65,333 | 129,822 | 28,609 | 45,396 | 95,482 |

Covariates in adjusted models: Sex of child, age of child, birth order, part of a multiple birth, child currently breastfed, duration of breastfeeding in months, birthweight, education of mother, age of mother at birth, current partnership status of mother, wealth quintiles. Third specification additionally controls for a minimum acceptable diet. All adjusted models include fixed effects on the PSU level. AMEs are based on logistic regression in the first specification and on conditional logistic regression in the second and third specification. Standard errors are clustered at the PSU-level. Standard errors of adjusted models for continuous outcomes are clustered on the country level. Estimates are unweighted.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Alternative specification with interaction of milk consumption and wealth quintiles

Table S4. Wealth as mediator of association between milk consumption and undernutrition

| | Adjusted (2) | | | Adjusted (2), no milk | | | Adjusted (2), interaction | | |
|---------------------------------------------------------------------|-------------------|----------------|----------------|-----------------------|----------------|----------------|---------------------------|----------------|----------------|
| z-scores | Weight-for-height | Weight-for-age | Height-for-age | Weight-for-height | Weight-for-age | Height-for-age | Weight-for-height | Weight-for-age | Height-for-age |
| Milk consumption | 0.0062 | 0.0540*** | 0.0809*** | | | | -0.0026 | 0.0320** | 0.0431** |
| CI 95% | [-0.02, 0.03] | [0.03, 0.08] | [0.06, 0.10] | | | | [-0.02, 0.02] | [0.01, 0.05] | [0.02, 0.07] |
| P | 0.5678 | 0.0000 | 0.0000 | | | | 0.7812 | 0.0053 | 0.0027 |
| Wealth quintiles, base: quintile 1 | | | | | | | | | |
| Quintile 2 | 0.0181** | 0.0426*** | 0.0494*** | 0.0182** | 0.0439*** | 0.0512*** | 0.0200* | 0.0473*** | 0.0474*** |
| CI 95% | [0.01, 0.03] | [0.03, 0.06] | [0.03, 0.07] | [0.01, 0.03] | [0.03, 0.06] | [0.03, 0.07] | [0.00, 0.04] | [0.03, 0.07] | [0.03, 0.07] |
| P | 0.0061 | 0.0000 | 0.0000 | 0.0064 | 0.0000 | 0.0000 | 0.0105 | 0.0000 | 0.0001 |
| Quintile 3 | 0.0456*** | 0.1043*** | 0.1041*** | 0.0459*** | 0.1070*** | 0.1079*** | 0.0426*** | 0.0969*** | 0.0940*** |
| CI 95% | [0.02, 0.07] | [0.06, 0.15] | [0.06, 0.14] | [0.02, 0.07] | [0.06, 0.15] | [0.07, 0.15] | [0.02, 0.07] | [0.06, 0.14] | [0.05, 0.13] |
| P | 0.0001 | 0.0000 | 0.0000 | 0.0002 | 0.0000 | 0.0000 | 0.0004 | 0.0000 | 0.0000 |
| Quintile 4 | 0.0877*** | 0.1951*** | 0.1990*** | 0.0882*** | 0.1991*** | 0.2048*** | 0.0839*** | 0.1865*** | 0.1875*** |
| CI 95% | [0.05, 0.12] | [0.12, 0.27] | [0.13, 0.26] | [0.05, 0.13] | [0.12, 0.28] | [0.14, 0.27] | [0.05, 0.12] | [0.11, 0.26] | [0.12, 0.26] |
| P | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Quintile 5 | 0.1550*** | 0.3387*** | 0.3519*** | 0.1558*** | 0.3453*** | 0.3615*** | 0.1466*** | 0.3163*** | 0.3201*** |
| CI 95% | [0.09, 0.22] | [0.23, 0.45] | [0.25, 0.45] | [0.09, 0.22] | [0.23, 0.46] | [0.26, 0.46] | [0.09, 0.20] | [0.22, 0.41] | [0.23, 0.41] |
| P | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Milk – wealth interaction, base: no milk consumption, quintile 1 | | | | | | | | | |
| Milk consumption & quintile 2 | | | | | | | -0.0054 | -0.0133 | 0.0114 |
| CI 95% | | | | | | | [-0.03, 0.02] | [-0.03, 0.01] | [-0.02, 0.04] |
| P | | | | | | | 0.6629 | 0.1998 | 0.4532 |
| Milk consumption & quintile 3 | | | | | | | 0.0112 | 0.0279* | 0.0399* |
| CI 95% | | | | | | | [-0.02, 0.04] | [0.00, 0.05] | [0.01, 0.07] |
| P | | | | | | | 0.4104 | 0.0393 | 0.0118 |
| Milk consumption & quintile 4 | | | | | | | 0.0133 | 0.0306 | 0.0436 |
| CI 95% | | | | | | | [-0.02, 0.04] | [-0.00, 0.06] | [-0.00, 0.09] |
| P | | | | | | | 0.3664 | 0.0509 | 0.0633 |
| Milk consumption & quintile 5 | | | | | | | 0.0224 | 0.0584* | 0.0857*** |
| CI 95% | | | | | | | [-0.02, 0.06] | [0.01, 0.11] | [0.05, 0.12] |
| P | | | | | | | 0.2460 | 0.0169 | 0.0000 |
| N | 668,463 | 693,376 | 673,177 | 668,463 | 693,376 | 673,177 | 668,463 | 693,376 | 673,177 |

Covariates: Sex of child, age of child, birth order, part of a multiple birth, child currently breastfed, duration of breastfeeding in months, education of mother, age of mother at birth, current partnership status of mother, wealth quintiles. All models include fixed effects on the PSU level. AMEs are based on conditional logistic regression. Standard errors are clustered on the country level. Estimates are unweighted.

* p < 0.05, ** p < 0.01, *** p < 0.001