

Divergent trends in child undernutrition in Bangladesh, 2012-2025: falling stunting alongside rising wasting in three nationally representative surveys

Ashiqur Rahman Rony

ashiqurrahman.stat@gmail.com

Government Titumir College, Dhaka <https://orcid.org/0009-0005-2932-2630>

Kazi Sabbir Ahmad Nahin

University of Kentucky

Tamanna Islam

Eden Mohila College

Abida S Asha

University of Kentucky

Arman Hossen

Miami University

Arpita Sarkar Kripa

Government Titumir College, Dhaka

Research Article

Keywords: child undernutrition, stunting, wasting, Bangladesh, health inequality, Multiple Indicator Cluster Survey

Posted Date: August 11th, 2026

DOI: <https://doi.org/10.21203/rs.3.rs-10637396/v1>

License: © ⓘ This work is licensed under a Creative Commons Attribution 4.0 International License.
[Read Full License](#)

Additional Declarations: The authors declare no competing interests.

Abstract

Bangladesh has achieved substantial reductions in child stunting and is frequently cited as a global nutrition success story, but trends in other forms of undernutrition may not mirror those observed for stunting. We analysed the three Bangladesh Multiple Indicator Cluster Survey rounds carrying anthropometry (2012-13, 2019, 2025; 67,359 children under five) using survey-weighted methods. Stunting declined from 42.0% to 24.0% and underweight from 31.9% to 23.0%, whereas wasting increased from 9.6% to 12.9% and severe wasting from 1.6% to 2.5%. Wasting rose across all five wealth quintiles and all seven divisions with a comparable baseline, significantly in five. In 2025, maternal education and division remained significant predictors of stunting but were not associated with wasting, and across the 64 districts the two conditions were uncorrelated ($r = -0.01$). Absolute wealth inequality in stunting narrowed while relative inequality persisted, and only 19% of the decline in stunting was attributable to changes in population composition. Continuing the pace observed since 2019 leaves stunting at 21.2% in 2030 against a 21.0% target. Monitoring stunting alone may obscure emerging nutritional vulnerabilities, and existing poverty- and geography-based targeting may inadequately identify children affected by wasting.

Introduction

Child undernutrition remains one of the largest contributors to child mortality and to lost human capital worldwide (1). Stunting, low height for age, reflects the cumulative effect of inadequate diet and repeated infection over the first years of life, and is associated with impaired cognitive development, reduced schooling and lower adult earnings. (2, 3) Wasting, low weight for height, reflects recent and often acute weight loss and carries a markedly higher short-term risk of death. (4, 5) The two conditions are related but not interchangeable: they arise on different timescales, they respond to different interventions, and a child may have one, the other, or both. Children who are concurrently wasted and stunted carry the highest mortality risk of any anthropometric group. (5–7)

Because stunting is the primary child nutrition indicator incorporated into the World Health Assembly (WHA) nutrition targets and the Sustainable Development Goal (SDG) monitoring framework, national and global assessments of progress against child undernutrition are frequently based on changes in stunting prevalence alone. (8) Consequently, countries that have achieved substantial reductions in stunting are often highlighted as nutrition success stories. Bangladesh has been cited repeatedly as an example of rapid improvement, with the decline attributed to rising household incomes, expanded maternal education, improved sanitation and wider health service coverage rather than to nutrition-specific programmes alone. (9, 10)

The mechanisms underlying this improvement have also been explored empirically. Using data from the 2012-13 and 2019 rounds of the Bangladesh Multiple Indicator Cluster Survey (MICS), a recent decomposition study reported that approximately 86% of the observed reduction in stunting was attributable to changes in the relationships between child and household characteristics and nutritional

outcomes, whereas only a small proportion of the decline resulted from shifts in the distribution of those characteristics themselves. (11) Using the same survey rounds, another study documented a substantial decline in the coexistence of multiple forms of child malnutrition, with prevalence falling from 27.5% to 18.6% over the period. (12) Collectively, these studies reinforced the view that Bangladesh was making broad and sustained progress in reducing child undernutrition. However, available evidence has remained limited to data collected up to 2019.

The 2025 Bangladesh MICS provides the first nationally representative assessment of child anthropometry since that time and covers a period marked by major social and economic disruptions associated with the COVID-19 pandemic and its aftermath. Preliminary findings from the survey indicate that the long-term decline in stunting continued, but that wasting increased during the same period. (13) This emerging divergence is particularly important because stunting and wasting reflect distinct biological processes, risk factors, and intervention needs. While stunting captures cumulative growth deficits arising from chronic deprivation, wasting reflects more recent or acute nutritional stress and is associated with a substantially elevated risk of child mortality. (4, 5)

Notably, the increase in wasting observed in the 2025 MICS is consistent with evidence from an independent national survey programme. The Bangladesh Demographic and Health Survey (BDHS) reported that wasting increased from 8% in 2017-18 to 11% in 2022, while stunting continued to decline, reaching 24%. (14) The consistency of these findings across two nationally representative survey systems, each based on independent samples, survey instruments, and field operations, strengthens confidence that the observed rise in wasting reflects a genuine population-level trend rather than survey-specific measurement error. Taken together, the available evidence suggests that Bangladesh's child nutrition transition may be more complex than implied by stunting trends alone, underscoring the need to examine how different forms of undernutrition have evolved during the post-2019 period.

Despite emerging evidence that wasting has increased in Bangladesh, several important questions remain unanswered. First, it is unclear whether the observed increase reflects a population-wide shift or is concentrated among socioeconomically disadvantaged and geographically vulnerable groups. Existing studies have primarily focused on trends in stunting and coexisting forms of malnutrition up to 2019, leaving the distribution and determinants of wasting in the post-pandemic period largely unexplored. (11, 12, 15) Second, although stunting and wasting are frequently discussed together under the broader framework of child undernutrition, it remains uncertain whether they share similar social and geographic patterning. (6, 7) This distinction has important programmatic implications. If wasting remains concentrated among poorer households and historically disadvantaged regions, existing poverty-targeted and geographically targeted nutrition programmes may be sufficient. Conversely, if wasting is more widely distributed across population groups, current targeting approaches may fail to reach a substantial proportion of affected children.

To address these gaps, we analysed all three nationally representative Bangladesh MICS rounds that included anthropometric measurements (2012-13, 2019, and 2025). We hypothesised that recent

improvements in child nutrition would not be uniform across anthropometric indicators and that the determinants of wasting would differ from those of stunting. Specifically, we expected stunting to remain strongly associated with socioeconomic and geographic disadvantage, whereas wasting would exhibit weaker social and spatial gradients, reflecting the broader and more diffuse pattern suggested by recent survey findings. We therefore examined long-term trends in multiple forms of child undernutrition, changes in wealth-related inequality, differences in the risk profiles of stunting and wasting, their geographic distribution at the district level, and the extent to which changes in population composition contributed to the continued decline in stunting.

Methodology

Data Source and Study Design

We used the Bangladesh Multiple Indicator Cluster Survey, a nationally representative household survey conducted by the Bangladesh Bureau of Statistics with technical support from UNICEF. The survey uses a stratified two-stage cluster design: enumeration areas are selected within strata defined by division and urban or rural residence, and households are then selected systematically within each enumeration area. Four rounds have been conducted in Bangladesh, in 2006, 2012-13, 2019 and 2025. (13, 16, 17)

The 2006 round did not include an anthropometry module and was therefore excluded (supplementary note S2); the analysis uses the three rounds in which children were measured (2012-13, 2019 and 2025). As these are repeated cross-sectional surveys rather than a panel, the analysis compares independent samples over time and does not follow individual children.

Analytic Sample

The sample comprised children under five years of age in households where the under-five questionnaire was completed. Children for whom the questionnaire was not completed, identified by a sampling weight of zero and a missing height-for-age z-score, were excluded. The resulting sample was 67,359 children: 20,903 in 2012-13, 23,099 in 2019 and 23,357 in 2025.

Outcome Variables

Anthropometric status was defined against the WHO Child Growth Standards using the height-for-age, weight-for-age and weight-for-height z-scores supplied in the survey data files. (18) Stunting, underweight and wasting were defined as z-scores below minus two standard deviations on the respective measure, and the severe forms as below minus three. Overweight was defined as a weight-for-height z-score above plus two. Concurrent wasting and stunting was defined as meeting both criteria simultaneously.

Children with biologically implausible measurements, identified by the measurement flags supplied with each round, were excluded from the corresponding estimates. Applying this procedure reproduced the published 2025 stunting estimate of 24.0%; every 2025 estimate that also appears in the survey's preliminary report is compared with the published value in supplementary table S1.

Explanatory Variables

Explanatory variables were restricted to those measured consistently in all three rounds: child age, child sex, urban or rural residence, administrative division, household wealth quintile and mother's education. Maternal education was classified as none or pre-primary, primary, and secondary or higher, the finest categorisation comparable across all three rounds. Water and sanitation indicators and maternal anthropometry were not analysed because they were not measured comparably across the three rounds. (19)

Administrative geography changed over the study period. Rangpur division was created in 2010 and Mymensingh in 2015, so the 2012-13 round comprises seven divisions and the later rounds eight; Mymensingh is therefore reported without a 2012-13 baseline. District-level analyses used boundaries harmonised across rounds, with the separately reported city corporations folded into their parent districts, giving 64 districts in each round. Harmonisation decisions are set out in full in supplementary note S1.

Statistical Analysis

Data management, including merging survey rounds, harmonising variable definitions, and checking consistency across rounds, was carried out in R. All statistical analyses were conducted in R (version 4.5.0) using the survey package. (20, 21)

Descriptive statistics were used to summarise the analytic sample across the three survey rounds. Differences in prevalence across rounds were tested using the Rao-Scott chi-squared test. (22)

Survey-weighted multivariable logistic regression models were fitted separately for each round (2012-13, 2019, and 2025) to identify factors independently associated with stunting and wasting. All explanatory variables were included simultaneously to control for potential confounding. Results are reported as adjusted odds ratios (AORs) with 95% confidence intervals.

All analyses accounted for the MICS complex survey design (stratification, clustering, and sampling weights). For the 2012-13 round, which does not carry an explicit stratum variable, strata were defined by division and residence combined. Statistical significance was defined as a two-sided p-value < 0.05.

Temporal trends in stunting, underweight, and wasting were assessed by comparing weighted prevalence estimates across the three rounds and summarised as the average annual rate of reduction.

Wealth-related inequality was assessed using the Erreygers-corrected concentration index, estimated within the survey design.(23–26) To determine how much of the observed change in stunting reflected shifts in population composition versus changes in the strength of association between characteristics and stunting, we decomposed the 2012-13–2025 change using the Oaxaca-Blinder method.(11, 27–29) Stunting was projected to 2030 under two scenarios: continuing the full-period average annual rate of reduction, and continuing the slower rate observed since 2019.

Ethical Considerations

This study is a secondary analysis of publicly available, anonymised survey microdata obtained from the MICS programme with formal permission. Ethical clearance for the original surveys was obtained by the Bangladesh Bureau of Statistics and the relevant institutional review boards, and informed consent was obtained from caregivers during the original data collection. No further ethical approval was required for this analysis.

Results

The analytic sample comprised 67,359 children under five years of age across the three rounds. Table 1 shows how the composition of that population changed. The most pronounced shift is in maternal education: the share of children whose mother had completed secondary schooling or higher rose from 47.9% in 2012-13 to 76.1% in 2025, while the share whose mother had no formal or only pre-primary education fell from 22.5% to 5.9%. The share of children living in urban areas rose from 20.4% to 28.8%. Wealth quintiles are constructed within each round and are therefore close to even by design.

Table 1
Composition of the analytic sample by survey round, Bangladesh MICS 2012–2025

Characteristic	Category	2012-13	2019	2025
Child age (months)	0–5	1,959 (9.5)	2,370 (10.5)	2,224 (9.7)
	6–11	1,942 (9.6)	2,177 (9.5)	2,228 (9.6)
	12–23	4,026 (19.6)	4,514 (19.2)	4,850 (20.9)
	24–35	4,175 (20.0)	4,596 (19.9)	4,883 (21.0)
	36–47	4,391 (20.7)	4,790 (20.9)	4,667 (19.7)
	48–59	4,410 (20.6)	4,652 (20.1)	4,505 (19.1)
Sex	Male	10,732 (51.2)	11,950 (52.0)	12,074 (51.9)
	Female	10,171 (48.8)	11,149 (48.0)	11,283 (48.1)
Place of residence	Urban	3,331 (20.4)	4,303 (21.2)	6,210 (28.8)
	Rural	17,572 (79.6)	18,796 (78.8)	17,147 (71.2)
Household wealth quintile	Poorest	6,264 (24.4)	5,755 (21.8)	5,441 (20.0)
	Second	4,511 (20.5)	4,838 (19.6)	4,964 (19.7)
	Middle	3,777 (18.6)	4,352 (18.6)	4,675 (20.0)
	Fourth	3,415 (17.9)	4,310 (19.5)	4,410 (20.8)
	Richest	2,936 (18.5)	3,844 (20.4)	3,867 (19.5)
Mother's education	None or pre-primary	5,255 (22.5)	2,594 (11.2)	1,445 (5.9)
	Primary	6,253 (29.7)	5,563 (23.7)	4,224 (17.9)
	Secondary or higher	9,395 (47.9)	14,942 (65.1)	17,683 (76.1)
Division	Barishal	1,929 (6.1)	2,066 (5.7)	1,966 (5.3)
	Chattogram	4,343 (22.9)	4,804 (21.8)	5,145 (23.6)
	Dhaka	5,235 (30.9)	4,513 (23.8)	4,909 (24.1)
	Khulna	2,729 (9.6)	3,175 (10.4)	3,076 (10.2)
	Rajshahi	1,996 (11.5)	2,407 (11.9)	2,333 (11.4)
	Rangpur	2,639 (11.3)	2,769 (10.8)	2,843 (10.8)
	Sylhet	2,032 (7.6)	1,976 (8.1)	1,655 (6.4)
	Mymensingh	-	1,389 (7.6)	1,430 (8.2)

Values are unweighted n (survey-weighted column %). Mymensingh division was created in 2015 and has no 2012-13 value. Percentages are computed among children with a non-missing value for that characteristic.

The four forms of undernutrition moved in different directions

Stunting fell from 42.0% (95% CI 41.0–43.0) in 2012-13 to 28.0% (95% CI 27.2–28.7) in 2019 and 24.0% (95% CI 23.3–24.7) in 2025, an average annual rate of reduction of 4.30% and a relative decline of 43% over the period. Underweight fell from 31.9% to 23.0%, but almost all of that fall occurred before 2019: the 2019 and 2025 estimates, 22.6% and 23.0%, differ by less than a percentage point. Severe stunting showed the largest relative improvement of any indicator, falling from 16.4% to 6.3%.

Wasting moved in the opposite direction. It was 9.6% in 2012-13 and 9.8% in 2019, then rose to 12.9% (95% CI 12.4–13.4) in 2025. Severe wasting rose from 1.6% to 2.5%, a relative increase of 54%. Overweight remained low throughout, at 1.6% in 2012-13, 2.4% in 2019 and 1.7% in 2025. Change across rounds was significant for all four principal outcomes (Rao-Scott $p < 0.001$ for stunting, wasting and underweight; $p < 0.0001$ for overweight). Figure 1 shows all eight indicators and their trajectories.

Table 2

Survey-weighted prevalence of eight indicators of child nutritional status by survey round, with average annual rate of reduction

Indicator	2012-13	2019	2025	Change (pp)	AARR (%/yr)
Stunting	42.00 (41.02–42.98)	27.96 (27.20–28.73)	24.01 (23.30–24.73)	-18.0	+ 4.30
Severe stunting	16.45 (15.65–17.24)	8.81 (8.31–9.31)	6.27 (5.88–6.66)	-10.2	+ 7.42
Underweight	31.93 (30.97–32.89)	22.60 (21.94–23.25)	23.03 (22.36–23.71)	-8.9	+ 2.51
Severe underweight	8.76 (8.21–9.31)	5.16 (4.81–5.51)	4.96 (4.63–5.30)	-3.8	+ 4.37
Wasting	9.65 (9.08–10.21)	9.83 (9.35–10.31)	12.88 (12.37–13.40)	+ 3.2	-2.23
Severe wasting	1.63 (1.42–1.84)	2.26 (2.02–2.49)	2.52 (2.28–2.75)	+ 0.9	-3.34
Concurrent wasting and stunting	4.60 (4.21–4.99)	3.26 (2.99–3.53)	4.01 (3.71–4.30)	-0.6	+ 1.06
Overweight	1.59 (1.34–1.84)	2.43 (2.16–2.70)	1.74 (1.53–1.96)	+ 0.2	-0.71

Values are survey-weighted prevalence % (95% confidence interval), computed with logit transformation. Change is the difference in percentage points between 2012-13 and 2025. A positive average annual rate of reduction (AARR) indicates improvement and a negative value indicates deterioration. Denominators differ slightly between indicators because measurement flags apply to different z-scores.

The rise in wasting is broad rather than concentrated

Wasting rose in all five wealth quintiles: from 11.6% to 14.4% in the poorest quintile and from 6.6% to 9.6% in the richest. It rose in all seven divisions with a 2012-13 baseline, and the increase was statistically significant in 5 of them: Rajshahi, Rangpur, Chattogram, Khulna, Dhaka. The two divisions where the change was not significant, Barishal and Sylhet, are those with the highest baseline wasting, so the rise brought other divisions up towards them rather than widening the gap. Figure 2 shows both patterns.

Stunting and wasting occupy different geographies

Divisional differences in stunting narrowed but did not disappear. In 2012-13 stunting ranged from 34.4% in Khulna to 50.6% in Sylhet, a spread of 16.2 percentage points; by 2025 the range was 20.9% in Khulna to 32.0% in Sylhet, a spread of 11.1 points. Sylhet was the worst-performing division in every round. The largest absolute reductions were in Dhaka (20.4 points) and Rangpur (20.3 points) and the smallest in Khulna (13.5 points), which had the lowest starting level (supplementary figure S2).

Division is, however, a coarse geography for this purpose. A variance partitioning of height-for-age with clusters nested within divisions showed that division accounts for a small share of the total variation, and a share that fell over the period (intraclass correlation 0.012 in 2012-13, 0.010 in 2019 and 0.005 in 2025), while clustering within divisions accounts for several times more (0.071, 0.077 and 0.040 respectively). We therefore repeated the geographic analysis at district level, the finest geography recorded consistently in all three rounds.

Across the 64 districts, stunting in 2025 ranged from 17.0% in Kushtia to 37.3% in Sylhet, a spread of 20.4 percentage points against 11.1 points across the eight divisions (supplementary table S4). Wasting ranged from 6.3% in Manikganj to 20.0% in Naogaon. The two conditions did not occur in the same places: the correlation between district stunting and district wasting was $r = -0.01$ ($p = 0.91$), and at divisional level $r = +0.29$ ($p = 0.49$). Districts are less precisely estimated than divisions, with a median 95% confidence interval width of 10 percentage points against 4 points, so individual district rankings should be read as indicative: only 8 districts have a confidence interval lying wholly above the national estimate and 5 wholly below it, while the remaining 51 cannot be distinguished from it. Sampling error also attenuates the correlation towards zero, so these figures do not exclude a modest true association. What they do show is no evidence of the strong positive association that shared geographic targeting would require, which is consistent with the regression results, in which no division was significantly associated with wasting in 2025.

Wealth-related inequality

The absolute gap in stunting between the poorest and richest wealth quintiles narrowed from 25.7 percentage points in 2012-13 to 18.3 points in 2019 and 16.2 points in 2025. The relative gap did not: the poorest-to-richest ratio was 1.95, 1.92 and 2.00 across the three rounds. The Erreygers-corrected concentration index for stunting moved from -0.201 (95% CI -0.223 to -0.180) to -0.121 (-0.136 to -0.106), a change that is statistically significant, whereas the uncorrected concentration index, which does not adjust for the falling mean, barely moved (-0.120 to -0.126). Reporting only one of these two quantities would give a misleading impression of what happened; the underlying concentration curves are shown in supplementary figure S1.

Wasting was less strongly patterned by wealth than stunting in every round, and its concentration index did not change materially (Erreygers -0.040 in 2012-13 and -0.038 in 2025, with overlapping confidence intervals). Overweight ran in the opposite direction to the three forms of undernutrition, concentrating

among wealthier children in every round (Erreygers + 0.018, + 0.028 and + 0.013). Figure 4 reports these results; the underlying estimates with confidence intervals are given in supplementary table S2.

Stunting and wasting do not share a risk structure

In the 2025 round, stunting remained strongly patterned by the characteristics conventionally used to target nutrition programmes. Relative to the poorest quintile, children in the richest quintile had an adjusted odds ratio for stunting of 0.42 (95% CI 0.36–0.48), and children whose mother had secondary or higher education had an odds ratio of 0.65 (95% CI 0.56–0.75) relative to those whose mother had none. Residence in Sylhet carried an odds ratio of 1.43 (95% CI 1.20–1.69) relative to Barishal. The age gradient was pronounced, with children aged 12–23 months at 2.03 (95% CI 1.73–2.37) relative to those aged 0–5 months.

Wasting in the same children and the same year showed a different pattern. The wealth gradient was present but weaker (richest versus poorest 0.65 (95% CI 0.55–0.77)). Maternal education was not associated with wasting (secondary or higher versus none, 0.93 (95% CI 0.76–1.14)). No division differed significantly from Barishal. The age gradient was absent: no age band differed significantly from children aged 0–5 months. The only covariate associated with wasting as strongly as with stunting was child sex, with girls at lower odds in all three rounds (0.83 (95% CI 0.75–0.90) in 2025). Table 3 presents both sets of estimates side by side.

Table 3
Determinants of stunting and of wasting in the 2025 round: survey-weighted adjusted odds ratios with 95% confidence intervals

Group	Category	Stunting	Wasting
Child age (ref: 0–5 months)	6–11 months	0.99 (0.82–1.20)	0.91 (0.73–1.12)
	12–23 months	2.03 (1.73–2.37) ^{***}	0.94 (0.78–1.12)
	24–35 months	2.02 (1.72–2.37) ^{***}	0.96 (0.80–1.15)
	36–47 months	1.69 (1.44–1.98) ^{***}	1.00 (0.83–1.20)
	48–59 months	1.31 (1.12–1.55) ^{**}	1.08 (0.90–1.29)
Sex (ref: male)	Female	0.92 (0.86–0.99) [*]	0.83 (0.75–0.90) ^{***}
Residence (ref: urban)	Rural	0.99 (0.90–1.09)	0.98 (0.88–1.10)
Division (ref: Barishal)	Chattogram	1.19 (1.03–1.38) [*]	1.18 (0.97–1.42)
	Dhaka	0.99 (0.85–1.16)	0.96 (0.80–1.17)
	Khulna	0.82 (0.70–0.97) [*]	1.03 (0.85–1.26)
	Mymensingh	0.89 (0.74–1.07)	0.90 (0.70–1.15)
	Rajshahi	0.92 (0.78–1.08)	1.20 (0.98–1.48)
	Rangpur	0.86 (0.73–1.02)	1.05 (0.85–1.29)
	Sylhet	1.43 (1.20–1.69) ^{***}	1.12 (0.89–1.41)
Wealth quintile (ref: poorest)	Second	0.79 (0.71–0.89) ^{***}	1.05 (0.91–1.21)
	Middle	0.69 (0.62–0.78) ^{***}	0.86 (0.74–1.00)
	Fourth	0.61 (0.54–0.69) ^{***}	0.89 (0.76–1.04)
	Richest	0.42 (0.36–0.48) ^{***}	0.65 (0.55–0.77) ^{***}
Mother's education (ref: none or pre-primary)	Primary	0.87 (0.74–1.02)	1.01 (0.82–1.25)
	Secondary or higher	0.65 (0.56–0.75) ^{***}	0.93 (0.76–1.14)

Both models are survey-weighted logistic regressions fitted to the 2025 round with all listed covariates entered simultaneously. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Estimates for all three rounds are shown in Fig. 5 for stunting and in supplementary table S3 for wasting.

The pooled models confirmed that these patterns are stable rather than shifting. For stunting, the wealth gradient did not change across rounds ($F(8, 8802) = 1.03$, $p = 0.41$) but the education gradient did ($F(4, 8802) = 2.60$, $p = 0.034$). For wasting, neither gradient changed (wealth $F(8, 8802) = 0.79$, $p = 0.61$; education $F(4, 8802) = 0.75$, $p = 0.56$), which is consistent with a rise that is general rather than concentrated in any social group.

Age pattern and the composition of the burden

Mean height-for-age fell steeply over the first two years of life in every round and then partially recovered, the pattern documented across low- and middle-income countries. (30) The depth of faltering lessened considerably: mean height-for-age at 24–35 months, the lowest point, was -2.01 in 2012-13, -1.55 in 2019 and -1.35 in 2025. In 2012-13 the mean child aged 24–47 months sat essentially on the stunting threshold; by 2025 the lowest group mean was more than half a standard deviation above it.

The composition of the burden changed markedly. Among children with any deficit, the share who were stunted only fell from 37.3% of all children in 2012-13 to 20.0% in 2025, while the share wasted only rose from 5.0% to 8.8%. Children who were both wasted and stunted fell from 4.6% to 3.3% between 2012-13 and 2019 but rose again to 4.0% by 2025. The total burden, the proportion of children with at least one of the two deficits, fell from 47.0% to 32.8%, but the wasting share of that burden roughly doubled.

What drove the fall in stunting, and what it implies for 2030

Decomposing the 18.0 percentage-point fall in stunting between 2012-13 and 2025 attributed 3.4 points (19%) to changes in the distribution of child and household characteristics and 14.6 points (81%) to changes in the association between those characteristics and stunting. This is close to the 14% and 86% split reported for 2012-13 to 2019, so extending the window by a further six years does not change the conclusion. (11) The population becoming wealthier and better educated accounts for a real but minor part of the improvement.

Progress has, however, slowed. The average annual rate of reduction was 4.30% over the full period but 2.54% between 2019 and 2025. Anchoring both rates on the observed 2025 estimate, continuing the full-period pace would give 19.4% stunting in 2030, while continuing the pace observed since 2019 would give 21.2%. The World Health Assembly target of a 50% reduction from the 2012 level corresponds to 21.0%. Bangladesh therefore meets the target on the faster trajectory and arrives essentially at it, rather than below it, on the slower one.

Discussion

Using three nationally representative rounds of the Bangladesh Multiple Indicator Cluster Survey (MICS), this study demonstrates that recent progress in child nutrition in Bangladesh has been uneven across anthropometric indicators. While stunting and underweight declined substantially between 2012-13 and 2025, wasting and severe wasting increased during the same period. The continued reduction in stunting is consistent with a large body of evidence documenting Bangladesh's nutrition transition and attributing improvements to broader socioeconomic development, including gains in household living standards, maternal education, fertility reduction, sanitation coverage, and access to healthcare services. (9, 10) Similar pathways have been reported in other low- and middle-income countries, where sustained declines in chronic undernutrition have often accompanied wider social and economic progress rather than nutrition-specific interventions alone. (3, 31)

Our decomposition analysis extends previous findings by showing that most of the decline in stunting remained attributable to changes in the associations between socioeconomic factors and nutritional outcomes rather than changes in population composition itself. (11) The persistence of this pattern over a longer time horizon suggests that structural improvements in children's growth environments continue to play a central role in reducing chronic undernutrition.

In contrast, the rise in wasting represents a markedly different epidemiological pattern. Unlike stunting, wasting increased across all wealth quintiles and across all divisions with a comparable baseline. Moreover, socioeconomic and geographic gradients that remained pronounced for stunting were considerably weaker or absent for wasting in 2025. These findings suggest that the determinants of acute undernutrition may no longer align closely with those traditionally used to identify populations at highest risk of chronic growth failure. Although poverty remains an important predictor of wasting, the relatively modest wealth gradient and lack of association with maternal education indicate that wasting may now be influenced by factors operating across broader segments of the population. Similar observations have been reported in other settings where acute malnutrition has become increasingly linked to short-term shocks, food system disruptions, infectious disease exposure, and seasonal vulnerabilities rather than solely to persistent socioeconomic disadvantage. (32, 33)

Our findings further indicate that stunting and wasting are becoming increasingly disconnected geographically. District-level estimates revealed virtually no correlation between the two conditions ($r = -0.01$), indicating that areas with the highest burden of chronic undernutrition are not necessarily those with the greatest burden of acute malnutrition. This divergence has important implications for nutrition surveillance and programme design. Historically, nutrition interventions have often relied on geographic targeting based on stunting prevalence or broader deprivation indicators. However, the present findings suggest that such approaches may inadequately identify populations affected by wasting. Similar concerns have been raised in recent global analyses showing that the spatial distribution of wasting frequently differs from that of stunting because the two conditions reflect different biological processes and respond to different contextual factors. (3, 6) Consequently, strategies developed primarily to address chronic undernutrition may not efficiently capture emerging burdens of acute malnutrition.

The present study cannot identify the underlying causes of the observed increase in wasting; the timing coincides with the COVID-19 pandemic and its economic aftermath. Modelling studies conducted early in the pandemic predicted that wasting would be particularly responsive to disruptions in food access, household income, healthcare utilisation, and child feeding practices because it reflects recent nutritional deprivation rather than cumulative deficits. (34, 35) Similar increases in acute malnutrition following economic shocks have been documented in several low- and middle-income countries. (36) Nevertheless, because comparable measures of household food insecurity, dietary intake, and income shocks were not available across the three survey rounds, the present study cannot directly evaluate these mechanisms.

The inequality findings underscore the importance of considering both absolute and relative measures of disparity. The absolute difference in stunting prevalence between the poorest and richest wealth quintiles narrowed considerably over the study period, reflecting substantial reductions in the burden of chronic undernutrition across all socioeconomic groups. However, the relative disparity changed little, indicating that children from poorer households remained approximately twice as likely to be stunted as those from the wealthiest households. This apparent paradox is well recognised in the health inequality literature and highlights how different metrics capture distinct dimensions of equity. (24, 25) Similar patterns have been observed in several countries that have experienced rapid reductions in child stunting, where improvements in overall prevalence have not necessarily translated into proportional reductions in relative disadvantage. (37) These results suggest that progress in reducing the overall burden of undernutrition should not be interpreted as evidence that socioeconomic inequalities have been eliminated.

Although overweight remained uncommon among Bangladeshi children under five, its concentration among wealthier households points to the emergence of a nutrition profile increasingly characterised by multiple forms of malnutrition. The coexistence of declining undernutrition and growing socioeconomic gradients in childhood overweight has been reported across many countries undergoing nutrition transition. (19) However, the prevalence of overweight in this study remained low compared with that reported in several middle-income countries, indicating that Bangladesh has not yet entered an advanced phase of the childhood double burden. Nevertheless, the contrasting socioeconomic distributions of undernutrition and overweight suggest that prevention strategies may require increasingly differentiated approaches as nutrition patterns continue to evolve.

Finally, our findings highlight important limitations of administrative geography as a targeting framework. Although Sylhet consistently exhibited the highest stunting prevalence, variance decomposition analyses showed that divisional boundaries explained only a small and declining proportion of variation in child growth outcomes. Much greater heterogeneity existed within divisions than between them, suggesting that broad regional averages may increasingly obscure localised patterns of vulnerability. Similar conclusions have emerged from studies in South Asia and sub-Saharan Africa, where district-level analyses have uncovered substantial intra-regional disparities that are not

apparent in higher-level administrative reporting. (38, 39) As nutrition programmes become more data-driven, finer geographic targeting may therefore be necessary to identify populations at greatest risk.

Strengths and limitations

This study has several strengths. First, it is among the first analyses to incorporate the 2025 Bangladesh Multiple Indicator Cluster Survey (MICS), providing the first nationally representative assessment of child undernutrition since 2019 and extending the evidence base through a period that included substantial social and economic disruption. By analysing all three MICS rounds containing anthropometric measurements (2012-13, 2019, and 2025), the study offers a consistent assessment of long-term trends in child undernutrition within a single survey programme, thereby avoiding comparability issues that often arise when combining data from different survey systems. Second, the analysis considered multiple forms of undernutrition simultaneously, allowing direct comparison of trends in stunting, wasting, underweight, and concurrent anthropometric deficits. This approach revealed important divergences that would have been obscured by focusing on stunting alone. Third, all estimates accounted for the complex survey design, and inequality measures incorporated design-based uncertainty, providing more robust inference than analyses that assume simple random sampling. Finally, the study extended previous work by examining geographic patterns at the district level and by assessing whether stunting and wasting shared similar socioeconomic and spatial distributions, generating evidence with direct relevance for programme targeting and policy design.

Several limitations should also be considered. First, the MICS data are derived from repeated cross-sectional surveys; therefore, causal inferences cannot be made, and individual children cannot be followed over time. Second, the analysis was restricted to variables measured consistently across all survey rounds to ensure comparability. As a result, potentially important factors such as dietary diversity, household food insecurity, feeding practices, infectious disease burden, and several environmental characteristics could not be examined. Consequently, while the study identifies changes in the distribution and patterning of undernutrition, it cannot determine the mechanisms underlying the observed increase in wasting. Third, some contextual variables required harmonisation across survey rounds, and maternal education had to be categorised into broader groups to maintain comparability over time. Fourth, although district-level analyses provided a finer geographic perspective than divisional comparisons, estimates for some districts were based on relatively small sample sizes and should therefore be interpreted with appropriate caution. Finally, projections of stunting to 2030 are intended to illustrate the implications of alternative trend scenarios rather than to provide forecasts, as they do not account for future policy changes, economic conditions, or unexpected shocks.

Policy recommendations

Three implications follow directly from these results. First, national nutrition monitoring in Bangladesh should not report progress against stunting alone. Over this period the stunting figure and the wasting figure moved in opposite directions, and a summary based on stunting would have described a period of uninterrupted improvement in which severe wasting in fact rose by more than half.

Second, because the rise in wasting is not concentrated in the poorest quintile, the least educated households or the worst-performing divisions, the platforms that currently deliver nutrition programmes on those criteria will not reach much of it. Case-finding for acute malnutrition needs to operate through routine, universal contact points such as growth monitoring at immunisation visits rather than through targeted selection. Treatment capacity for severe acute malnutrition should be sized against a national prevalence that has risen from 1.6% to 2.5%, not against the earlier figure. (5, 6)

Third, the stunting target should not be treated as already secured. Stunting fell at 5.81% a year between 2012-13 and 2019 but at 2.54% a year between 2019 and 2025, and at that slower pace Bangladesh reaches 2030 at the target rather than below it. Sustaining the earlier pace requires continuing the broad-based improvements in household conditions and maternal education that the decomposition shows to be only part of the story, alongside the nutrition-specific interventions with established effectiveness. (15, 40)

Conclusion

Between 2012-13 and 2025, stunting among children under five in Bangladesh fell from 42.0% to 24.0% and underweight from 31.9% to 23.0%, while wasting rose from 9.6% to 12.9% and severe wasting from 1.6% to 2.5%. The rise in wasting was general: it occurred in all five wealth quintiles and all seven divisions with a baseline, and by 2025 wasting showed no significant association with maternal education or with division. Stunting, by contrast, remained strongly patterned by wealth, maternal education and division. Absolute wealth inequality in stunting narrowed while relative inequality did not, and only 19% of the fall in stunting was attributable to the population becoming wealthier and better educated.

A programme designed around the stunting figure and delivered through poverty-targeted platforms would address the form of undernutrition that is improving through the channel best suited to it, and would miss the form that is deteriorating. Monitoring wasting separately, and finding cases through universal rather than targeted contact, are the practical consequences of these findings.

Declarations

Acknowledgements

The authors thank the Bangladesh Bureau of Statistics and UNICEF for conducting the Multiple Indicator Cluster Surveys and for making the microdata available through the MICS programme.

Author contributions

ARR and KSAN conceived and designed the study and were major contributors in writing the manuscript. ARR obtained and harmonised the data. ARR, KSAN, TI, and ASK performed the statistical analysis. ARR, AH and KSAN conducted the literature search. ARR and AH produced the figures and tables. All authors

interpreted the data, contributed to the critical revision of the manuscript, and read and approved the final manuscript.

Ethics approval and consent to participate

This study used publicly available, anonymised secondary data from the Bangladesh Multiple Indicator Cluster Surveys. Ethical approval for the original surveys was obtained by the Bangladesh Bureau of Statistics and the relevant institutional review boards, and informed consent was obtained from caregivers during the original data collection. No additional ethical approval was required for this secondary analysis.

Data availability statement

The Bangladesh MICS microdata analysed in this study are publicly available from the UNICEF MICS programme at <https://mics.unicef.org/surveys> following registration and approval of a request. The analysis code that reproduces every estimate, table and figure in this paper is available from the corresponding authors on request.

Funding

This research received no specific grant from any funding agency in the public, commercial or not-for-profit sectors.

Competing interests

The authors declare no competing interests.

Patient and public involvement

Patients and the public were not involved in the design, conduct, reporting or dissemination plans of this research, which is a secondary analysis of existing anonymised survey data.

References

1. benjohnson. Joint Child Malnutrition Estimates (JME) 2025. UNICEF DATA [Internet]. 2025 Jul 21 [cited 2026 Aug 4]. Available from: <https://data.unicef.org/resources/jme/>
2. Black R, Victora C, Walker S, Bhutta Z, Christian P, de Onis M, et al. Maternal and child undernutrition and overweight in low-income and middle-income countries. *The Lancet*. 2013;382(9890):427–51. doi:10.1016/s0140-6736(13)60937-x
3. Victora C, Christian P, Vidaletti L, Gatica-Domínguez G, Menon P, Black R. Revisiting maternal and child undernutrition in low-income and middle-income countries: variable progress towards an unfinished agenda. *The Lancet*. 2021;397(10282):1388–99. doi:10.1016/s0140-6736(21)00394-9

4. Leroy J, Frongillo E. Perspective: What Does Stunting Really Mean? A Critical Review of the Evidence. *Advances in Nutrition*. 2019;10(2):196–204. doi:10.1093/advances/nmy101
5. McDonald C, Olofin I, Flaxman S, Fawzi W, Spiegelman D, Caulfield L, et al. The effect of multiple anthropometric deficits on child mortality: meta-analysis of individual data in 10 prospective studies from developing countries. *The American Journal of Clinical Nutrition*. 2013;97(4):896–901. doi:10.3945/ajcn.112.047639
6. Myatt M, Khara T, Schoenbuchner S, Pietzsch S, Dolan C, Lelijveld N, et al. Children who are both wasted and stunted are also underweight and have a high risk of death: a descriptive epidemiology of multiple anthropometric deficits using data from 51 countries. *Archives of Public Health*. 2018;76(1):28. doi:10.1186/s13690-018-0277-1
7. Khara T, Mwangome M, Ngari M, Dolan C. Children concurrently wasted and stunted: A meta-analysis of prevalence data of children 6–59 months from 84 countries. *Maternal & Child Nutrition*. 2018;14(2):e12516. doi:10.1111/mcn.12516
8. Global nutrition targets 2025: stunting policy brief [Report] [Internet]. Geneva: World Health Organization; 2014. Available from: <https://www.who.int/publications/i/item/WHO-NMH-NHD-14.3>
9. Headey D, Hoddinott J, Ali D, Tesfaye R, Dereje M. The Other Asian Enigma: Explaining the Rapid Reduction of Undernutrition in Bangladesh. *World Development*. 2015;66:749–61. doi:10.1016/j.worlddev.2014.09.022
10. Headey D, Hoddinott J, Park S. Drivers of nutritional change in four South Asian countries: a dynamic observational analysis. *Maternal & Child Nutrition*. 2016;12(S1):210–8. doi:10.1111/mcn.12274
11. Kundu S, Aboagye R, Chowdhury S, Banna M, Rahman M, Dey R, et al. Trends and factors contributing to changes in childhood stunting in Bangladesh from 2012 to 2019: A multivariate decomposition modelling. *PLOS Global Public Health*. 2025;5(7):e0004890. doi:10.1371/journal.pgph.0004890
12. Islam M, Al Fidah M, Rahman M, Ahmed T, Nuzhat S. Coexisting forms of malnutrition among under-5 children in Bangladesh: results from 2012 to 13 and 2019 Multiple Indicator Cluster Surveys. *Public Health Nutrition*. 2025;28(1):e84. doi:10.1017/s1368980025000448
13. Progotir Pathey, Bangladesh Multiple Indicator Cluster Survey 2025, Preliminary Report [Report] [Internet]. Dhaka: Bangladesh Bureau of Statistics and UNICEF Bangladesh; 2025. Available from: <https://mics.unicef.org/surveys>
14. Bangladesh Demographic and Health Survey 2022: Final Report [Report] [Internet]. Dhaka, Bangladesh and Rockville, Maryland, USA: National Institute of Population Research and Training (NIPORT) and ICF; 2023. Available from: <https://dhsprogram.com/publications/>
15. Hossain M, Choudhury N, Adib Binte Abdullah K, Mondal P, Jackson A, Walson J, et al. Evidence-based approaches to childhood stunting in low and middle income countries: a systematic review. *Archives of Disease in Childhood*. 2017;102(10):903–9. doi:10.1136/archdischild-2016-311050
16. Progotir Pathey, Bangladesh Multiple Indicator Cluster Survey 2019, Survey Findings Report [Report] [Internet]. Dhaka: Bangladesh Bureau of Statistics and UNICEF Bangladesh; 2019. Available from:

<https://mics.unicef.org/surveys>

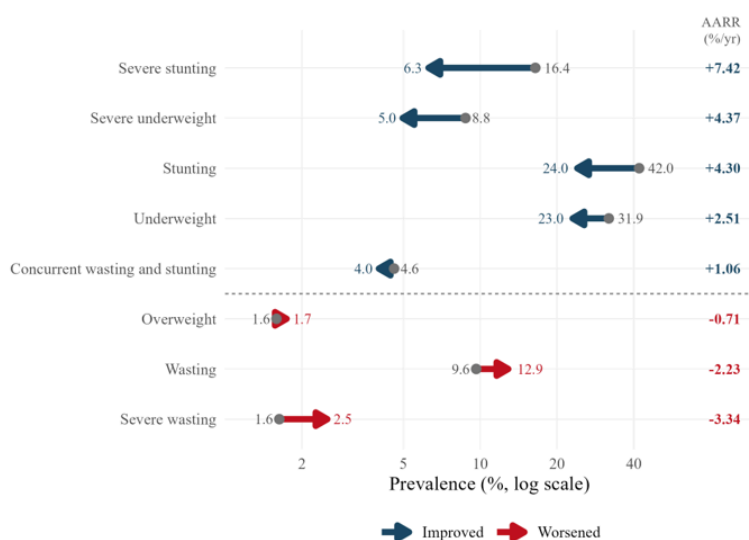
17. Progotir Pathey, Bangladesh Multiple Indicator Cluster Survey 2012-2013, Final Report [Report] [Internet]. Dhaka: Bangladesh Bureau of Statistics and UNICEF Bangladesh; 2014. Available from: <https://mics.unicef.org/surveys>
18. WHO Multicentre Growth Reference Study Group. WHO Child Growth Standards based on length/height, weight and age. *Acta Paediatrica*. 2006;95(S450):76–85. doi:10.1111/j.1651-2227.2006.tb02378.x
19. Wells J, Sawaya A, Wibaek R, Mwangome M, Poullas M, Yajnik C, et al. The double burden of malnutrition: aetiological pathways and consequences for health. *The Lancet*. 2020;395(10217):75–88. doi:10.1016/s0140-6736(19)32472-9
20. R: A language and environment for statistical computing [Report] [Internet]. Vienna: R Foundation for Statistical Computing; 2025. Available from: <https://www.R-project.org/>
21. Lumley T. Analysis of Complex Survey Samples. *Journal of Statistical Software*. 2004;9(8):1–19. doi:10.18637/jss.v009.i08
22. Rao J, Scott A. On Chi-Squared Tests for Multiway Contingency Tables with Cell Proportions Estimated from Survey Data. *The Annals of Statistics*. 1984;12(1):46–60. doi:10.1214/aos/1176346391
23. Kakwani N, Wagstaff A, van Doorslaer E. Socioeconomic inequalities in health: Measurement, computation, and statistical inference. *Journal of Econometrics*. 1997;77(1):87–103. doi:10.1016/s0304-4076(96)01807-6
24. Erreygers G. Correcting the Concentration Index. *Journal of Health Economics*. 2009;28(2):504–15. doi:10.1016/j.jhealeco.2008.02.003
25. Wagstaff A. The bounds of the concentration index when the variable of interest is binary, with an application to immunization inequality. *Health Economics*. 2005;14(4):429–32. doi:10.1002/hec.953
26. O'Donnell O, O'Neill S, Van Ourti T, Walsh B. Conindex: Estimation of Concentration Indices. *The Stata Journal: Promoting communications on statistics and Stata*. 2016;16(1):112–38. doi:10.1177/1536867x1601600112
27. Oaxaca R. Male-Female Wage Differentials in Urban Labor Markets. *International Economic Review*. 1973;14(3):693. doi:10.2307/2525981
28. Blinder A. Wage Discrimination: Reduced Form and Structural Estimates. *The Journal of Human Resources*. 1973;8(4):436. doi:10.2307/144855
29. Powers D, Yoshioka H, Yun M. Mvdcmp: Multivariate Decomposition for Nonlinear Response Models. *The Stata Journal: Promoting communications on statistics and Stata*. 2011;11(4):556–76. doi:10.1177/1536867x1101100404
30. Victora C, de Onis M, Hallal P, Blössner M, Shrimpton R. Worldwide Timing of Growth Faltering: Revisiting Implications for Interventions. *Pediatrics*. 2010;125(3):e473–80. doi:10.1542/peds.2009-1519

31. Headey D, Palloni G. Water, Sanitation, and Child Health: Evidence From Subnational Panel Data in 59 Countries. *Demography*. 2019;56(2):729–52. doi:10.1007/s13524-019-00760-y
32. Lelijveld N, Seal A, Wells J, Kirkby J, Opondo C, Chimwezi E, et al. Chronic disease outcomes after severe acute malnutrition in Malawian children (ChroSAM): a cohort study. *The Lancet Global Health*. 2016;4(9):e654–62. doi:10.1016/s2214-109x(16)30133-4
33. Headey D, Ruel M. Economic shocks predict increases in child wasting prevalence. *Nature Communications*. 2022;13(1):2157. doi:10.1038/s41467-022-29755-x
34. Osendarp S, Akuoku J, Black R, Headey D, Ruel M, Scott N, et al. The COVID-19 crisis will exacerbate maternal and child undernutrition and child mortality in low- and middle-income countries. *Nature Food*. 2021;2(7):476–84. doi:10.1038/s43016-021-00319-4
35. Akseer N, Kandru G, Keats E, Bhutta Z. COVID-19 pandemic and mitigation strategies: implications for maternal and child health and nutrition. *The American Journal of Clinical Nutrition*. 2020;112(2):251–6. doi:10.1093/ajcn/nqaa171
36. Headey D, Heidkamp R, Osendarp S, Ruel M, Scott N, Black R, et al. Impacts of COVID-19 on childhood malnutrition and nutrition-related mortality. *The Lancet*. 2020;396(10250):519–21. doi:10.1016/s0140-6736(20)31647-0
37. da Silva I, França G, Barros A, Amouzou A, Krasevec J, Victora C. Socioeconomic Inequalities Persist Despite Declining Stunting Prevalence in Low- and Middle-Income Countries. *The Journal of Nutrition*. 2018;148(2):254–8. doi:10.1093/jn/nxx050
38. Osgood-Zimmerman A, Millear A, Stubbs R, Shields C, Pickering B, Earl L, et al. Mapping child growth failure in Africa between 2000 and 2015. *Nature*. 2018;555(7694):41–7. doi:10.1038/nature25760
39. Local Burden of Disease Child Growth Failure Collaborators. Mapping child growth failure across low- and middle-income countries. *Nature*. 2020;577(7789):231–4. doi:10.1038/s41586-019-1878-8
40. Bhutta Z, Das J, Rizvi A, Gaffey M, Walker N, Horton S, et al. Evidence-based interventions for improvement of maternal and child nutrition: what can be done and at what cost? *The Lancet*. 2013;382(9890):452–77. doi:10.1016/s0140-6736(13)60996-4

Figures

A Where each indicator moved, 2012-13 to 2025

All eight indicators, ordered by average annual rate of reduction (AARR). Arrows run from the 2012-13 to the 2025 survey-weighted prevalence. The dashed rule separates the 5 indicators that improved (above) from the 3 that worsened (below).



B Each form on its own scale

Free vertical scales, because overweight (1.6 to 2.4%) and stunting (42 to 24%) cannot be read on a common axis.

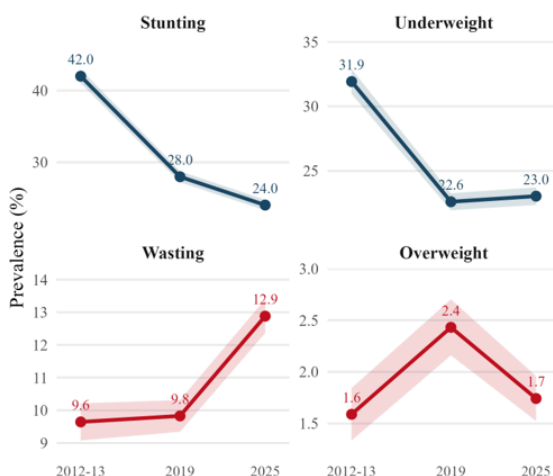
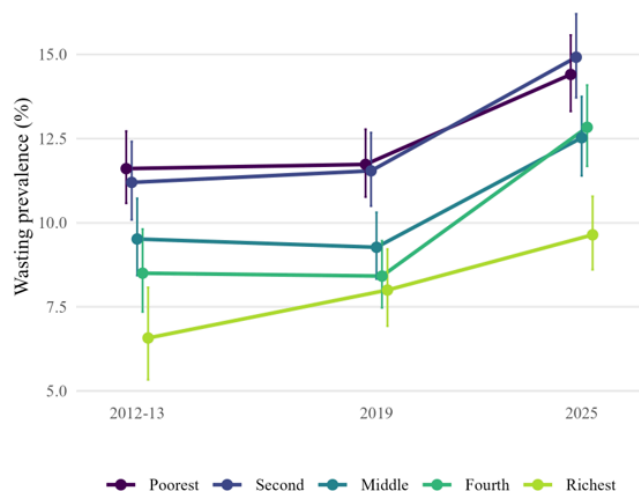


Figure 1

Direction and pace of change in eight indicators of child nutritional status, Bangladesh MICS 2012-2025. Panel A: arrows run from the 2012-13 to the 2025 survey-weighted prevalence on a logarithmic scale, ordered by the average annual rate of reduction (AARR) shown at the right; blue indicates improvement and red deterioration. Panel B: the four principal forms on separate vertical scales, with 95% confidence bands. Separate scales are used because overweight ranges from 1.6% to 2.4% and stunting from 42.0% to 24.0%, which cannot be read on a common axis.

A Wasting rose in all five wealth quintiles

Survey-weighted prevalence with 95% CI. The national change across rounds is significant ($p < 0.0001$).



B And in all seven divisions, significantly in five

Rao-Scott test of the within-division change: *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, ns not significant. Mymensingh omitted (no 2012-13 baseline).

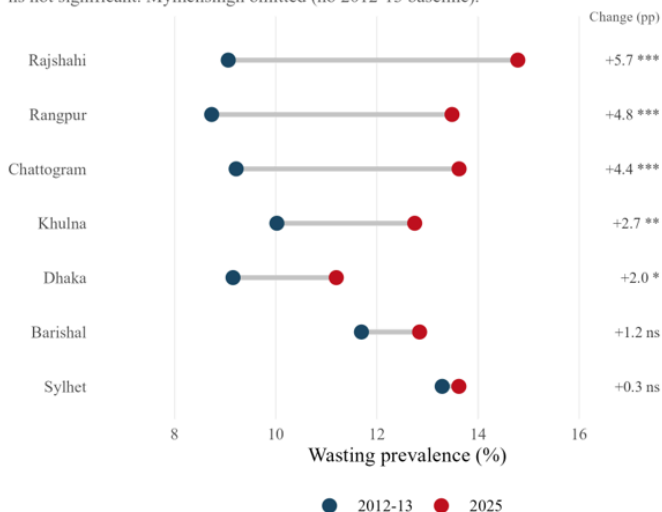


Figure 2

The rise in wasting by household wealth quintile and by division, Bangladesh MICS 2012-2025. Panel A: prevalence with 95% confidence intervals, positions offset horizontally so that the five quintiles remain separable. Panel B: change between 2012-13 and 2025 within each division, with the Rao-Scott test of that change. Mymensingh is omitted because it has no 2012-13 baseline.

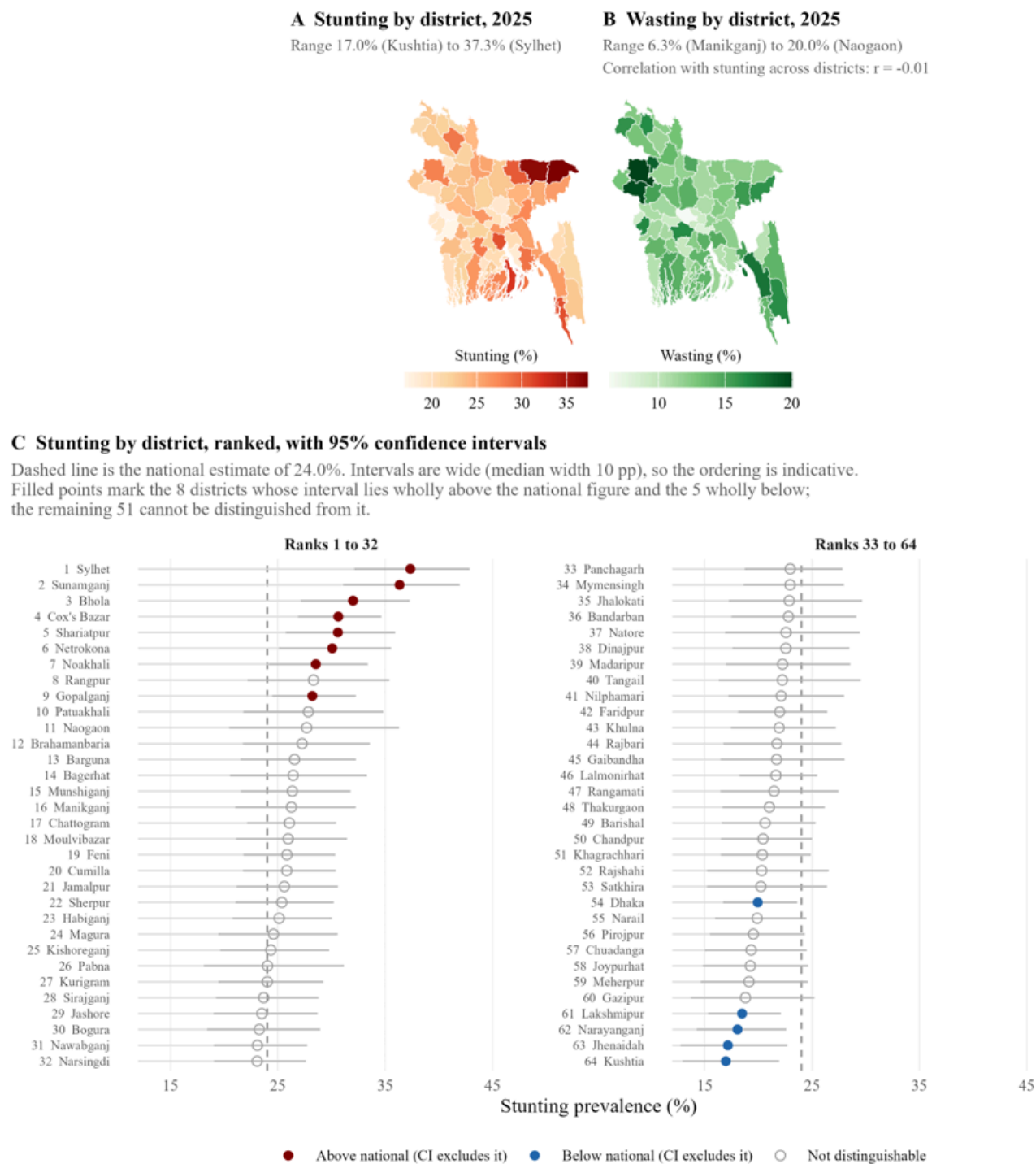


Figure 3

Child undernutrition by district, Bangladesh MICS 2025. Panel A: survey-weighted stunting prevalence in each of the 64 districts. Panel B: wasting prevalence on the same district boundaries; the two maps correlate at $r = -0.01$. Panel C: districts ranked by stunting prevalence with 95% confidence intervals; the dashed line is the national estimate. District intervals are wide (median width 10 percentage points), so the ranking is indicative rather than exact. Filled points mark the 8 districts lying wholly above the national figure and the 5 wholly below it.

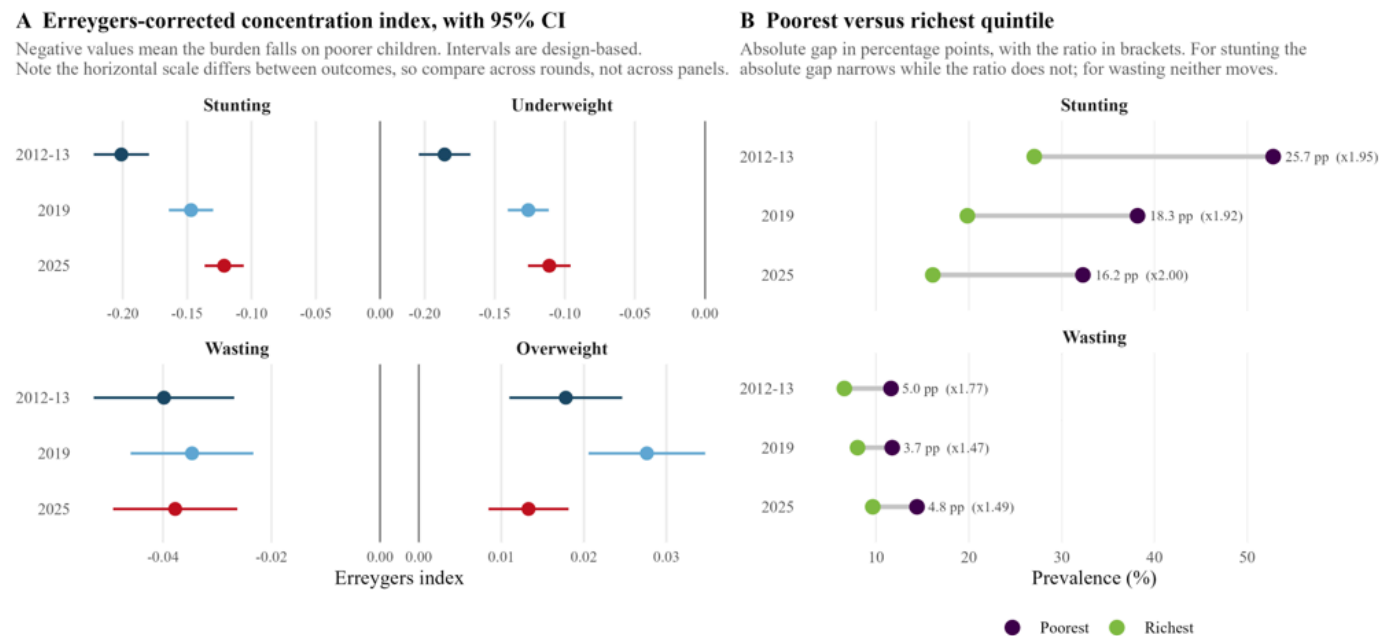


Figure 4

Wealth-related inequality in child nutritional status, Bangladesh MICS 2012-2025. Panel A: Erreygers-corrected concentration index with design-based 95% confidence intervals. The horizontal scale differs between the four outcomes, so estimates should be compared across rounds within a panel and not across panels. Panel B: prevalence in the poorest and richest wealth quintiles, with the absolute gap in percentage points and the ratio in brackets.

Determinants of stunting, by survey round

Survey-weighted multivariable logistic regression; adjusted odds ratios with 95% CI. Each model holds all listed covariates constant. Formal tests of whether the gradients changed across rounds (pooled model with round interactions): wealth $F(8, 8802) = 1.03$, $p = 0.41$; mother's education $F(4, 8802) = 2.60$, $p = 0.034$.

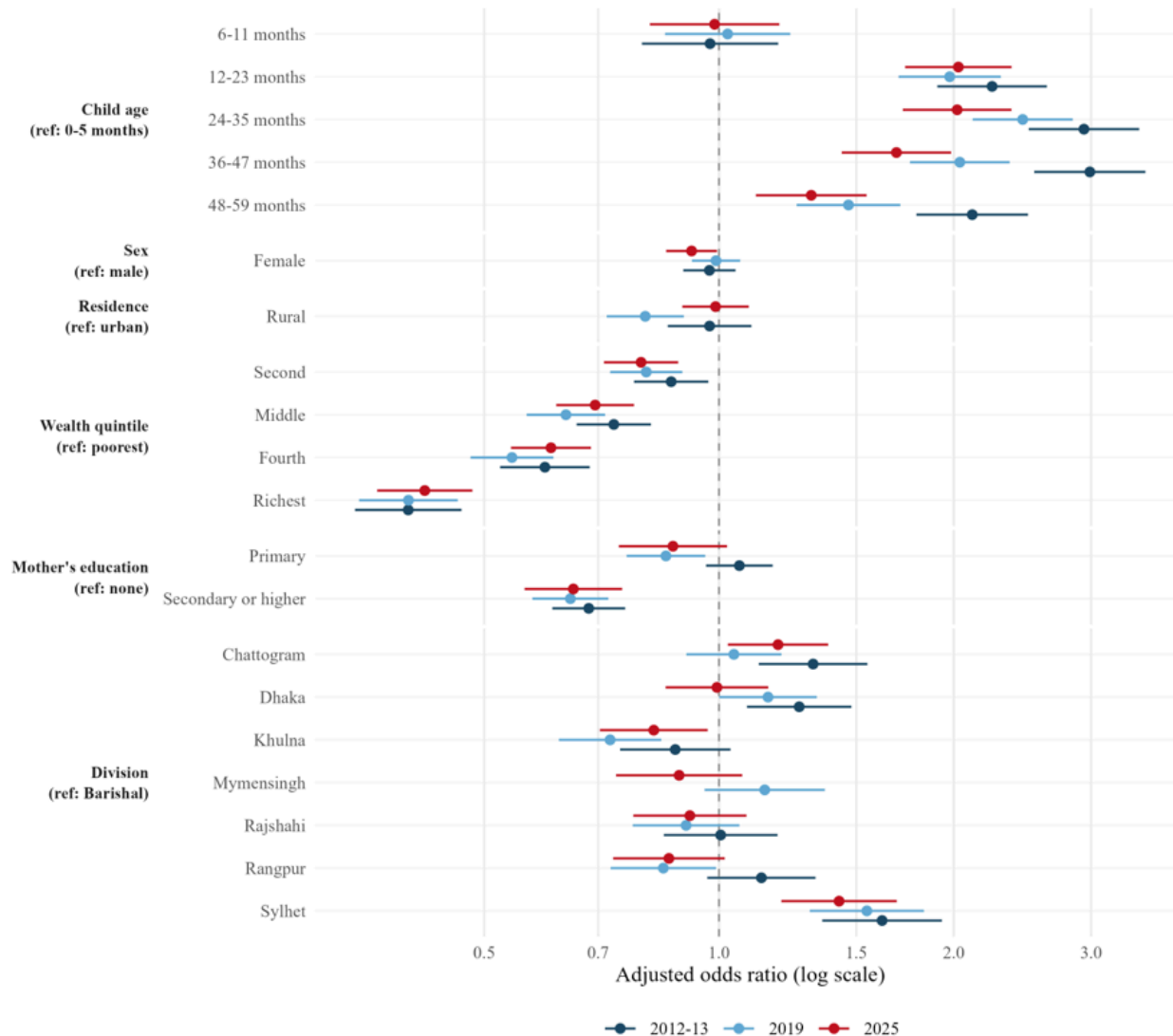
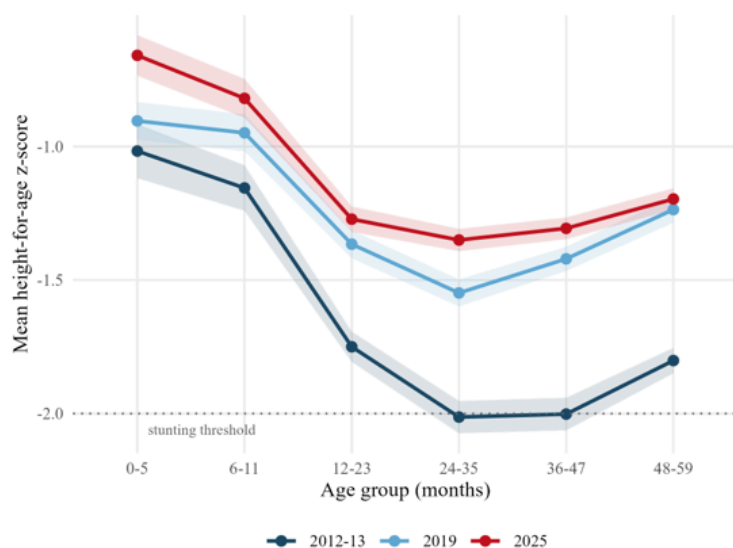


Figure 5

Determinants of stunting in each survey round, Bangladesh MICS 2012-2025. Points are survey-weighted adjusted odds ratios and horizontal lines are 95% confidence intervals, on a logarithmic scale. Each model holds all listed covariates constant. The two tests reported in the subtitle are adjusted Wald tests of the round interaction terms in a pooled model, and are the formal answer to whether each gradient changed.

A Growth faltering by child age

Mean height-for-age z-score with 95% confidence bands



B Composition of the burden

Children with no deficit are omitted, so the bar height is the total burden. The burden shrinks, but the share of it that is wasting grows.

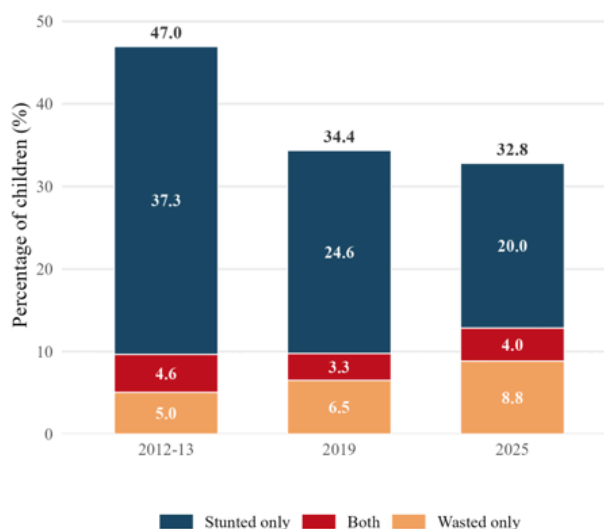
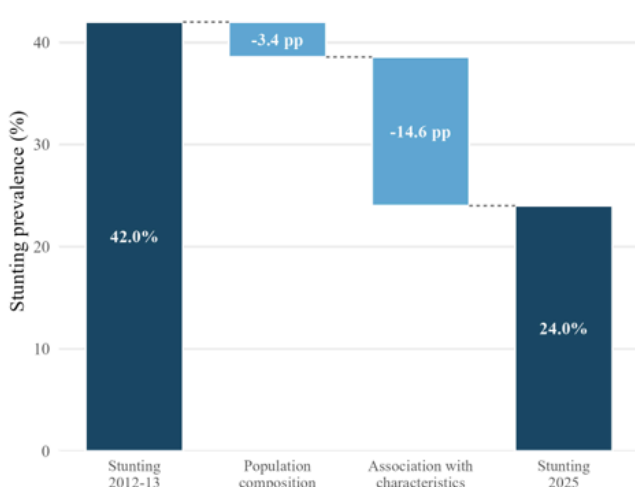


Figure 6

Age pattern of growth faltering and composition of the anthropometric burden, Bangladesh MICS 2012-2025. Panel A: mean height-for-age z-score by age group with 95% confidence bands. Panel B: children with no deficit are omitted, so the height of each bar is the proportion of children with at least one deficit, shown above the bar.

A What drove the fall in stunting, 2012-13 to 2025

Oaxaca-Blinder decomposition. Only 19% of the 18.0 pp decline is explained by the population becoming wealthier and better educated.



B Progress against the 2030 stunting target

Both scenarios are anchored on the observed 2025 estimate. Progress slowed after 2019 (AARR 4.30%/yr over the full period against 2.54%/yr since 2019). At the slower pace the 2030 value lands essentially on the target rather than below it.

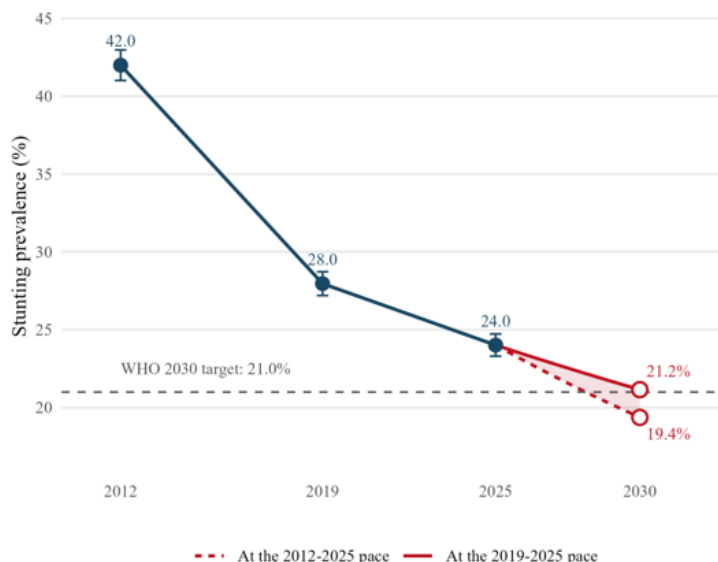


Figure 7

Decomposition of the fall in stunting and projection to 2030, Bangladesh MICS 2012-2025. Panel A: Oaxaca-Blinder decomposition; dotted connectors carry the running total from one bar to the next. Panel B: observed estimates with 95% confidence intervals, and two projections anchored on the observed 2025 estimate. The dashed horizontal line is the World Health Assembly target of a 50% reduction from the 2012 level.

Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- [SupplementaryMaterial.docx](#)