



EDITOR'S NOTE

In this second edition of South Asia Nutrition Knowledge Initiative's Abstract Digest, we present insights from new global evidence on the double burden of underweight and obesity, interventions to improve women's diets, policy challenges related to unhealthy food and beverage marketing to children, and facilitators and barriers to implementing community-based interventions for addressing acute malnutrition in low and middle-income countries.

This issue also includes studies from Bangladesh, India, and Nepal that examine anthropometric outcomes and their determinants, utilization of various social safety net programs and linkages to undernutrition, synergistic association of antenatal care and iron-folic acid supplementation on low birthweight, and global relevance of Multicenter Growth Reference Study. We also share IFPRI's Global Food Policy Report 2024, that highlights opportunities and challenges for transforming food systems for sustainable, and healthy diets for all.

Additionally, this edition features Agri-Food Systems Data Portal for India, launched by Anuvaad Solutions, and the document on adolescent health indicators recommended by the Global Action for Measurement of Adolescent health.

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PEER REVIEWED

Double burden of underweight and obesity: insights from new global evidence

Tumas, N., and S. R. López. 2024 "Double burden of underweight and obesity: insights from new global evidence." *The Lancet*. doi.org/10.1038/s41598-024-53280-0

The double burden of malnutrition—the simultaneous manifestation of both undernutrition and overweight and obesity—continues to be a major worldwide public health problem. Having updated data on key malnutrition outcomes is crucial for evidence-based actions to effectively address one of the primary contributors to poor health globally. In *The Lancet*, the NCD Risk Factor Collaboration (NCD-RisC) present a worldwide, up-to-date, and large body of evidence on key malnutrition components: underweight or thinness and obesity. Using extensive high-standard population-based data, the authors estimate the age-standardised prevalence of underweight or thinness and obesity and the combined burden for adults (age ≥ 20 years) and school-aged children and adolescents (age 5–19 years) in 200 countries and territories over the past three decades (1990–2022). This study has some limitations, including scarce data availability for some countries and absent data for three, scarce data for the youngest and oldest age groups, potential bias due to non-response in health surveys and possible model mis-specification related to data variability, and an absence of reporting on height (an important nutrition indicator), among others. Nevertheless, the authors build a comprehensive picture of the worldwide dynamics of underweight or thinness and obesity.

Burden of undernutrition among under-five Bengali children and its determinants: Findings from Demographic and Health Surveys of Bangladesh and India

Kundu, R.N., M. G. Hossain, M. A. Haque, R. A. Mahumud, M. Pal, and P. Bharati. 2024 "Burden of undernutrition among under-five Bengali children and its determinants: Findings from Demographic and Health Surveys of Bangladesh and India." *Plos one* 19, no. 4: e0301808. doi.org/10.1136%2Fbmjpo-2023-002333

Background: Globally, undernutrition is the leading cause of mortality among under-five children. Bangladesh and India were in the top ten countries in the world for under-five mortality. The aim of the study was to investigate the nutritional status of Bengali under-five children. **Methods:** Data on 25938 under-five children were retrieved from the Bangladesh Demographic and Health Survey 2017–18 (BDHS) and the National Family Health Survey of India 2015–16 (NFHS-4). Stunting, wasting, underweight and thinness were considered to understand the nutritional status of under-five children. Binary logistic regression was used to identify associated factors of undernutrition among children.

Results: Over one-quarter of Bengali under-five children were found to be suffering from the problem of stunting (31.9%) and underweight (28.1%), while other nutritional indicators raised serious concern and revealed inter-country disparities. In the cases of wasting, underweight and thinness, the mean z-scores and frequency differences between Bangladesh and India were significant. The nutritional status of Bengali under-five children appeared to have improved in Bangladesh compared to India. Child undernutrition had significant relations with maternal undernutrition in both countries. Girls in Bangladesh had slightly better nutritional status than boys. In Bangladesh, lack of formal education among mothers was a leading cause of child undernutrition. Stunting and underweight coexist with low household wealth index in both counties. **Conclusions:** The research revealed that various factors were associated with child undernutrition in Bengalis. It has been proposed that programmes promoting maternal education and nutrition, along with household wealth index be prioritised. The study recommends that the Governments of Bangladesh and India should increase the budget for health of children so as to reach the sustainable development goals.

Temporal change in prevalence of BMI categories in India: patterns across States and Union territories of India, 1999–2021

Sung, M., A. Kumar, R. Mishra, B. Kulkarni, R. Kim, and S. V. Subramanian. 2024 "Temporal change in prevalence of BMI categories in India: patterns across States and Union territories of India, 1999–2021." *BMC Public Health* 24, no. 1:1322. doi.org/10.1016/j.nut.2023.112346

Background: The problem of overweight/obesity often coexists with the burden of undernutrition in most low- and middle-income countries. BMI change in India incorporating the most recent trends has been under-researched.

Methods: This repeated cross-sectional study of 1,477,885 adults in India analyzed the prevalence of different categories of BMI among adults (age 20–54) in 4 rounds of National Family Health Surveys (1998–1999, 2005–2006, 2015–2016, and 2019–2021) for 36 states/UTs. State differences across time were harmonized for accurate analysis.

The categories were Severely/Moderately Thin (BMI < 17.0), Mildly Thin (17.0-18.4), Normal (18.5-24.9), Overweight (25.0-29.9), and Obese (≥ 30.0). We also estimated change in Standardized Absolute Change (SAC), ranking of states, and headcount burden to quantify the trend of BMI distribution across time periods for all-India, urban/rural residence, and by states/UTs. **Results:** The prevalence of thinness declined from 31.7% in 1999 to 14.2% in 2021 for women, and from 23.4% in 2006 to 10.0% in 2021 for men. Obesity prevalence increased from 2.9% (1999) to 6.3% (2021) for women, and from 2.0% (2006) to 4.2% (2021) for men. In 2021, the states with the highest obesity prevalence were Puducherry, Chandigarh, and Delhi. These states also had a high prevalence of overweight. Dadra and Nagar Haveli and Diu, Gujarat, Jharkhand, and Bihar had the highest prevalence of severe/moderately thin. Prevalence of extreme categories (severely/moderately thin and obese) was larger in the case of women than men. While States/UTs with a higher prevalence of thin populations tend to have a larger absolute burden of severe or moderate thinness, the relationship between headcount burden and prevalence for overweight and obese is unclear. **Conclusions:** We found persistent interstate inequalities of undernutrition. Tailored efforts at state levels are required to further strengthen existing policies and develop new interventions to target both forms of malnutrition.

Societal, Economic and Behavioural Predictors of Stunting Among Children Aged 24 to 59 Months: Evidence from the National Survey of Bangladesh

Rana, Z. H., D. B. Reed, W. Oldewage-Theron, S. Islam, M. Akhtaruzzaman, C. Lyford, M. Colwell, and J. A. Dawson. 2023 "Societal, Economic and Behavioural Predictors of Stunting Among Children Aged 24 to 59 Months: Evidence from the National Survey of Bangladesh." *Asia-Pacific Journal of Rural Development* 33, no. 1: 88-107. <https://doi.org/10.1177/24551333241232795>

With long-term detrimental consequences of irreversible physical and intellectual impairment, stunting remains one of the most prevalent public health problems. This study aimed to identify the factors contributing to stunting among children aged 24 to 59 months in Bangladesh. An analysis of nutrition survey data from the Nutrition, Health and Demographic Survey of Bangladesh analysed the data from a sample of 4,182 children. A predictive model was constructed to identify the association of stunting with family socioeconomics and children's characteristics. The study found that the development of stunting among 24- to 59-month-old children has been attributed to several factors such as household food security, child feeding practices, parental education and domestic violence. Mothers with secondary education had lower odds of having stunted children. Houses with better flooring quality reduced the probability of stunting by 50%. Children growing up in a moderately food-insecure family had higher odds of becoming stunted. Better child-feeding practices also had lower odds of stunting by 33%. The presence of domestic violence in the household increased the odds of having a stunted child. However, household sanitary conditions, safe water sources and maternal nutritional knowledge and practice were not significantly associated with stunting.

Effects of disability on adverse health outcomes and anthropometric deficits among under-five children in South Asian countries: evidence from multiple indicator cluster surveys

Alam, M. B., S. J. Khanam, M. S. Rana, G. Khandaker, M. A. Kabir, and M. N. Khan. 2024 "Effects of disability on adverse health outcomes and anthropometric deficits among under-five children in South Asian countries: evidence from multiple indicator cluster surveys." *The Lancet Regional Health-Southeast Asia* 25. doi.org/10.1111/ijpo.13092

Background: Children with disabilities face an increased risk of adverse health outcomes and poor anthropometric deficits, although the focus on them is limited in the South Asian context thus far and need newer and more evidence. This study investigates the effects of disability on adverse health outcomes and anthropometric deficits among 2-4 years aged children in South Asian countries. **Methods:** We analyzed data from 93,180 children aged 2-4 years across Bangladesh, Nepal, Pakistan, and Afghanistan using Multiple Indicator Cluster Surveys (2017-2023). Disability status was the primary exposure, and outcomes included adverse health outcome (acute respiratory infection, diarrhea, fever), anthropometric deficit (stunting, wasting, underweight), and healthcare service sources during adverse health events (care received from skilled healthcare personnel, care received from non-professional personnel, and care received from health facility workers other than skilled healthcare personnel). Using multilevel and multinomial logistic regression models, we examined associations between exposure and outcome variables, adjusting for covariates.

Findings: We found average disability prevalence in South Asia was 8.7% (8.3–9.0; n = 8072), varying from 3.4% (3.0–3.8; n = 446) in Bangladesh to 12.3% (11.4–13.3; n = 1259) in Afghanistan. Common health issues included fever (n = 24,982, 26.8%, 26.2–27.4) and diarrhea (n = 14,081, 15.1%, 14.7–15.6), while prevalent poor anthropometric deficits were stunting (n = 39,766, 42.7%, 42.0–43.3) and underweight (n = 22,390, 24.0%, 23.5–24.5). Children with disability had 1.30 (95% CI: 1.21–1.40) to 1.60 (95% CI: 1.47–1.75) times and 1.17 (95% CI: 1.05–1.29) to 1.39 (95% CI: 1.30–1.48) times higher likelihoods of adverse health outcomes and anthropometric deficits, respectively, with variations observed among countries and different disability types. Individuals with disability were 1.16 (95% CI: 1.00–1.35) to 1.26 (95% CI: 1.01–1.58) times more likely to receive healthcare services from skilled healthcare personnel compared to health facility workers other than skilled healthcare personnel. **Interpretation:** This study findings emphasizes the need for community-level awareness programs to improve anthropometric well-being and healthcare of the children with disability.

Caste Differences in Child Growth: Disentangling Endowment and Investment Effects

Cummins, J., J. Guo, N. Agarwal, A. Aiyar, V. Jain, and A. Bergmann. 2024 "Caste Differences in Child Growth: Disentangling Endowment and Investment Effects." *World development* 179: 106598. doi.org/10.1038/s41430-024-01427-7

Using the fourth round of the Indian National Family Health Survey (NFHS-4), and subsequently replicating our results using the fifth round (NFHS-5), we document differential child physical growth patterns across caste groups in India, demonstrating that lower caste children are born shorter and grow less quickly than children from higher-caste households. We then show that, in line with work from previous rounds of the NFHS, these differences are largely explainable by observable covariates, particularly maternal characteristics and household wealth variables. Our research also reveals a previously undocumented dynamic, that the influence of these variables changes as children develop, and suggests that caste-gaps are the result of multiple mechanisms impacting the child growth process at different stages of development. Using age-disaggregated decomposition methods, we demonstrate that health endowment related variables (e.g. maternal height) largely explain birth length gaps, and that variables related to health investments (e.g. household wealth, health care usage) become increasingly influential as children age. Children from lower caste households thus face two margins generating height gaps as they age: a persistent endowment disparity present from birth, and a post birth investment differential that exacerbates the initial deficit.

Deworming and micronutrient status by community open defecation prevalence: An observational study using nationally representative data from India, 2016–2018

Chakrabarti, S., S. S. Ajjampur, H. S. Waddington, A. Kishore, P. H. Nguyen, and S. Scott. "Deworming and micronutrient status by community open defecation prevalence: An observational study using nationally representative data from India, 2016–2018." *Plos Medicine* 21, no. 5 (2024): e1004402. doi.org/10.1371/journal.pgmph.0002095

Background: Micronutrient deficiencies are widespread in India. Soil-transmitted helminth (STH) infections are acquired by interaction with soil and water contaminated by human feces and lead to blood loss and poor micronutrient absorption. The current recommendation for control of STH-related morbidity is targeted deworming, yet little is known about the effectiveness of deworming on micronutrient status in varying sanitation contexts. Ranging between 1% and 40% prevalence across Indian states, open defecation (OD) remains high despite India's investments at elimination by promoting community-wide sanitation. This variation provides an opportunity to study the relationship between deworming, micronutrient status, and OD at-scale. **Methods and findings:** Cross-sectional datasets that were representative for India were obtained from the Comprehensive National Nutrition Survey in 2016 to 2018 (n = 105,060 individuals aged 1 to 19 years). Consumption of deworming medication was described by age and community OD level. Logistic regression models were used to examine the relationship between deworming, cluster OD, and their interactions, with anemia and micronutrient deficiencies (iron, zinc, vitamin A, folate, and vitamin B12), controlling for age, sex, wealth, diet, and seasonality. These regression models further allowed us to identify a minimum OD rate after which deworming becomes ineffective. In sensitivity analyses, the association between

deworming and deficiencies were tested in subsamples of communities classified into 3 OD levels based on statistical tertiles: OD free (0% of households in the community practicing OD), moderate OD (>0% and <30%), or high OD (at least 30%). Average deworming coverage and OD prevalence in the sample were 43.4% [IQR 26.0, 59.0] and 19.1% [IQR 0, 28.5], respectively. Controlling for other determinants of nutritional status, adolescents living in communities with higher OD levels had lower coverage of deworming and higher prevalence of anemia, zinc, vitamin A, and B12 deficiencies. Compared to those who were not dewormed, dewormed children and adolescents had lower odds of anemia (adjusted odds ratio 0.72, (95% CI [0.67, 0.78], $p < 0.001$) and deficiencies of iron 0.78, (95% CI [0.74, 0.82], $p < 0.001$) and folate 0.69, (95% CI [0.64, 0.74], $p < 0.001$) in OD free communities. These protective effects remained significant for anemia but diminished for other micronutrient deficiencies in communities with moderate or high OD. Analysis of community OD indicated a threshold range of 30% to 60%, above which targeted deworming was no longer significantly associated with lower anemia, iron, and folate deficiency. The primary limitations of the study included potential for omitted variables bias and inability to capture longitudinal effects. Conclusions: Moderate to high rates of OD significantly modify the association between deworming and micronutrient status in India. Public health policy could involve sequencing interventions, with focus on improving deworming coverage in communities that have achieved minimum thresholds of OD and re-triggering sanitation interventions in high OD communities prior to deworming days, ensuring high coverage for both. The efficacy of micronutrient supplementation as a complementary strategy to improve nutritional outcomes alongside deworming and OD elimination in this age group needs further study.

Association between short birth spacing and child malnutrition in Bangladesh: a propensity score matching approach

Ahmed, F., M. N. Hasan, M. F. Hossain, M. T. F. Khan, M. M. Rahman, M. P. Hussain, and M. J. Hossain. 2024 "Association between short birth spacing and child malnutrition in Bangladesh: a propensity score matching approach." *BMJ Paediatrics Open* 8, no. 1. doi.org/10.1186/s12889-024-17789-3

Objectives: This study aimed to explore the effects of short birth spacing (SBS), which is defined as a period of less than 33 months between two successive births, on multiple concurrent forms of child malnutrition (MCFCM) and at least one form of child malnutrition (ALOFCM) using propensity score matching (PSM). **Methods:** This study used data extracted from the 2017-18 Bangladesh Demographic and Health Survey. PSM with four different distance functions, including logistic regression, classification and regression tree, single hidden layer neural network and random forest, were performed to evaluate the effects of SBS on MCFCM and ALOFCM. We also explored how the effects were modified in different subsamples, including women's empowerment, education and economic status (women's 3E index)-constructed based on women's decision-making autonomy, education level, and wealth index, and age at marriage, and place of residence. **Results:** The prevalence of SBS was 22.16% among the 4652 complete cases. The matched samples of size 2062 generated by PSM showed higher odds of MCFCM (adjusted OR (AOR)=1.25, 95% CI=1.02 to 1.56, $p=0.038$) and ALOFCM (AOR=1.20, 95% CI=1.01 to 1.42, $p=0.045$) for the SBS children compared with their counterparts. In the subsample of women with 3E index $\geq 50\%$ coverage, the SBS children showed higher odds of MCFCM (AOR: 1.43, 95% CI=1.03 to 2.00, $p=0.041$) and ALOFCM (AOR: 1.33, 95% CI=1.02 to 1.74, $p=0.036$). Higher odds of MCFCM (AOR=1.27, 95% CI=1.02 to 1.58, $p=0.036$) and ALOFCM (AOR=1.23, 95% CI=1.02 to 1.51, $p=0.032$) for SBS children than normal children were also evident for the subsample of mothers married at age ≤ 18 years. Conclusion: SBS was significantly associated with child malnutrition, and the effect was modified by factors such as women's autonomy and age at marriage.

Association of child marriage and nutritional status of mothers and their under-five children in Bangladesh: a cross-sectional study with a nationally representative sample

Mim, S. A., A. S. M. Al Mamun, M. A. Sayem, M. A. Wadood, and M. G. Hossain. 2024 "Association of child marriage and nutritional status of mothers and their under-five children in Bangladesh: a cross-sectional study with a nationally representative sample." *BMC nutrition* 10, no. 1: 67. doi.org/10.1177/03795721241234086

Background: Child marriage remains an important problem around the world with young mothers and their under-five children often experiencing under-nutrition. The problem is rarely studied in the Bangladeshi population. This paper was designed to identify the association between child marriage and nutritional status of mothers and their under-five children in Bangladesh. **Methods:** Nationally representative secondary data was used for this study, data was extracted from the Bangladesh Demographic and Health Survey (BDHS) 2017-18. The sample consisted of 7235 mothers aged 18-49 years and their under-five children. The mothers were classified into two classes according to their age at first marriage: (i) child marriage (marriage at < 18 years) and (ii) not child marriage (marriage at ≥ 18 years). The nutritional status of mothers was measured by body mass index (BMI), and under-five children's nutritional status was measured by (i) height-for-age (z-score) (stunting), (ii) weight-for-age (z-score) (underweight), and (iii) weight-for-height (z-score) (wasting). The chi-square test and two-level logistic regression model were used for data analysis using SPSS software (IBM version 20). **Results:** The prevalence of child marriage among Bangladeshi women was 69.0%, with the mean and median of age at the first marriage being 16.57 ± 2.83 years and 16 years, respectively. Of the mothers, 15.2% suffered from chronic energy deficiency (underweight), and 72.8% were married at < 18 years. The prevalence of stunting, underweight, and wasting among under-five children in Bangladesh was 31.0%, 22.0%, and 8.5%, respectively. Compared to women married at the age of ≥ 18 years, there was a significantly higher likelihood of chronic energy deficiency among women who married at < 18 years [Adjusted OR = 1.27, CI: 1.05-1.82; $p < 0.05$]. Under-five children of mothers married before the age of 18 were more likely to have stunting [Adjusted OR = 1.201, CI: 1.11-1.72; $p < 0.05$], wasting [Adjusted OR = 1.519, CI: 1.15-2.00; $p < 0.01$], and underweight [Adjusted OR = 1.150, CI: 1.09-1.82; $p < 0.05$] compared to children of mothers who married at age ≥ 18. **Conclusion:** The rate of child marriage among Bangladeshi women is high, and it is significantly associated with malnutrition among mothers and their under-five children. The Bangladesh government can use the findings of this study to prevent and reduce child marriage and malnutrition among mothers and their under-five children to achieve sustainable development goals by 2030.

Factors influencing household and women's dietary diversity in migrant households in central Nepal

Gartaula, H. N., K. Atreya, K. Kattel, and D. B. Rahut. 2024 "Factors influencing household and women's dietary diversity in migrant households in central Nepal." Plos one 19, no. 4: e0298022. doi.org/10.1186/s12889-024-17942-y

Food security and dietary diversity, defined as providing either physical (availability) or economic (accessibility) access to food, are linked with access to and control over productive resources and is a highly-gendered phenomenon. In Nepal, labor out-migration has increased household income and may have increased people's ability to access diverse food either by increasing investment in agriculture or purchasing various food items from the market. However, the relationship between household dietary improvement and labor out-migration is complex. Drawing on a survey of 1,053 migrant households in three agroecological regions of Nepal, this paper disentangles this complex phenomenon by showing how household dietary diversity and women's dietary diversity are influenced by biophysical, social, economic, and cultural factors. The influence of the amount of remittances, land abandonment, and women confined to the house by household chores are some factors that policy makers should consider seriously in designing gender-sensitive nutrition policies. The expansion of women's agency contributes to enhancing dietary diversity and specifically women's dietary diversity at the household level; however, how these factors determine an individual's dietary diversity depends on intrahousehold dynamics and relations.

Association between Child Nutritional Anthropometric Indices and Iron Deficiencies among Children Aged 6-59 Months in Nepal

Agho, K. E., S. Chitekwe, S. Rijal, N. Paudyal, S. K. Sahani, and B. J. Akombi-Inyang. 2024 "Association between Child Nutritional Anthropometric Indices and Iron Deficiencies among Children Aged 6-59 Months in Nepal." Nutrients 16, no. 5: 698. doi.org/10.1017/S0029665124000144

Developmental impairment remains an important public health problem among children in many developing countries, including Nepal. Iron deficiency in children may affect development and lead to anaemia. This study on 1702 children aged 6–59 months aimed to assess the association between nutritional anthropometric indices and iron deficiencies. Data for this study were extracted from the 2016 Nepal National Micronutrient Status Survey. Three nutritional anthropometric indices (stunting, wasting and underweight) and their association with anaemia and iron deficiencies (ferritin and sTfR biomarkers) were assessed by conducting multivariate statistical analyses. The prevalence of stunting, wasting and underweight among children aged 6–59 months was 35.6%, 11.7% and 29.0%, respectively. Most of the children were not stunted (64.4%), not wasted (71.0%) and not underweight (88.3%). Belonging to castes other than the Janajati, Dalit and Brahmin castes increased the odds of anaemia and iron deficiency (ferritin biomarker). Children in the age group 6–23 months were significantly at higher odds of having anaemia and iron deficiency (ferritin and sTfR biomarkers). Stunting significantly increased the odds of anaemia [adjusted odds ratio (OR): 1.55; 95% confidence interval (CI): (1.11, 2.17)], iron deficiency (ferritin biomarker [OR: 1.56; 95% CI: (1.16, 2.08)] and sTfR biomarker [OR: 1.60; 95% CI: (1.18, 2.15)]). Further, underweight significantly increased the odds of anaemia [OR: 1.69; 95% CI: (1.12, 2.54)] and iron deficiency (sTfR biomarker [OR: 1.48; 95% CI: (1.14, 1.93)]). Interventions to minimise the occurrence of anaemia and iron deficiencies among children in Nepal should focus on providing appropriate healthcare services that would reduce the burden of stunting and underweight.

How Do Social and Behavioral Change Interventions Respond to Social Norms to Improve Women's Diets in Low- and Middle-Income Countries? A Scoping Review

Litvin, K., G. W. Grandner, E. Phillips, L. Sherburne, H. C. Craig, K. A. Phan, A. N. Patel, and K. L. Dickin. "How do social and behavioral change interventions respond to social norms to improve women's diets in low-and middle-income countries? A scoping review." *Current Developments in Nutrition* (2024): 103772. doi.org/10.1017/S0029665124000144

Healthy dietary practices are highly influenced by social norms, the widely-held expectations about the behaviors that are appropriate or typical within a given group. Yet many nutrition programs designed to reduce women's undernutrition in low- and middle-income countries do not address the influence of social and gender norms in their interventions and therefore there is limited information about how norms-responsive interventions have been designed and implemented. The objective of this scoping review was to identify and describe social and behavioral change interventions designed to improve women's dietary practices and nutritional intake that integrate the influence of social and gender norms. We systematically searched four databases (Scopus, Web of Science, PubMed, CINAHL) for peer-reviewed papers describing design, implementation, and/or assessment of nutrition interventions in low- or middle-income countries. Results are reported following PRISMA guidelines. Our review identified 27 papers from 25 projects or research studies that addressed social, or gender norms related to women's dietary practices. The majority focused on the pregnancy and lactation periods, and few aimed to reach all women of reproductive age. Interventions most often endeavored to shift norms through multiple activities, channels, and platforms, aiming to reach not only the primary participants but also influencers and reference groups. Intervention approaches ranged from home visits and support groups to engage influential family members to community-level outreach with opinion leaders such as religious leaders, healthcare workers, and peer change agents. Most interventions were delivered through the health sector or were community-based, with some nutrition-sensitive agriculture interventions. There is increasing, although still limited, integration of social and gender norms perspectives in the design, implementation, and assessment of interventions to improve women's diets. This comprehensive review summarizes influential norms and intervention approaches, an important step toward enhancing the effectiveness of social and behavioral change interventions by addressing nutrition-relevant norms.

Unhealthy Food and Beverage Marketing to Children in the Digital Age: Global Research and Policy Challenges and Priorities

Boyland, E., K. Backholer, M. P. Kent, M. A. Bragg, F. Sing, T. Karupaiah, and B. Kelly. "Unhealthy Food and Beverage Marketing to Children in the Digital Age: Global Research and Policy Challenges and Priorities." *Annual review of nutrition* 44 (2024). doi.org/10.1111/mcn.13609

Food and nonalcoholic beverage marketing is implicated in poor diet and obesity in children. The rapid growth and proliferation of digital marketing has resulted in dramatic changes to advertising practices and children's exposure. The constantly evolving and data-driven nature of digital food marketing presents substantial challenges for researchers seeking to quantify the impact on children and for policymakers tasked with designing and implementing restrictive policies. We outline the latest evidence on children's experience of the contemporary digital food marketing ecosystem, conceptual frameworks guiding digital food marketing research, the impact of digital food marketing on dietary outcomes, and the methods used to determine impact, and we consider the key research and policy challenges and priorities for the field. Recent methodological and policy developments represent opportunities to apply novel and innovative solutions to address this complex issue, which could drive meaningful improvements in children's dietary health.

Facilitators and barriers to implementing complex community-based interventions for addressing acute malnutrition in low- and lower-middle income countries: A scoping review

Beggs, B., M. Bustos, L. J. Brubacher, M. Little, L. Lau, and W. Dodd. 2024 "Facilitators and barriers to implementing complex community-based interventions for addressing acute malnutrition in low-and lower-middle income countries: A scoping review." *Nutrition and Health*: 02601060241253327. doi.org/10.1017/S1368980023002963

Background: Community-based nutrition interventions have been established as the standard of care for identifying and treating acute malnutrition among children 6-59 months in low- and lower-middle-income countries. However, limited research has examined the factors that influence the implementation of the community-based component of interventions that address severe acute malnutrition and moderate acute malnutrition among children. **Aim:** The objective of this review was to identify and describe the facilitators and barriers in implementing complex community-based nutrition interventions to address acute malnutrition among children in low- and lower-middle-income countries. **Methods:** This review used a systematic search strategy to identify existing peer-reviewed literature from three databases on complex community-based interventions (defined as including active surveillance, treatment, and education in community settings) to address severe acute malnutrition and moderate acute malnutrition in children. **Results:** In total, 1771 sources were retrieved from peer-reviewed databases, with 38 sources included in the review, covering 26 different interventions. Through an iterative deductive and inductive analysis approach, three main domains (household and interpersonal, sociocultural and geographical; operational and administrative) and eight mechanisms were classified, which were central to the successful implementation of complex community-based interventions to address acute child malnutrition. **Conclusion:** Overall, this review highlights the importance of addressing contextual and geographical challenges to support participant access and program operations. There is a need to critically examine program design and structure to promote intervention adherence and effectiveness. In addition, there is an opportunity to direct resources towards community health workers to facilitate long-term community trust and engagement.

Synergistic associations of antenatal care visits and iron-folic acid supplementation with low birth weight: a pooled analysis of national surveys from six south Asian countries

Khanal, V., S. Bista, and S. R. Mishra. 2024 "Synergistic associations of antenatal care visits and iron-folic acid supplementation with low birth weight: a pooled analysis of national surveys from six south Asian countries." *BMC Public Health* 24, no. 1: 835. doi.org/10.1016/j.cdnut.2023.102053

Background: The prevalence of low birth weight (LBW) has remained high (24.9%) in the South Asian region with a significant impact on newborn survival. This region bears nearly 40% of global burden of LBW. While antenatal care (ANC) and iron-folic acid supplementation independently have been considered effective for improving maternal and newborn outcomes, the evidence on the combined effect of these two supplements on LBW is lacking. This study aimed to examine the synergistic association of ANC and iron-folic acid supplementation on LBW in the South Asian region using pooled data from six South Asian countries. **Methods:** Nationally representative surveys from Nepal, India, Bangladesh, Pakistan, Maldives, and Afghanistan were included in the study. Birth weight and the prevalence of LBW for singleton last-born children were reported using descriptive statistics. The association between LBW and ANC visits and the interaction between iron-folic acid consumption and ANC were examined using multiple logistic regression. **Results:** The mean birth weight in the region was 2841.8 g with an LBW prevalence of 17.1%. Country-specific prevalence ranged from 11.4% in Nepal to 22.4% in Pakistan. Not attending ANC visits (adjusted odds ratio

(AOR): 1.24; 95% confidence interval (CI): 1.16, 1.34) and not consuming iron-folic acid (AOR: 1.14; 95% CI: 1.08, 1.21) were significantly associated with a higher likelihood of LBW. Furthermore, jointly, having < 4 ANC visits and < 180 days of iron-folic acid supplementation was associated with a higher likelihood (AOR: 1.29; 95% CI: 1.22, 1.36) of having LBW compared to those who had ≥ 4 ANC visits and ≥ 180 days of iron-folic acid consumption after controlling for key confounding factors. **Conclusions:** The current study provides important evidence on the synergy between ANC visits and iron-folic acid consumption during pregnancy to capitalize on the existing national maternal health programs in the South Asian region, including low-and middle-income countries for positive foetal outcomes.

Utilization of Integrated Child Development Services (ICDS) and its linkages with undernutrition in India

Singh, S. K., A. Chauhan, H. Alderman, R. Avula, L. K. Dwivedi, R. Kapoor, T. Meher, P. Menon, P.H. Nguyen, S. Pedgaonker, P. Puri, and S. Chakrabarti. 2024. "Utilization of Integrated Child Development Services (ICDS) and its linkages with undernutrition in India." *Maternal & Child Nutrition* (2024): e13644. doi.org/10.1136/bmjopen-2023-071882

The Integrated Child Development Services (ICDS) programme has been the central focus of the POSHAN Abhiyaan to combat maternal and child malnutrition under the national nutrition mission in India. This paper examined the linkages between utilization of ICDS and underweight among children aged 6-59 months. The study utilized data from two recent rounds of the National Family Health Survey (NFHS-4 [2015-2016] and NFHS-5 [2019-2021]). Descriptive analyses were used to assess the change in utilization of ICDS and the prevalence of underweight at the national and state levels. Multivariable logistic regressions were performed to examine factors associated with the utilization of ICDS and underweight. Linkages between utilization of ICDS and underweight were examined using the difference-in-differences (DID) approach. Utilization of ICDS increased from 58% in 2015-2016 to 71% in 2019-2021. The prevalence of underweight decreased from 37% to 32% in the same period. Changes in ICDS utilization and underweight prevalence varied considerably across states, socioeconomic and demographic characteristics. Results from decomposition of DID models suggest that improvements in ICDS explained 9%-12% of the observed reduction in underweight children between 2016 and 2021, suggesting that ICDS made a modest but meaningful contribution in addressing undernutrition among children aged 6-59 months in this period.

Food Transfers, Cash Transfers, Behavior Change Communication and Child Nutrition: Evidence from Bangladesh

Ahmed, A., J. Hoddinott, and S. Roy. "Food transfers, cash transfers, behavior change communication and child nutrition: Evidence from Bangladesh." *The World Bank Economic Review* (2024): lhae023. doi.org/10.1371/journal.pone.0292802

This paper reports the results of two 2-year randomized control trials in two poor rural areas of Bangladesh. Treatment arms included monthly cash transfers, monthly food rations of equivalent value to the cash transfers, and mixed monthly cash and food transfers, and treatment arms—one with food and one with cash—that combined transfers with nutrition-behavior communication change (BCC). This design enables a comparison of transfer modalities within the same experiment. Intent-to-treat estimators show that cash transfers and nutrition BCC had a large impact on nutritional status, a 0.25 standard deviation increase in height-for-age z-scores and a 7.8 percentage point decrease in stunting prevalence. No other treatment arm affected anthropometric outcomes. Mechanisms underlying these impacts are explored. Improved diets—particularly increased intake of animal source foods in the cash plus BCC arm—are consistent with the improvements observed in this paper.

Global relevance of MGRS growth standards: the case of India

Prasad, V., D. Sinha, and R. J. Joseph. "Global relevance of MGRS growth standards: the case of India." *BMJ Paediatrics Open* 8, no. 1 (2024). doi.org/10.1136/bmjpo-2023-002472

The most common measures of childhood undernutrition are based on anthropometric measures such as height-for-age (stunting/chronic undernutrition) and weight-for-height (wasting/acute undernutrition). It is well recognised that the determinants of undernutrition are multiple, including food intake, dietary diversity, health, sanitation and women's status. Currently, most countries across the world including India use the globally accepted WHO-Multicentre Growth Reference Study (MGRS) growth standards (2006) for the purposes of measurement as well as for evaluating progress on these metrics. However, there is some discussion on the universal relevance of these standards and in the Indian context, whether these standards overestimate the prevalence of stunting, considering differences in genetic potential for growth. This is especially relevant in the context of increasing burden of obesity and non-communicable diseases in India. Based on a detailed review of literature, policy documents and expert inputs, this review paper discusses the relevance of the WHO growth standards for height/stunting, in the context of India. Issues discussed related to the MGRS methodology include pooling of data and intersite and intrasite variability, opting for standards as opposed to references, and external validity. Other issues related to plasticity of stunting and the influence of maternal heights are also discussed, in the context of analysing the appropriateness of using universal growth standards. Based on the review, it is recommended that the current standards may continue to be used until a newer global standard is established through a similar study.

Global Food Policy Report 2024

Food systems and diets underpin many critical challenges to public health and environmental sustainability, including malnutrition, noncommunicable diseases, and climate change, but healthy diets have the unique potential to reshape the future for both human and planetary well-being. Drawing on recent evidence and experience, the 2024 Global Food Policy Report highlights opportunities for transforming food systems to ensure sustainable healthy diets for all.

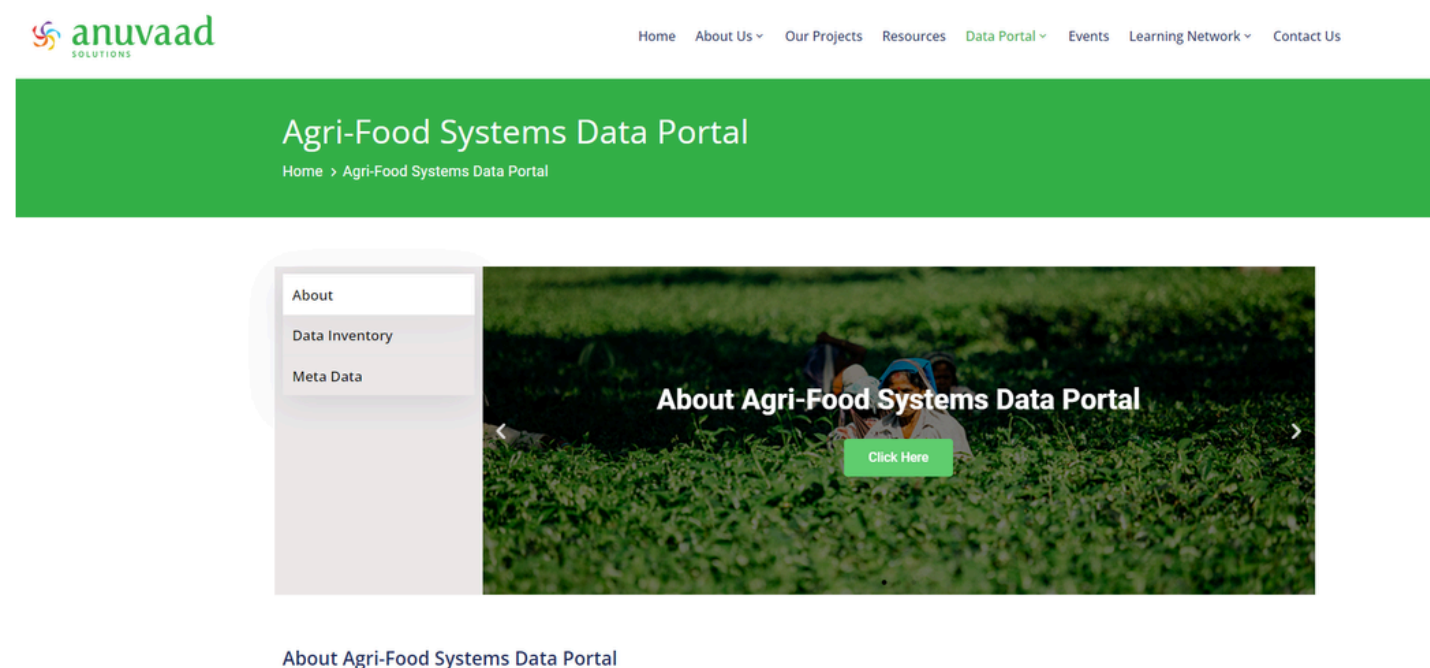
[Click here to read the full report.](#) To read the South Asia regional developments, jump to page 103 in the report.

NON-PEER REVIEWED

Agri-Food Systems Data Portal

Anuvaad has developed an Agri-Food systems data portal that compiles data on land use, crop production, agricultural inputs, rainfall, groundwater, soil health, livestock populations, and population health from various ministries and departments of the Government of India. The portal draws inspiration from the Food and Agriculture Organization's [FAOSTAT](#).

The Agri-Food Systems data portal features a data inventory where users can explore or download the available data for a particular domain by making selections from the list of district, state & years and a metadata tab that provides information on the data sources, collection methods, and the years for which the data is available.



Agri-Food Systems Data Portal
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About Agri-Food Systems Data Portal

The Adolescent Health Indicators, recommended by the Global Action for Measurement of Adolescent health Guidance for monitoring adolescent health at country, regional and global levels

Adolescence is a time of significant physical and emotional change that requires tailored health approaches. Historically, the world has lacked comprehensive indicators for adolescent health. This has been a critical gap since advancing an agenda for adolescent well-being demands timely and robust data for effective advocacy, policy development and programme monitoring. The indicators recommended by the Global Action for Measurement of Adolescent health (GAMA) offer a framework to guide global efforts to improve adolescent health. The indicators span a range of adolescent health issues, including physical health, mental health, sexual and reproductive health, and social well-being. Use of these indicators will improve the health and well-being of adolescents and the prospects of future generations.

[Click here](#) to go directly to the report.



UPCOMING EVENTS

7th International Conference on Food and Nutrition

The 7th International Conference on Food and Nutrition invites all the Nutritionists, Dieticians, Professors, Deans, Scientists, Researchers, Research Scholars, Health experts, Delegates, Industrialists and Students for this conference, with the theme entitled "Culinary Diversity and Health: A Global Perspective". Current advancement and research within the field of food science and nutrition will be shared which delivers extensive knowledge, novel ideas, and experience to the participants from the experts in the field. This global conference also discusses the trends, concerns, practical challenges came across and the solutions. International Conference on Food and Nutrition not only shares the knowledge but also provides a platform that helps in building prolific networking and professional opportunities which will boost one's career.

When: June 29-30, 2024

Where: Malaysia, Hybrid Conference

For more information: [Click here!](#)

28th World Congress on Nutrition and Food Sciences

The "28th World Congress on Nutrition and Food Sciences" (NUTRITION SCIENCE 2024) invites all the participants across the globe to attend and share their insights and convey in the field of Food and Nutritional Sciences. The theme of this year's conference is "Addressing global challenges in nutrition and food security". The Nutrition Science 2024 is honored to host high-profile keynote speakers from around the world for oral presentations, poster presentations, young re-searchers forum, with delegates to discuss and share on Food and Nutritional Sciences.

When: Oct 21-22, 2024

Where: Paris, France

For more information: [Click here!](#)

Committee on World Food Security

The 52nd Plenary Session of the Committee on World Food Security (CFS 52) will focus on the 2024 State of Food Security and Nutrition report, the endorsement of those CFS products developed by the Committee during the intersessional period, the update of the CFS Multi-Year Programme of Work for 2024-2027, the report by the High-Level Panel of Experts on Food Security and Nutrition (HLPE-FSN) on "Strengthening urban and peri-urban food systems to achieve food security and nutrition in the context of urbanization and rural transformation", and other ongoing CFS workstreams and priorities.

When: Oct 21-25, 2024

Where: Rome, Italy

For more information: [Click here!](#)



SOUTH ASIA NUTRITION KNOWLEDGE INITIATIVE: ABSTRACT DIGEST

Under the South Asia Nutrition Knowledge Initiative, IFPRI aims to generate and synthesize evidence to support policies and programs for improving maternal and child nutrition in South Asia.

In each issue, the South Asia Abstract Digest will present new and notable studies on maternal and child nutrition, focusing on global and South Asia-specific literature. The Abstract Digest is based on literature searches to identify selected studies that we think are most relevant to nutrition issues in South Asia. We share with you a collection of abstracts from articles published in peer-reviewed journals of repute. The abstracts in this document are reproduced in their original form from their source.

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