



EDITOR'S NOTE

In this third edition of the South Asia Nutrition Knowledge Initiative's Abstract Digest, we present studies on global, regional, and country-specific evidence on various topics of nutrition. These include the impact of short birth intervals on child malnutrition in the Asia-Pacific region, a summary of lessons from program evaluations of food systems interventions for nutrition in South Asia, the effect of zinc supplementation in pregnant and lactating mothers in a three-country study, and a review of evidence on school meals, impact on nutrition, and their other evolving dimensions.

The peer-reviewed country-specific studies are on anemia among women in Bangladesh, the double burden of malnutrition among women of reproductive age in India, and reproductive and child health transitions in India. Other country-specific studies pertain to community-based and nutrition program and multi-sectoral community development interventions in Nepal, and utilization of an integrated child development services program in India.

This issue also includes studies focusing on methods, such as measures for coverage of nutrition-sensitive social protection programs, a systematic scoping review examining aspects of quantitative nutrition research engaging with the intersectionality of inequities, a protocol to develop a data repository to support interdisciplinary research into childhood stunting, and a concept exploratory study on empowerment among adolescent girls.

We also highlight the availability of an open-access dataset for an integrated food systems assessment, which includes a wealth of data collected from Bangladesh, India, and Nepal spanning climate adaptation, agricultural production, food purchasing and shopping practices, gender disparities in unhealthy eating, adolescent diets and aspirations, and much more!

Below is the list of articles. Please scroll down to explore the abstracts in the pages that follow. If this Abstract Digest was forwarded to you, we invite you to [subscribe](#).

Happy reading!

IN THIS ISSUE

Effects of short birth interval on child malnutrition in the Asia-Pacific region: Evidence from a systematic review and meta-analysis. Khan MN, et al. *Maternal & Child Nutrition*. 2024 Jul;20(3):e13643. doi: 10.1111/mcn.13643.

Zinc Supplementation Initiated Prior to or During Pregnancy Modestly Impacted Maternal Status and High Prevalence of Hypozincemia in Pregnancy and Lactation: The Women First Preconception Maternal Nutrition Trial. Kemp JF, et al. *The Journal of Nutrition*. 2024 Jun;154(6):1917-1926. doi: 10.1016/j.tjnut.2024.04.018.

Anaemia among adolescent girls, pregnant and lactating women in the southern rural region of Bangladesh: Prevalence and risk factors. Ara G, et al. *PLoS One*. 2024 Jul;19(7):e0306183. doi: 10.1371/journal.pone.0306183.

Double burden of malnutrition among women of reproductive age: Trends and determinants over the last 15 years in India. Prithishkumar IJ, et al. *PLoS One*. 2024 Jun;19(6):e0304776. doi: 10.1371/journal.pone.0304776.

Reproductive and child health transition among selected empowered action groups states of India: A district-level analysis. Pandey BW, et al. *PLoS One*. 2024 Jun;19(6):e0301587. doi: 10.1371/journal.pone.0301587.

Assessment of a Community-Based Nutrition Program for Women and Children in Nepal Using Demographic and Health Survey. Joshi G, et al. *International Journal of Environmental Research and Public Health*. 2024 Jun;21(6):754. doi: 10.3390/ijerph21060754.

A multi-sectoral community development intervention has a positive impact on diet quality and growth in school-age children in rural Nepal. Miller LC, et al. *Maternal & Child Nutrition*. 2024 Jul;20(3):e13637. doi: 10.1111/mcn.13637.

Utilization of Integrated Child Development Services (ICDS) and its linkages with undernutrition in India. Singh SK, et al. *Maternal & Child Nutrition*. 2024 Jul;20(3):e13644. doi: 10.1111/mcn.13644.

Food Systems Interventions for Nutrition: Lessons from 6 Program Evaluations in Africa and South Asia. Neufeld LM, et al. *The Journal of Nutrition*. 2024 Jun;154(6):1727-1738. doi: 10.1016/j.tjnut.2024.04.005.

School Meals Are Evolving: Has the Evidence Kept Up? Alderman H, et al. *The World Bank Research Observer*. 2024 Aug;39(2):159-176. doi: 10.1093/wbro/lkad012.

Identifying measures for coverage of nutrition-sensitive social protection programs: Learnings from India. Nguyen PH, et al. *Maternal & Child Nutrition*. 2024 Jun;20(3):e13661. doi: 10.1111/mcn.13661.

The Extent, Range, and Nature of Quantitative Nutrition Research Engaging with Intersectional Inequalities: A Systematic Scoping Review. Fivian E, et al. *Advances in Nutrition*. 2024 Jun;15(6):100237. doi: 10.1016/j.advnut.2024.100237.

Developing a data repository to support interdisciplinary research into childhood stunting: a UKRI GCRF Action Against Stunting Hub protocol paper. Conway-Moore K, et al. *BMJ Paediatrics Open*. 2024 Jun;8(Suppl 1):e002443. doi: 10.1136/bmjpo-2023-002443.

Exploring a Preliminary Set of Indicators to Measure Adolescent Health: Results From a 12-Country Feasibility Study. Kågesten AE, et al. *Journal of Adolescent Health*. 2024 Jun;74(6S):S66-S79. doi: 10.1016/j.jadohealth.2024.01.017.

Empowerment Among Adolescent Girls in Nepal: A Concept Mapping Exploratory Study. Burke JG, et al. *Global Health: Science and Practice*. 2024 Jun;12(3):e2300010. doi: 10.9745/GHSP-D-23-00010.

CGIAR Transforming Agrifood Systems in South Asia (TAFSSA) integrated household survey datasets

PEER REVIEWED

Effects of short birth interval on child malnutrition in the Asia-Pacific region: Evidence from a systematic review and meta-analysis

Khan MN, Harris ML, Hassen TA, Bagade T, Shifti DM, Feyissa TR, Chojenta C. *Maternal & Child Nutrition*. 2024 Jul;20(3). doi: 10.1111/mcn.13643.

Child malnutrition remains a significant concern in the Asia-Pacific region, with short birth intervals recognised as a potential risk factor. However, evidence of this association is inconclusive. This study aimed to systematically review the existing evidence and assess the summary effects of short birth interval on child malnutrition in the Asia-Pacific region. Five electronic databases were searched in May 2023 to identify relevant studies reporting the association between short birth interval and child malnutrition, including stunting, wasting, underweight, anaemia and overall malnutrition, in Asia-Pacific region between September 2000 and May 2023. Fixed-effects or random-effects meta-analysis was performed to estimate the summary effects of short birth interval on child malnutrition. Out of 56 studies meeting the inclusion criteria, 48 were included in quantitative synthesis through meta-analysis. We found a slightly higher likelihood of stunting ($n = 25$, odds ratio [OR] = 1.13; 95% confidence interval [CI]: 0.97-1.32) and overall malnutrition ($n = 3$, OR = 2.42; 95% CI: 0.88-6.65) among children born in short birth intervals compared to those with nonshort intervals, although the effect was not statistically significant. However, caution is warranted due to identified heterogeneity across studies. Subgroup analysis demonstrated significant effects of short birth intervals on child malnutrition in national-level studies and studies with larger sample sizes. These findings underscore short birth intervals as a significant contributor to child malnutrition in the Asia-Pacific region. Implementing effective policies and programs is vital to alleviate this burden, ultimately reducing child malnutrition and associated adverse outcomes, including child mortality.

Zinc supplementation initiated prior to or during pregnancy modestly impacted maternal status and high prevalence of hypozincemia in pregnancy and lactation: The Women First Preconception Maternal Nutrition Trial

Kemp JF, Hambidge KM, Westcott JL, Ali SA, Saleem S, Garcés A, Figueroa L, Somannavar MS, Goudar SS, Long JM, Hendricks AE, Krebs NF; Women First Preconception Maternal Nutrition Trial Group. *The Journal of Nutrition*. 2024 Jun;154(6):1917-1926. doi: 10.1016/j.tjnut.2024.04.018.

Background: Data regarding effects of small-quantity-lipid-based nutrient supplements (SQ-LNS) on maternal serum zinc concentrations (SZC) in pregnancy and lactation are limited. Objectives: The objectives of this study were to evaluate the effect of preconception compared with prenatal zinc supplementation (compared with control) on maternal SZC and hypozincemia during pregnancy and early lactation in women in low-resource settings, and assess associations with birth anthropometry. METHODS: From approximately 100 women/arm at each of 3 sites (Guatemala, India, and Pakistan) of the Women First Preconception Maternal Nutrition trial, we compared SZC at 12- and 34-wk gestation ($n = 651$ and 838 , respectively) and 3-mo postpartum ($n = 742$) in women randomly assigned to daily SQ-LNS containing 15 mg zinc from ≥ 3 mo before conception (preconception, arm 1), from approximately 12 wk gestation through delivery (early pregnancy, arm 2) or not at all (control, arm 3). Birth anthropometry was examined for newborns with ultrasound-determined gestational age. Statistical analyses were performed separately for each time point. Results: At 12-wk gestation and 3-mo postpartum, no statistical differences in mean SZC were observed among arms. At 34-wk, mean SZC for arms 1 and 2 were significantly higher than for arm 3 (50.3, 50.8, 47.8 $\mu\text{g/dL}$, respectively; $P = 0.005$). Results were not impacted by correction for inflammation or albumin concentrations. Prevalence of hypozincemia at 12-wk ($< 56 \mu\text{g/dL}$) was 23% in Guatemala, 26% in India, and 65% in Pakistan; at 34 wk ($< 50 \mu\text{g/dL}$), 36% in Guatemala, 48% in India, and 74% in Pakistan; and at 3-mo postpartum ($< 66 \mu\text{g/dL}$) 79% in Guatemala, 91% in India, and 92% in Pakistan. Maternal hypozincemia at 34-wk was associated with lower birth length-for-age Z-scores (all sites $P = 0.013$, Pakistan $P = 0.008$) and weight-for-age Z-scores (all sites $P = 0.017$, Pakistan $P = 0.022$). Conclusions: Despite daily zinc supplementation for ≥ 7 mo, high rates of maternal hypozincemia were observed. The association of hypozincemia with impaired fetal growth suggests widespread zinc deficiency in these settings. This trial is registered at clinicaltrials.gov as #NCT01883193.

Anaemia among adolescent girls, pregnant and lactating women in the southern rural region of Bangladesh: Prevalence and risk factors.

Ara G, Hassan R, Haque MA, Boitchi AB, Ali SD, Kabir KS, Mahmud RI, Islam KA, Rahman H, Islam Z. *PLoS One*. 2024 Jul;19(7):e0306183. doi: 10.1371/journal.pone.0306183.

Anaemia is a major public health concern in developing countries, particularly among children, adolescents, and women of reproductive age. The study aimed to assess the anaemia status among adolescent girls, pregnant, and lactating women with their contributing factors in the southern rural regions of Bangladesh.

This cross-sectional study was conducted among 400 adolescent girls, 375 pregnant, and 375 lactating women using a multistage cluster-random sampling technique. Anaemia was measured through haemoglobin concentration in blood capillaries collected with a Hemocue 301 machine. Multinomial logistic regression was used to determine the factors associated with anaemia. The average age of pregnant and lactating women was 24 years and 15.2 years for girls. Overall, the prevalence of anaemia was 50% among pregnant women, 46% among lactating women, and 38% among adolescent girls. The risk of anaemia among adolescent girls was higher among non-Muslim (aOR = 2.13, 95%CI:1.05-4.31), belonged to families having >5 members (aOR = 2.24, 95%CI:1.16-4.31) while exposure to media reduced their risk (aOR = 0.33, 95%CI:0.15-0.74). Pregnant women who consumed a diversified diet, washed their hands after toilet, and received ≥ 4 ANC visits had a lower likelihood of developing anaemia. Lactating women who were employed, consumed a diversified diet, washed their hands before preparing food, and after toilet, had been exposed to media, received ≥ 4 ANC visits, and consumed ≥ 90 IFA, had a lower risk of developing anaemia. However, anaemia was more likely to be associated with lactating women who were non-Muslim (aOR = 3.75; 95%CI:1.26-11.22). The high prevalence of anaemia emphasizes the need to reconsider the existing strategy for the prevention and control of micronutrient deficiencies in Bangladesh.

Double burden of malnutrition among women of reproductive age: Trends and determinants over the last 15 years in India

Prithishkumar IJ, Sappani M, Ranjan V, Garg C, Mani T, Babu M, Joy M, Rao B, Asirvatham ES, Lakshmanan J. *PLoS One*. 2024 Jun 13;19(6). doi: 10.1371/journal.pone.0304776.

Introduction: Double burden of malnutrition (DBM) has been recognized by the World Health Organisation (WHO) as an emerging Global Syndemic characterized by the simultaneous occurrence of both undernutrition and overnutrition. Women of the reproductive age group (15 to 49 years) are disproportionately affected by DBM and are at high risk of continuing the intergenerational cycle of malnutrition. This study aims to assess the changing trends and determinants of DBM among women of the reproductive age group in India. **Materials and Methods:** We used data from three rounds of National Family Health Surveys (NFHS-3,4,5) conducted in years 2005-06, 2015-16, and 2019-2021. **Descriptive statistics and Poisson regression analysis** were done using weights with log link function. **Results:** The prevalence of anaemia, underweight and overweight/obesity was 57.2%, 18.6% and 24% respectively. The combined burden of underweight and anaemia has declined by 46% (21.6% to 11.7%), whereas the combined burden of overweight/obesity and anaemia has increased by 130% (5.4% to 12.4%) in the past 15 years. The prevalence of DBM, which includes both underweight and overweight/obesity with anaemia was 24.1% in 2021, a decline of 11% in 15 years. Women who were younger, rural, less educated, poor and middle class, and women living in the eastern, western and southern regions of India had higher risk for being underweight with anaemia and lower risk for developing overweight/obesity with anaemia. **Conclusion:** The significant decrease in underweight yet enormous increase in overweight/obesity over the past 15 years with the persistence of anaemia in both ends of the nutritional spectrum is characteristic of the new nutritional reality emphasizing the need to address malnutrition in all its forms. It is critical to consider geography and a population specific, double-duty targeted intervention to holistically address the risk factors associated with DBM and accomplish India's commitment to the global agenda of Sustainable Development Goals-2030.

Reproductive and child health transition among selected empowered action groups states of India: A district-level analysis

Pandey BW, Yadav G, Tripathi N, Pathak PK. *PLoS One*. 2024 Jun 10;19(6). doi: 10.1371/journal.pone.0301587.

Background: Health is an inseparable part of life and central to all life supporting systems. The reproductive and child health shares a major portion of public health cases that is crucial for socio-economic development. Studies on reproductive and child health have traditionally been focused on demographic aspects using socio-economic parameters. Given the emphasis of Sustainable Development Goal (SDG)-3 on health and well-being, it is imperative to understand the geo-spatial dimension with the visible transition of key health indicators of fertility, maternal and infant/child health in the high burdened districts within these high focus Empowered Action Group (EAG) states of Rajasthan, Madhya Pradesh, Uttar Pradesh and Bihar that make up nearly 40% of India's population with relatively laggard health status. **Methodology:** This paper aims to understand the status and trend of key reproductive and child health indicators and vital statistics based on the recent representative demographic surveys. We intend to undertake a district level spatio-temporal analysis by developing District Composite Health Profile (DCHP) using Composite Index Method on selected 13 equally weighted key reproductive and child health indicators. The study has been carried out using data from National Family Health Survey-4 (2015-16) and National Family Health Survey-5 (2019-21) survey rounds. We employed geo-spatial techniques i.e. Moran's-I, and univariate LISA to comprehend the geographical clustering of high and low health burden districts and their heterogeneities at the district level.

Results/Conclusions: The study highlights emerging inter-districts, and inter-state disparities over survey periods. With consistent improvement in the selected EAG states over time, the overall reproductive and child health status through DCHP along with each indicator was relatively better in the states of Rajasthan and worse in Bihar. Districts along the Terai belt in Uttar Pradesh and Bihar consistently performed sluggish during survey rounds. The geo-spatial clustering follows the political boundary of states, albeit with intra-state variations. Monitoring of key health indicators using composite index method provides a useful leverage for identifying priority districts/regions for universal health access that should also consider geographical space as an important policy dimension.

Assessment of a Community-Based Nutrition Program for Women and Children in Nepal Using Demographic and Health Survey

Joshi G, Ichihashi M, Binaya C. *International Journal of Environmental Research and Public Health*. 2024 Jun 9;21(6):754. doi:10.3390/ijerph21060754.

Undernutrition is a particularly acute problem in middle- and low-income countries. The "Suaahara" program is a 5-year community-focused program in Nepal, aimed at improving the health and nutrition of pregnant and lactating women and their children under the age of 2 years. This research contributes to evidence on the impact of the "Suaahara" program in 41 treated districts compared to 34 control districts. Using the difference-in-differences method, we found that the weight-for-height z-score and body mass index z-score of children under the age of 2 in the treated districts significantly increased by 0.223 standard deviations (SDs) and 0.236 SDs, respectively, compared with the control districts 5 years before and after the program. The number of antenatal care visits (at least four visits) and safe deliveries significantly increased for pregnant women by 10.4% and 9.1%, respectively, in the treated districts compared with the control districts. The prevalence of fever in children under 2 years of age was significantly reduced by 6.2% in the treated districts. The results show the significance of a policy evaluation with transparent indicators on public health, which is necessary for policymakers so that they can propose evidence-based policy.

A multi-sectoral community development intervention has a positive impact on diet quality and growth in school-age children in rural Nepal

Miller LC, Neupane S, Joshi N, Lohani M. *Maternal & Child Nutrition*. 2024 Jul;20(3). doi: 10.1111/mcn.13637.

Poor diet quality (diet diversity and animal-source food [ASF] consumption) during childhood negatively affects growth, development, behaviour and physiologic function in later life. Relatively less is known about the impact of poor diet on the growth of school-age children compared to children <5 years of age, especially in low/middle-income countries. A better understanding of delivery strategies for effective interventions to improve diet and hence growth in school-age children is needed. A 36-month longitudinal controlled impact evaluation in rural Nepal assessed the nutrition and growth of children <5 years of age in families assigned via community clusters to full package intervention (community development, training in nutrition [during pregnancy and for children <5 years] and livestock husbandry), partial package (training only) or control (no inputs). Concurrent data were collected prospectively (baseline plus additional four rounds) on school-age children (5-8 years at baseline) in these households; the present study analysed findings in the cohort of school-age children seen at all five study visits (n = 341). Diet quality improved more in the full package school-age children compared to those in partial package or control households. Full package children consumed more ASF (beta +0.40 [CI 0.07,0.73], p < 0.05), more diverse diets (beta +0.93 [CI 0.55,1.31], p < 0.001) and had better head circumference z-scores (beta +0.21 [CI 0.07,0.35], p < 0.01) than control children. In conclusion, a multi-sectoral community development intervention was associated with improvements in diet and growth of school-age children in rural Nepal even though the intervention focused on the diet of children <5 years of age. The diet and growth of school-age children can be favourably influenced by community-level interventions, even indirectly.

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

Singh SK, Chauhan A, Alderman H, Avula R, Dwivedi LK, Kapoor R, Meher T, Menon P, Nguyen PH, Pedgaonker S, Puri P, Chakrabarti S. *Maternal & Child Nutrition*. 2024 Jul;20(3). doi: 10.1111/mcn.13644.

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 Systems Interventions for Nutrition: Lessons from 6 Program Evaluations in Africa and South Asia

Neufeld LM, Nordhagen S, Leroy JL, Aberman NL, Barnett I, Djimeu Wouabe E, Webb Girard A, Gonzalez W, Levin CE, Mbuya MN, Nakasone E, Nyhus Dhillon C, Prescott D, Smith M, Tschirley D. *The Journal of Nutrition*. 2024 Jun;154(6):1727-1738. doi: 10.1016/j.tjn.2024.04.005

Although there is growing global momentum behind food systems strategies to improve planetary and human health—including nutrition—there is limited evidence of what types of food systems interventions work. Evaluating these types of interventions is challenging due to their complex and dynamic nature and lack of fit with standard evaluation methods. In this article, we draw on a portfolio of 6 evaluations of food systems interventions in Africa and South Asia that were intended to improve nutrition. We identify key methodological challenges and formulate recommendations to improve the quality of such studies. We highlight 5 challenges: a lack of evidence base to justify the intervention, the dynamic and multifaceted nature of the interventions, addressing attribution, collecting or accessing accurate and timely data, and defining and measuring appropriate outcomes. In addition to more specific guidance, we identify 6 cross-cutting recommendations, including a need to use multiple and diverse methods and flexible designs. We also note that these evaluation challenges present opportunities to develop new methods and highlight several specific needs in this space.

School Meals Are Evolving: Has the Evidence Kept Up?

Alderman H, Bundy D, Gelli A. *The World Bank Research Observer*. 2024 Aug;39(2):159-176. doi: 10.1093/wbro/lkad012.

School meal programs are popular social programs. They are provided to 61 percent of primary students in high-income countries but to a smaller share of students in less wealthy countries. There is a body of evidence documenting their contribution to education, health and nutrition, and social protection. But in each domain, program objectives have evolved: schooling is recognized to be more about learning than grades obtained; nutrition goals include healthy diets that reduce risks of non-communicable diseases and are more environmentally responsible; social protection programs aim to respond to acute crises and address chronic poverty. In addition to assisting in these sectors, school meal programs are tasked with creating food systems that assist smallholder farmers, an endeavor that has yet to be extensively studied. This review examines the latest evidence on these evolving dimensions of school meal programs. Findings suggest that while there is a strong evidence base for school meals, there are also specific gaps in the evidence of effectiveness and a particular lack of clarity around costs. The country-led School Meals Coalition, developed in response to COVID pandemic-related school closures, has brought new momentum to national programs and new urgency for reliable evidence on effectiveness and costs.

Identifying measures for coverage of nutrition-sensitive social protection programs: Learnings from India

Nguyen PH, Avula R, Neupane S, Akseer N, Heidkamp R. *Maternal & Child Nutrition*. 2024 Jun 12:e13661. doi: 10.1111/mcn.13661.

Optimal child growth requires a combination of nutrition-specific and sensitive interventions in the first 1,000 days. There is limited guidance on how to measure the population-level coverage of nutrition-sensitive social protection (NSSP), which is designed with explicit nutrition goals and often provides food or cash transfers and co-coverage with nutrition and health intervention. In this study in India, we designed a questionnaire that captures seven core NSSP program elements (transfer type, size, modality, population, timing, provider, conditionalities), then used cognitive testing to refine the questionnaire, and then implemented the questions as part of a telephone survey. Cognitive testing indicated variability in understanding the terms used to specify NSSP programs, including the need to use regional program names. Respondents also had difficulty recalling the timing of the benefit receipt. We included the refined NSSP coverage questions in a phone-based survey with 6,627 mothers with children <2 years across six states. Coverage of subsidized food was 73% across all households. Women were more likely to report receiving food than cash transfers during pregnancy (89% vs. 60%) and during lactation (75% vs. 13%). Co-coverage of NSSP with nutrition and health interventions during pregnancy (16%) and early childhood (3%) was low. It was feasible to measure coverage of NSSP investments in these populations; however, further research is needed to comprehensively assess all the dimensions of the NSSP benefits, including benefit adequacy and the validity of these questions when administered in person and by phone.

The Extent, Range, and Nature of Quantitative Nutrition Research Engaging with Intersectional Inequalities: A Systematic Scoping Review

Fivian E, Harris-Fry H, Offner C, Zaman M, Shankar B, Allen E, Kadiyala S. *Advances in Nutrition*. 2024 Jun;15(6):100237. doi: 10.1016/j.advnut.2024.100237.

Addressing malnutrition for all requires understanding inequalities in nutrition outcomes and how they intersect. Intersectionality is increasingly used as a theoretical tool for understanding how social characteristics intersect to shape inequalities in health outcomes. However, little is known about the extent, range, and nature of quantitative nutrition research engaging with intersectional inequalities. This systematic scoping review aimed to address this gap. Between 15 May 2021 and 15 May 2022, we searched 8 databases. Studies eligible for inclusion used any quantitative research methodology and aimed to investigate how social characteristics intersect to influence nutrition outcomes. In total, 55 studies were included, with 85% published since 2015. Studies spanned populations in 14 countries but were concentrated in the United States (n = 35) and India (n = 7), with just 1 in a low-income country (Mozambique). Race or ethnicity and gender were most commonly intersected (n = 20), and body mass index and overweight and/or obesity were the most common outcomes. No studies investigated indicators of infant and young child feeding or micronutrient status. Study designs were mostly cross-sectional (80%); no mixed-method or interventional research was identified. Regression with interaction terms was the most prevalent method (n = 26); 2 of 15 studies using nonlinear models took extra steps to assess interaction on the additive scale, as recommended for understanding intersectionality and assessing public health impacts. Nine studies investigated mechanisms that may explain why intersectional inequalities in nutrition outcomes exist, but intervention-relevant interpretations were mostly limited. We conclude that quantitative nutrition research engaging with intersectionality is gaining traction but is mostly limited to the United States and India. Future research must consider the intersectionality of a wider spectrum of public health nutrition challenges across diverse settings and use more robust and mixed-method research to identify specific interventions for addressing intersectional inequalities in nutrition outcomes. Data systems in nutrition must improve to facilitate this. This review was registered in PROSPERO as CRD42021253339.

Developing a data repository to support interdisciplinary research into childhood stunting: a UKRI GCRF Action Against Stunting Hub protocol paper

Conway-Moore K, Tetsa Tata D, Wood P, Katerinchuk V, Yadav DMD, Augustine LF, Munikumar M, Diop A, Tairou F, Jobarteh ML, Kulkarni B, Faye B, Haggarty P, Heffernan C. *BMJ Paediatrics Open*. 2024 Jun 5;8(Suppl 1). doi: 10.1136/bmjpo-2023-002443.

Introduction: As a topic of inquiry in its own right, data management for interdisciplinary research projects is in its infancy. Key issues include the inability of researchers to effectively query diverse data outputs and to identify potentially important synergies between discipline-specific data. Equally problematic, few semantic ontologies exist to better support data organisation and discovery. Finally, while interdisciplinary research is widely regarded as beneficial to unpacking complex problems, non-researchers such as policy-makers and planners often struggle to use and interrogate the related datasets. To address these issues, the following article details the design and development of the UKRI GCRF Action Against Stunting Hub (AASH)'s All-Hub Data Repository (AHDR). Methods and Analysis: The AHDR is a single application, single authentication web-based platform comprising a data warehouse to store data from across the AASH's three study countries and to support data querying. Four novel components of the AHDR are described in the following article: (1) a unique data discovery tool; (2) a metadata catalogue that provides researchers with an interface to explore the AASH's data outputs and engage with a new semantic ontology related to child stunting; (3) an interdisciplinary aid to support a directed approach to identifying synergies and interactions between AASH data and (4) a decision support tool that will support non-researchers in engaging with the wider evidence-based outputs of the AASH. Ethics and Dissemination: Ethical approval for this study was granted by institutional ethics committees in the UK, India, Indonesia and Senegal. Results will be disseminated via publications in peer-reviewed journals; presentations at international conferences and community-level public engagement events; key stakeholder meetings; and in public repositories with appropriate Creative Commons licences allowing for the widest possible use.

Exploring a Preliminary Set of Indicators to Measure Adolescent Health: Results From a 12-Country Feasibility Study

Kågesten AE, Marsh AD, Storey S, Abduvahobov P, Adebayo E, Amezquita Velásquez AI, Azzopardi PS, Ba MG, Bose K, Camara MK, Cardona M, da Cruz J, Dastgiri S, Fagan L, Ferguson BJ, Giyava CR, Karna P, Keogh SC, Melkumova M, Moller AB, Newby H, Swai E, Tchandana M, Uzma Q, Yoffo GJ, Zainal Abidin Z, Zbelo M, Guthold R. *Journal of Adolescent Health*. 2024 Jun;74(6S). doi: 10.1016/j.jadohealth.2024.01.017.

Purpose: To explore data availability, perceived relevance, acceptability and feasibility of implementing 52 draft indicators for adolescent health measurement in different countries globally.

Methods: A mixed-methods, sequential explanatory study was conducted in 12 countries. An online spreadsheet was used to assess data availability and a stakeholder survey to assess perceived relevance, acceptability, and feasibility of implementing each draft indicator proposed by the Global Action for Measurement of Adolescent health (GAMA). The assessments were discussed in virtual meetings with all countries and in deep dives with three countries. Findings were synthesized using descriptive statistics and qualitative thematic analysis. **Results:** Data availability varied across the 52 draft GAMA indicators and across countries. Nine countries reported measuring over half of the indicators. Most indicators were rated relevant by stakeholders, while some were considered less acceptable and feasible. The ten lowest-ranking indicators were related to mental health, sexual health and substance use; the highest-ranking indicators centered on broader adolescent health issues, like use of health services. Indicators with higher data availability and alignment with national priorities were generally considered most relevant, acceptable and feasible. Barriers to measurement included legal, ethical and sensitivity issues, challenges with multi-sectoral coordination and data systems flexibility. **Discussion:** Most of the draft GAMA indicators were deemed relevant and feasible, but contextual priorities and perceived acceptability influenced their implementation in countries. To increase their use for a more comprehensive understanding of adolescent health, better multi-sectoral coordination and tailored capacity building to accommodate the diverse data systems in countries will be required.

Empowerment Among Adolescent Girls in Nepal: A Concept Mapping Exploratory Study

Burke JG, Baumann S, Jones J, Joshi N, Lhaki P. *Global Health: Science and Practice*. 2024 Jun 27;12(3). doi: 10.9745/GHSP-D-23-00010.

Background: The concept of empowerment is challenging to operationalize and measure; it is multidimensional, the outcomes are not always directly observable, and meanings of empowerment are highly contextual and socially and culturally situated. This study aimed to explore perspectives of empowerment among adolescent girls in Nepal to identify statements for inclusion in a context-specific empowerment measure. **Methods:** We used a participatory and mixed method research method called concept mapping in 3 districts in Nepal. Three sequential concept mapping sessions were used to solicit, organize, and process how participants responded to the prompt: "The life of an adolescent girl improves when she has/can..." The Concept Systems Global software was used to manage and analyze the concept mapping brainstorming, sorting, and rating data using established tools, such as multidimensional scaling and cluster analysis. **Results:** Concept mapping was conducted with 113 participants, including national experts, program staff, adolescents, and their mothers. They identified 105 items that fall into a 4-cluster solution: education and knowledge, decision-making, supports and skills, and physical infrastructure. Rating data uncovered there was some overlap between the top 10 most important items between the national-level experts and other stakeholder groups; however, several components associated with empowerment differed by stakeholder group in terms of importance. **Conclusion:** This research represents a critical step in exploring definitions of empowerment among adolescent girls in the Nepal context and with expert input. These results led to the development of a contextually specific definition of empowerment. Researchers and practitioners interested in developing context-specific understandings of complex topics that incorporate community voices and perspectives could use a similar concept mapping approach in other countries to explore various topics with diverse populations.

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CGIAR TAFSSA Agrifood Systems Assessment in Bangladesh, India, and Nepal

The CGIAR Regional Initiative Transforming Agrifood Systems in South Asia (TAFSSA) conducted comprehensive agrifood systems assessments in early 2023 across rural areas in 5 districts of 3 countries: Bangladesh (Rangpur and Rajshahi), India (Nalanda), and Nepal (Banke and Surkhet). The main objectives of the agrifood system assessment were to demonstrate the feasibility and value of creating locally relevant datasets, collect high-resolution data linking production systems, markets, diets, and the environment, and develop methods for collecting gender-disaggregated data from farms, markets, and households.

- Check out the [open access dataset](#) from TAFSSA's agrifood systems assessment
- Access [TAFSSA data notes](#) for Bangladesh, India, and Nepal
- For more information, please visit the official [TAFSSA website](#)



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We are inviting abstracts on research and implementation experiences related to South Asia across the following thematic areas: agricultural production; markets, food environment, and value chains; digital innovations; behavior change communication (BCC), including nutrition education; health systems; diets and drivers of food choices; water, sanitation, and hygiene (WASH) and water systems; social protection, including social safety nets; equity and social inclusion; climate action; policy and governance; and strengthening the capacity of individuals and institutions

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