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Partnerships and Opportunities to Strengthen and Harmonize Actions for Nutrition in India
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# EDITOR'S NOTE

**Dear all,**

This issue of the Abstract Digest features our new *Policy Note*, summarizing costs of delivering a set of essential nutrition interventions at scale in India. We also bring to you the new WHO guidelines for improving the quality of maternal and newborn health and infant and young child feeding (IYCF) practices, two *Alive & Thrive* studies on IYCF, work on the performance of *anganwadis* under the Integrated Child Development Services (ICDS), models for the management of severe acute malnutrition (SAM), and studies on ICDS and health programs that deliver the essential nutrition interventions in India. Here are some more highlights:

- Frongillo and colleagues (2016) find that an intensive intervention involving a package of intensive interpersonal counseling on infant and young child feeding (IYCF), mass media campaign, and community mobilization, implemented at scale to improve IYCF practices, advanced language and gross motor development of Bangladeshi children.
- An intense interpersonal counseling intervention, using principles of social franchising within a government health system, combined with mass media and community mobilization, improved dietary diversity among children in Vietnam (Rawat et al. 2017).
- In a systematic review of 52 studies, Welch et al. (2017) find that mass deworming for soil-transmitted helminths in low-to middle-income countries has little to no effect on the height, cognition and school attendance, and might only have a slight effect on weight.
- In a cluster-randomized controlled trial, Mehta and colleagues (2017) find that daily consumption of an iron-supplement bar for 90 days reduces anemia prevalence among 18–35-year-old non-pregnant women in Mumbai. Prentice and colleagues (2016) argue that although non-physiological amounts of supplemental iron increase the risk of bacterial and protozoal infections, and that the use of lower quantities of iron provided within a food matrix might be safer.
- In a first randomized trial comparing options for a home-based management of uncomplicated severe acute malnutrition (SAM), Bhandari et al. (2016) find that locally prepared ready-to-use therapeutic food (RUTF-L) is more efficacious than energy-dense home-prepared foods (A-HPF). Thapa et al. (2017) find a locally produced ready-to-use therapeutic food called *Nutreal* to be more effective than defined food in the management of SAM among children under five years of age.
- Using data from the Rapid Survey of Children on Children, Maity (2016) constructed four indices, the knowledge index, infrastructure index, service index, and awareness index to characterize the *anganwadi* center services and their awareness across India.
- Using qualitative methods, Gupta et al. (2017) find that in Haryana the National Rural Health Mission (NRHM) improved health infrastructure, accessibility and affordability of maternal and child health services.

- In a cluster randomized controlled trial, Singh and Mitra (2017) test the effectiveness of various performance contracts and find high absolute incentives to workers, combined with nutritional information to mothers, improve severe malnutrition among 3–6-year-old children in urban slums of Kolkata.
- McDougal et al. (2017) discuss how a health system training and community outreach intervention called *Ananya*, improved reproductive, maternal and newborn health coverage in Bihar.
- Kim and colleagues (2017) argue that congruent or shared priorities and regularity of actions between the Integrated Child Development Services (ICDS) and National Rural Health Mission (NRHM) is crucial along with clear roles and leadership and accountability for improving the delivery and utilization of interventions for maternal and child nutrition in India.
- Lodenstein et al. (2016) reviewed 37 social accountability initiatives in 15 countries and find that health provider receptivity to citizen's demands is mediated by health providers' perceptions of the legitimacy of the citizen groups and the support that such citizen groups provide to health providers as well.
- Fitzpatrick and Tumlinson (2017) discuss strategies for optimal implementation of mystery client approach for measuring quality of care in low- and middle-income countries.

Enjoy the read!

Warm regards,
Dr. Rasmi Avula

# PEER-REVIEWED STUDIES

## Large-Scale Behavior-Change Initiative for Infant and Young Child Feeding Advanced Language and Motor Development in A Cluster-Randomized Program Evaluation in Bangladesh

**Frongillo, E.A., P.H. Nguyen, K.K. Saha, T. Sanghvi, K. Afsana, R. Haque, J. Baker, M.T. Ruel, R. Rawat, and P. Menon. 2016. *The Journal of Nutrition*.**

**http://jn.nutrition.org/content/early/2016/12/27/jn.116.240861.abstract?papetoc**

**Background:** Promoting adequate nutrition through interventions to improve infant and young child feeding (IYCF) has the potential to contribute to child development. **Objective:** We examined whether an intensive intervention package that was aimed at improving IYCF at scale through the Alive & Thrive initiative in Bangladesh also advanced language and gross motor development, and whether advancements in language and gross motor development were explained through improved complementary feeding. **Methods:** A cluster-randomized design compared 2 intervention packages: intensive interpersonal counseling on IYCF, mass media campaign, and community mobilization (intensive) compared with usual nutrition counseling and mass media campaign (non intensive). Twenty sub districts were randomly assigned to receive either the intensive or the non intensive intervention. Household surveys were conducted at baseline (2010) and at endline (2014) in the same communities ($n$ = ~ 4000 children aged 0–47.9 mo for each round). Child development was measured by asking mothers if their child had reached each of multiple milestones, with some observed. Linear regression accounting for clustering was used to derive difference-in-differences (DID) impact estimates, and path analysis was used to examine developmental advancement through indicators of improved IYCF and other factors. **Results:** The DID in language development between intensive and non intensive groups was 1.05 milestones ($P$ = 0.001) among children aged 6–23.9 mo and 0.76 milestones ($P$ = 0.038) among children aged 24–47.9 mo. For gross motor development, the DID was 0.85 milestones ($P$ = 0.035) among children aged 6–23.9 mo. The differences observed corresponded to age- and sex-adjusted effect sizes of 0.35 for language and 0.23 for gross motor development. Developmental advancement at 6–23.9 mo was partially explained through improved minimum dietary diversity and the consumption of iron-rich food. **Conclusions:** Intensive IYCF intervention differentially advanced language and gross motor development, which was partially explained through improved complementary feeding. Measuring a diverse set of child outcomes, including functional outcomes such as child development, is important when evaluating integrated nutrition programs. This trial was registered at clinicaltrials.gov as NCT01678716.

## Social Franchising and a Nationwide Mass Media Campaign Increased the Prevalence of Adequate Complementary Feeding in Vietnam: A Cluster-Randomized Program Evaluation

**Rawat, R., P.H. Nguyen, L.M. Tran, N. Hajeebhoy, H.V. Nguyen, J. Baker, E.A. Frongillo, M.T. Ruel, and P. Menon. 2017. *The Journal of Nutrition*.**

**http://jn.nutrition.org/content/early/2017/02/08/jn.116.243907.abstract**

**Background:** Rigorous evaluations of health system–based interventions in large-scale programs to improve complementary feeding (CF) practices are limited. Alive & Thrive applied principles of social franchising within the government health system in Vietnam to improve the quality of interpersonal counseling (IPC) for infant and young child feeding combined with a national mass media (MM) campaign and community mobilization (CM). **Objective:** We evaluated the impact of enhanced IPC + MM + CM (intensive) compared with standard IPC + less-intensive MM and CM (nonintensive) on CF practices and anthropometric indicators. **Methods:** A cluster-randomized, nonblinded evaluation design with cross-sectional surveys ($n$ = ~500 children aged 6–23.9

mo and ~ 1000 children aged 24–59.9 mo/group) implemented at baseline (2010) and endline (2014) was used. Difference-in-difference estimates (DDEs) of impact were calculated for intent-to-treat (ITT) analyses and modified per-protocol analyses (MPAs; mothers who attended the social franchising at least once: 62%). **Results:** Groups were similar at baseline. In ITT analyses, there were no significant differences between groups in changes in CF practices over time. In the MPAs, greater improvements in the intensive than in the nonintensive group were seen for minimum dietary diversity [DDE: 6.4 percentage points (pps); $P < 0.05$] and minimum acceptable diet (8.0 pps; $P < 0.05$). Significant stunting declines occurred in both intensive (7.1 pps) and nonintensive (5.4 pps) groups among children aged 24–59.9 mo, with no differential decline. **Conclusions:** When combined with MM and CM, an at-scale social franchising approach to improve IPC, delivered through the existing health care system, significantly improved CF practices, but not child growth, among mothers who used counseling services at least once. A greater impact may be achieved with strategies designed to increase service utilization. This trial was registered at clinicaltrials.gov as NCT01676623.

## Mass Deworming to Improve Developmental Health and Wellbeing of Children in Low-Income and Middle-Income Countries: A Systematic Review and Network Meta-Analysis

**Welch, V.A., E. Ghogomu, A. Hossain, S. Awasthi, Z.A. Bhutta, C. Cumberbatch, R. Fletcher, J. McGowan, S. Krishnaratne, E. Kristjansson, S. Sohani, S. Suresh, P. Tugwell, H. White, and G.A. Wells. 2017. *The Lancet: Global Health* 5(1): e40–e50.**

**http://www.thelancet.com/journals/langlo/article/PIIS2214-109X(16)30242-X/abstract**

**Background:** Soil-transmitted helminthiasis and schistosomiasis, considered among the neglected tropical diseases by WHO, affect more than a third of the world's population, with varying intensity of infection. We aimed to evaluate the effects of mass deworming for soil-transmitted helminths (with or without deworming for schistosomiasis or co-interventions) on growth, educational achievement, cognition, school attendance, quality of life, and adverse effects in children in endemic helminth areas. **Methods:** We searched 11 databases up to Jan 14, 2016, websites and trial registers, contacted authors, and reviewed reference lists. We included studies published in any language of children aged 6 months to 16 years, with mass deworming for soil-transmitted helminths or schistosomiasis (alone or in combination with other interventions) for 4 months or longer, that reported the primary outcomes of interest. We included randomised and quasi-randomised trials, controlled before–after studies, interrupted time series, and quasi-experimental studies. We screened in duplicate, then extracted data and appraised risk of bias in duplicate with a pre-tested form. We conducted random-effects meta-analysis and Bayesian network meta-analysis. **Findings:** We included 52 studies of duration 5 years or less with 1 108 541 children, and four long-term studies 8–10 years after mass deworming programmes with more than 160 000 children. Overall risk of bias was moderate. Mass deworming for soil-transmitted helminths compared with controls led to little to no improvement in weight over a period of about 12 months (0·99 kg, 95% credible interval [CrI] –0·09 to 0·28; moderate certainty evidence) or height (0·07 cm, 95% CrI –0·10 to 0·24; moderate certainty evidence), little to no difference in proportion stunted (eight fewer per 1000 children, 95% CrI –48 to 32; high certainty evidence), cognition measured by short-term attention (–0·23 points on a 100 point scale, 95% CI –0·56 to 0·14; high certainty evidence), school attendance (1% higher, 95% CI –1 to 3; high certainty evidence), or mortality (one fewer per 1000 children, 95% CI –3 to 1; high certainty evidence). We found no data on quality of life and little evidence of adverse effects. Mass deworming for schistosomiasis might slightly increase weight (0·41 kg, 95% CrI –0·20 to 0·91) and has little to no effect on height (low certainty evidence) and cognition (moderate certainty evidence). Our analyses do not suggest indirect benefits for untreated children from being exposed to treated children in the community. We are uncertain about effects on long-term economic productivity (hours worked), cognition, literacy, and school enrolment owing to very low certainty evidence. Results were consistent across sensitivity

and subgroup analyses by age, worm prevalence, baseline nutritional status, infection status, impact on worms, infection intensity, types of worms (ascaris, hookworm, or trichuris), risk of bias, cluster versus individual trials, compliance, and attrition. **Interpretation:** Mass deworming for soil-transmitted helminths with or without deworming for schistosomiasis had little effect. For schistosomiasis, mass deworming might be effective for weight but is probably ineffective for height, cognition, and attendance. Future research should assess which subset of children do benefit from mass deworming, if any, using individual participant data meta-analysis.

## Efficacy of Iron-Supplement Bars to Reduce Anemia in Urban Indian Women: A Cluster-Randomized Controlled Trial

**Mehta, R., A.C. Platt, X. Sun, M. Desai, D. Clements, and E.L. Turner. 2017. *American Journal of Clinical Nutrition*.**

**http://ajcn.nutrition.org/content/early/2017/01/18/ajcn.115.127555.abstract**

**Background:** India's high prevalence of iron-deficiency anemia has largely been attributed to the local diet consisting of nonheme iron, which has lower absorption than that of heme iron. **Objective:** We assessed the efficacy of the consumption of iron-supplement bars in raising hemoglobin concentrations and hematocrit percentages in anemic (hemoglobin concentration <12 g/dL) Indian women of reproductive age. **Design:** The Let's be Well Red study was a 90-d, pair-matched, cluster-randomized controlled trial. A total of 361 nonpregnant women (age 18–35 y) were recruited from 10 sites within Mumbai and Navi Mumbai, India. All participants received anemia education and a complete blood count (CBC). Random assignment of anemic participants to intervention and control arms occurred within 5 matched site-pairs. Intervention participants received 1 iron-supplement bar (containing 14 mg Fe)/d for 90 d, whereas control subjects received nothing. CBC tests were given at days 15, 45, and 90. Primary outcomes were 90-d changes from baseline in hemoglobin concentrations and hematocrit percentages. Linear mixed models and generalized estimating equations were used to model continuous and binary outcomes, respectively. **Results:** Of 179 anemic participants, 136 (76.0%) completed all follow-up assessments (65 intervention and 71 control participants). Baseline characteristics were comparable by arm. Mean hemoglobin and hematocrit increases after 90 d were greater for intervention than for control participants [1.4 g/dL (95% CI: 1.3, 1.6 g/dL) and 2.7% (95% CI: 2.2%, 3.2%), respectively]. The anemia prevalence at 90 d was lower for intervention (29.2%) than for control participants (98.6%) (OR: 0.007; 95% CI: 0.001, 0.04). **Conclusions:** The daily consumption of an iron-supplement bar leads to increased hemoglobin concentrations and hematocrit percentages and to a lower anemia prevalence in the target population with no reported side effects. This intervention is an attractive option to combat anemia in India. This trial was registered at clinicaltrials.gov as NCT02032615.

## Dietary Strategies for Improving Iron Status: Balancing Safety and Efficacy

**Prentice, A.M., Y.A. Mendoza, D. Pereira, C. Cerami, R. Wegmuller, A. Constable, and J. Spieldenner. 2016. *Nutrition Reviews* 75(1): 49–60.**

**https://academic.oup.com/nutritionreviews/article-abstract/75/1/49/2684505/Dietary-strategies-for-improving-iron-status**

In light of evidence that high-dose iron supplements lead to a range of adverse events in low-income settings, the safety and efficacy of lower doses of iron provided through biological or industrial fortification of foodstuffs is reviewed. First, strategies for point-of-manufacture chemical fortification are compared with biofortification achieved through plant breeding. Recent insights into the mechanisms of human iron

absorption and regulation, the mechanisms by which iron can promote malaria and bacterial infections, and the role of iron in modifying the gut microbiota are summarized. There is strong evidence that supplemental iron given in non-physiological amounts can increase the risk of bacterial and protozoal infections (especially malaria), but the use of lower quantities of iron provided within a food matrix, ie, fortified food, should be safer in most cases and represents a more logical strategy for a sustained reduction of the risk of deficiency by providing the best balance of risk and benefits. Further research into iron compounds that would minimize the availability of unabsorbed iron to the gut microbiota is warranted.

## Efficacy of Three Feeding Regimens for Home-Based Management of Children with Uncomplicated Severe Acute Malnutrition: A Randomised Trial in India

**Bhandari, N., S.B. Mohan, A. Bose, S.D. Iyengar, S. Taneja, S. Mazumder, R.A. Pricilla, K. Iyengar, H.S. Sachdev, V.R. Mohan, V. Suhalka, S. Yoshida, J. Martines, and R. Bahl. 2016. *BMJ Global Health* 1: e000144.**

**http://gh.bmj.com/content/1/4/e000144**

**Objective:** To assess the efficacy of ready-to-use therapeutic food (RUTF), centrally produced RUTF (RUTF-C) or locally prepared RUTF (RUTF-L) for home-based management of uncomplicated severe acute malnutrition (SAM) compared with micronutrient-enriched (augmented) energy-dense home-prepared foods (A-HPF, the comparison group). **Methods:** In an individually randomised multicentre trial, we enrolled 906 children aged 6–59 months with uncomplicated SAM. The children enrolled were randomised to receive RUTF-C, RUTF-L or A-HPF. We provided foods, counselling and feeding support until recovery or 16 weeks, whichever was earlier and measured outcomes weekly (treatment phase). We subsequently facilitated access to government nutrition services and measured outcomes once 16 weeks later (sustenance phase). The primary outcome was recovery during treatment phase (weight-for-height ≥–2 SD and absence of oedema of feet). **Results:** Recovery rates with RUTF-L, RUTF-C and A-HPF were 56.9%, 47.5% and 42.8%, respectively. The adjusted OR was 1.71 (95% CI 1.20 to 2.43; $P = 0.003$) for RUTF-L and 1.28 (95% CI 0.90 to 1.82; $P = 0.164$) for RUTF-C compared with A-HPF. Weight gain in the RUTF-L group was higher than in the A-HPF group (adjusted difference 0.90 g/kg/day, 95% CI 0.30 to 1.50; $P = 0.003$). Time to recovery was shorter in both RUTF groups. Morbidity was high and similar across groups. At the end of the study, the proportion of children with weight-for-height Z-score (WHZ) >–2 was similar (adjusted OR 1.12, 95% CI 0.74 to 1.95; $P = 0.464$), higher for moderate malnutrition (WHZ<–2 and ≥–3; adjusted OR 1.46, 95% CI 1.02 to 2.08; $P = 0.039$), and lower for those with SAM (adjusted OR 0.58, 95% CI 0.40 to 0.85; $P = 0.005$) in the RUTF-L when compared with the A-HPF group. **Conclusions:** This first randomised trial comparing options for home management of uncomplicated SAM confirms that RUTF-L is more efficacious than A-HPF at home. Recovery rates were lower than in African studies, despite longer treatment and greater support for feeding.

## Acceptability and Efficacy of Locally Produced Ready-to-Use Therapeutic Food Nutreal in the Management of Severe Acute Malnutrition in Comparison with Defined Food: A Randomized Control Trial

**Thapa, B.R., P. Goyal, J. Menon, and A. Sharma. 2017. *Food and Nutrition Bulletin* 38(1).**

**http://journals.sagepub.com/doi/abs/10.1177/0379572116689743**

**Background:** Severe acute malnutrition (SAM) is a salient health problem in India. Federation of Indian Chamber of Commerce and Industry (FICCI) Research and Analysis Centre, New Delhi, prepared nutreal equivalent to

ready-to-use therapeutic food by World Health Organization (WHO) for the management of SAM and defined food like homemade diet. **Objective:** To compare acceptability and efficacy of nutreal over defined food for the management of SAM. **Methods:** One hundred twelve children aged less than 5 years with SAM were enrolled as per the standard of WHO. Children were randomized into 2 groups to receive nutreal (*n* = 56) and defined food (*n* = 56) in unlimited amounts for 42 consecutive days and extended by 2 weeks as per demand. Calorie and protein intake, weight, and mid-upper arm circumference (MUAC) were recorded daily. **Results:** Age range was 8 to 45 months. Ninety-three percent of children eagerly accepted nutreal but 7% does not. Whereas in the defined food group, 68% accepted eagerly, 30% did not accept eagerly, and 1.8% accepted poorly (*P* = .004). At enrollment, mean weight in the nutreal group was 6.44 ± 1.60 kg and in the defined food group was 8.69 ± 1.76 kg, with MUAC in the nutreal group being 11.12 ± 0.47 cm and in the defined food group being 11.54 ± 0.34 cm. Mean weight in the nutreal and defined food groups at eighth week of intervention was 7.97 ± 1.8 kg and 9.71 ± 1.8 kg (P < .001), respectively. Mid-upper arm circumference at eighth week was 12.10 ± 0.29 cm in the nutreal group and 12.49 ± 0.50 cm in the defined group (*P* < .001). **Conclusion:** Acceptability, mean weight gain, and MUAC in the nutreal group are greater than the defined food.

## Interstate Differences in the Performance of Anganwadi Centres under ICDS Scheme

**Maity, B. 2016. *Economic and Political Weekly* LI(51).**

**http://www.epw.in/journal/2016/51/special-articles/interstate-differences-performance-anganwadi-centres-under-icds**

Malnutrition is a severe problem among India's women and children. The Integrated Child Development Services aims at providing supplementary nutrition, growth monitoring, immunisation, preschool education, health check-ups and referral to children between the ages of 0 and 6 years, as well as health- and nutrition-related education and facilities for pregnant women and lactating mothers. These services are provided through childcare centres, called anganwadis, with the primary aim of fighting malnutrition in utero, as well as in very young children. This article attempts to construct indices to measure the performance of these anganwadis across different states in India in terms of their availability of infrastructure, ease of accessibility for children with disabilities and skill level of the anganwadi worker in terms of her accuracy of knowledge about nutrition requirements of pregnant women and young children.

## Impact of a Multi-Strategy Community Intervention to Reduce Maternal and Child Health Inequalities in India: A Qualitative Study in Haryana

**Gupta, M., H. Bosma, F. Angeli, M. Kaur, V. Chakrapani, M. Rana, and O.C.P. van Schayck. 2017. *PLoS ONE* 12(1): e0170175**

**http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0170175**

A multi-strategy community intervention, known as National Rural Health Mission (NRHM), was implemented in India from 2005 to 2012. By improving the availability of and access to better-quality healthcare, the aim was to reduce maternal and child health (MCH) inequalities. This study was planned to explore the perceptions and beliefs of stakeholders about extent of implementation and effectiveness of NRHM's health sector plans in improving MCH status and reducing inequalities. A total of 33 in-depth interviews (*n* = 33) with program managers, community representatives, mothers and 8 focus group discussions (*n* = 42) with health service providers were conducted from September to December 2013, in Haryana, post NRHM. Using NVivo software (version 9), an inductive applied thematic analysis was done based upon grounded theory, program

theory of change and a framework approach. Almost all the participants reported that there was an improvement in overall health infrastructure through an increased availability of accredited social health activists, free ambulance services, and free treatment facilities in rural areas. This had increased the demand and utilization of MCH services, especially for those related to institutional delivery, even by the poor families. Service providers felt that acute shortage of human resources was a major health system level barrier. District-specific individual, community, and socio-political level barriers were also observed. Overall program managers, service providers and community representatives believed that NRHM had a role in improving MCH outcomes and in reduction of geographical and socioeconomic inequalities, through improvement in accessibility, availability and affordability of the MCH services in the rural areas and for the poor. Any reduction in gender-based inequalities, however, was linked to the adoption of small family sizes and an increase in educational levels.

## Incentives, Information and Malnutrition: Evidence from An Experiment in India

**Singh, P., and S. Mitra. 2017. *European Economic Review*.**

**http://www.sciencedirect.com/science/article/pii/S0014292117300120**

This study provides one of the first pieces of evidence comparing the effectiveness of different performance pay contracts among caregivers to improve child health. We carry out a cluster randomized controlled trial in urban slums of Kolkata, India covering 209 childcare centers to test three separate performance pay treatments in addition to providing information on the demand-side. We promise low or high absolute performance incentives to public sector caregivers where each bonus is based on improvements in health of 3–6-year-old children under their care. We also test for the impact of relative incentives where the bonus depends upon a worker's performance relative to her peers. All mothers in the treatment arms are also provided nutritional information. High absolute incentives to workers combined with nutritional information to mothers works to reduce severe malnutrition by 5 percentage points over three months. Relative incentives and low absolute incentives show no significant improvements in child health on average.

## Making the Continuum of Care Work for Mothers and Infants: Does Gender Equity Matter? Findings from A Quasi-Experimental Study in Bihar, India

**McDougal, L., Y. Atmavilas, K. Hay, J.G. Silverman, U.K. Tarigopula, and A.Raj. 2017. *PLOS One* 12(2).**

**http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0171002**

**Background:** Improvements in continuum of care (CoC) utilization are needed to address inadequate reductions in neonatal and infant mortality in India and elsewhere. This study examines the effect of Ananya, a health system training and community outreach intervention, on reproductive, maternal and newborn health continuum of care (RMNH CoC) utilization in Bihar, India, and explores whether that effect is moderated by gender equity factors (child marriage, restricted mobility and low decision-making control). **Methods:** A two-armed quasi-experimental design compared districts in Bihar that did/did not implement Ananya. Cross-sections of married women aged 15–49 with a 0–5 month old child were surveyed at baseline and two year follow-up (baseline $n$ = 7191 and follow-up $n$ = 6143; response rates 88.9% and 90.7%, respectively). Difference-in-difference analyses assessed program impact on RMNH CoC co-coverage, defined by 9 health services/behaviors for the index pregnancy (e.g., antenatal care, skin-to-skin care). Three-way interactions assessed gender equity as a moderator of Ananya's impact. **Findings:** Participants reported low RMNH CoC co-coverage at baseline (on average 3.2 and 3.0 of the 9 RMNH services/behaviors for Ananya and control

groups, respectively). The Ananya group showed a significantly greater increase in RMNH CoC co-coverage (.41 services) compared with the control group over time (p<0.001), with the primary drivers being increases in clean cord care, skin-to-skin care and postpartum contraceptive use. Gender equity interaction analyses revealed diminished intervention effects on antenatal care, skilled birth attendance and exclusive breast-feeding for women married as minors. **Conclusion:** Ananya improved RMNH CoC co-coverage among these recent mothers, largely through positive health behavior changes. Child marriage attenuated Ananya's impact on utilization of key health services and behaviors. Supporting the health system with training and community outreach can be beneficial to RMNH CoC utilization; additional support is needed to adequately address the unique issues faced by women married as minors.

## Understanding the Role of Intersectoral Convergence in The Delivery of Essential Maternal and Child Nutrition Interventions in Odisha, India: A Qualitative Study

**Kim, S.S., R. Avula, R. Ved, N. Kohli, K. Singh, M. van den Bold, S. Kadiyala, and P. Menon. 2017. BMC Public Health 17(161).**

**https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-017-4088-z**

**Background:** Convergence of sectoral programs is important for scaling up essential maternal and child health and nutrition interventions. In India, these interventions are implemented by two government programs – Integrated Child Development Services (ICDS) and National Rural Health Mission (NRHM). These programs are designed to work together, but there is limited understanding of the nature and extent of coordination in place and needed at the various administrative levels. Our study examined how intersectoral convergence in nutrition programming is operationalized between ICDS and NRHM from the state to village levels in Odisha, and the factors influencing convergence in policy implementation and service delivery. **Methods:** Semi-structured interviews were conducted with state-level stakeholders ($n = 12$), district ($n = 19$) and block officials ($n = 66$), and frontline workers (FLWs, $n = 48$). Systematic coding and content analysis of transcripts were undertaken to elucidate themes and patterns related to the degree and mechanisms of convergence, types of actions/services, and facilitators and barriers. **Results:** Close collaboration at state level was observed in developing guidelines, planning, and reviewing programs, facilitated by a shared motivation and recognized leadership for coordination. However, the health department was perceived to drive the agenda, and different priorities and little data sharing presented challenges. At the district level, there were joint planning and review meetings, trainings, and data sharing, but poor participation in the intersectoral meetings and limited supervision. While the block level is the hub for planning and supervision, cooperation is limited by the lack of guidelines for coordination, heavy workload, inadequate resources, and poor communication. Strong collaboration among FLWs was facilitated by close interpersonal communication and mutual understanding of roles and responsibilities. **Conclusions:** Congruent or shared priorities and regularity of actions between sectors across all levels will likely improve the quality of coordination, and clear roles and leadership and accountability are imperative. As convergence is a means to achieving effective coverage and delivery of services for improved maternal and child health and nutrition, focus should be on delivering all the essential services to the mother-child dyads through mechanisms that facilitate a continuum of care approach, rather than sectorally-driven, service-specific delivery processes.

## Health Provider Responsiveness to Social Accountability Initiatives in Low- And Middle-Income Countries: A Realist Review

**Lodenstein, E., M. Dieleman, B. Gerresten, and J.E.W. Broerse. 2016. *Health Policy and Planning* 32(1): 125–140.**

**https://academic.oup.com/heapol/article/32/1/125/2555394/Health-provider-responsiveness-to-social**

Social accountability in the health sector has been promoted as a strategy to improve the quality and performance of health providers in low- and middle-income countries. Whether improvements occur, however, depends on the willingness and ability of health providers to respond to societal pressure for better care. This article uses a realist approach to review cases of collective citizen action and advocacy with the aim to identify key mechanisms of provider responsiveness. Purposeful searches for cases were combined with a systematic search in four databases. To be included in the review, the initiatives needed to describe at least one outcome at the level of frontline service provision. Some 37 social accountability initiatives in 15 countries met these criteria. Using a realist approach, retroductive analysis and triangulation of methods and sources were performed to construct Context–Mechanism–Outcome configurations that explain potential pathways to provider responsiveness. The findings suggest that health provider receptivity to citizens' demands for better health care is mediated by health providers' perceptions of the legitimacy of citizen groups and by the extent to which citizen groups provide personal and professional support to health providers. Some citizen groups activated political or formal bureaucratic accountability channels but the effect on provider responsiveness of such strategies was more mixed. Favourable contexts for health provider responsiveness comprise socio-political contexts in which providers self-identify as activists, health system contexts in which health providers depend on citizens' expertise and capacities, and health system contexts where providers have the self-perceived ability to change the system in which they operate. Rather than providing recipes for successful social accountability initiatives, the synthesis proposes a programme theory that can support reflections on the theories of change underpinning social accountability initiatives and interventions to improve the quality of primary health care in different settings.

## Strategies for Optimal Implementation of Simulated Clients for Measuring Quality of Care in Low- and Middle-Income Countries

**Fitzpatrick, A., and K. Tumlinson. 2017. *Global Health: Science and Practice*.**

**http://www.ghspjournal.org/content/early/2017/01/25/GHSP-D-16-00266.abstract.html**

The use of simulated clients or "mystery clients" is a data collection approach in which a study team member presents at a health care facility or outlet pretending to be a real customer, patient, or client. Following the visit, the shopper records her observations. The use of mystery clients can overcome challenges of obtaining accurate measures of health care quality and improve the validity of quality assessments, particularly in low- and middle-income countries. However, mystery client studies should be carefully designed and monitored to avoid problems inherent to this data collection approach. In this article, we discuss our experiences with the mystery client methodology in studies conducted in public- and private sector health facilities in Kenya and in private-sector facilities in Uganda. We identify both the benefits and the challenges in using this methodology to guide other researchers interested in using this technique. Recruitment of appropriate mystery clients who accurately represent the facility's clientele, have strong recall of recent events, and are comfortable in their role as undercover data collectors are key to successful implementation of this methodology. Additionally, developing detailed training protocols can help ensure mystery clients behave identically and mimic real patrons accurately while short checklists can help ensure mystery client responses are standardized. Strict confidentiality and protocols to avoid unnecessary exams or procedures should also be stressed during training and monitored carefully throughout the study. Despite these challenges, researchers should consider mystery client designs to

measure actual provider behavior and to supplement self-reported provider behavior. Data from mystery client studies can provide critical insight into the quality of service provision unavailable from other data collection methods. The unique information available from the mystery client approach far outweighs the cost.

# NON-PEER REVIEWED

## Achieving the 2025 World Health Assembly Targets for Nutrition in India: What Will It Cost?

**Chakrabarti, S., A. Kapur, A. Vaid, and P. Menon. 2017. *Achieving the 2025 World Health Assembly Targets for Nutrition in India: What Will It Cost?* POSHAN Policy Note #2. New Delhi, India: International Food Policy Research Institute.**

**http://poshan.ifpri.info/2017/03/02/achieving-the-2025-world-health-assembly-targets-for-nutrition-in-india-what-will-it-cost/**

The prevalence of nutritional outcomes such as stunting, anemia, wasting and low birth weight is persistently high in India. In 2012, India committed to achieving the six World Health Assembly (WHA) targets for nutrition. However, data on the prevalence of undernutrition shows that substantial improvements are required across all states, if India is to meet its WHA commitment by 2025. Thus, financial resources for nutrition need to be prioritized, expanded and well-utilized to deliver fully for nutrition in the coming decade. National nutrition and health programmes in India– namely the Integrated Child Development Services (ICDS) and the National Rural Health Mission (NRHM)– are largely designed to provide evidence-based nutrition-specific interventions, but intervention coverage is low, likely due to a combination of implementation challenges, capacity and financing gaps. In previous work (Menon, McDonald and Chakrabarti, 2016), we estimated national and subnational costs of delivering recommended nutrition-specific interventions. In this new Policy Note, we've updated our previous cost estimates by projecting target population figures to 2017 using more recent undernutrition prevalence estimates, adding estimated costs for newly introduced and nationally mandated nutrition interventions–calcium supplementation and deworming for pregnant and lactating women. Together with Accountability Initiative, we also conducted an expenditure analyses using available data on nutrition-relevant government budget data.

## Standards for Improving Quality of Maternal and Newborn Care in Health Facilities

**WHO (World Health Organization). 2016. *Standards for Improving Quality of Maternal and Newborn Care in Health Facilities*. Geneva: World Health Organization.**

**http://www.who.int/maternal_child_adolescent/documents/improving-maternal-newborn-care-quality/en/**

The Sustainable Development Goals have set ambitious health-related targets for mothers, newborns, children under the umbrella of Universal Health Coverage by 2030. Addressing quality of care will be fundamental in reducing maternal and newborn mortality and achieving the health-related SDG targets. For mothers and newborns, the period around childbirth is the most critical for saving the maximum number of lives and preventing stillbirths. In this context, WHO has elaborated a global vision where 'every pregnant woman and newborn receives quality care throughout pregnancy, childbirth and the postnatal period' under the umbrella of Universal Health Coverage and quality.' This vision is in alignment with two complementary global action agendas conceptualised by WHO and partners, namely Strategies toward Ending Preventable Maternal Mortality (EPMM)' and the 'Every Newborn Action Plan (ENAP)'. To realize this vision, a "framework" for improving the quality of care for mothers and newborns around the time of childbirth encompassing both

the provision and experience of care has been developed. The framework contains eight domains of quality of care that should be assessed, improved and monitored within the context of the health system building blocks. Within this framework and in line with the Organization's mandate, six strategic areas have been identified as a basis for a systematic, evidence-based approach to providing guidance for improving the quality of maternal and newborn care. These are clinical guidelines, standards of care, effective interventions, quality measures, and the relevant research and capability building. This publication of the Framework, standards of care and quality measures is the first in a series of normative guidance documents that will be developed to support maternal, newborn and child quality of care improvement. The development of standards of care and measures of quality were prioritized because of lack of substantive WHO guidance in this area of work. Eight standards are formulated, one for each of the eight domains of the quality of care framework. These standards explicitly define what is required in order to achieve high-quality care around the time of childbirth to set a benchmark against which improvements can be measured to drive and monitor quality of care improvement. They are broad statements underpinned by more specific 2-3 quality statements except for standard 1 with 13, and each quality statement has a number of input, output or process and outcome measures.

## WHO Guideline: Use of Multiple Micronutrient Powders for Point-Of-Use Fortification of Foods Consumed by Infants and Young Children Aged 6–23 Months and Children Aged 2–12 Years

**WHO (World Health Organization). 2016. *WHO Guideline: Use of Multiple Micronutrient Powders for Point-Of-Use Fortification of Foods Consumed by Infants and Young Children Aged 6–23 Months and Children Aged 2–12 Years*. Geneva: World Health Organization.**

**http://www.who.int/nutrition/publications/micronutrients/guidelines/mpowders-infant-children-executivesummary.pdf**

Approximately 300 million children globally had anaemia in 2011. The WHO African, South-East Asia, and Eastern Mediterranean Regions have the highest burden of anaemia, with approximately 62%, 54% and 48%, respectively, of children aged 6–59 months suffering from anaemia. Iron deficiency is thought to be the most common cause of anaemia. It is also estimated that 29% of preschool-age children in low- and middle-income countries are affected by vitamin A deficiency. The highest burden occurs in Saharan Africa and South Asia, with approximately 48% and 44% of children aged 6–59 months being vitamin A deficient.

To date, no direct estimates of zinc deficiency are available for these age groups, but it is thought that it may be also widespread. Member States have requested guidance from WHO on the effects and safety of the use of multiple micronutrient powders for point-of-use fortification of foods consumed by infants and young children aged 6–23 months and children aged 2–12 years. Point-of-use fortification is often referred to as "home fortification"; the word "home" has been substituted by "point-of-use", to reflect the variety of settings where this intervention may take place. This guideline is intended to help Member States and their partners in their efforts to make evidence informed decisions on the appropriate nutrition actions to improve the nutritional status of infants and children aged 6 months to 12 years. It will also support their efforts to achieve the Sustainable Development Goals, the global targets set by the *Comprehensive implementation plan on maternal, infant and young child nutrition*, and the *Global strategy for women's, children's and adolescents' health 2016–2030*. The guideline is intended for a wide audience, including governments, nongovernmental organizations, health-care workers, scientists and donors involved in the design and implementation of micronutrient programmes and their integration into national and subnational public health strategies and programmes. The guideline is an update of the 2011 WHO guideline on *Use of multiple micronutrient powders for home fortification of foods consumed by infants and children 6–23 months of age*. The present guideline supersedes the previous one for infants and young children aged 6–23 months and provides new recommendations for children aged 2–12 years.

## Incentivizing Nutrition: Incentive Mechanisms to Accelerate Improved Nutrition Outcomes

**Laviolette, L., S. Gopalan, L.K. Elder, and O.J.K. Wouters. 2016. *Incentivizing Nutrition: Incentive Mechanisms to Accelerate Improved Nutrition Outcomes*. Washington, D.C.: World Bank Group.**

**http://documents.worldbank.org/curated/en/271081482398198838/Incentivizing-nutrition-incentive-mechanisms-to-accelerate-improved-nutrition-outcomes**

Investing in nutrition will contribute to achieving the World Bank's dual goals of ending extreme poverty and promoting shared prosperity. The coordinated support of the international community is important to optimizing the rising trend in nutrition investment, which was galvanized by the global Scaling Up Nutrition (SUN) movement, and reaffirmed at the 2012 World Health Assembly where world leaders committed to reaching six global nutrition targets by 2025. The report, Incentive Mechanisms to Accelerate Improved Nutrition Outcomes—and the accompanying Practitioner's Compendium—provide important guidance for cost-effective multisectoral efforts to scale up nutrition programming by incentivizing nutrition interventions. Financial incentives are one tool to support nutrition interventions. However, incentives need to be carefully chosen, underpinned by a clear theory of change, and designed for particular contexts and objectives. When a decision is taken to use financial incentives, the report and compendium offer operational guidance to task teams and leaders. They highlight the potential challenges and strengths of the various mechanisms, and include country examples and nutrition indicators to monitor progress at the levels where the mechanism would exert its influence, i.e., national, sub-national facility, community, households, or individuals. It is intended for non-technical staff to support their clients' efforts to enhance the nutritional impact of World Bank country investments. The report provides practical advice to design and implement nutrition interventions in future operations based on review of past successful and less successful attempts. The recommendations are organized by type of financial incentive mechanism, which correspond to the specific levels where the mechanisms exert their influence, i.e., national, sub-national, facility, community, households, or individuals, and also provides information on the use of non-financial incentives.

## MDGs to SDGs: Reproductive, Maternal, Newborn and Child Health in India

**Shah, P. 2016. *MDGs to SDGs: Reproductive, Maternal, Newborn and Child Health in India*. ORF Occasional Paper: December 2016. New Delhi: Observer Research Foundation.**

**http://cf.orfonline.org/wp-content/uploads/2016/12/ORF_Occasional_Paper_103_RMNCH-.pdf**

Goals 4 and 5 of the United Nations Millennium Development Goals (MDGs) focused a great deal on maternal and child health, which has now been carried forward to the Sustainable Development Goals (SDGs). While India made significant strides in reducing maternal and child mortality, the country did not succeed in achieving its health goals. This paper makes an assessment of the current state of Reproductive, Maternal, Newborn and Child health (RMNCH) in India, and describes the various challenges it faces. It traces India's progress, or lack thereof, in its MDG performance in health, considers lessons that can be learned, and explores the road ahead.

## Gender Justice and Food Security in India: A Review

**Rao, Nitya, M. Pradhan and D. Roy. 2017. *Gender Justice and Food Security in India: A Review*. IFPRI Discussion Paper 1600. Washington, D.C.: International Food Policy Research Institute.**

**http://ebrary.ifpri.org/cdm/singleitem/collection/p15738coll2/id/131054**

There is ample evidence to suggest a strong correlation between gender inequality and food and nutrition insecurity, yet the policy discourse around food and nutrition security in India has largely been gender-blind. This paper, based on a review of existing literature and emerging research, emphasizes the need to place gender justice at the center of all food and nutrition interventions, if food and nutrition security for all is to be achieved. Rather than exclusively targeting women and often overburdening them with the responsibility for household food security, policy approaches need to encourage and enhance reciprocity and sharing between men and women in households and communities, and empower them to negotiate effectively vis-à-vis institutions of the state, markets, and society. With the aim of moving toward gender-transformative approaches in policies and programs for achieving food and nutrition security in India, in this paper we set out an alternate framing of the agenda, drawing on what the evidence tells us. We flag emerging issues that need to be addressed to draw out possible implications for research and policy in gender-just food and nutrition interventions in India.

### Evaluation Study on The Role of The Public Distribution System in Shaping Household and Nutritional Security in India

**DMEO (Development Monitoring and Evaluation Office), Niti Aayog, Government of India. 2016. DMEO Report No. 233.**

**http://niti.gov.in/writereaddata/files/document_publication/Final%20PDS%20Report-new.pdf**

### A Quick Evaluation Study of Anganwadis Under the ICDS

**PEO (Programme Evaluation Organization), Niti Aayog, Government of India. 2015. PEO Report No. 227.**

**http://niti.gov.in/writereaddata/files/document_publication/report-awc.pdf**

### Women's Nutrition: Sight and Life

**Sight and Life. 2016. Women's Nutrition. Sight and Life 30(2).**

**http://www.sightandlife.org/fileadmin/data/Magazine/2016/Mag2/SALMZ_0216.pdf#page=98**

# RESOURCES

### Nutrition Exchange (NEX)

Nutrition Exchange is an ENN publication that contains short, non-technical and easy-to-read articles on nutrition programme experiences and learning, from countries with a high burden of undernutrition and those that are prone to crisis. It also summarises research and provides information on guidance, tools and upcoming trainings in nutrition and related sectors. It is published twice per year and one issue is dedicated to Scaling Up Nutrition (SUN) Movement related learning and experiences of scale up which is facilitated by the ENN SUN Knowledge Management Project regional and Global team.

Nutrition Exchange is for all those working to reduce levels of undernutrition at the national, district and community level. This includes government, civil society and all sectors concerned with nutrition including

agriculture, health, education, water and sanitation and social protection. Articles are written by and for national actors and ENN provides support for the writing process.

Nutrition Exchange is available in English, French, Spanish and Arabic.

**To subscribe to Nutrition Exchange, visit:** http://www.ennonline.net/subscribe/nex

### Interview with Professor Zulfiqar Bhutta – Minimizing Nutritional Gaps in The Continuum of Maternal and Child Health

As good nutrition for children begins before conception, appropriate nutrition for women of child-bearing age is important. In a recent interview with world authority and leading researcher in maternal and paediatric nutrition, Professor Zulfiqar Bhutta, we explored the global impact of malnutrition on maternal and child health and why improving nutrition is a goal of the United Nations Development Program.

**For more information:** https://hongkong.wyethnutritionsc.org/en/learning-corner/expert-interviews/interview-with-prof-zulfiqar-bhutta

## UPCOMING EVENTS

### Transforming Nutrition: Ideas, Policies and Outcomes 2017

This five-day course is designed for both policy makers and practitioners. The course will lead participants through cutting edge knowledge and evidence on nutrition globally. Using an interactive diagnostic approach, participants will learn to apply such knowledge to specific national or sub-national situations to identify strategic areas for nutrition action. The course is designed to provide a base from which participants can develop their own future leadership for transformational change in nutrition.

**Where:** Brighton, United Kingdom

**When:** July 17-21, 2017

**For more information:** http://www.ids.ac.uk/events/transforming-nutrition-ideas-policies-and-outcomes-2017

### Measurement and Survey Design Course

The CLEAR South Asia Team invites applications for a three-day course on Measurement and Survey Design, which is intended for researchers, M&E professionals, and other individuals interested in gaining essential skills for collecting high quality primary data. The course is designed to increase participants' understanding of the process of designing and implementing effective survey questionnaires that yield high quality data. It focuses on concepts related to what data to collect, how to measure outcomes effectively, why and how to pilot the survey instrument to refine it and how to develop field protocols, and best practices related to each.

The last date for submission of applications is April 3, 2017.

**Where:** India Habitat Center, Lodi Road, New Delhi

**When:** May 3-5, 2017

**For more information:** http://www.clearsouthasia.org/activities/measurement-survey-design-course-2017/

Led by IFPRI

**Partnership members:**

**Institute of Development Studies (IDS)**

**Public Health Foundation of India (PHFI)**

**One World South Asia**

**Vikas Samvad**

**Coalition for Sustainable Nutrition Security in India**

**Save the Children, India**

**Public Health Resource Network (PHRN)**

**Vatsalya**

**Centre for Equity Studies**

## ABOUT POSHAN

Partnerships and Opportunities to Strengthen and Harmonize Actions for Nutrition in India (POSHAN) is a multi-year initiative that aims to build evidence on effective actions for nutrition and support the use of evidence in decisionmaking. It is supported by the Bill & Melinda Gates Foundation and led by IFPRI in India.

## ABOUT ABSTRACT DIGEST

In each issue, the POSHAN Abstract Digest brings you some of the new and noteworthy studies on maternal and child nutrition. It focuses on India-specific studies and also brings to you other relevant global or regional literature with broader implications for maternal and child nutrition. The Abstract Digest is based on literature searches to identify selected studies that we think are most relevant to nutrition issues in India and to Indian programs and policies. We share with you a collection of abstracts from articles published in peer-reviewed journals, as well as selected non peer-reviewed articles by researchers in reputed academic and/or research institutions and which demonstrated rigor in their research objectives, methodology, and analysis. The abstracts in this document are reproduced in their original form from their source, and without editorial commentary about specific articles.

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This publication has been prepared by POSHAN with research assistance from Abhilasha Vaid, IFPRI, and has not been peer reviewed. Any opinions stated herein are those of the author(s) and do not necessarily reflect the policies of the International Food Policy Research Institute. Please contact Dr. Rasmi Avula at IFPRI with any questions: r.avula@cgiar.org.