

## EDITOR'S NOTE

### Dear all,

This last issue of the Abstract Digest for 2016 brings to focus the importance of maternal factors including pre- and peri-conceptual nutrition, education and stature, as well as macro-level factors such as sustained economic growth and investments in health, education, and water for the overall well-being of a child.

- De-Regil (2016) describes the current global guidelines for preconceptional nutrition for girls and women while highlighting gaps and the need for evidence to move the nutrition agenda. King (2016) provides a comprehensive review of the origins of our current understanding as well as the role of preconception and periconception nutrition and subsequent well-being of the next generation.
- Ramakrishnan and colleagues (2016), in a double-blind randomized controlled trial setting, did not find any influence of preconceptional supplementation of multiple micronutrients or iron folic acid on birth outcomes of Vietnamese women. However, consuming a daily snack made from leafy green vegetables, milk, and fruits during preconception period, was found to have a protective effect against gestational diabetes in a randomized-controlled study conducted in India (Sahariah et al. 2016).
- Garcia and colleagues (2016) in a systematic literature review found that obesity among women is associated with failure to initiate breastfeeding and delayed onset of lactogenesis.
- Devkumar and colleagues conducted a systematic review and meta-analysis of long-term follow-up studies of the trials that were included in the 2015 Cochrane review of multiple micronutrient supplementation in pregnancy. They found that there is no evidence to suggest that routine multiple micronutrient supplementation improves child survival growth, blood pressure, respiratory or cognitive outcomes better than only iron and folic acid supplementation.
- Sacks and Langlois (2016) comment on the need to invest in improving the quality of interventions during the postnatal period, and bridging the inequity gap while focusing on increasing their coverage.
- Corsi and colleagues (2016) reported that maternal height, BMI, education, and household wealth explain between 60 to 80% of the burden of undernutrition among stunted/underweight children in India, with poor dietary diversity being a major risk factor. Furthermore, maternal health literacy was found to be associated with child nutrition status in resource-poor rural and urban settings in India (Johri et al. 2016).
- A mobile-based nutrition grade calculator improved the diagnostic accuracy of screening for acute malnutrition by frontline workers in the slums of Mumbai (Chanani et al. 2016), by reducing the human error in using the WHO tables.
- In a comprehensive qualitative study conducted in six states in India, Chaturvedi and colleagues (2016), identified maternal time constraints, fragile food security system, child targeted market, availability and consumption of ready-to-eat market foods, poor feeding practices, and inadequate responsiveness of the government systems as the most forceful thematic areas that could contribute to both undernutrition and childhood obesity.

- Mamidi and colleagues (2016) use cross-sectional data from the National Monitoring Bureau to construct secular trends in linear growth and report that the patterns of linear growth over the last three decades in two of the southern states (Kerala and Tamil Nadu) has been similar to that of in the developed countries.
- In the context of India's dual burden of malnutrition, Thow et al. (2016) found that policy opportunities exist for targeting common foods of interest such as highly processed foods and fruits and vegetables while challenges include policy inertia and competing priorities within the economic sector.
- Soriano and colleagues (2016) used panel data from 27 countries and spanning 22 years to examine the role of economic growth in reducing undernutrition and state that along with a sustained long-term economic growth, investments in health, education, and drinking water are required.
- According to Balrajan and Reich (2016), lack of an effective policy entrepreneur was a major limitation to transforming the potential for reform to an actual reform of the Integrated Child Development Services program reforms in 2012.
- Aguayo et al (2016) call for strengthening national and state policies, hospital and maternity practices to support early initiation of breastfeeding in the light of low rates of breastfeeding initiation (44%) despite the rise in deliveries attended by skilled-birth attendants (81%).
- Leyvraz et al (2016) found that the coverage and utilization of the take-home ration for children under the ICDS program are high in the state of Telangana, and can be further improved by addressing the supply chain problems and intra-household product sharing issues.
- Two studies from the three country Alive& Thrive research Leyvraz et al (2016) found that the coverage and utilization of the take-home ration for children under the ICDS program are high in the state of Telangana, and can be further improved by addressing the supply chain problems and intra-household product sharing issues.
- The Alive & Thrive study results from Bangladesh and Viet Nam demonstrate that intense interpersonal counseling combined with mass media and community mobilization improve breastfeeding practices at-scale (Menon et al. 2016). In Bangladesh, while the intense intervention also improved complementary feeding practices, but only had nondifferential impact on stunting (Menon et al. 2016).

Enjoy Reading!

Warm regards,  
Dr. Rasmi Avula

## PEER-REVIEWED STUDIES

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### **Preconceptional Nutrition Interventions for Adolescent Girls and Adult Women: Global Guidelines and Gaps in Evidence and Policy with Emphasis on Micronutrients**

**De-Regil, L.M., K.B. Harding, and M.L. Roche. *The Journal of Nutrition* 146(Suppl): 1461–1470.**

<http://jn.nutrition.org/content/early/2016/06/08/jn.115.223487.abstract>

Much of the global nutrition efforts in recent years have been focused on improving the nutritional status of children during the window of the first 1000 d of life, from conception to 2 y of age. However, as the world transitions from the Millennium Development Goals to the Sustainable Development Goals, women's and adolescent girls' overall health and well-being are being placed at the center of the global agenda. It is also increasingly recognized that a woman's nutritional status before pregnancy affects maternal and child outcomes and thus needs to be improved to ensure optimal outcomes. This article reviews the global picture of preconception nutrition in women and girls, including some of the key factors that influence women's outcomes, as well as their children's outcomes, if they do become pregnant. This article describes the current global guidelines on preconceptional nutrition interventions for girls and women; highlights related gaps in evidence, guidelines, and policy; and discusses research to forward the agenda of improving women's and girls' preconceptional nutrition.

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### **A Summary of Pathways or Mechanisms Linking Preconception Maternal Nutrition with Birth Outcomes**

**King, J.C. 2016. *The Journal of Nutrition* 146(Suppl): 1437–1444.**

<http://jn.nutrition.org/content/early/2016/06/08/jn.115.223479.abstract>

Population, human, animal, tissue, and molecular studies show collectively and consistently that maternal nutrition in the pre- or periconception period influences fetal growth and development, which subsequently affects the individual's long-term health. It is known that nutrition during pregnancy is an important determinant of the offspring's growth and health. However, now there is evidence that the mother's nutritional status at conception also influences pregnancy outcome and long-term health. For example, the mother's nutritional status at conception influences the way energy is partitioned between maternal and fetal needs. Furthermore, placental development during the first weeks of gestation reflects maternal nutrition and establishes mechanisms for balancing maternal and fetal nutritional needs. Also, maternal nutritional signals at fertilization influence epigenetic remodeling of fetal genes. These findings all indicate that maternal parenting begins before conception. The following papers from a symposium on preconception nutrition presented at the 2015 Scientific Sessions and Annual Meeting of the ASN emphasize the importance of maternal nutrition at conception on the growth and long-term health of the child.

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## Neither Preconceptional Weekly Multiple Micronutrient nor Iron–Folic Acid Supplements Affect Birth Size and Gestational Age Compared with a Folic Acid Supplement Alone in Rural Vietnamese Women: A Randomized Controlled Trial

Ramakrishnan, U., P.H. Nguyen, I. Gonzalez-Casanova, H. Pham, W. Hao, H. Nguyen, T.V. Truong, S. Nguyen, K.B. Harding, G.A. Reinhart, L.M. Neufeld, and R. Martorell. 2016. *The Journal of Nutrition* 146(Suppl): 1445–1452.

<http://jn.nutrition.org/content/early/2016/06/08/jn.115.223420.abstract?papetoc&trendmd-shared=0>

**Background:** Maternal nutritional status before and during early pregnancy plays a critical role in fetal growth and development. The benefits of periconception folic acid (FA) supplementation in the prevention of neural tube defects is well recognized, but the evidence for preconception micronutrient interventions for improving pregnancy outcomes is limited. **Objective:** This study aimed to evaluate whether preconception supplementation with weekly iron and folic acid (IFA) or multiple micronutrients (MMs) improves birth outcomes compared with FA alone. **Methods:** We recruited 5011 women of reproductive age in a double-blind, randomized controlled trial in Vietnam and provided weekly supplements containing either 2800 µg FA, 60 mg Fe and 2800 µg FA (IFA), or the same amount of FA and iron plus other MMs until they conceived ( $n = 1813$ ). All pregnant women received daily IFA through delivery, and were followed up for birth outcomes, including birth weight, gestational age, preterm delivery and small for gestational age (SGA). Group comparisons were done with the use of ANOVA or chi-square tests for both intention-to-treat ( $n = 1599$ ) and per-protocol analyses (women consumed supplements  $\geq 26$  wk before conception;  $n = 824$ ). Effect modification by baseline underweight or anemia status was tested with the use of generalized linear models. **Results:** The mean age of the women was 26 y, 30% were underweight, and  $<10\%$  were nulliparous. The groups were similar for most baseline characteristics. The mean  $\pm$  SD duration of the preconception intervention was  $33 \pm 25$  wk and compliance was high ( $>90\%$ ). Infants born to the 3 groups of women did not differ ( $P \geq 0.05$ ) on mean  $\pm$  SD birth weight ( $3076.8 \pm 444.5$  g) or gestational age ( $39.2 \pm 2.0$  wk), or prevalence of SGA (12%), low birth weight (5%) and preterm delivery (10%). There were no significant differences in women who consumed supplements  $\geq 26$  wk before conception or by baseline underweight or anemia. Conclusion: Weekly supplementation with MMs or IFA before conception did not affect birth outcomes compared with FA in rural Vietnamese women. The trial was registered at *clinicaltrials.gov* as *NCT01665378*.

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## Maternal Antenatal Multiple Micronutrient Supplementation for Long-Term Health Benefits in Children: A Systematic Review and Meta-Analysis

Devakumar, D., C.H.D. Fall, H.P.S. Sachdev, B.M. Margetts, C. Osmond, J.C.K. Wells, A. Costello and D. Osrin. 2016. *BMC Medicine* 14(90).

[http://bmcmmedicine.biomedcentral.com/articles/10.1186/s12916-016-0633-3?utm\\_campaign=BMC40054C&utm\\_medium=BMCemail&utm\\_source=Teradata](http://bmcmmedicine.biomedcentral.com/articles/10.1186/s12916-016-0633-3?utm_campaign=BMC40054C&utm_medium=BMCemail&utm_source=Teradata)

**Background:** Multiple micronutrient supplementation for pregnant women reduces low birth weight and has been recommended in low- and middle-income countries (LMICs) to improve child survival, growth and health. We aimed to review the evidence from long-term follow-up studies of multiple micronutrient supplementation beginning in the later first or second trimester. **Methods:** We searched systematically for follow-up reports from all trials in a 2015 Cochrane review of multiple micronutrient supplementation in pregnancy. The intervention comprised three or more micronutrients and the comparison group received

iron (60 mg) and folic acid (400 µg), where possible. Median gestation of commencement varied from 9 to 23 weeks. Primary outcomes were offspring mortality, height, weight and head circumference, presented as unadjusted differences in means or proportions (intervention minus control). Secondary outcomes included other anthropometry, body composition, blood pressure, and cognitive and lung function. **Results:** We found 20 follow-up reports from nine trials (including 88,057 women recruited), six of which used the UNIMMAP supplement designed to provide recommended daily allowances. The age of follow-up ranged from 0 to 9 years. Data for mortality estimates were available from all trials. Meta-analysis showed no difference in mortality (risk difference  $-0.05$  per 1000 livebirths; 95 % CI,  $-5.25$  to  $5.15$ ). Six trials investigated anthropometry and found no difference at follow-up in weight-for-age z score (0.02; 95 % CI,  $-0.03$  to  $0.07$ ), height-for-age zscore (0.01; 95 % CI,  $-0.04$  to  $0.06$ ), or head circumference (0.11 cm; 95 % CI,  $-0.03$  to  $0.26$ ). No differences were seen in body composition, blood pressure, or respiratory outcomes. No consistent differences were seen in cognitive function scores. **Conclusions:** There is currently no evidence that, compared with iron and folic acid supplementation, routine maternal antenatal multiple micronutrient supplementation improves childhood survival, growth, body composition, blood pressure, respiratory or cognitive outcomes.

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### A Daily Snack Containing Leafy Green Vegetables, Fruit, And Milk Before and During Pregnancy Prevents Gestational Diabetes in A Randomized, Controlled Trial in Mumbai, India

Sahariah, S.A., R.D. Potdar, M. Gandhi, S.H. Kehoe, N. Brown, H. Sane, P.J. Coakley, T. Marley-Zagar, H. Chopra, D. Shivshankaran, V.A. Cox, A.A. Jackson, B.M. Margetts, and C.H.D. Fall. 2016. *The Journal of Nutrition (Suppl)*: 1453–1460.

<http://jn.nutrition.org/content/early/2016/06/08/jn.115.223461.abstract>

**Background:** Prospective observational studies suggest that maternal diets rich in leafy green vegetables and fruit may help prevent gestational diabetes mellitus (GDM). **Objective:** Our objective was to test whether increasing women's dietary intake of leafy green vegetables, fruit, and milk before conception and throughout pregnancy reduced their risk of GDM. **Methods:** Project SARAS ("excellent") (2006–2012) was a nonblinded, individually randomized, controlled trial in women living in slums in the city of Mumbai, India. The interventions included a daily snack made from leafy green vegetables, fruit, and milk for the treatment group or low-micronutrient vegetables (e.g., potato and onion) for the control group, in addition to the usual diet. Results for the primary outcome, birth weight, have been reported. Women were invited to take an oral-glucose-tolerance test (OGTT) at 28–32 wk gestation to screen for GDM (WHO 1999 criteria). The prevalence of GDM was compared between the intervention and control groups, and Kernel density analysis was used to compare distributions of 120-min plasma glucose concentrations between groups. **Results:** Of 6513 women randomly assigned, 2291 became pregnant; of these, 2028 reached a gestation of 28 wk, 1008 (50%) attended for an OGTT, and 100 (9.9%) had GDM. In an intention-to-treat analysis, the prevalence of GDM was reduced in the treatment group (7.3% compared with 12.4% in controls; OR: 0.56; 95% CI: 0.36, 0.86;  $P = 0.008$ ). The reduction in GDM remained significant after adjusting for prepregnancy adiposity and fat or weight gain during pregnancy. Kernel density analysis showed that this was explained by the fact that fewer women in the treatment group had a 2-h glucose concentration in the range 7.5–10.0 mmol/L. **Conclusions:** In low-income settings, in which women have a low intake of micronutrient-rich foods, improving dietary micronutrient quality by increasing intake of leafy green vegetables, fruit, and/or milk may have an important protective effect against the development of GDM. This trial was registered at [www.controlled-trials.com](http://www.controlled-trials.com) as ISRCTN62811278.

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## Maternal Weight Status, Diet, and Supplement Use as Determinants of Breastfeeding and Complementary Feeding: A Systematic Review and Meta-Analysis

Garcia, A.H., T. Voortman, C.P. Baena, R. Chowdhury, T. Muka, L. Jaspers, S. Warnakula, M.J. Tielemans, J. Troup, W.M. Bramer, O.H. Franco, and E.H. van den Hooven. *Nutrition Reviews* 74: 490–516.

<http://nutritionreviews.oxfordjournals.org/content/74/8/490.abstract?etoc>

**Context:** Infant feeding practices are influenced by maternal factors. **Objective:** The aim of this review is to examine the associations between maternal weight status or dietary characteristics and breastfeeding or complementary feeding. **Data Sources:** A systematic literature search of the Embase, Cochrane Library, Google Scholar, MEDLINE, PubMed, and Web of Science databases was performed. **Study Selection:** Interventional and cohort studies in healthy mothers and infants that reported on maternal weight status, diet, or supplement use were selected. **Data Extraction:** Outcomes assessed included delayed onset of lactogenesis; initiation, exclusivity, duration, and cessation of breastfeeding; and timing of complementary feeding. **Data Analysis:** Eighty-one studies were included. Maternal underweight, diet, and supplement use were not associated with infant feeding practices. Obese women had a relative risk of failure to initiate breastfeeding (risk ratio [RR] = 1.23; 95%CI, 1.03–1.47) and a delayed onset of lactogenesis (RR=2.06; 95%CI, 1.18–3.61). The RR for breastfeeding cessation was 1.11 (95%CI, 1.07–1.15) per increase in category of body mass index. **Conclusions:** Prevention of obesity in women of reproductive age, as well as counseling of obese women after delivery, could be targeted to improve infant feeding practices.

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## Postnatal Care: Increasing Coverage, Equity, and Quality

Sacks, E., and E.V. Langlois. 2016. *The Lancet Global Health* 4(7): e442–e443.

[http://www.thelancet.com/journals/langlo/article/PIIS2214-109X\(16\)30092-4/abstract](http://www.thelancet.com/journals/langlo/article/PIIS2214-109X(16)30092-4/abstract)

As the Millennium Development Goals came to a close last year and we entered the new Sustainable Development Goals (SDGs) era, the global health community took stock of accomplishments over the past decades and continuing challenges for the future. Despite impressive reductions in maternal and under-5 mortality rates, neonatal mortality reduction continues to lag behind. Neonates account for an increasing share of child deaths, now reaching almost half (45%) of the burden of under-5 mortality.

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## Early Initiation of Breast Feeding on The Rise in India

Aguayo VM, G. Gupta, G. Singh, and R. Kumar. 2016. *BMJ Global Health*.

<http://gh.bmj.com/content/1/2/e000043.full>

In India, a multipronged strategy including large scale programmes, effective capacity building initiatives, strong partnerships, community-based action, and strategic mass media communication led to an increase in the rates of early initiation of breastfeeding from 24.5% in 2006 to 44.6% in 2014 (i.e. a 1.8-fold increase). In the seven states of India with the highest burden of neonatal mortality, the combined rate of early initiation of breastfeeding increased from 12.5% in 2006 to 34.4% in 2014 (i.e. a 2.7-fold increase).

## Impacts on Breastfeeding Practices of At-Scale Strategies That Combine Intensive Interpersonal Counseling, Mass Media, and Community Mobilization: Results of Cluster-Randomized Program Evaluations in Bangladesh and Viet Nam

Menon P, P.H. Nguyen, K.K. Saha, A. Khaled, A. Kennedy, and L.M. Tran, Tina Sanghvi, Nemat Hajeebhoy, Jean Baker, Silvia Alayon, Kaosar Afsana, Raisul Haque, Edward A. Frongillo, Marie T. Ruel, and Rahul Rawat. 2016. *PLoS Med* 13(10): e1002159.

<http://journals.plos.org/plosmedicine/article?id=10.1371/journal.pmed.1002159>

**Background:** Despite recommendations supporting optimal breastfeeding, the number of women practicing exclusive breastfeeding (EBF) remains low, and few interventions have demonstrated implementation and impact at scale. Alive & Thrive was implemented over a period of 6 y (2009–2014) and aimed to improve breastfeeding practices through intensified interpersonal counseling (IPC), mass media (MM), and community mobilization (CM) intervention components delivered at scale in the context of policy advocacy (PA) in Bangladesh and Viet Nam. In Bangladesh, IPC was delivered through a large non-governmental health program; in Viet Nam, it was integrated into government health facilities. This study evaluated the population-level impact of intensified IPC, MM, CM, and PA (intensive) compared to standard nutrition counseling and less intensive MM, CM, and PA (non-intensive) on breastfeeding practices in these two countries.

**Methods and Findings:** A cluster-randomized evaluation design was employed in each country. For the evaluation sample, 20 sub-districts in Bangladesh and 40 communes in Viet Nam were randomized to either the intensive or the non-intensive group. Cross-sectional surveys ( $n \sim 500$  children 0–5.9 mo old per group per country) were implemented at baseline (June 7–August 29, 2010, in Viet Nam; April 28–June 26, 2010, in Bangladesh) and endline (June 16–August 30, 2014, in Viet Nam; April 20–June 23, 2014, in Bangladesh). Difference-in-differences estimates (DDEs) of impact were calculated, adjusting for clustering. In Bangladesh, improvements were significantly greater in the intensive compared to the non-intensive group for the proportion of women who reported practicing EBF in the previous 24 h (DDE 36.2 percentage points [pp], 95% CI 21.0–51.5,  $p < 0.001$ ; prevalence in intensive group rose from 48.5% to 87.6%) and engaging in early initiation of breastfeeding (EIBF) (16.7 pp, 95% CI 2.8–30.6,  $p = 0.021$ ; 63.7% to 94.2%). In Viet Nam, EBF increases were greater in the intensive group (27.9 pp, 95% CI 17.7–38.1,  $p < 0.001$ ; 18.9% to 57.8%); EIBF declined (60.0% to 53.2%) in the intensive group, but less than in the non-intensive group (57.4% to 40.6%; DDE 10.0 pp, 95% CI –1.3 to 21.4,  $p = 0.072$ ). Our impact estimates may underestimate the full potential of such a multipronged intervention because the evaluation lacked a “pure control” area with no MM or national/provincial PA. Conclusions: At-scale interventions combining intensive IPC with MM, CM, and PA had greater positive impacts on breastfeeding practices in Bangladesh and Viet Nam than standard counseling with less intensive MM, CM, and PA. To our knowledge, this study is the first to document implementation and impacts of breastfeeding promotion at scale using rigorous evaluation designs. Strategies to design and deliver similar programs could improve breastfeeding practices in other contexts.

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## M-Health for Improving Screening Accuracy of Acute Malnutrition in a Community-Based Management of Acute Malnutrition Program in Mumbai Informal Settlements

Chanani, S., J. Wacksman, D. Deshmukh, S. Pantvaidya, A. Fernandez, and A. Jayaraman. 2016. *Food and Nutrition Bulletin*: 1–13.

<http://fnb.sagepub.com/content/early/2016/06/30/0379572116657241.abstract>

**Background:** Acute malnutrition is linked to child mortality and morbidity. Community-Based Management of Acute Malnutrition (CMAM) programs can be instrumental in large-scale detection and treatment of undernutrition. The World Health Organization (WHO) 2006 weight-for-height/length tables are diagnostic tools available to screen for acute malnutrition. Frontline workers (FWs) in a CMAM program in Dharavi, Mumbai, were using CommCare, a mobile application, for monitoring and case management of children in combination with the paper-based WHO simplified tables. A strategy was undertaken to digitize the WHO tables into the CommCare application. **Objective:** To measure differences in diagnostic accuracy in community-based screening for acute malnutrition, by FWs, using a mobile-based solution. **Methods:** Twenty-seven FWs initially used the paper-based tables and then switched to an updated mobile application that included a nutritional grade calculator. Human error rates specifically associated with grade classification were calculated by comparison of the grade assigned by the FW to the grade each child should have received based on the same WHO tables. Cohen kappa coefficient, sensitivity and specificity rates were also calculated and compared for paper-based grade assignments and calculator grade assignments. **Results:** Comparing FWs ( $N = 14$ ) who completed at least 40 screenings without and 40 with the calculator, the error rates were 5.5% and 0.7%, respectively ( $p < .0001$ ). Interrater reliability ( $\kappa$ ) increased to an almost perfect level ( $>.90$ ), from .79 to .97, after switching to the mobile calculator. Sensitivity and specificity also improved significantly. **Conclusion:** The mobile calculator significantly reduces an important component of human error in using the WHO tables to assess acute malnutrition at the community level.

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## Risk Factors for Chronic Undernutrition Among Children in India: Estimating Relative Importance, Population Attributable Risk and Fractions

Corsi, D.J., I. Mejia-Guevara, and S.V. Subramanian. 2016. *Social Science & Medicine* 157(C): 165–185.

[http://econpapers.repec.org/article/eesocmed/v\\_3a157\\_3ay\\_3a2016\\_3ai\\_3ac\\_3ap\\_3a165-185.htm](http://econpapers.repec.org/article/eesocmed/v_3a157_3ay_3a2016_3ai_3ac_3ap_3a165-185.htm)

Nearly 40% of the world's stunted children live in India and the prevalence of undernutrition has been persistently high in recent decades. Given numerous available interventions for reducing undernutrition in children, it is not clear of the relative importance of each within a multifactorial framework. We assess the simultaneous contribution of 15 known risk factors for child chronic undernutrition in India. Data are from the 3rd Indian National Family Health Survey (NFHS-3), a nationally representative cross-sectional survey undertaken in 2005–2006. The study population consisted of children aged 6–59 months [ $n = 26,842$  (stunting/low height-for-age),  $n = 27,483$  (underweight/low weight-for-age)]. Risk factors examined for their association with undernutrition were: vitamin A supplementation, vaccination, use of iodized salt, household air quality, improved sanitary facilities, safe disposal of stools, improved drinking water, prevalence of infectious disease, initiation of breastfeeding, dietary diversity, age at marriage, maternal BMI, height, education, and household wealth. Age/sex-adjusted and multivariable adjusted effect sizes (odds ratios) were calculated for risk factors along with Population Attributable Risks (PAR) and Fractions (PAF) using logistic regression. In the mutually adjusted models, the five most important predictors of childhood stunting/underweight were short maternal stature, mother having no education, households in lowest

wealth quintile, poor dietary diversity, and maternal underweight. These five factors had a combined PAR of 67.2% (95% CI: 63.3–70.7) and 69.7% (95% CI: 66.3–72.8) for stunting and underweight, respectively. The remaining factors were associated with a combined PAR of 11.7% (95% CI: 6.0–17.4) and 15.1% (95% CI: 8.9–21.3) for stunting and underweight, respectively. Implementing strategies focused on broader progress on social circumstances and infrastructural domains as well as investments in nutrition specific programs to promote dietary adequacy and diversity are required to ensure a long term trajectory of optimal child growth and development in India.

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## Maternal Health Literacy Is Associated with Early Childhood Nutritional Status in India

Johri, M., S.V. Subramanian, G.K. Kone, S. Dudeja, D. Chandra, N. Minoyan, M. Sylvestre, and S. Pahwa. 2016. *The Journal of Nutrition* 146: 1402–1410.

<http://jn.nutrition.org/content/early/2016/06/14/jn.115.226290.abstract>

**Background:** The global burden of child undernutrition is concentrated in South Asia, where gender inequality and female educational disadvantage are important factors. Maternal health literacy is linked to women's education and empowerment, can influence multiple malnutrition determinants, and is rapidly modifiable. **Objective:** This study investigated whether maternal health literacy is associated with child undernutrition in 2 resource-poor Indian populations. **Methods:** We conducted cross-sectional surveys in an urban and a rural site, interviewing 1 woman with a child aged 12–23 mo/household. Multivariate logistic regression analyses were conducted independently for each site. The main exposure was maternal health literacy. We assessed respondents' ability to understand, appraise, and apply health-related information with the use of Indian health promotion materials. The main outcomes were severe stunting, severe underweight, and severe wasting. We classified children as having a severe nutritional deficiency if their z score was  $<-3$  SDs from the WHO reference population for children of the same age and sex. Analyses controlled for potential confounding factors including parental education and household wealth. **Results:** Rural and urban analyses included 1116 and 657 mother-child pairs, respectively. In each site, fully adjusted models showed that children of mothers with high health literacy had approximately half the likelihood of being severely stunted (rural adjusted OR: 0.50; 95% CI: 0.33, 0.74;  $P = 0.001$ ; urban adjusted OR: 0.58; 95% CI: 0.35, 0.94;  $P = 0.028$ ) or severely underweight (rural adjusted OR: 0.57; 95% CI: 0.38, 0.87;  $P = 0.009$ ; urban adjusted OR: 0.48; 95% CI: 0.25, 0.91;  $P = 0.025$ ) than children of mothers with low health literacy. Health literacy was not associated with severe wasting. **Conclusions:** In resource-poor rural and urban settings in India, maternal health literacy is associated with child nutritional status. Programs targeting health literacy may offer effective entry points for intervention.

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## Time-constrained Mother and Expanding Market: Emerging Model of Undernutrition in India

Chaturvedi, S., S. Ramji, N.K. Arora, S. Rewal, R. Dasgupta, and V. Deshmukh. 2016. *BMC Public Health* 16 (632): 1–13.

<https://bmcpublihealth.biomedcentral.com/articles/10.1186/s12889-016-3189-4>

**Background:** Persistent high levels of under-nutrition in India despite economic growth continue to challenge political leadership and policy makers at the highest level. The present inductive enquiry was conducted to map the perceptions of mothers and other key stakeholders, to identify emerging drivers of childhood

under-nutrition. **Methods:** We conducted a multi-centric qualitative investigation in six empowered action group states of India. The study sample included 509 in-depth interviews with mothers of undernourished and normal nourished children, policy makers, district level managers, implementer and facilitators. Sixty-six focus group discussions and 72 non-formal interactions were conducted in two rounds with primary caretakers of undernourished children, Anganwadi Workers and Auxiliary Nurse Midwives. **Results:** Based on the perceptions of the mothers and other key stakeholders, a model evolved inductively showing core themes as drivers of under-nutrition. The most forceful emerging themes were: multitasking, time constrained mother with dwindling family support; fragile food security or seasonal food paucity; child targeted market with wide availability and consumption of ready-to-eat market food items; rising non-food expenditure, in the context of rising food prices; inadequate and inappropriate feeding; delayed recognition of under-nutrition and delayed care seeking; and inadequate responsiveness of health care system and Integrated Child Development Services (ICDS). The study emphasized that the persistence of child malnutrition in India is also tied closely to the high workload and consequent time constraint of mothers who are increasingly pursuing income generating activities and enrolled in paid labour force, without robust institutional support for childcare. **Conclusion:** The emerging framework needs to be further tested through mixed and multiple method research approaches to quantify the contribution of time limitation of the mother on the current burden of child under-nutrition.

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### High Coverage and Utilization of Fortified Take-Home Rations Among Children 6–35 Months of Age Provided Through the Integrated Child Development Services Program: Findings from A Cross-Sectional Survey in Telangana, India

Leyvraz, M., J.P. Wirth, A. B. Woodruff, R. Sankar, P. R. Sodani, N.D. Sharma, and G.J. Aaron. 2016. *PLoS One*. <http://dx.doi.org/10.1371/journal.pone.0160814>

<http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0160814>

The Integrated Child Development Services (ICDS) in the State of Telangana, India, freely provides a fortified complementary food product, Bal Amrutham, as a take-home ration to children 6–35 months of age. In order to understand the potential for impact of any intervention, it is essential to assess coverage and utilization of the program and to address the barriers to its coverage and utilization. A two-stage, stratified cross-sectional cluster survey was conducted to estimate the coverage and utilization of Bal Amrutham and to identify their barriers and drivers. In randomly selected catchment areas of ICDS centers, children under 36 months of age were randomly selected. A questionnaire, constructed from different validated and standard modules and designed to collect coverage data on nutrition programs, was administered to caregivers. A total of 1,077 children were enrolled in the survey. The coverage of the fortified take-home ration was found to be high among the target population. Nearly all caregivers (93.7%) had heard of Bal Amrutham and 86.8% had already received the product for the target child. Among the children surveyed, 57.2% consumed the product regularly. The ICDS program's services were not found to be a barrier to product coverage. In fact, the ICDS program was found to be widely available, accessible, accepted, and utilized by the population in both urban and rural catchment areas, as well as among poor and non-poor households. However, two barriers to optimal coverage were found: the irregular supply of the product to the beneficiaries and the intra-household sharing of the product. Although sharing was common, the product was estimated to provide the target children with significant proportions of the daily requirements of macro- and micronutrients. Bal Amrutham is widely available, accepted, and consumed among the target population in the catchment areas of ICDS centers. The coverage of the product could be further increased by improving the supply chain.

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## The Influence of Seasonality and Community-Based Health Worker Provided Counseling on Exclusive Breastfeeding - Findings from a Cross-Sectional Survey in India

Das, A., R. Chatterjee, M. Karthick, T. Mahapatra, and I. Chaudhuri. 2016. *PLOS One*.

<http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0161186>

**Background:** Exclusive breastfeeding (EBF) during the first six months of life is considered a high impact but low-cost measure for reducing the morbidity and mortality among children. The current study investigated the association of seasonality and frontline worker (FLW) provided counselling with practice of EBF in Bihar, India.

**Methods:** We used the 'Lot Quality Assurance Sampling' technique to conduct a multi-stage sampling survey in 8 districts of Bihar. Regarding EBF, mothers of 0–5 (completed) months old children were asked if they had given only breastmilk to their children during the previous day, while mothers of 6–8 (completed) months old children were inquired about the total duration of EBF. We tested for association between EBF during the previous day with season of interview and EBF for full 6 months with nursing season. We also assessed if receiving counselling on EBF and complementary feeding had any association with relevant EBF indicators.

**Results:** Among the under-6 month old children, 76% received EBF during the previous day, whereas 92% of 6–8 (completed) months old children reportedly received EBF for the recommended duration. Proportion of 0–5 (completed) month old children receiving only breastmilk (during last 24 hours) decreased significantly with increasing age and with change of season from colder to warmer months. Odds of receiving only breastmilk during the previous day was significantly higher during the winter months (Adjusted odds ratio (AOR) = 1.50; 95% CI = 1.37, 1.63) compared to summer. Also, the children nursed primarily during the winter season had higher odds of receiving EBF for 6 months (AOR = 1.90, 95% CI = 1.43, 2.52) than those with non-winter nursing. Receiving FLW-counselling was positively associated with breastfeeding exclusively, even after adjusting for seasonality and other covariates (AOR = 1.82; 95% CI = 1.67, 1.98). **Conclusions:** Seasonality is a significant but non-modifiable risk factor for EBF. However, FLW-counselling was found to increase practice of EBF irrespective of season. Scale-up of FLW-counselling services, with emphasis on summer months and mothers of older infants, can potentially reduce the impact of seasonality on EBF.

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## Combining Intensive Counseling by Frontline Workers with a Nationwide Mass Media Campaign Has Large Differential Impacts on Complementary Feeding Practices but Not on Child Growth: Results of a Cluster-Randomized Program Evaluation in Bangladesh

Menon, P., P.H. Nguyen, K.K. Saha, A. Khaled, T. Sanghvi, J. Baker, K. Afsana, R. Haque, E.A. Frongillo, M.T. Ruel, and R. Rawat. 2016. *The Journal of Nutrition* 146(10): 2075-2084.

<http://jn.nutrition.org/content/146/10/2075.short>

**Background:** Complementary feeding (CF) contributes to child growth and development, but few CF programs are delivered at scale. Alive & Thrive addressed this in Bangladesh through intensified interpersonal counseling (IPC), mass media (MM), and community mobilization (CM). **Objective:** The objective was to evaluate the impact of providing IPC + MM + CM (intensive) compared with standard nutrition counseling + less intensive MM + CM (nonintensive) on CF practices and anthropometric measurements.

**Methods:** We used a cluster-randomized, nonblinded evaluation with cross-sectional surveys [ $n = 600$  and 1090 children 6–23.9 mo and 24–47.9 mo/group, respectively, at baseline (2010) and  $n = 500$  and 1100 children of the same age, respectively, at endline (2014)]. We derived difference-in-difference impact estimates (DDEs), adjusting for geographic clustering, infant age, sex, differences in baseline characteristics,

and differential change in characteristics over time. **Results:** Groups were similar at baseline. CF improvements were significantly greater in the intensive than in the nonintensive group [DDEs: 16.3, 14.7, 22.0, and 24.6 percentage points (pp) for minimum dietary diversity, minimum meal frequency, minimum acceptable diet, and consumption of iron-rich foods, respectively]. In the intensive group, CF practices were high: 50.4% for minimum acceptable diet, 63.8% for minimum diet diversity, 75.1% for minimum meal frequency, and 78.5% for consumption of iron-rich foods. Timely introduction of foods improved. Significant, nondifferential stunting declines occurred in intensive (6.2 pp) and nonintensive (5.2 pp) groups in children 24–47.9 mo. **Conclusions:** The intensive program substantially improved CF practices compared with the nonintensive program. Large-scale program delivery was feasible and, with the use of multiple platforms, reached 1.7 million households. Nondifferential impacts on stunting were likely due to rapid positive secular trends in Bangladesh. Accelerating linear growth further could require accompanying interventions. This study establishes proof of concept for large-scale behavior change interventions to improve child feeding.

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### Political Economy of Child Nutrition Policy: A Qualitative Study of India's Integrated Child Development Services (ICDS) Scheme

Balarajan, Y., and M.R. Reich. 2016. *Food Policy* 62: 88–98.

<http://www.sciencedirect.com/science/article/pii/S0306919216300252>

In this paper, we adapt and apply Kingdon's theory of agenda setting to explore how the issue of child nutrition and reform of India's longstanding Integrated Child Development Services (ICDS) scheme—a key policy intervention to address child nutrition—failed to sustain the attention of national policymakers in recent years. We find that although favourable factors were operating in the problem, policy and politics streams to promote policy reform, these were not sufficient to harness the potential opportunity for reform, with several missed opportunities to move the reform process forward. The analysis suggests that more attention to the political economy of the policy process may help to enhance the political feasibility of future policy reform efforts for ICDS policy, and may have lessons for complementary policy reform efforts to improve child nutrition in India.

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### Secular Trends in Heights and Weights in Boys and Girls Over 3 Decades in Rural India

Mamidi, R.S., H. Rajkumar, K.V. Radhakrishna, and J.J. Babu. 2016. *Food and Nutrition Bulletin*.

<http://fnb.sagepub.com/content/early/2016/05/11/0379572116647579.abstract>

**Background:** Secular trends in height reported from developing countries are few and scarce. **Objective:** To assess secular trends in linear growth in boys and girls from birth to 18 years of life in rural households of India based on periodical cross-sectional surveys conducted over a period of 35 years. **Materials and Methods:** The present study uses data from baseline and final surveys of National Nutrition Monitoring Bureau from 1975 to 1979 (N = 6043) to 2012 to 2013 (N = 11 910) on anthropometry from birth to 18 years from 7 states in households of rural India. **Results:** The overall improvement in 18+ boys and girls was 3.1 and 1.0 cm, respectively, over a period of 35 years. The increments in height of 18+ were highest for both boys (7.4 cm) and girls (4.8 cm) in the state of Kerala followed by Tamil Nadu (boys, 7.3 cm and girls, 3.8 cm). Under-5 stunting rates reduced from 82% in the baseline survey to 45.7% in the final survey at 1.35% per year in the pooled states and was similar in both boys and girls. The recovery in stunting was highest in Tamil Nadu (1.63% per year) followed by Kerala (1.46% per year). **Conclusion:** The pattern of secular trends in height in rural India seen over 3 decades was strikingly similar to that of developed

countries. The phenomenal improvement in linear growth in Kerala and Tamil Nadu in children younger than 5 years and adolescents suggests that growth potential for Indians is similar to that of developed countries.

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## How Important Is Economic Growth for Reducing Undernourishment in Developing Countries?

**Soriano, B., and A. Garrido. 2016. *Food Policy* 63: 87–101.**

<http://www.sciencedirect.com/science/article/pii/S0306919216301841>

There is intense debate in the literature about how important economic growth is for solving the problem of undernourishment. This paper focuses on the rate of change in the prevalence of undernourishment and looks at whether higher economic growth speeds up reductions in undernutrition in developing countries. The analysis uses panel data analysis on data spanning 22 years (1991–2012) and covering 27 developing countries. Results reveal that faster annual economic growth leads to larger annual improvements in undernourishment rates. Both annual and long-term economic growth are relevant. Sustained economic growth has a greater positive impact on undernutrition than short-term economic growth. In addition to economic growth, investments in health, education and access to drinking water are also enabling factors for reducing undernourishment. In conclusion, increased income growth can hasten the effects of food policies aimed at reducing undernourishment, but not to the extent that sustained growth and better access to health, education and drinking water can.

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## Toward Food Policy for the Dual Burden of Malnutrition: An Exploratory Policy Space Analysis in India

**Thow, A.M., S. Kadiyala, S. Khandelwal, P. Menon, S. Downs, and K.S. Reddy. 2016. *Food and Nutrition Bulletin*.**

<http://fnb.sagepub.com/content/early/2016/06/15/0379572116653863.abstract>

**Background:** There is global consensus that a strong policy response is essential for addressing the dual burden of malnutrition. However, policy makers in low- and middle-income countries may perceive a conflict between food supply policies to combat persistent undernutrition and more recent recommendations for policies addressing rising rates of diet-related noncommunicable diseases (NCDs). **Objective:** This article explores the potential to use policy space analysis to identify food supply policy opportunities for addressing both undernutrition and diet-related NCDs and to support improved policy coherence. **Methods:** We conducted an exploratory policy space analysis to identify opportunities and constraints for integrated nutrition policy with respect to the food supply in India, where a dual burden of malnutrition has been well documented. We conducted a review of food supply policies and 27 key informant interviews (16 with stakeholders active in India's national nutrition policy space, and 11 with policy makers and experts in food supply policy). **Results:** The analysis suggests several opportunities for an integrated food supply policy agenda, including targeting common foods of concern (such as highly processed foods) and foods that present common benefits (such as fruits and vegetables), and scaling up existing small-scale policy initiatives that support the availability of nutrient-rich foods. Challenges include policy inertia and competing priorities within the economic sector. **Conclusion:** This scoping study indicates that the policy space analysis framework used here can help to identify specific, contextually appropriate policy options and strategies for strengthening public health nutrition policy within sectors responsible for food supply policy.

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## Socio-Economic Impacts of JEEViKA: A Large-Scale Self-Help Group Project in Bihar, India

Datta, U. 2015. *World Development* 68: 1–18

<http://www.sciencedirect.com/science/article/pii/S0305750X14003714>

Policymakers have invested billions of dollars over the past two decades on projects which target poverty reduction by institutional mobilization of the poor. Unfortunately, evidence on the efficacy of such projects is few and far between; this is an outcome of the complexity of these projects. We consider results from JEEViKA, a large-scale rural livelihoods program in Bihar, India. We use a retrospective survey instrument, coupled with PSM techniques to find that JEEViKA has engendered some significant results in restructuring the debt portfolio of these households; additionally, there is evidence on women's empowerment, as measured by various dimensions.

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## Self-Help Groups in Development: A Review of Evidence from South Asia and Sub-Saharan Africa

Biscaye, P., Z. True, C. Clark, K.P. Harris, C.L. Anderson, and M.K. Gugerty. 2014. EPAR Brief No. 283. Washington, D.C.: Evans School of Public Affairs.

[https://evans.uw.edu/sites/default/files/EPAR\\_283\\_SHG%20Evidence%20Review%20Brief\\_12.5.14\\_0.pdf](https://evans.uw.edu/sites/default/files/EPAR_283_SHG%20Evidence%20Review%20Brief_12.5.14_0.pdf)

This brief synthesizes available evidence on the effectiveness of Self-Help Groups (SHGs) in promoting health, finance, agriculture, and empowerment objectives in South Asia and Sub-Saharan Africa. Our findings are intended to inform strategic decisions about how to best use scarce resources to leverage existing SHG interventions in various geographies and to better understand how local institutions such as SHGs can serve as platforms to enhance investments.

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## Women's Groups Practicing Participatory Learning and Action to Improve Maternal and Newborn Health in Low-Resource Settings: A Systematic Review and Meta-Analysis

Prost, A., T. Colbourn, N. Seward, K. Azad, A. Coomarasamy, A. Copas, T.A.J. Houweling, E. Fottrell, A. Kuddus, S. Lewycka, C. MacArthur, D. Manandhar, J. Morrison, C. Mwansambo, N. Nair, B. Nambiar, D. Osrin, C. Pagel, T. Phiri, A.M. Pulkki-Brännström, M. Rosato, J. Skordis-Worrall, N. Saville, N.S. More, B. Shrestha, P. Tripathy, A. Wilson, and A. Costello. 2013. *The Lancet* 381(9879): 1736–1746.

<http://www.ncbi.nlm.nih.gov/pubmed/23683640>

**Background:** Maternal and neonatal mortality rates remain high in many low-income and middle-income countries. Different approaches for the improvement of birth outcomes have been used in community-based interventions, with heterogeneous effects on survival. We assessed the effects of women's groups practising participatory learning and action, compared with usual care, on birth outcomes in low-resource settings. **Methods:** We did a systematic review and meta-analysis of randomised controlled trials undertaken in Bangladesh, India, Malawi, and Nepal in which the effects of women's groups practising participatory learning and action were assessed to identify population-level predictors of effect on maternal mortality, neonatal mortality, and stillbirths. We also reviewed the cost effectiveness of the women's group intervention and estimated its potential effect at scale in Countdown countries. **Findings:** Seven trials (119 428 births) met the inclusion criteria. Meta-analyses of all trials showed that exposure to women's groups

was associated with a 37% reduction in maternal mortality (odds ratio 0.63, 95% CI 0.32–0.94), a 23% reduction in neonatal mortality (0.77, 0.65–0.90) (Prost et al. Page 2 Lancet. Author manuscript; available in PMC 2013 October 16. Europe PMC Funders Author Manuscripts Europe PMC Funders Author Manuscripts 0.90), and a 9% non-significant reduction in stillbirths (0.91, 0.79–1.03), with high heterogeneity for maternal ( $I^2=58.8\%$ ,  $p=0.024$ ) and neonatal results ( $I^2=64.7\%$ ,  $p=0.009$ ). In the meta-regression analyses, the proportion of pregnant women in groups was linearly associated with reduction in both maternal and neonatal mortality ( $p=0.026$  and  $p=0.011$ , respectively). A subgroup analysis of the four studies in which at least 30% of pregnant women participated in groups showed a 55% reduction in maternal mortality (0.45, 0.17–0.73) and a 33% reduction in neonatal mortality (0.67, 0.59–0.74). The intervention was cost effective by WHO standards and could save an estimated 283 000 newborn infants and 41 100 mothers per year if implemented in rural areas of 74 Countdown countries. **Interpretation:** With the participation of at least a third of pregnant women and adequate population coverage, women's groups practising participatory learning and action are a cost effective strategy to improve maternal and neonatal survival in low-resource settings.

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## **“Double Burden of Malnutrition” Reexamining the Coexistence of Undernutrition and Overweight Among Women in India**

**Kulkarni, V. S., V.S. Kulkarni, and R. Gaiha. 2016. *International Journal of Health Services*.**

<http://joh.sagepub.com/content/early/2016/09/15/0020731416664666.abstract>

India has one of the highest rates of underweight burden, with signs of rising obesity. Coexistence of underweight and overweight persons is symptomatic of the “double burden of malnutrition.” The present study throws new light on the “double burden of malnutrition” among Indian women in the age group 22–49 years. The analysis is based on a nationally representative household survey, India Human Development Survey. Our results indicate the continuing pattern of socioeconomic segregation of underweight and overweight/obese women, with a large concentration of underweight women among the low socioeconomic group and of overweight/obese women among the high socioeconomic group. Further, relative food prices of food items like cereals and vegetables are significantly associated with the risk of being underweight and overweight/obese. Additionally, we find notable rural/urban differences. The relationship between socioeconomic factors and the probability of being underweight and overweight/obese is stronger in urban than in rural areas. Given that the health implications of being underweight and overweight/obese are equally grim, provision of healthy food items at affordable prices and implementation of programs for preventive and curative care of plausible illnesses related to underweight and overweight/obese are imperative.

## NON-PEER REVIEWED

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### **WHO Recommendations on Antenatal Care for a Positive Pregnancy Experience**

**WHO (World Health Organization). 2016**

<http://apps.who.int/iris/bitstream/10665/250796/1/9789241549912-eng.pdf?ua=1>

In 2016, at the start of the Sustainable Development Goals (SDGs) era, pregnancy-related preventable morbidity and mortality remains unacceptably high. While substantial progress has been made, countries need to consolidate and increase these advances, and to expand their agendas to go beyond survival, with a view to maximizing the health and potential of their populations. The World Health Organization (WHO) envisions a world where every pregnant woman and newborn receives quality care throughout the pregnancy, childbirth and the postnatal period. Within the continuum of reproductive health care, antenatal care (ANC) provides a platform for important health-care functions, including health promotion, screening and diagnosis, and disease prevention. It has been established that by implementing timely and appropriate evidence-based practices, ANC can save lives. Crucially, ANC also provides the opportunity to communicate with and support women, families and communities at a critical time in the course of a woman's life. The process of developing these recommendations on ANC has highlighted the importance of providing effective communication about physiological, biomedical, behavioural and sociocultural issues, and effective support, including social, cultural, emotional and psychological support, to pregnant women in a respectful way. These communication and support functions of ANC are key, not only to saving lives, but to improving lives, health-care utilization and quality of care. Women's positive experiences during ANC and childbirth can create the foundations for healthy motherhood. This is a comprehensive WHO guideline on routine ANC for pregnant women and adolescent girls. The aim is for these recommendations to complement existing WHO guidelines on the management of specific pregnancy related complications. The guidance is intended to reflect and respond to the complex nature of the issues surrounding the practice and delivery of ANC, and to prioritize person-centred health and well-being – not only the prevention of death and morbidity – in accordance with a human rights-based approach. The scope of this guideline was informed by a systematic review of women's views, which shows that women want a positive pregnancy experience from ANC. A positive pregnancy experience is defined as maintaining physical and sociocultural normality, maintaining a healthy pregnancy for mother and baby (including preventing or treating risks, illness and death), having an effective transition to positive labour and birth, and achieving positive motherhood (including maternal self-esteem, competence and autonomy).

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### **Nutrition: How Will the Next 'Decade of Nutrition' Be Different from The Past One?**

**Bhutta, Z.A. 2016. *Nature Reviews Gastroenterology & Hepatology* 13: 441–442.**

<http://www.nature.com/nrgastro/journal/v13/n8/full/nrgastro.2016.102.html>

The global burden of malnutrition (undernutrition, micronutrient deficiencies or obesity) is considerable and associated with risk of excess mortality and long-term adverse outcomes. Concerted action to achieve agreed global nutrition targets is proposed for the next decade, which must be coupled with the political will to address the root causes of malnutrition and implement evidence-based strategies.

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## Does the ICDS Improve the Quantity and Quality of Children's Diets? Some Evidence from Rural Bihar

**Mittal, N., and J.V. Meenakshi. 2016. Working Paper No. 257. New Delhi: Centre for Development Economics.**

<http://www.cdedse.org/pdf/work257.pdf>

This study analyses the impact of supplementary nutrition provided through ICDS on intakes of calories, proteins, vitamin A and iron among young children in Bihar. The analysis is based on 24-hour dietary recall data collected for 320 children in four villages in rural Bihar in 2013, and uses matching methods to estimate impact. The results suggest that cooked meals, provided to children in the age-group 3-6 years, increase net intake of food by approximately 135 calories (about a third of the intended transfer), 6 grams of proteins (two-fifths of the intended transfer) and 2 grams of iron (half of the intended transfer), but there is no change in the net intake of vitamin A. There is also no evidence of any reduction in food allocated to these children at home. For children below 3 years of age, who receive take-home rations, there are no improvements in intakes of calories or any nutrients. Since the income elasticity of demand for calories and nutrients have been estimated to be of small magnitude, ex-ante there is no reason to expect the implicit ICDS income transfer to lead to substantial changes in intakes. That nonetheless, a significant positive effect is observed for children above 3 years suggests that parents view cooked meals differently than take-home rations, the latter being easier to allocate to other household members than cooked meals provided at the ICDS centre.

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## Malnutrition: Future Challenges and Lessons from the Past

**Alderman, H., and D.E. Sahn. 2016. *Malnutrition: Future Challenges and Lessons from the Past*. Cornell Food and Nutrition Policy Program Working Paper. New York: Cornell University.**

<http://www.cfnpp.cornell.edu/images/wp254.pdf>

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## National Food Security Act 2013: Moving from Exclusion to Inclusion

**Sinha, D., and B. Patnaik. 2016. *Oxfam India Policy Brief No.18*. New Delhi: Oxfam India.**

<http://policy-practice.oxfam.org.uk/publications/national-food-security-act-2013-moving-from-exclusion-to-inclusion-608479>

India has one of the lowest per capita daily supply of calories, protein and fat, according to the Organisation for Economic Co-operation and Development (OECD). One of the biggest contradictions of contemporary India is the unconscionably high rates of child malnutrition and the largest number of hungry people in the world, even as it emerged as one of the fastest growing economies. India has been a net exporter of foodgrains for more than a decade now and the government warehouses stock foodgrains at levels much higher than the required buffer norms. India has malnutrition levels almost double the levels of many countries in Africa. This problem needs a multi-sectoral approach including diet diversification, women's empowerment, education, health, safe drinking water, sanitation, and hygiene. The National Food Security Act (NFSA), 2013, which covers two thirds of the Indian population with subsidised food and universal entitlements for women and children, is a tentative first step towards solving this problem. There is a need for speedy implementation along with steps to avoid exclusion of poor households, and setting up an independent grievance redressal mechanism.

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## Impact of Caregiver Incentives on Child Health: Evidence from an Experiment with Anganwadi Workers in India

**Masters, W., and P. Singh. 2016. Discussion Paper No. 818. Boston: Tufts University.**

<http://econpapers.repec.org/paper/tuftuftec/0818.htm>

This paper provides evidence for the effectiveness of performance pay among government caregivers to improve child health in India. In a controlled study of 160 daycare centers serving over 4000 children, we randomly assign workers to receive performance pay or fixed bonuses of roughly similar expected value, and test for differences in malnutrition among the children in their care. We find that performance pay reduces the prevalence of weight-for-age malnutrition by about 5 percentage points in 3 months. This effect is sustained in the medium term with a renewal of incentives but the differential growth rate fades away once the scheme is discontinued. Fixed bonuses lead to smaller-sized effects and only in the medium-term. Both treatments appear to improve worker effort and communication with mothers, who in turn feed a more calorific diet to their children at home.

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## A Case Study of Collaboration: Cyclical Negotiations Between Theory and Practice for Building Knowledge in Nutrition, With The Intent to Action

**Prasad, V. 2016.**

<http://cdp.res.in/wp-content/uploads/2016/06/A-case-study-of-Collaboration.pdf>

While malnutrition amongst children and women has been the subject of much concern in India, the issue has remained largely in the domain of 'technical medical expertise' rather than in the lives of people and communities who suffer it. Though this domination has been contested, few processes have emerged in actual practice, that could have the privilege of sustained engagement and action with communities; keeping in mind that community processes need to be given primacy, and simultaneously, technical issues need to be communicated, discussed and negotiated in a manner allowing for community ownership and action. A collaboration between a public health resource organisation - Public Health Resource Network (PHRN) and Professional Assistance for Development Action (PRADAN) has piloted an innovative process to work with village women to communicate theoretical precepts of nutrition and malnutrition as a starting point for a cyclical process of co-producing knowledge that is relevant to the engaged women, is owned by them and can facilitate action for change. The intention was to build upon existing (indigenous) knowledge with inputs from standard western/scientific systems, to achieve a practice that is owned by the communities concerned.

## RESOURCES

### Agriculture-Nutrition Community of Practice (Ag2Nut CoP)

The Agriculture-Nutrition Community of Practice (Ag2Nut CoP) is one of the discussion groups under the United Nations Systems Standing Committee on Nutrition. The Ag2Nut CoP is a global network of professionals working on issues pertaining to the intersection of agriculture and nutrition. The group is informal, and facilitates the sharing of information as well as networking among participants. The need for this community arose in June 2010 when several people discovered that they were writing policy briefs for their respective institutions on how to link agriculture and nutrition. The community emerged to facilitate communication and discussion, so that members could communicate with a common set of responses to the degree possible and appropriate, to the broader development community.

The UNSCN has offered to provide a space on the UNSCN website for interested individuals to come together and join the Nutrition-Agriculture CoP.

**Read and join:** <https://www.unscn.org/en/forums/discussion-groups>

### Civil Society Academy

The Civil Society Academy, an initiative of Welthungerhilfe, announces 4 short term training workshops on – “Leadership and Management Series” – a) leadership skills, b) team management, c) conflict management and d) communication skills for leaders. Each of these are for 2 days and will be held in New Delhi. The dates are as follows:

Date	Topic	Venue
21-22 Feb 2017	Leadership Skills	New Delhi
23-24 Feb 2017	Team Management and Leadership	New Delhi
27-28 Feb 2017	Conflict Management	New Delhi
1-2 March 2017	Communication Skills for Leaders	New Delhi

**For details, contact:** [aldo@civilsocietyacademy.org](mailto:aldo@civilsocietyacademy.org)

## UPCOMING EVENTS

### IUNS 21st International Congress of Nutrition (ICN)

**Where:** Buenos Aires, Argentina

**When:** October 15–20, 2017

**For more information:** <https://www.nutritionociety.org/events/iuns-21st-international-congress-nutrition-icn>

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 4-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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