

EDITOR'S NOTE

This first issue of the Abstract Digest in 2014 features a number of interesting reviews and articles, which include the following:

- ▶ A special open-access issue of *Annals of the New York Academy of Sciences* on integrating nutrition and early childhood development interventions illustrating the need for learning about effective implementation models for integrated nutrition and child development, their cost, and impact.
- ▶ Two articles from *Advances in Nutrition* discussing 1) how nutrition research can become more useful in informing global nutrition guidelines (Stoltzfus 2014) and 2) arguing for the need to develop implementation science to enable stronger delivery of adequate nutrition to those in need (Habicht and Pelto 2014).
- ▶ One study identifying gaps in South Asian postgraduate nutrition programs to build capacity to address the current public health nutrition challenges of the population (Khandelwal et al. 2014).
- ▶ Two review articles, one providing an overview of the evidence-base for nutritional deficits in early life and greater risk for non-communicable diseases in later life (Langley-Evans 2014) and the other recommending investments in improving maternal autonomy to improve child nutritional status (Carlson et al. 2014).
- ▶ Several articles focusing specifically on malnutrition in India, including on determinants of anemia (Anand 2013), vitamin A programming in India and its reach (Aguayo 2014), and management of severe acute malnutrition (Singh et al. 2014; Kumar et al. 2013).

Enjoy reading!

Warm regards,

Dr. Rasmi Avula

PEER-REVIEWED LITERATURE

Special Open Access Issue of *Annals of the New York Academy of Sciences*:

Every Child's Potential: Integrating Nutrition and Early Childhood Development Interventions

EDITED BY: BLACK, MM AND DEWEY, KG.

This special open issue is a collection of papers presented by the Sackler Institute for Nutrition Science at the New York Academy of Sciences on examining how to optimize and integrate two highly complementary fields: nutrition and child development. The series illustrates the need for learning about effective implementation models for integrated nutrition and child development, their cost, and impact. Following is a list of select articles:

Promoting Equity Through Integrated Early Child Development and Nutrition Interventions

Black, MM, and Dewey, KG. 1-10. DOI: 10.1111/nyas.12351

<http://onlinelibrary.wiley.com/doi/10.1111/nyas.12351/pdf>

Effects of Integrated Child Development and Nutrition Interventions on Child Development and Nutritional Status

Grantham-McGregor, SM, Fernald, LCH, Kagawa, RMC, and Walker, S. 11-32. DOI: 10.1111/nyas.12284

<http://onlinelibrary.wiley.com/doi/10.1111/nyas.12284/pdf>

Review of Implementation Processes for Integrated Nutrition and Psychosocial Stimulation Interventions

Yousafzai, AK, and Aboud, F. 33-45. DOI: 10.1111/nyas.12323

<http://onlinelibrary.wiley.com/doi/10.1111/nyas.12313/pdf>

Formative Research Methods for Designing Culturally Appropriate, Integrated Child Nutrition and Development Interventions: An Overview

Bentley, ME, Johnson, SL, Wasser, H, Creed-Kanashiro, H, Shroff, M, Fernandez Rao, S, and Cunningham, M. 54-67. DOI: 10.1111/nyas.12290

<http://onlinelibrary.wiley.com/doi/10.1111/nyas.12290/pdf>

Measures and Indicators for Assessing Impact of Interventions Integrating Nutrition, Health, and Early Childhood Development

Frongillo, EA, Tofail, F, Hamadani, JD, Warren, AM, and Mehrin, SF. 68-88. DOI: 10.1111/nyas.12319

<http://onlinelibrary.wiley.com/doi/10.1111/nyas.12319/pdf>

Understanding Care and Feeding Practices: Building Blocks for a Sustainable Intervention in India and Pakistan

Lingam, R, Gupta, P, Zafar, S, Hill, Z, Yousafzai, A, Iyengar, S, Sikander, S, Haq, ZU, Mehta, S, Worre, JS, Rahman, A, and Kirkwood, B. 2014-217. DOI: 10.1111/nyas.12326

<http://onlinelibrary.wiley.com/doi/10.1111/nyas.12326/pdf>

Water, Sanitation, and Hygiene (Wash), Environmental Enteropathy, Nutrition, and Early Child Development: Making the Links

Ngure, FM, Reid, BM, Humphrey, JH, Mbuya, MM, Peltó, G, and Stoltzfus, RJ. 118-128. DOI: 10.1111/nyas.12330

<http://onlinelibrary.wiley.com/doi/10.1111/nyas.12330/pdf>

How Can the Scientific Community Support the Generation of the Evidence Needed to Improve the Quality of Guidelines for Micronutrient Interventions?

Stoltzfus, RJ. *Advances in Nutrition*, 5: 40–45, 2014.

<http://www.ncbi.nlm.nih.gov/pubmed/24425721>

The process used by the WHO to generate nutrition recommendations relies on high-quality research evidence, and this makes new demands on the research questions that nutrition scientists address. As a researcher involved in WHO nutrition guidelines development, my objective is to suggest ways in which our research can adapt to meet these demands. Randomized controlled trials and systematic reviews generate the highest quality of evidence to support strong recommendations, yet even these methods leave controversies in which judgments must be made. Using examples from recent research and guidelines, 4 issues are highlighted that illustrate ways in which nutrition research can adapt to become more useful and informative to global nutrition guidelines. These issues include embedding mechanistic research within trials, explicit choice of design along the efficacy or effectiveness spectrum, anticipation of heterogeneity of effects, and the need for research on consumer or community values and preferences.

From Biological to Program Efficacy: Promoting Dialogue Among the Research, Policy, and Program Communities

Habicht, JP, and Pelto, GH. *Advances in Nutrition*, 5: 27–34, 2014.

<http://advances.nutrition.org/content/5/1/27.short>

The biological efficacy of nutritional supplements to complement usual diets in poor populations is well established. This knowledge rests on decades of methodologic research development and, more recently, on codification of methods to compile and interpret results across studies. The challenge now is to develop implementation (delivery) science knowledge and achieve a similar consensus on efficacy criteria for the delivery of these nutrients by public health and other organizations. This requires analysis of the major policy instruments for delivery and well-designed program delivery studies that examine the flow of a nutrient through a program impact pathway. This article discusses the differences between biological and program efficacy, and why elucidating the fidelity of delivery along the program impact pathways is essential for implementing a program efficacy trial and for assessing its internal and external validity. Research on program efficacy is expanding, but there is a lack of adequate frameworks to facilitate the process of harmonizing concepts and vocabulary, which is essential for communication among scientists, policy planners, and program implementers. There is an urgent need to elaborate these frameworks at national and program levels not only for program efficacy studies but also for the broader research agenda to support and improve the science of delivering adequate nutrition to those who need it most.

Postgraduate Education in Nutrition in South Asia: A Huge Mismatch Between Investments and Needs

Khandelwal, S, Paul, T, Haddad, L, Bhalla, S, Gillespie, S, and Laxminarayan, R. *Bio Medical Education*, 14:3, 2014.

<http://www.biomedcentral.com/content/pdf/1472-6920-14-3.pdf>

Background: Despite decades of nutrition advocacy and programming, the nutrition situation in South Asian countries is alarming. We assume that modern training in nutrition at the post graduate level is an important contributor to building the capacity of individuals to think and act effectively when combating

undernutrition. In this context, this paper presents a regional situation analysis of master's level academic initiatives in nutrition with a special focus on the type of programme we think is most likely to be helpful in addressing undernutrition at the population level: Public Health Nutrition (PHN). **Methods:** This situational analysis of Masters in nutrition across South Asian countries viz. India, Pakistan, Bangladesh, Sri Lanka, Afghanistan, Maldives, Nepal, Bhutan was conducted using an intensive and systematic Internet search. Further, detailed information was extracted from the individual institute websites and library visits. **Results:** Of the 131 master's degree programmes we identified one that was in PHN while another 15 had modules in PHN. Most of these universities and institutions were found in India with a few in Bangladesh and Sri Lanka. In the rest of the countries, neither nutrition nor PHN emerged as an academic discipline at the master's level. In terms of eligibility Indian and Sri Lankan programmes were most inclusive, with the remaining countries restricting eligibility to those with health qualifications. On modules, no country had any on nutrition policy or on nutrition's interactions with agriculture, social protection, water and sanitation or women's empowerment. **Conclusion:** If a strong focus on public health nutrition is key to reducing undernutrition, then the poor availability of such courses in the region is cause for concern. Nutrition master's courses in general focus too little on the kinds of strategies highlighted in the recent Lancet series on nutrition. Governments seeking to accelerate declines in undernutrition should incentivize the delivery of postgraduate programmes in nutrition and Public Health Nutrition (PHN) that reflect the modern consensus on priority actions. In the absence of PHN type programmes, the competence to scale up nutrition capacity is likely to be impaired and the human potential of millions of infants will continue to be squandered.

Nutrition in Early Life and the Programming of Adult Disease: A Review

Langley-Evans, SC. *Journal of Human Nutrition and Dietetics*, Jan 31, 2014. doi: 10.1111/jhn.12212. [Epub ahead of print]

<http://onlinelibrary.wiley.com/doi/10.1111/jhn.12212/abstract>

Foetal development and infancy are life stages that are characterised by rapid growth, development and maturation of organs and systems. Variation in the quality or quantity of nutrients consumed by mothers during pregnancy, or infants during the first year of life, can exert permanent and powerful effects upon developing tissues. These effects are termed 'programming' and represent an important risk factor for noncommunicable diseases of adulthood, including the metabolic syndrome and coronary heart disease. This narrative review provides an overview of the evidence-base showing that indicators of nutritional deficit in pregnancy are associated with a greater risk of type-2 diabetes and cardiovascular mortality. There is also a limited evidence-base that suggests some relationship between breastfeeding and the timing and type of foods used in weaning, and disease in later life. Many of the associations reported between indicators of early growth and adult disease appear to interact with specific genotypes. This supports the idea that programming is one of several cumulative influences upon health and disease acting across the lifespan. Experimental studies have provided important clues to the mechanisms that link nutritional challenges in early life to disease in adulthood. It is suggested that nutritional programming is a product of the altered expression of genes that regulate the cell cycle, resulting in effective remodelling of tissue structure and functionality. The observation that traits programmed by nutritional exposures in foetal life can be transmitted to further generations adds weight to the argument that heritable epigenetic modifications play a critical role in nutritional programming.

Associations Between Women's Autonomy and Child Nutritional Status: A Review of the Literature

Carlson, GJ, Kordas, K, and Murray-Kolb, LE. *Maternal and Child Nutrition*, 2014. doi: 10.1111/mcn.12113

<http://onlinelibrary.wiley.com/doi/10.1111/mcn.12113/abstract>

Around the world, many women continue to experience low levels of autonomy. Recent literature has reported that the health consequences of low maternal autonomy extend beyond mothers and translate into health consequences for their children, and may be an important causal factor in child malnutrition. This review summarises the current knowledge of the relationship between maternal autonomy and children's nutritional status (defined as any measure that reflects the nutritional state of the body, such as birthweight or anthropometric scores) and child-feeding practices. The review also includes both discussion of the limitations found in the literature and directions for future research. A systematic review of the literature was conducted. Results of the studies included in the review strongly suggest that raising maternal autonomy is an important goal for improving children's nutritional status, yet gaps in the current knowledge exist, further confounded by issues with how autonomy is measured and limitations of cross-cultural comparability. A thorough understanding of the consequences of restricting women's autonomy will inform programmes and policy worldwide, and speed progress towards both empowering women and alleviating the global burden of child malnutrition.

Livestock Production, Animal Source Food Intake, and Young Child Growth: The Role of Gender for Ensuring Nutrition Impacts

Jin, M, Iannotti, LL. *Social Science & Medicine*, 105: 16-21, 2014.

<http://www.sciencedirect.com/science/article/pii/S0277953614000033>

Animal source foods (ASF) provide critical micronutrients in highly bioavailable forms, with the potential to efficiently address undernutrition among young children living in developing countries. There is limited evidence for how livestock ownership might increase ASF intake in poor households either through own-consumption or income generation. Along with lack of nutrition knowledge, gender dimensions may affect the pathways leading from livestock ownership to child ASF intake and ultimately to young child growth. Using data from a large-scale impact evaluation conducted in Kenya, this study tested the hypothesis that co-owned/female-owned livestock would be associated with improved child growth, mediated by increases in ASF consumption. Data were collected from September 2010 to January 2011 from households in six provinces in Kenya on a broad range of agricultural, economic, social, health and nutrition factors. Children ages 6–60 months were included in this analysis ($n = 183$). In this sample, co-owned/female-owned livestock was valued at 18,861 Kenyan shillings in contrast with male-owned livestock valued at 66,343 Kenyan shillings. Multivariate linear regression models showed a positive association between co-owned/female-owned livestock with child weight-for-age z score (WAZ) after adjusting for caregiver education level, income, child age, and child sex. A mediating effect by child ASF intake was evident, explaining 25% of the relationship of livestock ownership with child WAZ, by Sobel–Goodman test ($p < .05$). A trend towards significance was demonstrated for co-owned/female-owned livestock and height-for-age z score (HAZ), and no effect was apparent for weight-for-height z score (WHZ). The partial mediating effect may be indicative of other factors inherent in co-owned/female-owned livestock such as higher status of females in these households with greater influence over other child care practices promoting growth. Nonetheless, our study suggests targeting females in livestock production programming may better ensure improvements in child nutrition.

The Association of Early Life Supplemental Nutrition with Lean Body Mass and Grip Strength in Adulthood: Evidence from Apcaps

Kulkarni, B, Kuper, H, Radhakrishna, KV, Hills, AP, Byrne, NM, Taylor, A, Sullivan, R, Bowen, L, Wells, JC, Ben-Shlomo, Y, Davey Smith, G, Ebrahim, S, and Kinra, S. *American Journal of Epidemiology*, 179(6): 700-709, 2014. doi: 10.1093/aje/kwt332.

<http://aje.oxfordjournals.org/content/179/6/700.long>

In the present study, we examined the associations of early nutrition with adult lean body mass (LBM) and muscle strength in a birth cohort that was established to assess the long-term impact of a nutrition program. Participants (n = 1,446, 32% female) were born near Hyderabad, India, in 29 villages from 1987 to 1990, during which time only intervention villages (n = 15) had a government program that offered balanced protein-calorie supplementation to pregnant women and children. Participants' LBM and appendicular skeletal muscle mass were measured using dual energy x-ray absorptiometry; grip strength and information on lifestyle indicators, including diet and physical activity level, were also obtained. Ages (mean = 20.3 years) and body mass indexes (weight (kg)/height (m)²; mean = 19.5) of participants in 2 groups were similar. Current dietary energy intake was higher in the intervention group. Unadjusted LBM and grip strength were similar in 2 groups. After adjustment for potential confounders, the intervention group had lower LBM ($\beta = -0.75$; $P = 0.03$), appendicular skeletal muscle mass, and grip strength than did controls, but these differences were small in magnitude (<0.1 standard deviation). Multivariable regression analyses showed that current socioeconomic position, energy intake, and physical activity level had a positive association with adult LBM and muscle strength. This study could not detect a "programming" effect of early nutrition supplementation on adult LBM and muscle strength.

Issues in Prevention of Iron Deficiency Anemia in India

Anand, T, Rahi, M, Sharma, P, and Ingle, GK. *Nutrition*, 2014. doi: 10.1016/j.nut.2013.11.022.

<http://www.sciencedirect.com/science/article/pii/S0899900713005509>

Iron deficiency anemia (IDA) continues to be major public health problem in India. It is estimated that about 20% of maternal deaths are directly related to anemia and another 50% of maternal deaths are associated with it. The question therefore, remains that despite being the first country to launch National Nutritional Anemia Prophylaxis Programme in 1970, the problem of IDA remains widespread in India. Evidently economic implications of IDA are also massive. The issues in control of IDA in India are multiple. Inadequate dietary intake of iron, defective iron absorption, increased iron requirement due to repeated pregnancy and lactation, poor iron reserves at birth, timing of umbilical cord clamping, timing and type of complementary food introduction, frequency of infections in children and excessive physiological blood loss during adolescence and pregnancy are some of the causes responsible for high prevalence of anemia in India. Besides, there are other multiple programmatic and organizational issues. The current paper, therefore, is an attempt to discuss the current burden of anemia in the country, its epidemiology and various issues regarding prevention and control of anemia and is offering some innovative approaches to deal this with major health problem.

Iron Status of Pregnant Indian Women from an Area of Active Iron Supplementation

Menon, KC, Ferguson, EL, Thomson, CD, Gray, AR, Zodpey, S, Saraf, A, Das, PK, Pandav, CS, and Skeaff, SA. *Nutrition*, 30(3): 291-2916, 2014. doi: 10.1016/j.nut.2013.08.015

<http://www.nutritionjrn.com/article/S0899-9007%2813%2900393-6/abstract>

Objective: The aim of this study was to investigate the iron status of pregnant tribal women from Ramtek, Nagpur, Maharashtra, India using a combination of indices. **Methods:** A community-based observational study was conducted to assess iron status using a convenience sample of pregnant Indian tribal women from Ramtek. Pregnant women were recruited at 13 to 22 wk gestation (first visit; n = 211) and followed to 29 to 42 wk gestation (second visit; n = 177) of pregnancy. Sociodemographic and anthropometric data; iron supplement intake; and blood samples for estimating hemoglobin (Hb), serum ferritin (SF), soluble transferrin receptor (sTfR), and C-reactive protein (CRP) were obtained. **Results:** The mean (SD) Hb concentration at recruitment was 106 (15) g/L and 106 (14) g/L at the second visit; 41% of the women at recruitment and 55% at second visit were anemic (14% higher, $P < 0.001$). No women at recruitment and 3.7% at second visit had SF concentration < 15 ng/mL; and 3.3% at recruitment and 3.9% at the second visit had sTfR > 4.4 ng/mL (0.6% higher, $P = 0.179$). Almost 62% and 71% of pregnant women used iron supplements at both visits, respectively. Iron supplement intake > 7 d in the preceding month improved the Hb concentration by 3.23 g/L and reduced sTfR concentration by 13%; women who were breastfeeding at the time of recruitment had 11% higher SF concentration. **Conclusions:** The iron indices suggest that pregnant tribal women of central India, although anemic, had good iron status. Use of iron supplements > 7 d in the preceding month improved iron status; however, non-iron-deficiency anemia persisted in this group.

Association Between Farming and Chronic Energy Deficiency in Rural South India

Subasinghe, AK, Walker, KZ, Evans, RG, Srikanth, V, Arabshahi, S, Kartik, K, Kalyanram, K, and Thrift, AG. *PLoS ONE* 9(1): e87423. 2014. doi: 10.1371/journal.pone.0087423

<http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0087423>

Objective: To examine factors associated with chronic energy deficiency (CED) and anaemia in disadvantaged Indian adults who are mostly involved in subsistence farming. **Design:** A cross-sectional study in which we collected information on socio-demographic factors, physical activity, anthropometry, blood haemoglobin concentration, and daily household food intake. These data were used to calculate body mass index (BMI), basal metabolic rate (BMR), daily energy expenditure, and energy and nutrient intake. Multivariable backward stepwise logistic regression was used to assess socioeconomic and lifestyle factors associated with CED (defined as BMI < 18 kg/m²) and anaemia. **Setting:** The study was conducted in 12 villages, in the Rishi Valley, Andhra Pradesh, India. **Subjects:** Individuals aged 18 years and above, residing in the 12 villages, were eligible to participate. **Results:** Data were available for 1178 individuals (45% male, median age 36 years (inter quartile range (IQR) 27–50)). The prevalence of CED (38%) and anaemia (25%) was high. Farming was associated with CED in women (2.20, 95% CI: 1.39–3.49) and men (1.71, 95% CI: (1.06–2.74)). Low income was also significantly associated with CED, while not completing high school was positively associated with anaemia. Median iron intake was high: 35.7 mg/day (IQR 26–46) in women and 43.4 mg/day (IQR 34–55) in men. **Conclusions:** Farming is an important risk factor associated with CED in this rural Indian population and low dietary iron is not the main cause of anaemia. Better farming practice may help to reduce CED in this population.

India's Vitamin A Supplementation Programme is Reaching the Most Vulnerable Districts but Not All Vulnerable Children. New Evidence from the Seven States with the Highest Burden of Mortality Among Under-5s

Aguayo, VM, Bhattacharjee, S, Bhawani, L, and Badgaiyan, N. *Public Health Nutrition*, 1-8, 2014.

<http://journals.cambridge.org/action/displayAbstract?fromPage=online&aid=9138286>

Objective: To characterize the coverage of India's national vitamin A supplementation (VAS) programme and document its performance in reaching children in the districts with higher concentration of poor households (2006-2011). **Design:** Analysis of VAS programme coverage data collated and collected using standardized bottom-up procedures, data from India's Office of the Registrar General and Census Commissioner, and data from India's District Level Household Survey to compute exposure (poverty) and outcome (full VAS coverage) variables. **Setting:** Seven Indian states with the highest burden of mortality in children (74 % of all deaths among under-5s in the country in 2006). **Subjects:** Children 6-59 months old. **Results:** Between 2006 and 2011, the mean full VAS coverage (two VAS doses per child per year) in these seven states increased from 44.7 % to 67.3 % while the number of districts with high (≥ 80 %) full VAS coverage increased from twenty-four (9.4 %) to 131 (51.4 %). The highest increases in full VAS coverage figures were recorded in the districts with the highest concentration of poor households. The estimated number of poor children (i.e. children living in households classified as poor) who did not receive two VAS doses annually decreased from 8.5 million in 2006 to 5.1 million in 2011 (40.3 % decrease); 2.5 million (49.1 %) of these children lived in the districts with the lowest proportion of poor households. **Conclusions:** Despite significant improvements in VAS, a large number of Indian children are not benefitting yet from this life-protecting intervention, particularly among those who are potentially the most vulnerable. Future programme action needs to give priority to sub-district level units—blocks and villages—with higher concentrations of poor households.

Management of Children with Severe Acute Malnutrition: Experience of Nutrition Rehabilitation Centers in Uttar Pradesh, India

Singh, K, Badgaiyan, N, Ranjan, A, Dixit, OH, Kaushik, A, Kushwahaand, KP, and Aguayo, VM. *Indian Paediatrics*, 2013.

<http://www.indianpediatrics.net/Epub05092013/RP-00686.pdf>

Objective: To assess the effectiveness of facility-based care for children with severe acute malnutrition (SAM) in Nutrition Rehabilitation Centers (NRC). **Design:** Review of data. **Setting:** 12 NRCs in Uttar Pradesh, India. **Participants:** Children admitted to NRCs (Jan 1, 2010–Dec 31, 2011). **Intervention:** Detection and treatment of SAM with locally adapted protocols. **Outcomes:** Survival, default, discharge, and recovery rates. **Results:** 54.6% of the total 1,229 children admitted were boys, 81.6% were in the age group 6-23 months old, 86% belonged to scheduled tribes, scheduled castes, or other backward castes, and 42% had edema or medical complications. Of the 1,181 program exits, 14 (1.2%) children died, 657 (47.2%) children defaulted, and 610 (51.7%) children were discharged. The average (SD) weight gain was 12.1 (7.3) g/kg body weight/day and the average (SD) length of stay was 13.2 (5.6) days. 206 (46.8%) children were discharged after recovery (weight gain ≥ 15 %) while 324 (53.2%) were discharged, non-recovered (weight gain < 15 %) **Conclusions:** NRCs provide life-saving care for children with SAM; however, the protocols and therapeutic foods currently used need to be improved to ensure the full recovery of all children admitted.

How Effective is the Integration of Facility and Community-Based Management of Severe Acute Malnutrition in India?

Kumar, B, Shrivastava, J, Satyanarayana, S, Reid, AJ, Ali, E, Zodpey, S, and Agnani, M. *International Union Against Tuberculosis and Lung Disease Health Solution for the Poor*, 3(4), 2013.

<http://www.ingentaconnect.com/content/iuatld/pha/2013/00000003/00000004/art00003>

Setting: All children admitted to two nutritional rehabilitation centres (NRCs) during 2011–2012 in Madhya Pradesh, India. **Objective:** To determine 1) adherence to in-patient care and follow-up visits, 2) attainment and maintenance of target weight gain, and 3) association with the children's demographic characteristics. **Design:** A retrospective record review. The 74-day programme included 14 days of in-patient care, with subsequent home-based care and four follow-up visits to the NRC at 15-day intervals. The first three visits were part of the treatment, while the fourth was for assessment of sustained weight gain. **Results:** Of the 1027 children admitted, 900 (88%) completed in-patient care. Of these, 685 (76%) attended the first three follow-up visits, 482 (70%) of whom gained >15% of their admission weight. Of these, 409 (85%) completed four visits, 314 (77%) of whom were able to sustain their weight gain. Those unable to gain >15% weight by the third visit had a significantly lower proportion of sustained weight gain at the fourth visit. Children aged ≥6 months had significantly higher odds (OR 4.5, 95%CI 3.1–6.2, $P < 0.05$) of completing in-patient care. **Conclusion:** In-patient care combined with community-based follow-up was effective in adherence to follow-up visits; however, there is still room for improvement in attaining and sustaining the target weight.

Are Children in West Bengal Shorter than Children in Bangladesh?

Ghosh, A, Gupta, A, and Spears, D. *Economic & Political Weekly*, XLIX(8): 21-24, 2014.

http://www.epw.in/system/files/CM_XLIX_8_220214_Arabinda_Ghosh_0.pdf

Children in West Bengal and Bangladesh are presumed to share the same distribution of genetic height potential. In West Bengal they are richer, on average, and are therefore slightly taller. However, when wealth is held constant, children in Bangladesh are taller. This gap can be fully accounted for by differences in open defecation, and especially by open defecation in combination with differences in women's status and maternal nutrition.

NON PEER-REVIEWED LITERATURE

The Global Landscape of Poverty, Food Insecurity, and Malnutrition; and Implications for Agricultural Development Strategies

Headey, D. *International Institute of Food Policy and Research, Discussion Paper*, 01303, 2013.

<http://www.ifpri.org/sites/default/files/publications/ifpridp01303.pdf>

For many years poverty reduction was the overarching welfare objective of a wide range of development institutions and programs, particularly in the context of agricultural development. Yet in recent years the development community has increasingly set for itself more specific welfare objectives by distinguishing between monetary poverty, food security, nutrition and, most recently, resilience. This paper first outlines a basic framework for thinking about the relationships between these different concepts, and then explores the empirical relationships among different indicators of these concepts, and some of their potential

determinants. The empirical analysis highlights several important stylized facts. First, key indicators of these three dimensions of welfare suggest strong correlations among the subset of chronic welfare indicators but much weaker relationships between chronic and acute measures of welfare. Put another way, many countries are chronically poor, food insecure or malnourished, but a much smaller set of countries suffer from acute ill-being. For example, countries in the Sahel, the Horn of Africa and South Asia suffer disproportionately from high rates of child and maternal wasting, and a relatively small subset of developing countries is highly prone to natural disasters. Conceivably these acutely vulnerable countries require quite different development strategies. Second, gross domestic product per capita, agricultural productivity, literacy rates, fertility rates, and health burdens all share fairly robust relationships with poverty, food insecurity, and malnutrition indicators, as expected. But somewhat novel is a strong relationship between a simple indicator of dietary diversity and a wide range of both chronic and acute welfare indicators. This perhaps suggests that dietary diversity is a relevant intermediate welfare indicator of particular relevance for agricultural development initiatives.

Poverty-Hunger Divergence in India

Basu, D, and Das, D. *Economic & Political Weekly*, vol xliX (2), 2014.

<http://www.epw.in/commentary/poverty-hunger-divergence-india.html>

The usual explanations for the divergence between calorie intake and consumption expenditure in India ignore the enormous squeeze on food budgets arising from dispossession (leading to loss of access to common property resources), rising migration (involving a loss of access to non-market food items) and the forced turn to the private sector for social sector services that are more expensive than public sector provision. It is the resulting squeeze on food budgets that has led to calorie intake declining even as per capita consumption expenditure has risen.

Sanitation and Externalities Evidence from Early Childhood Health in Rural India

Andres, LA, Briceño, B, Chase, C, and Echenique, JA. *Policy Research Working Paper*, 6737. The World Bank, 2014.

http://www-wds.worldbank.org/external/default/WDSCContentServer/WDSP/IB/2014/01/06/000158349_20140106091805/Rendered/PDF/WPS6737.pdf

This paper estimates two sources of benefits related to sanitation infrastructure access on early childhood health: a direct benefit a household receives when moving from open to fixed-point defecation or from unimproved sanitation to improved sanitation, and an external benefit (externality) produced by the neighborhood's access to sanitation infrastructure. The paper uses a sample of children under 48 months in rural areas of India from the Third Round of District Level Household Survey 2007–08 and finds evidence of positive and significant direct benefits and concave positive external effects for both improved sanitation and fixed-point defecation. There is a 47 percent reduction in diarrhea prevalence between children living in a household without access to improved sanitation in a village without coverage of improved sanitation and children living in a household with access to improved sanitation in a village with complete coverage. One-fourth of this benefit is due to the direct benefit leaving the rest to external gains. Finally, all the benefits from eliminating open defecation come from improved sanitation and not other sanitation solutions.

Towards Integrated Management of Malnutrition: NCPCR Interventions Aug 2012–Oct 2013

National Commission for Protection of Child Rights, 2013.

http://www.ncpcr.gov.in/reports/Report_Towards%20Integrated%20Management%20of%20Malnutrition%20_IMM_%2017.10.13FINAL.pdf

This report is based upon the work of the Commission on these issues (2012–2013), which has entailed detailed field observations, case-by-case investigations of deaths due to malnutrition, programmatic analysis, and policy and legal analysis. These processes have resulted in specific recommendations to Centre, States and Districts with a view to monitoring and improving services for children with malnutrition.

UPCOMING EVENTS

Workshop I: Qualitative Research Methods in Health & Medical Research, 8th Batch.

Introduction: Theoretical basis, nature and scope of QRMs, Scope of QR in medical and public health research, in-depth interviews in qualitative research, observation – out-door exercise, case studies in qualitative research, FGD – method & analysis, FGD – mock session, study designs in qualitative research, ethics in qualitative research, rigour and validity in qualitative research and data reduction, writing qualitative research, and data analysis.

When: May 27–29, 2014

For more information: Visit www.phfi.org for application form and updated news about the course.

Workshop II: Qualitative Data Analysis using Atlas-ti and introduction to NVivo, 2nd batch.

Introduction to data analysis using qualitative data analysis software, introduction to Atlas-ti, hermeneutic unit and primary documents, codes, quotations, comments, memos, families, network diagram, query tools, outputs; introduction to use of NVivo.

When: May 30–31, 2014

For more information: Visit www.phfi.org for application form and updated news about the course.

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

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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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