

VIRTUAL EVENT

Delivering for Nutrition in India

Insights from Implementation Research

September 15-18, 2020



ABSTRACTS BOOKLET

About the conference

Delivering for Nutrition in India: Insights from Implementation Research was the third India-focused nutrition implementation research conference and the first ever virtual conference on nutrition implementation research. Previous in-person conferences were held in 2016 and in 2019.

Background

India's major nutrition efforts - POSHAN Abhiyaan, and initiatives like 'Anemia Mukht Bharat' and 'Eat Right India' – aim to address malnutrition in all its forms in India. These efforts recognize the importance of the first 1000 days of life, the value of scaling up effective interventions, the critical role of improving nutrition-related behaviors for all, and of addressing the underlying social determinants of India's malnutrition challenge through actions in diverse sectors. They also explicitly recognize the importance of political and administrative leadership and of tackling governance and strengthening systems. Crises like pandemics and natural disasters have the potential to stall progress, but not if programs adapt, transform and redeploy with new vigor.

Why implementation research?

The success of these massive efforts across India ultimately depend on improving coverage and quality of interventions and effectively addressing social, economic and other factors that can support families to adopt healthy diets and lifestyles. Implementation research can help identify challenges, test solutions, and inform program scale-up and sustainability. There remain multiple challenges to achieving coverage, continuity, intensity and quality of the nutrition interventions delivered across systems in India. Implementation research can help to identify challenges and solutions.

Process

Through an open call, abstracts were invited on research studies and implementation experiences focused on various aspects of POSHAN Abhiyaan and other platforms supporting actions for nutrition. Selection of abstracts for oral presentation and posters was made through a double-blind review process.

Participants

More than 1800 academics, implementers, development partners, and policymakers from multiple institutes registered on a common platform to share and discuss evidence on strengthening the implementation of maternal and child nutrition initiatives. Average participation in conference sessions varied between 80 – 270.

Co-hosts (In alphabetical order)

1. Accountability Initiative, Centre for Policy Research (AI CPR)
2. Alive & Thrive (A&T)
3. Association of Indian Coalition for Control of Iodine Deficiency Disorders (ICCIDD)
4. Bill and Melinda Gates Foundation (BMGF)
5. Children's Investment Fund Foundation (CIFF)
6. IDinsight
7. Iodine Global Network (IGN)
8. Institute of Economic Growth (IEG)
9. International Food Policy Research Institute (IFPRI)
10. International Initiative for Impact Evaluation (3ie)
11. National Centre of Excellence and Advanced Research on Anemia Control (NCEAR-A)
12. National Centre of Excellence and Advanced Research on Diets (NCEARD)
13. National Institute of Nutrition (NIN)

14. NITI Aayog
15. Nutrition International (NI)
16. Society for Applied Studies (SAS)
17. The India Nutrition Initiative (TINI)
18. United Nations Children's Fund (UNICEF)
19. World Bank (WB)

Presentations

A total of 51 abstract-based oral and 56 poster presentations were programmed under 12 carefully selected themes. Of the 12 thematic sessions, 8 were parallel sessions. The conference program also featured 3 pre-conference workshops, 3 plenary lecture sessions, 3 social hangouts and opening and closing panels with policymakers and research funders. Researchers shared science-based update on tackling various nutrition outcomes, such as stunting, wasting and anemia. Researchers and implementers together examined evidence on multiple causes of malnutrition, including maternal, infant and young child nutrition behaviors and household diets. Findings on implementing a range of interventions such as food supplementation, micronutrient supplements, cash transfers, behavior change, and actions in food systems were also discussed. Four conference sessions focused on key delivery platforms, like the Integrated Child Development Services, health systems and women's group platforms, including on efforts to strengthen those systems using technology, data, and building capacities and infrastructure. Insights were also shared on what it would take to achieve convergence of interventions on every mother-child dyad. And finally, a session showcased merging research on delivery of nutrition services during the COVID-19 pandemic.

About the abstracts booklet

This booklet is a collection of the abstracts of research studies and implementation experiences submitted in response to the open call and selected for oral and poster programming. These are presented verbatim, as they were received, without any edits or modification.

Abstracts were programmed, as oral and poster presentations, under carefully chosen themes. In this booklet they are presented under their relevant themes. Recordings of oral and poster presentations are available online. These can be accessed by clicking on the presentation titles and poster themes. Please visit the event [webpage](#) to explore more.

Contents

Supporting nutrition behaviors in the first 1000 days	9
A community-based convergent approach in ensuring pregnancy weight gain and reduction of anemia; <i>S G Mukherjee, Child In Need Institute</i>	9
Impact of Mother-Baby Friendly Initiative Plus on use of human milk for term and preterm neonates; <i>Ruchika C Sachdeva, PATH</i>	10
Formative study on identifying barriers and enablers of IYCF practices in Rajasthan; <i>Soma Biswas, IPE Global</i>	12
Disparity in knowledge, attitude and practice among mothers of children under 3 years about early initiation of breastfeeding, exclusive breastfeeding and continued breastfeeding in Alwar district, Rajasthan, India	12
Framework for enhancing service delivery in maternal and child nutrition programme in tribal Maharashtra: An inter-state comparative study of scheme implementation model; <i>Suveena Doddalingannavar, IITB UNICEF</i>	13
Missed opportunity of feeding minimally diverse data to babies aged 6-11 months in rural Bihar – demystifying the black hole; <i>Rakesh Giri, CARE India</i>	14
Saving new-born lives by ensuring universal access to human milk through Project SNEHI – an implementation experience; <i>Jayendra Kasar, CHRI; Ruchika Chugh Sachdeva, PATH</i>	15
Relation between optimal IYCF knowledge and its communication during counselling by Accredited Social Health Activists; <i>Sahiba Kohli, Lady Irwin College, University of Delhi</i>	16
What prevents early initiation of breast feeding – A cross sectional study from a public hospital in Gujarat; <i>Vanisha Nambiar, The Maharaja Sayajirao University of Baroda</i> ..	17
Implementation of SBCC to improve dietary diversity of pregnant/lactating women and children in tribal area of Odisha, India; <i>Rajashree Purohit, Catholic Relief Services</i>	18
Improving IYCF practices with special focus on complementary foods and feeding; <i>Swapan Bikash Saha, Child in Need Institute</i>	19
Dietary analysis of early postpartum women during the summer rainy season in Belgaum, Karnataka, India; <i>Zeyuan Wang, University of Michigan</i>	20
Bringing it together for good nutrition: What will convergence take?	21
Frontline perspectives on implementing a convergent framework of action against malnutrition in urban informal settlements in Mumbai; <i>Sudha Ramani, Society for Nutrition, Education and Health Action, Mumbai</i>	21
Close the gap in nutrition; <i>Neha Saigal, IPE Global</i>	21
Food-insecure rural communities have reduced malnutrition through a multisector, rights-based community-driven approach; <i>Sweta Banerjee, Welthungerhilfe</i>	23
Functionality of anganwadi centres in Madhepura District, Bihar; <i>Lisa Bogler, University of Goettingen, Germany</i>	23
Adopt an anganwadi initiative; <i>Deepak Ram, Tata Trusts</i>	24
Systems strengthening: Human resources, infrastructure, and financing	26
Public private partnership for system strengthening (ICDS): A case of Swasth Bharat Prerak Program; <i>Prapti Adhikari, The India Nutrition Initiative</i>	26
Quality assessment of MIYCN service delivery in the ‘First 1000 Days of Life’; <i>Shailesh Jagtap, Alive & Thrive</i>	27

Social Audit under National Food Security Act 2013; <i>Tapan Gope, GIZ</i>	28
Social identity, recognition and redistribution in health service delivery; <i>Soumya Pancholi, Government of Haryana and Ashoka University</i>	29
Financing nutrition in India; <i>Ritwik Shukla, Accountability Initiative</i>	31
Affordable innovative community-based strategies to improve attendance in anganwadi centers for children 3-6 years in selected rural areas in Bharuch district of Gujarat, India; <i>Archana Joshi, Deepak Foundation</i>	32
Understanding the frontline bureaucrat: Role and challenges of the Lady Supervisor; <i>Ruchi Junnarkar, Ritwik Shukla, Accountability Initiative, Centre for Policy Research</i> .	33
Implementation of Integrated Nutrition Program in Andhra Pradesh; <i>Sandesh Kotte, Tata Trusts</i>	34
Development of a model for efficient delivery of healthcare, nutrition, and ECCE by the state government through ANMs, ASHAs and AWWs; <i>Shaileja Yadav, University College of Medical Sciences, University of Delhi</i>	34
Scaling up interventions to tackle anemia	36
Factors associated with increased adherence to iron and folic acid supplementation among pregnant women: Results from a cross-sectional study in the states of Madhya Pradesh, Chhattisgarh and Gujarat in India; <i>Mini Varghese, Nutrition International</i>	36
A Socio-Normative Intervention to Reduce Anemia in Odisha - Learnings from the Reductions in Anemia through Normative Innovations (RANI) Project; <i>Lipika Patro, IPE Global</i>	36
Addressing adolescent anaemia in vulnerable urban Indian communities: A qualitative exploration; <i>Rama Shyam, Society for Nutrition, Education and Health Action, Mumbai</i>	38
Mirror Tool – A self-assessment tool for primary diagnosis of anemia; <i>Kunal Bhardwaj, Indian Institute of Public Health, Gandhinagar</i>	39
Use of locally available food supplement for anemia prevention and mitigation; <i>Krati Jain, former SBP & The India Nutrition Initiative; Sanjeev Kumar Maurya, Government of Uttar Pradesh</i>	39
“Test, Treat and Talk” (T-3) anemia camp: An innovative model to expedite anemia control in India; <i>Ritika Khandelwal, CCM All India Institute of Medical Sciences</i>	40
Reducing anemia among adolescent girls through Behaviour Change Communication; <i>Smita Maniar, Deepak Foundation</i>	41
From research to policy to program: Diagnostic accuracy of point of care testing hemoglobinometers for estimation of anemia; <i>Kashish Vohra, National Centre of Excellence and Advanced Research on Anemia Control</i>	42
What we eat: How different aspects of food systems come together	44
Empowered State Food Commission led convergence efforts enhances food and nutrition services: Learning of last 4 years from Odisha; <i>Niranjan Bariyar, Odisha State Food Commission</i>	44
Long-term double fortified salt usage for child health in rural Bihar; <i>Liza von Grafenstein, Goettingen University</i>	45
Technical assistance and research for Indian nutrition and agriculture; <i>Soumya Gupta, Tata- Cornell Institute for Agriculture and Nutrition</i>	46
Novel framework to engage with government and other stakeholders: Experience of staple food fortification program implementation in 15 states of India; <i>Agnita RN, Karnataka Health Promotion Trust</i>	47

Improving nutrition through safe, healthy, sustainable diets: Experience from Eat Right India; <i>Arun Singhal, Food Safety and Standards Authority of India</i>	48
How to design a complex behaviour change intervention: experiences from a nutrition-sensitive agriculture trial in rural India; <i>Emily Fivian, London School of Hygiene and Tropical Medicine</i>	50
Dietary energy and cost contribution of ultra-processed foods in the diets of adolescent urban slum dwellers of Delhi; <i>Shweta Kampani, Lady Irwin College</i>	50
Market-based Approach to Assessing Availability, Affordability, and Marketing of Foods in the National Capital Region of India; <i>Shweta Khandelwal, PHFI</i>	51
Nutrition perceptions and dietary practices during pregnancy and lactation among disadvantaged groups in Andhra Pradesh; <i>Sandesh Kotte, Tata Trusts</i>	52
To assess the Minimum Adequate Diet in the young children (6-23 months) and promoting nutri-kitchen garden to improve dietary diversity in the aspirational district of Gujarat; <i>Halak Mehta, The Maharaja Sayajirao University of Baroda</i>	53
Factors affecting nutritional status of farm families: A case study from Nalanda & Samastipur districts of Bihar; <i>Bhoopesh Punera, ICAR - Indian Agricultural Research Institute</i>	53
Nutrition garden: Succor the tribal families during COVID-19; <i>Ankita Sharma, Adani Foundation</i>	54
Building multisectoral partnerships to scale-up staple food fortification in India; <i>Shakun Sharma, Global Alliance for Improved Nutrition</i>	55
Improving nutritional outcomes through rice fortification under public distribution system in India: India's experience on fortification; <i>Vedeika Shekhar, NITI Aayog</i>	56
Ensuring Food Security through Redressal of Grievances in two Districts of Jharkhand: Pakur & Sahibganj; <i>Jagjeet Singh, Piramal Foundation</i>	57
Systems strengthening: What role can technology play?	58
IT-based nutrition performance review tool for strengthening review mechanism in National Health Mission, Jharkhand; <i>Sraban Kumar Badayanak, WeCan & IPE Global</i>	58
Real-time screening and monitoring of Malnutrition; <i>Krati Jain, UNICEF & Nikhil Tikaram Funde, Government of Uttar Pradesh</i>	58
The key to harnessing power of technology: Putting the user at the center; <i>Ramkrishnan B, CARE India</i>	59
Financing technology for nutrition: A case study; <i>Avani Kapur, Accountability Initiative</i>	60
Use of information technology in supportive supervision of frontline workers and monitoring of infant and young child feeding program; <i>Tarique Hasan, Nutrition International</i>	61
Severe wasting in India: Technical and programmatic insights	62
Early identification: Key to improve nutritional status of SAM and MAM children; <i>Lahari Yaddanapudi, Centre for Technology Alternatives for Rural Areas, IIT Mumbai</i>	62
Incidence of severe acute malnutrition among children under five in Bihar; <i>Aritra Das, CARE India</i>	62
Rehabilitating undernourished children through Poshan Sanjha Chulah approach; <i>Harish Chand, World Vision India</i>	63
Experience with community management of SAM in Abu Road block of Sirohi district, Rajasthan; <i>Ishaprasad Bhagwat, The India Nutrition Initiative, Tata Trusts</i>	64

Behaviour change strategies to improve utilization of services for severely malnourished children through ICDS scheme in selected villages of Vadodara district in Gujarat; <i>Archana Joshi, Deepak Foundation</i>	65
Sneh shivir - A way forward for supplementary feeding; <i>Sheetal Patel, Adani Foundation</i>	65
Improving nutritional status of below 5-year old children using positive deviance approach in rural Vadodara: A case control study; <i>Chitrapita Saha, The Maharaja Sayajirao University of Baroda</i>	66
Study of case finding, diagnosis & treatment of TB in children with moderate and severe acute malnutrition utilizing ready to use therapeutic food; <i>Rama Krishna Sanjeev, Rural Medical College, Pravara Institute of Medical Sciences</i>	67
Women together: Consolidating insights from women's group programs for nutrition	68
Leveraging and institutionalization of community-led multi-sector integrated interventions to improve food, nutrition, health and WASH outcomes for adolescent girls and women through DAY-NRLM: Implementation learnings from Swabhimaan; <i>Monica Shrivastav, ROSHNI Lady Irwin College</i>	68
Changing dietary diversity in 6-23-month-old children through women's collectives; <i>Rakesh Jha, Project Concern International</i>	69
Learnings from a comprehensive evaluation of a nutrition-focused pilot intervention through women's SHGs in Bihar; <i>Avishek Hazra, Population Council</i>	70
Role of participatory women group-based intervention in improving health and nutrition behaviour of lactating mothers in Eastern India: Evidence from Swabhimaan programme; <i>Reshmi RS, International Institute for Population Sciences</i>	71
Early learning program to improve maternal, infant and young child feeding practices in the 1st 1000 days of life, through women's collective platforms; <i>Appolenarius Purty, Bihar rural livelihood promotion society - JEEViKA</i>	73
Systems strengthening: Using data to improve programs	74
M-Health intervention has the potential to alleviate constraints in using administrative data systems for improving service delivery in India; <i>Rasmi Avula, IFPRI</i>	74
Strategic use of program data (SUD) as system strengthening measure to improve the implementation of maternal nutrition interventions; <i>Vishal Shastri, Alive & Thrive</i>	74
Enhancing Survey Questions on Maternal and Child Nutrition Intervention Coverage through Cognitive Interviewing in India; <i>Sattvika Ashok, International Food Policy Research Institute</i>	76
Use of situational vignettes to assess the competence of frontline health workers in nutrition counseling programs; <i>Sumati Bajaj, International Food Policy Research Institute</i>	76
COVID-19 and nutrition: Early insights from around India	78
Monitoring POSHAN Abhiyaan in Rajasthan and Jharkhand; <i>Aditi Gupta, IDinsight</i>	78
The agriculture-nutrition nexus in the time of COVID-19: Results of a national telephone survey of 1429 farmers; <i>Lindsay Jaacks, University of Edinburgh</i>	79
Complementary feeding practices among children of age 6-24 months in four districts of Rajasthan; <i>Vanita Dutta & Minakshi Singh, UNICEF India</i>	79
The effects of early and repeat migration on nutrition among circular migrant children in Bihar; <i>Reshma Roshania, Emory University, CARE India</i>	81

Community response and re-training of frontline health workers during COVID-19 crisis: A qualitative inquiry; <i>Nikhat Shaikh, Society for Nutrition, Education and Health Action</i>	81
Understanding Access to Nutrition in the Context of the Covid-19 Pandemic – Insights from a rapid assessment; <i>Alok Vajpeyi, Population Foundation of India; Vasudha Chakravarthy, Development Solutions</i>	82
Enhancing the reach and impact of cash transfers in the first 1000 days: What will it take?	84
The Impact of Conditional Cash Transfers on the Height and Weight of Young Children: Evidence from the Mamata Scheme in Odisha, India; <i>Vedavati Patwardhan, University of Washington, Seattle</i>	84
Role of intersectoral convergence in effective implementation of Pradhan Mantri Matru Vandana Yojna (PMMVY) scheme; <i>Heena Shaikh, Piramal Foundation</i>	84
An evaluation of PMMVY in Rajasthan; <i>Nilesh Yadav, The India Nutrition Initiative, Tata Trusts</i>	85
Systems strengthening: Building technical and operational capacities	87
Trends in ICDS service awareness and uptake: A study of NGO-ICDS partnership in implementing child health and nutrition program in urban informal settlements of Mumbai, India; <i>Apurva Tiwari, Society for Nutrition, Education and Health Action, Mumbai</i>	87
Experiences of strengthening IYCF services in select districts of Uttar Pradesh and Gujarat for children 6-23 months; <i>Vinay Koparde, Nutrition International</i>	88
Assessment of ILA trainings in 11 Aspirational Districts across seven states; <i>Punit Kumar Mishra, Piramal Foundation</i>	88
High in the morale or down in the dump: Motivation of frontline workers and its predictors - the Bihar story; <i>Sweta Kumari, CARE India</i>	89
Strengthening the capacity of industries to fortify staple foods in India; <i>Shakun Sharma, Global Alliance for Improved Nutrition</i>	90
Training on 'First 1000 days – maternal & child nutrition': Evidence-based skill building to prevent acute and chronic malnutrition in children; <i>Deepali Fargade, Shrimati Malati Dahanukar Trust</i>	92
Improving IYCF practices in Sitamarhi and Sheikhpura districts of Bihar through system-based actions; <i>Taruna Juneja Gandhi, Mamta Health Institute for Mother and Child</i>	93
Cross-sectional study on knowledge and practices of nursing staff related to MIYCN during antenatal, postnatal and Paediatric OPD and immunization services at Rajendra Institute of Medical Sciences, Jharkhand, India; <i>Manisha Kujur, Asha Kiran, Rajendra Institute of Medical Sciences, Ranchi, Jharkhand</i>	94
Centre of Excellence and Anemia Mukht Bharat: Experiences and the way forward; <i>Gomathi Ramaswamy, National Centre of Excellence and Advanced Research on Anemia Control</i>	95
Capacity building of PRI members on POSHAN Abhiyaan - comparison between trained vs non trained districts; <i>Heena Shaikh, Piramal Foundation</i>	96
Improving early initiation of breastfeeding in uncomplicated C-section deliveries using point of care quality improvement (POCQI) approach; <i>Praveen Kumar Sharma, FHI360 Alive & Thrive</i>	97
The effectiveness of training and service delivery support on motivation of frontline workers: Insights from NGO-ICDS partnership in implementing child health and nutrition	

program in urban informal settlements of Mumbai, India; <i>Apurva Tiwari, Society of Nutrition Education and Health Actions: Society for Nutrition, Education and Health Action, Mumbai</i>	98
NEEV- Ensuring healthy start through 1000 days care; <i>Rekha Purnima Xalxo, World Vision India</i>	99
An urbanizing world: Implications for nutrition programs	100
Food security and rising double malnutrition burden in urban poor settings in India; <i>Richa Malik, Institute of Home Economics</i>	100
Does mid-day meal scheme improve student achievement; <i>Mahima Soni, Meghnad Desai Academy of Economics</i>	100
Child growth and development	102
Study on relationship between nutritional status and motor development among the children of age 6-30 months using BDSTI tool at Dadri sub-district, Uttar Pradesh; <i>Kunal Bhardwaj, Ambuja Cement Foundation</i>	102
Synergy of childhood obesity and diet in peri-urban school-going children: an exploratory study; <i>Aheibam Sharmila Devi, NIMS, ICMR</i>	102
The Impact of Dairy Intake on Anthropometric Failures of Children consuming Vegetarian Diets (6-24 months) and fulfilling Minimum Dietary Diversity in India; <i>Sakshi Pandey, IITB - UNICEF India</i>	103
Growth patterns of children under 5 in India with special reference to stunting; <i>Diksha Rani, IIPS</i>	104
Nutrition and cognitive ability of school going children (7-9 yrs) and impact study of ICT-based nutrition education on their dietary patterns; <i>Shobika S, Rathnavel Subramaniam college of arts and science, Sulur, Coimbatore</i>	105
Reversal of stunting, wasting and underweight in urban slums of Mumbai: Implementation experience of nutrition delivery by strict growth monitoring and caregiver engagement; <i>Lahari Yaddanapudi, CTARA, Indian Institute of Technology, Mumbai</i>	106

Theme-wise oral and poster abstracts

- To view the recording of oral presentations, click on the presentation title.
- To view poster video, click on the thematic title in the poster section.

Supporting nutrition behaviors in the first 1000 days

Oral presentations

[A community-based convergent approach in ensuring pregnancy weight gain and reduction of anemia; S G Mukherjee, Child In Need Institute](#)

Background: The intervention was conducted in three diversified blocks of West Bengal namely Nagrakata (Northern part); Suti 1 (Central part) and Falta (Southern part) under a five year project on maternal and child nutrition. A baseline study conducted in Year 1 of the project (2017) revealed that around 48% of the children were stunted while 74% pregnant women anemic. Average gestational weight gain of the women was only around 7.6 Kgs. In order to address this, since 2018 the project is working intensively on promoting maternal nutrition with focus on identification of “Nutrition Risk Pregnancies”, assessing BMI during pregnancy registration and subsequent follow up on gestational weight gain ensured through ASHAs and ICDS workers. The interventions are done in close coordination with ICDS and endorsement from the State Health Department. 472 pregnant women in their first trimester from 74 sub health centres were identified and followed up till delivery through a set of predesigned interventions.

Approaches/methods of program implementation: The intervention used a community-based approach that emphasised home-based care and timely utilisation of government health and nutrition services by participants. 5 Key strategies were used: 1. Tracking of monthly body weight at ICDS Centers. The practice of weighing the pregnant women every month at the ICDS Centers was introduced in order to have vigilance of the change in body weight. 2. Spot feeding of Supplementary Nutrition and IFA at ICDS Centers. Women were encouraged to consume the hot cooked meal and IFA tablets at the ICDS Centers. 3. Increased home contact for ensuring family support Joint home visits and counselling was done by ASHA and AWWs to women identified as “Nutrition Risk” 4. Adopting team-based approach with FLWs. Simulation games were used to communicate the importance of team working, coordination and communication and to unravel various myths and superstitions associated with pregnancy care. 5. Token system for creating healthy competition. On complying with each of the services in a timely manner, each pregnant woman received a coupon. One with the maximum number of coupons was recognized in front of the community as an example to follow.

Key findings: Of the 472 women who formed the COHORT, majority 85% were identified as “At Nutrition Risk” pregnancy. The top two nutrition deficiencies included anemia (55.5%) followed by low or high BMI (52%). The percentages of different categories of BMI were 47.6 % (Normal); 25% (Thin or Severe Thin); 14.8% (Overweight); 12.5% (Obese). Pregnant women in the cohort gained on an average 9 Kg and 44% had gained 10 Kg or more (taking the middle value of suggested weight gain guidelines by GOI which is 9 to 11 Kg as per the MCP Card used in public health systems). In comparison, average weight gain of pregnant women in these blocks was 7.68 Kgs during 2017 before the intervention started (collected from an N of 424 PW) and only 25% of them had gained more than 10 Kgs. However, though for normal and low BMI women, 10 Kg minimum weight gain was set as target and counselling was done accordingly, for overweight and obese, counselling was tailored to control overeating and minimize weight gain standards as per WHO protocols (7-11 Kgs for overweight and 5-9 Kgs for obese). This explains for lesser weight gain among overweight and obese women and more gain among thin/severe thin. % of PW who gained 10 kg or more as per BMI were severe thin (68.4%); Thin (53%); Normal (45.5%); Overweight

(32.8%); Obese (26.6%). The follow up on IFA consumption also reduced the prevalence of anemia among the pregnant women. At the time of registration 61% women had severe or moderate anemia which reduced to 51% having moderate anemia at the time of delivery. Out of 472 deliveries 16.5% (78) babies were born with low birth weight. Among them, 47% mothers were anemic and 50% were malnourished as per BMI.

Significance and application: It is a known fact that pre-pregnancy BMI & Gestational weight gain are associated with maternal and infant health outcomes. Hence the learnings through a period of five years from these districts can provide an evidence backup for any policy formulation / alteration in the realm of Maternal nutrition. Focused work on maternal nutrition, identification of 'Nutrition Risk pregnancy' with use of BMI field tables, differential gestational weight gain, spot feeding of SNP and IFA at ICDS centres are some innovative interventions initiated for the first time in the state of West Bengal. Yet, the initiative can be replicable and scalable in any given context, as it was based on the existing systems and structures prevalent with the health and ICDS systems with no additional resource input other than capacity building. The project aims to address malnutrition in pregnancy by capacity building of Government frontline workers and through continuous advocacy in convergent platforms which are in sync with some of the targets and pillars of the 'POSHAN Abhiyan'. This is even important at this hour of COVID 19 crisis, wherein a sizeable population is likely to be pushed to a vicious cycle of poverty, malnutrition and diseases.

Area(s) of adaption in the COVID-19 context: The state of West Bengal had embraced various phases of lockdown beginning from the last week of March, thereby interrupting community mobilization and capacity building processes. In this context, the project team is continuing their endeavor by regularly conducting online training and/ interactions with the government functionaries by utilizing various digital platforms. Digital IEC contents pertaining to maternal/Child nutrition have been developed for circulation through Whatsapp and Email for the frontline workers. Additionally, since community mobilization or meetings are being avoided in the current scenario, Walling/Posters bearing awareness messages for the community are also being planned at different key locations of the community.

Impact of Mother-Baby Friendly Initiative Plus on use of human milk for term and preterm neonates; Ruchika C Sachdeva, PATH

Geographic location of research: The study was jointly conducted by PATH and Lokmanya Tilak Municipal Medical College & General Hospital at two health facilities in Mumbai, India. One was a tertiary care hospital with human milk bank (HMB) and the other was a secondary care facility without an HMB.

Rationale/objective: Breastfeeding and kangaroo mother care (KMC) are proven interventions to prevent newborn morbidity and mortality. Use of pasteurized donor human milk (PDHM) in absence of mothers' own milk (MOM) is recommended as next best alternative for vulnerable babies. Local evidence on combined effect of these interventions on human milk feeding and neonatal outcomes is missing. Mother Baby Friendly Initiative plus (MBFI+) is a model integrating breastfeeding support, KMC and provision of PDHM for needy babies. The study evaluated superiority of MBFI+ to routine lactation support and milk bank services in improving human milk feeding of neonates and neonatal outcomes.

Methods/analyses: Uncontrolled pre-post intervention superiority study was used. Exclusive human milk feeding (MOM and /or DHM) during hospital stay was primary outcome. Pre-intervention group included healthy (n=2268) and very low birth weight (VLBW) infants (n=140). Post intervention groups - healthy (n=2675) and VLBW (n=136) infants. Intervention included quality improvement projects to improve processes and practices on breastfeeding and KMC, national guidelines driven strengthening of milk bank, behaviour change communication, and community linkages. Mothers of eligible term and VLBW neonates were interviewed using four quantitative tools - healthy neonates, VLBW neonates, data related to interventions and HMB. We compared incidence rates of categorical outcome between pre-intervention and post-intervention periods using chi-square or Fisher exact test and the t-test or Mann-Whitney test to analyse continuous

outcomes. Regression analysis was used to adjust for differences in baseline variables in two study periods.

Results: Facility level exclusive human milk feeding among healthy neonates improved from 71.7% to 90.6% for vaginal deliveries (OR 1.26, 95% CI :1.22-1.31) and from 7.8% to 29.8% for caesarean deliveries (OR 3.85, 95% CI : 3.09-4.78) (mean 44% pre to 64.8% post intervention (adjusted OR 2.34, 95% CI: 2.09-2.62). Breastfeeding as first feed 51.1% vs. 67.3% (adjusted OR: 2.02 95% CI: 1.79-2.28) and initiation of breastfeeding within 1 hour 7.7% vs. 24%; (adjusted OR 3.87, 95% CI 3.25-4.60) improved. Among VLBW neonates, feeding of MOM on first day of life improved significantly from 2.8% to 29.8% (9.52; 95% CI: 3.49-26.00) and facility level exclusive human milk feeding increased from 49.3% to 74.2% (RR: 1.51, 95% CI: 1.23-1.83). Neonates receiving KMC improved from 32% to 65.3% (RR: 1.70 95% CI: 1.31-2.22). Weight at discharge increased from an average of 1499gms to 1605gms (p=0.004), survival without late onset of sepsis improved from 63.5% to 70 % (p=0.363).

Policy implications: MBFI+ improved exclusive human milk feeding among term healthy and VLBW neonates and will provide useful implementation research data to assist scale up of lactation management centres in India. As an approach it has potential to strengthen facilities, systems to improve maternal support and newborn nutrition thus contributing to POSHAN Abhiyaan pillar of health and nutrition in first 1000 days. Components like capacity building and BCC are aligned to those of POSHAN Abhiyaan. MBFI+ implementation could effectively improve access to human milk and contribute to improved immunity of newborns in COVID times. Documenting application lessons could be useful for replication in crisis situations.

Area(s) of adaption in the COVID-19 context: The research was conducted in 2017-18 and completed in pre- COVID times. The national government has adopted MBFI+ as comprehensive lactation management centre model as part of its national guidelines. Thus, this model continues to find relevance in COVID times by improving exclusive human milk feeding among neonates.

Supporting nutrition behaviors in the first 1000 days

Poster presentations

Formative study on identifying barriers and enablers of IYCF practices in Rajasthan;
Soma Biswas, IPE Global

Geographic location of research: State, District, Block, Ajmer, Barmer and Udaipuri District in Rajasthan

Rationale/objective: High levels of child malnutrition in India have persisted, despite strong governmental commitments. Even after making significant strides Rajasthan remains one of the highest burden states, where a significant part of the population remains affected by maternal and child malnutrition. While government schemes can make services and goods available; access and utilization of these is driven by beneficiary demand, intent, and action, which needs nudging. The study will aim to identify the barriers and enablers which influence IYCF practices among mothers in the state of Rajasthan and suggest communication strategies to aid the behavior change campaign.

Methods/analyses: A purposive sampling strategy was employed to identify the representative households for the qualitative immersion. Three blocks from each district was selected based on their distance from the District Headquarters. At least 3 mothers of infants and 1 other family member (either MIL or Husband) were covered in every sampling unit. 1 ASHA, ANM and AWW were covered in each study block. An in-depth interview (IDI) was conducted with each of the stakeholders using a semi-structured questionnaire. For the study, a participatory research framework was designed, and the key methodology used is a behaviour architecture process which goes through the steps of framing and hypothesizing, investigating, developing decision levers, and ideating strategies. Through the analysis process, the team identified the context, the key behavioural learnings and finally the principles that have the potential to change the current behaviour in the desired direction. For guiding the analysis Emotional Appraisal Framework was used.

Results: The findings of the study laid down five key behavioral barriers across the three stages of the IYCF journey. In each of the stage, a specific conflict was playing out in an established social context. There were certain factors acting as catalysts which were influencing the final outcome, or the coping method adopted by the mother and the household. The qualitative exploration across the three key journey stages of IYCF and understanding the key behaviors in the relevant context of the geography, led to three key insights on the IYCF landscape in Rajasthan - Relationship between extent of risk on the child and level of attentiveness of caregivers; The tendency of overcompensation; Using Adult mental models on children.

Policy implications: The three districts selected for the study are from very distinct agro-ecology which will help develop a state level social and behaviour change strategy, that can be applied to the entire state. The findings bring forth the nuances of different cultural zones that comprises the state. The study not only identifies specific norms and barriers, but also defines specific strategic direction for addressing those barriers. A state specific comprehensive behaviour change communication campaign will help in achieving the targets of POSHAN Abhiyan more effectively. It can be used to increase demand for services and improve consistent long-term maintenance of health seeking behaviours.

Disparity in knowledge, attitude and practice among mothers of children under 3 years about early initiation of breastfeeding, exclusive breastfeeding and continued breastfeeding in Alwar district, Rajasthan, India

Harish Chand, World Vision India

Rationale/objective: A cross-sectional study with the objective to ascertain the gap in knowledge, attitude and practice (KAP) pertaining to optimal breastfeeding behaviours was conducted in Alwar district. In spite of 81.9% children who were born in facilities only 29.7% children were fed breastmilk within one hour after the birth. 55% children were exclusively breastfed up to first 6 months of their life. The study aimed at exploring the prevalence of

knowledge, attitude and practices in three domain viz. early initiation of breastfeeding, exclusively breastfeeding and continued breastfeeding, and observe if the knowledge or attitude or both have effect on the practice of optimal breastfeeding behaviours.

Methods/analyses: Quantitative data was collected from mothers of children under 3 years of age through a face to face interview. Sample size (n=380) was calculated based on prevalence of women who practiced breastfeeding (45%) taking into consideration \pm 5% precision and 5% non-response rate, the final sample size was 400 samples. Data on socio-demographic characteristics and to optimal breastfeeding knowledge, attitude and practiced was collected. Attitude questions were adapted from Food and Agriculture Organization's manual. The survey responses were coded and entered into MS Excel spreadsheets. The data were analysed using statistical software SPSS version 23.0. Data visualisations were done using MS Excel 2007. All characteristics were summarized descriptively. For continuous variables, the summary statistics of mean \pm standard deviation (SD) were used. Mothers of children U3 years were analysed for early initiation and continued breastfeeding, and mothers of children up to 6 months were included in analysis of exclusive breastfeeding.

Results: Our findings reveal that 72.8 % mothers practiced EIBF, 25.5 % mothers practiced continued to breastfeeding. 73.8% mothers had a positive attitude about EIBF, 13.5 % mothers about EBF and 79.5 % mothers had positive attitude about continued breastfeeding. 34.3 % mothers had good knowledge on EIBF, 34.6 % mothers on EBF and 65.5 % had good knowledge on continued breastfeeding. Mother-in-law's provided support during breastfeeding (64.8 %) and colostrum feeding (95%). 32% mothers with higher secondary education and 22% mothers with graduation knew that EIBF helps the child to suck milk quickly and expelling of placenta. 86.5% mothers believed that colostrum is good for the health and development of the child. With regard to EBF, 23.08% mothers gave animal milk, 1.9 % juice, 5.7 % porridge, 42.3 % mothers gave other pre-lacteals before first six months of life. 46.1 % children given water when separated from mothers beyond 2 hours.

Policy implications: Key learning suggest that institutional compliance should be ensured to enhance the coverage of practices such as EIBF as such behaviours can be monitored at the institutional level. Skills and attitude of health facility staffs towards key services/clients may be improved through trainings. The capacity of frontline workers should be enhanced on BCC to ascertain the barriers and address them during home visits. The findings of this study will contribute to POSHAN Ahiyaan to strengthen the SBCC component by giving a perspective to programme implementers as to which aspect of breastfeeding should be focused during the implantation of optimal breastfeeding.

Framework for enhancing service delivery in maternal and child nutrition programme in tribal Maharashtra: An inter-state comparative study of scheme implementation model; *Suveena Doddalingannavar, IITB UNICEF*

Rationale/objective: In tribal belt of India, the malnutrition crisis has its roots strong in the pregnancy nutrition, indicative of high low birth weight and preterm births compared to other regions. To tackle this , govt of Maharashtra has a maternal nutrition programme jointly implemented by tribal development dept and Dept. of women and child development, GOM following Andhra Pradesh model of Anganwadi One full meal programme for pregnant and lactating mothers. However, the results of the programme are deviant from what was envisioned. The research studies the programmatic hurdles to effective implementation of Dr APJ Abdul Kalam Amrut Aahar Yojana in Maharashtra (Tribal regions) in comparison to Andhra Pradesh model and attempts to provide feasible convergent actions to strengthen its implementation.

Methods/analyses: Literature review formed the base understanding of one full meal programmes across the country and its impact on maternal health and nutrition especially during gestation which translated into proper gestational weight gain and reduction in anaemia. Secondary data consisted of studying the indicators in National family health survey round 4 (NFHS 4) which highlighted the disparity and crisis of malnutrition in tribal

regions. Further data for study was collected in the form of qualitative unstructured interviews. Field study was conducted in both the states and observational data was recorded. The supply chain models in both the states were studied through field visit as well as literature review and further analysis was done on the data to identify performance indicators. The study in Maharashtra was conducted mainly in Yavatmal, Nandurbar and Palghar. Possibilities for centralized kitchen were also explored along with the budget structure of Tribal Development department which would facilitate the idea of centralized kitchen.

Results: The study realized 3 niche areas where convergent actions could be taken strategically for targeted implementation of the scheme. Firstly, given the low available machinery in tribal development department, a MIS platform can be designed for regular monitoring of maternal indicators (gestational weight gain, anaemia reduction, counselling sessions, ANC check-up etc) which is absent currently. Though data for some indicators are available with Health/ WCD dept. but monitoring scheme beneficiaries per anganwadi or per ITDP project is still not in practice. Secondly, there has been gross violation at grass root level in provisioning of meals owing to unorganized SHG structure. Across the state tribal Ashram Shalas are present which have central Kitchens. These kitchens can be transformed into mega kitchens employing SHGs and ensuring uniform food supply to all the nearby anganwadis. Those out of reach can be catered through SHG unions to ensure uniform quality food supply. Thirdly, tailored maternal nutrition counselling is the need of the hour in Social Behavior Change Communication context which looks and works beyond just awareness rallies and VHNDs. A set curriculum for counselling is needed.

Policy implications: Tribal region has a labyrinth of accessibility problems. A self-organised effort is a far-fetched dream. A centralized kitchen built under MGNREGA/ Nucleus Budget (TDD) (for say) can serve as a station of permanent employment for people around and puts a check on gross quality violations in nearby anganwadis. The pooled budget at these centralized kitchens will allow introduction of fortified foods uniformly and lessens the cooking burden on anganwadi workers in anganwadis where SHGs do not cater to. In crisis like COVID-19, when food supplies to each anganwadi is disturbed, these centralized kitchens will function maintaining least contamination of the food through all stages and the govt has to ensure supply of necessities to only these kitchens instead of 'n' number of kitchens in each hamlet and village.

Missed opportunity of feeding minimally diverse data to babies aged 6-11 months in rural Bihar – demystifying the black hole; *Rakesh Giri, CARE India*

Rationale/objective: After six months of age, breastfeeding alone is not enough for infant growth. Growing child requires other foods to complement their rapid growth along with continued breastfeeding for 2 years or more. Maximum growth, physically and mentally, occurs in the first 2 years of age and 6-11 months of age is a vulnerable period as malnutrition is seen commonly at this age in the absence of appropriate complementary feeding. Due to various myths and beliefs that are prevalent in rural Bihar results in not feeding the child even when food was available at home (missed opportunity). Owing to this the mothers do not provide variety of foods to the child. The aim of this study was to investigate the pattern and predictors of missed opportunity of complementary feeding among 6-11 months of infants in rural Bihar.

Methods/analyses: Data was obtained from five rounds (2015-2019) of 'Household Survey' survey based on mixed sampling methodology (Two stage proportional cluster random sampling with a systematic component (random start) at individual level) in 534 blocks across 38 districts of rural Bihar. The primary outcomes were missed opportunity of various food groups. Descriptive and logistic regression were conducted using SAS 9.4 to get the association between missed opportunity and its determinants.

Results: Among 6-11 months old children, proportion of missed opportunity in various food groups have decreased except pulses and dairy products over the period (2015-2019). i.e. Missed opportunity of Vit-A rich fruits and vegetables decreased from 83% (82.58-83.67) to 73% (71.94-73.54), other fruits and vegetables decreased from 62% (61.22-63.54) to 51% (49.87-51.74), egg decreased from 71% (69.74-72.28) to 60% (58.37-60.77), flesh foods

(meat, fish, poultry and liver/organ meats) decreased from 83% (82.73-84.11) to 79% (77.90-79.32), meat (poultry and liver/organ meats) decreased from 80% (79.22-81.13) to 74% (73.35-75.36), fish decreased from 83% (82.24-83.87) to 77% (76.40-78.09), nuts decreased from 83% (81.40-85.17) to 72% (70.41-73.43), pulses increased from 42% (41.64-42.87) to 44% (43.18-44.43), dairy products increased from 43% (41.88-43.40) to 48% (47.09-48.53). Odds of having missed opportunity across the food groups was significantly lesser among those who participated in CF (complementary feeding) day during last 3 months [Vit-A rich fruits and vegetables AOR=0.61(0.60-0.62), other fruits and vegetables AOR=0.82(0.81-0.83), egg AOR=0.65(0.64-0.67), flesh foods (meat, fish, poultry and liver/organ meats) AOR=0.64(0.63-0.65), meat (poultry and liver/organs meats) AOR=0.69(0.67-0.70), fish AOR=0.61(0.60-0.62), nuts AOR=0.77(0.75-0.80), pulses AOR=0.72(0.72-0.73) and dairy products AOR=0.91(0.90-0.92)], received THR during previous 3 months [Vit-A rich fruits and vegetables AOR=0.86(0.85-0.87), other fruits and vegetables AOR=0.92(0.91-0.93), egg AOR=0.84(0.83-0.85), flesh foods (meat, fish, poultry and liver/organ meats) AOR=0.82(0.81-0.83), meat (poultry and liver/organs meats) AOR=0.80(0.79-0.81), fish AOR=0.82(0.81-0.83), nuts AOR=0.91(0.89-0.93), pulses AOR=0.85(0.84-0.85)], got FLW advice on complementary food [Vit-A rich fruits and vegetables AOR=0.61(0.60-0.62), other fruits and vegetables AOR=0.88(0.87-0.89), egg AOR=0.70(0.69-0.71), flesh foods (meat, fish, poultry and liver/organ meats) AOR=0.73(0.72-0.74), meat (poultry and liver/organs meats) AOR=0.72(0.71-0.74), fish AOR=0.69(0.68-0.70), nuts AOR=0.78(0.76-0.79), pulses AOR=0.74(0.74-0.75) and dairy products AOR=0.92(0.92-0.93)], got FLW visit after 6 months of age of the child [Vit-A rich fruits and vegetables AOR=0.61(0.60-0.62), other fruits and vegetables AOR=0.84(0.83-0.85), egg AOR=0.67(0.66-0.68), flesh foods (meat, fish, poultry and liver/organ meats) AOR=0.69(0.68-0.69), meat (poultry and liver/organs meats) AOR=0.75(0.73-0.76), fish AOR=0.62(0.61-0.63), nuts AOR=0.79(0.77-0.81), pulses AOR=0.68(0.67-0.69) and dairy products AOR=0.93(0.92-0.94)], is on age appropriate meal frequency [Vit-A rich fruits and vegetables AOR=0.39(0.38-0.39), other fruits and vegetables AOR=0.43(0.43-0.44), egg AOR=0.43(0.43-0.44), flesh foods (meat, fish, poultry and liver/organ meats) AOR=0.40(0.40-0.41), meat (poultry and liver/organs meats) AOR=0.43(0.42-0.43), fish AOR=0.39(0.38-0.40), nuts AOR=0.42(0.41-0.43), pulses AOR=0.27(0.27-0.27) and dairy products AOR=0.22(0.21-0.22)] and is on age appropriate dietary diversity [Vit-A rich fruits and vegetables AOR=0.12(0.12-0.12), other fruits and vegetables

Policy implications: Understanding the behavioural gaps is critical to translate evidence to action aiming for outcome level changes which have been tried to be communicated here. Upon decision maker level consumption, the learning can thus be sustainably translated into policy perspectives given readiness & political will.

Saving new-born lives by ensuring universal access to human milk through Project SNEHI – an implementation experience; Jayendra Kasar, CHRI; Ruchika Chugh Sachdeva, PATH

Background: Early and exclusive breastfeeding can prevent 160,000 under 5 deaths in India. Yet, breastfeeding rates remain low. 30-50% of babies in neonatal intensive care units and 10-20% of term babies in India lack access to mother's own milk (MOM). Donor human milk from human milk banks/Comprehensive Lactation management Centre (CLMC) is recommended for sick babies, when MOM is unavailable. CLMC model is recommended in 2017 "National Guidelines on Lactation Management in Public Health Facilities" for universalizing access to human milk for babies, SNEHI being implemented by PATH supports the government in rolling out these guidelines through strengthening of facility-based lactation management systems.

Approaches/methods of program implementation: In partnership with government, technical and policy leaders, SHEHI caters to the needs of lactating mothers and their newborns following an integrated approach. It strengthens health facilities for provision of lactation support to all mothers, supporting expression and storage of MOM, adhering to

standards processes at milk banks to provide safe donor human milk (DHM) to needy babies, implementing kangaroo mother care (KMC), family centric care and encouraging optimal infection prevention and patient centric practices. SNEHI provides technical support to government and facilities to establish and strengthen lactation management centres (LMCs) through development of tools and accreditation system, behaviour change communication package, developing robust evidence based information management systems, training and mentoring support, learning exchange, development of region centre of excellence, research studies and assistance to leverage government funding for long term sustainability of these centres. SNEHI is also working with government to prevent commercialization or misuse of DHM.

Key findings: Currently, India has 83 functional CLMCs up from 50 in early 2018. At seven intervention sites from June 2018 to June 2020, health facilities provided breastfeeding support to 1.65 lakhs mothers and their families. About 13049 mothers donated 2230.43 litres of milk which benefitted 3197 vulnerable babies. 78% mothers reported breastfeeding within first hour, 66% babies received exclusive human milk and 84% eligible babies received KMC. 71 % mothers of neonates admitted in NICU initiated expression of milk within 24 hours of delivery. 5965 stakeholders and 559 health providers were sensitized and trained respectively. Evaluation framework and monthly data tracker was developed which helped in formalising data tracking and taking informed decision making/Progress is monitored against 13 indicators across facilities. Two facilities upgraded and sustained technically and financially as zonal reference centre providing training and mentoring support to other facilities in catchment area. CLMCs are relatively new interventions slowly gaining momentum. administrative protocols and procurement processes delay their operationalisation.

Significance and application: Facilities with CLMCs have shown increased rates of breastfeeding, kangaroo mother care and family participatory care services over the years. Achieving SNEHI's target of exclusive human milk feeding with use of technology and behaviour change communication will contribute to POSHAN Abhiyan targets and improve newborn nutrition and care in facilities especially during crisis situations like COVID-19. Scaling these interventions can benefit 14.26 million and 10.47 million mother baby dyads at public and private facilities with improved newborn nutrition and care practices (HMIS 2017-2018).

Area(s) of adaption in the COVID-19 context: COVID-19 is presenting many challenges to LMCs in India. Staff shortage and suspension of services due to nationwide lockdown, misinformation and lack of clarity on guidance among health providers and mothers has affected access to breastmilk. During these trying times of COVID-19, SNEHI ensured uninterrupted delivery of essential newborn nutrition and care services. We rapidly worked with the government and professional bodies on guidance for newborn nutrition and care during COVID times and started working with health facilities to dispel myth and stigma, provided information and support to lactating mothers and their families to build their confidence and establish and sustain milk supply. We are disseminating best practices, outreach materials, e trainings followed by continuous tele support, guidance and learning exchanges for healthcare workers, mothers and their families. We collaborated with global human milk bank community to share learnings and best practices and mitigate challenges. A Virtual Communication Network of milk bank leaders including those from India formed in March 2020, has more than 90 members from 34 countries.

Relation between optimal IYCF knowledge and its communication during counselling by Accredited Social Health Activists; Sahiba Kohli, Lady Irwin College, University of Delhi

Rationale/objective: Accredited Social Health Activists (ASHAs), India's key community health workers, play a crucial role in promoting optimal infant and young child feeding (IYCF) practices by communicating relevant messages while counselling mothers of young children. Adequate knowledge and counselling skills are important for effective behavior change

among mothers of young children. Recent Home-Based Care for Young Child (HBYC) initiative under the POSHAN Abhiyaan allows ASHAs to provide IYCF counselling through structured home visits thereby further emphasizing on their role as counsellors. The present study assessed ASHAs' knowledge of optimal IYCF practices, and their ability to communicate these messages during counselling.

Methods/analyses: ASHAs (n=190) were selected randomly from 21 primary health centres in Delhi. Their knowledge of optimal IYCF practices was assessed using a valid and reliable questionnaire (maximum score 46; 32 questions on breastfeeding, complementary feeding, diarrhoea and malnutrition). Of the 190 ASHAs, 182 were assessed for their counselling skills using simulated counselling sessions based on WHO IYCF counselling course (2006) and IYCF guidelines by WHO (2009), GOI (2006) and IAP (2016). Simulated counselling sessions were observed and scored individually for counselling skills assessment of ASHAs (two situations each) using a reliable pre-designed checklist (developed on six context specific situations; comprising IYCF related relevant messages to be delivered and communication skills to be used). Descriptive statistics were used to compare the knowledge of optimal IYCF practices and its communication during counselling. Pearson's correlation was determined between ASHAs' knowledge and communication of key messages during counselling.

Results: ASHAs, aged 39 ± 6.5 years, had a work experience of 5.9 ± 2.9 years and were trained on topics including breastfeeding, complementary feeding, care during diarrhoea, mother's diet during pregnancy and lactation, malnutrition and communication skills. Mean scores of ASHAs on optimal IYCF knowledge and counselling skills were $65.2 \pm 11.8\%$ (n=190) and $41.8 \pm 9.4\%$ (n=182) respectively. Knowledge scores were significantly higher for optimal breastfeeding than complementary feeding practices ($t=13.617$, $p=0.000$). A huge disparity existed between ASHAs' IYCF knowledge and delivery of appropriate messages during counselling sessions. A weak but statistically significant positive correlation was observed between ASHAs' knowledge of optimal IYCF practices and its communication during counselling ($r=0.249$, $p=0.01$). A gap of $37.6 \pm 17.7\%$ existed between the knowledge scores and corresponding key messages scores obtained during simulated counselling sessions.

Policy implications: There is a need to address gaps in IYCF knowledge of ASHAs, especially with respect to complementary feeding practices and skill-based training with emphasis on communication skills to strengthen their ability to provide appropriate need-based counselling. The study provides evidence to focus on strengthening training of ASHAs with respect to counselling skills for effective IYCF promotion. Mock counselling sessions and on-job training with supportive supervision could be useful ways for capacity enhancement of ASHAs for effective counselling. Enhancing the capacity of ASHAs can contribute towards the effective implementation of HBYC initiative.

What prevents early initiation of breast feeding – A cross sectional study from a public hospital in Gujarat; *Vanisha Nambiar, The Maharaja Sayajirao University of Baroda*

Rationale/objective: Background: Immediate and uninterrupted skin-to-skin contact and initiation of breastfeeding within the first hour after birth are important for the establishment of breastfeeding, and for neonatal and child survival and development, yet delayed even in institutionalized setup. Aim: The present study aimed to estimate the barriers of early initiation in a hospital setting.

Methods/analyses: Methods: A single centric cross-sectional study (December to February 2019-20) wherein all deliveries in a public hospital in Vadodara, Gujarat, India were followed up (n=720 mothers) and data elicited on reproductive, medical and breastfeeding using mixed methods and recorded on Epicollect Mobile App.

Results: Results: Breast crawl in the labour room was not practiced in any mothers. Early initiation of breastfeeding within 1h of birth was only 16.1% and 61.6% could feed between 1-24h of delivery. However, 14.7% (105) of mothers reported no breastfeeding and were

given formula milk. Significant associations ($p < 0.005$) were seen early initiation of breastfeeding and time of receiving the child after birth, type of delivery (LSCS), positioning of the baby, term and weight of the baby.

Policy implications: Conclusion: Breast crawl in the labour room irrespective of the type of delivery need to be added in the protocol for all types of the delivery. Extensive training during antenatal period and lactation counsellors need to be mandatory for each maternity setup for improving breastfeeding rates in India.

Area(s) of adaption in the COVID-19 context: Most of the data was collected before the lockdown, only secondary data was collected during the lockdown from hospital records.

Implementation of SBCC to improve dietary diversity of pregnant/lactating women and children in tribal area of Odisha, India; *Rajashree Purohit, Catholic Relief Services*

Geographic location of implementation: Selected seventeen villages of one block

Background: Since 2016, CRS, along with its local NGO partner SWAD, has been implementing an integrated, multi-sectoral Social & Behaviour Change (SBC) activity aimed at improving the diets of pregnant/lactating women (PLW) and children aged 6-23 months in Gajapati district, Odisha. Gajapati is one of the most backward tribal dominant districts of Odisha where the nutritional status of PLWs and children aged 6-23 months (malnutrition among women is 24.5%, stunting is 34% among children below 5 years, NFHS 2015-2016) is not only poor but also diversity in terms of consumption of pulses, eggs and green leafy vegetable (GLVs) is missing.

Approaches/methods of program implementation: Before the implementation, a formative research conducted to understand barriers/enablers to behaviour change which informed the SBC activities. As per the findings, PLWs and children lacked diversity in terms of pulses, eggs and GLVs owing to various reasons like low productivity, less purchasing power and associated taboos. To address these barriers, the project worked on objectives of improving productivity through NRM and agricultural activities and enhancing income through alternative livelihoods like poultry and goatry. To initiate behaviour change, peer-to-peer group meetings with PLWs & mothers-in-law were conducted where participants were oriented on importance of consuming diverse diets and including eggs, pulses, GLVs. Other complementary activities; organizing cooking demonstrations using local food items, promoting home gardening. Home visits were conducted to negotiate on behaviour change with PLWs, but also with family members for supportive actions. Staffs also engaged with AWWs and ANMs so that uniform messaging is given across all platforms.

Key findings: The mid-term evaluation conducted in 2019 brought out that the proportion of PLWs consuming at least five out of ten defined food groups increased from 17% to 70%. Consumption of pulses increased from 67% to 77%, consumption of eggs from 4% to 45% and consumption of GLVs increased from 49% to 84% as compared to baseline study undertaken in 2015. Similarly, proportion of children (6-23 month) who received food from four or more food groups increased from 31% to 74%. Consumption of pulses increased from 61% to 90%, consumption of eggs increased from 9% to 67% and consumption of GLVs increased to 67% from 37%. All these could be achieved through promotion of home garden and positive influence on mother-in-law and husbands through negotiation during home visits. Engaging with men through agricultural activities and village health workers during VHND and cooking demonstrations acted as enablers for positive behavior change. Significance and application

Multi-sectoral approach adopted in the process like simultaneous work on natural resource management, agriculture and nutrition has helped in providing an enabling environment for behavior change. The project has gone beyond engaging only the target beneficiaries to negotiate with key influencers so that they can provide necessary support like procurement of nutritious foods for adding diversity to their diet. The project is also actively engaged with government frontline health and nutrition workers for delivering uniform messaging across all

available platforms. The learnings from this project on approaches to SBC could potentially add value to future POSHAN Abhiyan SBCC activities.

Area(s) of adaption in the COVID-19 context: Safety measures like social distancing were maintained in the group meetings during the Covid-19 scenario. Family counselling was preferred over group counselling to avoid gatherings. Also, the PLWs in small groups were oriented on handwashing. Support in establishing hand-washing stations in their houses are being provided and all the families are being supported with hygiene materials so that they can keep themselves safe from COVID by maintaining hygiene practices.

Improving IYCF practices with special focus on complementary foods and feeding; *Swapna Bikash Saha, Child in Need Institute*

Background: Improving Infant and Young Child Feeding Practices with special focus on complementary foods and feeding through system strengthening and communitization. A baseline study conducted by CINI and UNICEF in 2018 in 4 districts revealed that exclusive breast-feeding practice is 77.1 percent. However, the initiation of complementary feeding is 51.3 percent with frequency (20.7%), thinner consistency (82.5%) and food diversity (20.7%). More than 70% of the children (6-11 months) did not get 70% of RDA for micronutrients. Implementation in four districts of Odisha was undertaken by CINI, UNICEF and DoWCD&MS. The project was initiated in August 2018 and is ongoing.

Approaches/methods of program implementation: Specific approaches: -A centre-based approach adapted to facilitate counselling and feeding demonstration sessions at AWCs. IYCF counselling linked to NHED and VHSND.- Health Worker (F) capacitated to counsel caregivers on IYCF during ANC and Immunization sessions.- Community groups mobilized to expand the reach to all households with children below 2years for IYCF promotion- AWWs and ASHAs visited houses to counsel families face feeding problems, or with chronic growth faltering- PRI members engaged to observe and monitor the community meetings and quality of home visits and provide feedback during ICDS sector and GKS meetings. The data is collected from household as part of monitoring and the results shared during district, block and sector level convergence meetings to identify areas of actions. The implementation is led by DWCD&MS in coordination with DH&FW. The project team provides technical and implementation support to the DoWCD&MS for project implementation.

Key findings: A cohort of 20 AWCs with children in age group of 7-24 months was selected. These children are tracked monthly since July 2019. The data reveals that children being fed with age-appropriate quantity of food increased from 3% to 25%, consistency of food increased from 11% to 89% and food diversification (at least 4 foods) increased from 6% to 56% by Jan 2020. Concurrent project monitoring is undertaken by ICDS field staff and project team to determine the adoption of practices at household level. However, it's an ongoing project and an end-line will be conducted to measure the impact. Implementation through ICDS system in partnership with government has been a facilitator to ensure IYCF practices in the community. Through capacity building and skill development of frontline functionaries will ensure sustainability of centre-based approach. The irregular monitoring of activities at Anganwadi center by ICDS supervisors has been a barrier.

Significance and application: Skill development of mothers in preparing nutritious recipes using locally available foods for spot feeding of children with hygiene practices can be easily adopted. Experience sharing in next session promotes peer learning. This experience sharing builds social network among caregivers for exchange of good household level behaviors during COVID19. The project is in line with fundamentals of POSHAN Abhiyaan towards improving feeding practices during first 2 years of life through training, counseling and promoting social behavior change for optimal complementary feeding. Incremental learning approach is adopted during monthly sector meetings where ICDS supervisors discuss on one area of IYCF practice.

Area(s) of adaption in the COVID-19 context: During COVID 19, the counseling on optimal IYCF practices was undertaken at the household level jointly by AWWs and ASHAs in addition to promote hand washing, use of mask and social distancing while attending

VHSND and RI sessions. This was ensured following the guideline issued by the government. The videos on infant and young child feeding practices sent to AWWs through whatsapp which are being used to disseminate information and counseling during household visits. The workers without smart phone used flipbooks for counseling. The project field team along with AWWs also visited the houses of under-nourished children and counseled on age-appropriate feeding using foods from the family food basket. The ANMs and AWWs counseled the mothers on optimal IYCF practices during VHSND and RI sessions following the safety protocols of COVID 19. The growth monitoring at VHSND was also ensured so that support to the vulnerable children can be provided on time.

Dietary analysis of early postpartum women during the summer rainy season in Belgaum, Karnataka, India; *Zeyuan Wang, University of Michigan*

Rationale/objective: The purpose of the study is to use mixed methods to identify the dietary intake and cultural-based dietary practices among the same research participants in Belgaum, India. We hypothesized that the maternal postpartum nutrients intake was significantly lower than recommended amounts, and the maternal postpartum dietary practices in India have also been heavily influenced by traditional and cultural factors.

Methods/analyses: We used both quantitative and qualitative methods in the research to assess the postpartum dietary practice from different perspectives. We used FFQ and 24-hour dietary recalls to identify nutrients information, while used interviews to assess dietary practices from cultural and traditional levels.

Results: The postpartum diet in Belgaum, India, was cereal-based, and most of the nutrients intake was significantly lower than RDA. The postpartum participants followed various food restrictions during their postpartum period which originated from local beliefs, traditions, folk medicine, Ayurveda and, local perceptions towards food and diseases it may make either the mother or her baby prone to.

Policy implications: there is an urgent need for nutrition education and awareness generation among women. Meanwhile, considering the severe micronutrients intake insufficiency, addressing the micronutrients intake insufficiency should also be a key point to improve the local nutritional status. Traditional dietary beliefs must also be taken into account to develop culturally sensitive.

Bringing it together for good nutrition: What will convergence take?

Oral presentations

Frontline perspectives on implementing a convergent framework of action against malnutrition in urban informal settlements in Mumbai; *Sudha Ramani, Society for Nutrition, Education and Health Action, Mumbai*

Rationale/objective: The National Nutrition Mission (NNM) intends to 'converge' nutrition-related program components across sectors (nutrition, health, water and sanitation). While such an approach is very much needed, little is known about how 'convergence' across sectors is perceived and acted upon in the frontlines of service delivery in urban informal settlements in India. In this study, we have examined perspectives of Anganwadi workers (AWWs), the frontline workers of the Integrated Child Development Services, on working in convergence with the public health sector.

Methods/analyses: This exploratory qualitative study was done between November 2017-June 2019, in two urban informal settlements in Mumbai. We conducted in-depth interviews with 22 AWWs, purposively sampled and diversified in terms of age, education and years of experience. We tried to understand their views on convergence with the health sector, their willingness to do cross-sector work as well as perceived benefits/challenges. We also interviewed four individuals from the supervisory cadre to triangulate the issues raised by AWWs. We used a mix of inductive and deductive methods to analyse the data. Data was coded initially using pre-existing themes in the interview guide; and emerging themes were added in. Through an iterative process of data reduction, broad thematic categories emerged on which we have reported our findings. The software NVivo version 12 was used to aid the coding process. Ethical approval was obtained from the Institutional Ethics Committee, Bandra Holy Family Medical Research Society in Mumbai.

Results: Most AWWs acknowledged the relationship between 'nutrition' and 'health' concerns in women and children and shared that a convergent framework of action between the two sectors -ICDS and health- was likely to be beneficial to the community. However, AWWs also shared that convergence between the two sectors was currently limited to mobilization of the community for specific immunization campaigns, occasional interactions with health workers and sporadic data-sharing activities. The reasons reported by AWWs for limited field-level convergence included 1. Concerns of AWWs about working with the health sector – such as technical unfamiliarity with 'health-sector' issues, discomfort with data sharing and the lack of meaningful incentives for working together 2. Broader organizational challenges such as poor infrastructure and support for their work 3. Urban contextual challenges such as dealing with a migrant population and unmapped areas, and 4. Specific concerns about their changing roles under NNM.

Policy implications: The above findings indicate that a multi-pronged approach is needed to operationalise field-level convergence. First, critical structural gaps in the urban organizational set-up of ICDS need to be addressed and AWWs need to be better familiarised with the changing roles expected from them. Mechanisms to monitor the data digitalization process (including increasing the Supervisor-Anganwadi workers ratio) are essential. To work with the health sector better, the work-timings of Anganwadi workers need to be aligned with those of frontline workers of the health sector. Also, meaningful financial incentives need to be put in place for cross-sector work.

Close the gap in nutrition; *Neha Saigal, IPE Global*

Background: The project aimed to build evidence on the role of accountability in bridging nutrition inequities through improved access to nutrition services for the most marginalized groups, specifically Scheduled Tribes (STs). The project was implemented in Angul district of Odisha state. While coverage of ICDS services in Angul was relatively good, there were gaps in service delivery to villages inhabited by tribal communities. Limited awareness and access to complete SNP entitlements (especially eggs), skewed power relations, poor

grievance redressal hindered access. IPE Global, with funding from Children's Investment Fund Foundation, implemented the project for one year (December 2018 to December 2019), in partnership with local NGO SPREAD. The project was independently evaluated by Development Solutions.

Approaches/methods of program implementation: We created an effective, demand-driven grievance redressal mechanism, leveraging the Government mandated community monitoring committees under ICDS Jaanch and Matru committees (JC and MC). We worked with the district administration, by providing data and evidence for monthly ICDS reviews for action. On the ground, we co-created a people-led movement along with community, frontline workers, and PRI members. IPE Global led the implementation through Gram Panchayat facilitators, in collaboration with Anganwadi Members and Sarpanches. We conducted the following activities. Community monitoring meetings Conducted by JC and MC members in consultation with Anganwadi workers to ensure registered beneficiaries received SNP in right quantity and on time. Creating champions Engagement with Sarpanch, MPs and MLAs to make them nutrition champions. Training and handholding of JC and MC members to revive community monitoring process. Collaboration with district administration to identified areas requiring greater focus [ST dominated pockets] and jointly organized events to felicitate high-performing ICDS staff.

Key findings: In the past year, the intervention led to strengthening of SNP services by improving accountability of service providers towards the community. Evaluation showed that - the proportion of beneficiaries who received 12 eggs increased from 47% to 89%, those who received wheat chhatua, as per norms increased from 55% to 77%, and children 3-6 years who received THR increased from 4% to 26% in the sample area. Based on these estimates of change (baseline to end line) an additional 1676 children 3-6 years received THR, an additional 4834 beneficiaries received 12 eggs, and 2532 got wheat chhatua in the sample area. In addition, Government gave approval to establish 150 Anganwadi Centres from the District Mineral Fund. Over 1,300 tribal children benefited from an innovative solution led by the District Collector to provide Hot Cooked Meals (cooked by SHG members) in their hamlets.

Significance and application: Crisis situations such as Covid-19 pandemic, highlight the importance of community engagement and accountability for better nutrition access and outcomes. Empowered and aware communities can continue to demand their entitlements and hold service-providers accountable, even during crises. Activated committees can support administration in service delivery, while ensuring quick grievance redressal at local level and help in ensuring access to marginalized communities. Close the Gap in Nutrition has showcased a successful Jan Andolan or people's movement, a core pillar of POSHAN Abhiyaan, where government, political leaders, and community joined hands to ensure increased awareness and access to nutrition, through collective accountability.

Area(s) of adaption in the COVID-19 context: While the direct intervention was completed by December 2019, before the Covid impact set in, the community engagement and narrative on importance of nutrition and SNP services was kept alive through digital forums such as mass messaging using WhatsApp videos. Continued engagement with political leaders to spread messages on Covid and nutrition, and involvement of Jaanch and Matru committee members in monitoring SNP distribution in the district. These ensured that gains in local discourse on nutrition and strengthened service delivery of SNP is not lost amid the pandemic.

Bringing it together for good nutrition: What will convergence take?

Poster presentations

Food-insecure rural communities have reduced malnutrition through a multisector, rights-based community-driven approach; *Sweta Banerjee, Welthungerhilfe*

Background: Stunting, more accurately than underweight, reflects the long-term nutritional deficiencies and recurring illnesses that occur during early life, which hamper optimal growth and development. Breaking the intergenerational cycle of malnutrition through Multi sector approach is necessary. 3 years project - focuses on the 4 underlying causes on malnutrition- Agriculture, Feeding & care practices, WASH and access to services.

Approaches/methods of program implementation: Community led participatory processes including - Positive deviance camps for undernourished children, participatory learning & action (PLA) on Linking agriculture, natural resources with Nutrition, Integrated farming systems, Nutrition sensitive village planning & Budgeting and institution strengthening are the core approaches. Welthungerhilfe & local partners initiated the project in collaboration with ICDS in 2 districts of MP, in India. Also implemented in Bangladesh and Nepal.

Key findings: Major achievements in 1 year:-Outcome: 35% reduction in wasting Outputs: 28% increase in MDDW 28% children 6m to 24 m receive MAD 35% HH practice safely managed drinking water 12% HH use safely managed sanitation 50% villages have prepared climate smart and nutrition sensitive micro plans 70% of these micro plans have been implemented and being monitored by the community through active support of local government 59% of the target households are practicing the integrated farming systems approach and improve crop diversity to at least five food groups (cereals, pulses, vegetables, oilseeds, eggs/meat) Baseline, Midline & end line sample surveys are planned. Smart phone-based data collection application is used (Akvo flow) along with excel based data analysis for specific indicators. Facilitators – • Linking agriculture & Nutrition • Existing government schemes • Existing government mandated committees /institutions Barriers-• Inadequate & irregular execution of government schemes, esp. sanitation, drainage, MGNREGS • Poor capacities of elected members & village assemblies.

Significance and application: • Participatory Learning & Actions (PLA) effective tool for sensitizing and mobilizing community • Nutrition Gardens & Integrated farming has helped families to maintain dietary diversity even in crisis • Strengthening of community based institutions improves access & utilize entitlements under the different health & nutrition schemes • Families that understand the Linkage between agriculture, natural resource management, WASH and Nutrition ensure better care and nourishment of children, adolescents and women at household level.

Area(s) of adaption in the COVID-19 context: • Positive deviance camps were stopped and home visit to houses of children below 5 yrs were increased. • Procurement of Low cost instant complementary food & masks from SHGs and distributed to families with children below 5 years. • Extensive awareness on hand washing along with distribution of soaps, masks and sanitizers • Tippy taps and handwashing stations are being constructed in the houses as well as common places like markets, AWC and schools. • Dry food rations kits are being distributed • AWW is supported to continue growth monitoring maintaining all the safety measures • Seeds & saplings are being distributed with support from Agriculture department to maintain the Nutrition gardens. • Awareness videos are being made for information dissemination through WhatsApp groups in the community.

Functionality of anganwadi centres in Madhepura District, Bihar; *Lisa Bogler, University of Goettingen, Germany*

Rationale/objective: Anganwadi Centres (AWCs) reach children of poor households across India, providing pre-school education and nutrition to children 3-6 years of age, among others. They could potentially provide a channel for implementing additional nutrition

programmes to the beneficiaries. However, problems in the structure have been reported and pull into question the effectiveness of AWCs to combat malnutrition among the poorest households. The objective of our research, preparatory work for an iron supplementation intervention, was to capture the state of AWCs in Madhepura district, Bihar, in order to evaluate their potential as a platform for further nutrition interventions.

Methods/analyses: We conducted unannounced visits to all AWCs in ten blocks of Madhepura district, Bihar. AWCs found open during the first visit between November and December 2019, received a re-visit in January 2020. Exclusively through observation, we recorded details on the physical structure of the centre, presence of children, Anganwadi Workers and helpers, as well as the activities they were engaged in at the time of the visit. A picture was taken of each AWC building. Our analysis is a descriptive summary of characteristics of AWCs. We analysed heterogeneities between blocks and associations between AWC characteristics and their functionality. In addition, using geodata collected during the first unannounced visit, we created the first complete geographical map of AWCs in Madhepura.

Results: A total of 1719 AWCs were visited in the first round. Defining an AWC as open if anyone was present at the time of the visit, including children, Anganwadi Worker or helper, less than 75% were found open. Attendance is low. In less than 20% 20 or more children were present. The Anganwadi Worker was found absent in about 45% of open AWCs. At the re-visit among 834 AWCs several weeks later, 82% were found open and the Anganwadi Worker was present in 62% of open AWCs. While AWCs' main function is low-level teaching and providing nutrition, these activities were not frequently observed. Learning activities were observed in 10%. Among AWCs visited during lunch time, any indication of food being served was observed in about 30%. The physical structure of AWCs was of low quality in a majority of AWCs, providing little protection from weather and a poor learning environment.

Policy implications: Overall, our study of the state of AWCs revealed great heterogeneity and considerable gaps in their functionality. Their potential as platforms for delivering additional programmes appears to be limited in the current state. A strengthening of AWC functionality could improve their effectiveness in combating malnutrition and deliver essential services to vulnerable population groups.

Adopt an anganwadi initiative; Deepak Ram, Tata Trusts

Background: Tackling malnutrition is a collective responsibility and the multidimensional nature of the problem requires innovative efforts from all sections of society. Thus, convergence is an integral part of any attempt towards eradication of malnutrition. For effective convergence, personal involvement of members of different groups becomes necessary. For this purpose, the 'Adopt an Anganwadi' initiative was implemented in the Nilgiris district by making district level officials adopt at least one Anganwadi center. Led by the District Magistrate, over 120 centers were adopted by district and block level officials. The main line departments involved were District Rural Development Agency, District Rural Livelihood Mission, Health, State Rural Livelihoods Mission (TNSRLM) and Electricity Board. The program started during the 'Poshan Maah' campaign and continued in various forms over the next six months.

Approaches/methods of program implementation: Facilitated by me in the capacity of District Lead for Poshan Abhiyaan along with block officials, this initiative emphasised on targeted intervention for Severely Underweight (SUW) children (an average of 2-3 per center). Through ICDS-CAS, a digital mapping of centers with high SUW count was put out for adoption to ensure adoption of centers that needed critical attention. The district officials were asked to make at least one visit a month to ensure that infrastructure in the centers is adequate and to make provision for additional nutritional supplementation (peanut/sesame candies, dates and ghee) for the SUW children. Following the success in the first two months, schools and NGOs were also approached to adopt centers in their respective areas. In a district with a significant tribal population living in remote areas, NGOs are crucial in convergence due to their role in identification of high-risk beneficiaries (unregistered women/children), providing logistical support and sponsorship. Another key component of

this initiative was creating field convergence groups (ASHA/VHN, AWW, SHG members, NGO workers) in these mapped areas. This has paid rich dividends in terms of access to beneficiaries, logistics, intervention support and identification of high-risk beneficiaries.

Key findings: Heads of all line departments became more accessible to our department because of their awareness of the Poshan Abhiyaan mission and the issues facing ICDS. Besides the quarterly convergence meeting, the interaction between district officials of ICDS and DRDA, Health, TNSRLM increased significantly, leading to quick resolution of infrastructure related issues in Village Panchayat and led to more coordination with health dept. in terms of data sharing such as monthly high risk ante-natal mothers list and weak-born babies list. The frequency of high-level district officials visiting Anganwadi centers also increased significantly. A key outcome was the adoption of 35 centers by TNSRLM through 35 Panchayat Level Federation (PLF). They provided supplements for around 114 SUW children for two months. In each Panchayat the center with most SUW children was adopted by the respective PLF groups. Rotary (Nilgiris West) also adopted all the Anganwadi centers in the Ooty block. They held monthly medical camps for SUW children and provided nutritional supplements for them. A major barrier faced was the lack of coordination at the Anganwadi center level and the block level. For instance, there was less coordination between the Anganwadi workers and the Village/Panchayat officials, block medical officers and Block coordinator due to a strong hierarchy among them.

Significance and application: It is important to set quantifiable targets and use a data oriented approach when dealing with line departments. When digital mapping of the high malnutrition areas were made for adoption, line departments were themselves keen on working together in those areas and it also led to them visiting those areas frequently. It resulted in increased supplementary intervention for SUW children. The horticulture department contributed by giving Palak seeds to all Anganwadi centers. The Health department helped us with anemia screening in tribal centers. While there were no formal mechanisms to evaluate this initiative, there is a significant change in the way different agents now approach the problem of malnutrition. They are better informed about the nature of intervention required and more keen to bring it about. Although government officials and private players would help Anganwadis to some extent prior to this, now there is sustained engagement from line departments, schools and NGOs to ensure effective convergence.

Area(s) of adaption in the COVID-19 context: With Anganwadis shut, convergence with NGOs became all the more important because they sponsor initiatives and provide logistical support in remote tribal areas. The 'Adopt an Anganwadi' initiative was adapted during the pandemic through the Community Kitchen initiative, wherein many NGOs and line departments provided financial and material support. This pandemic has shown us that in any situation of crisis, lack of food security and subsequent malnutrition are major concerns. I believe that Adopt an Anganwadi initiative with highly empowered field convergence groups in critical areas is crucial for combating malnutrition.

Systems strengthening: Human resources, infrastructure, and financing

Oral presentations

Public private partnership for system strengthening (ICDS): A case of Swasth Bharat Prerak Program; Prapti Adhikari, The India Nutrition Initiative

Background: The India Nutrition Initiative (TINI) of Tata Trusts is one of the largest implementation partners of the POSHAN Abhiyaan, with an ongoing partnership with the MoWCD since January 2018. It implements Swasth Bharat Prerak (SBP) Program, a unique fellowship program which deputes young professionals - the Preraks as district-level managerial and administrative resources to the state machinery. This idea germinated from the honorable Prime Minister's vision of the corporate world contributing to the nation building process. This model of public private partnership aligns with the mandate of POSHAN Abhiyaan, aiming to reduce under nutrition among women, children, and adolescents, adopting a life-cycle approach with greater emphasis on the first 1000 days of a child's life. Primary stakeholders are WCD, Central and State Program Management Units and the NITI Aayog.

Approaches/methods of program implementation: TINI provides rigorous training at time of Prerak deputation, covering programmatic and technical know-how, key skills like critical thinking and leadership essential for the effective roll-out of POSHAN Abhiyaan. As district-level resources, they contribute substantially to moving the nutrition agenda forward. Following a bottom up approach, Preraks are supported by State Leads who are based at SPMU, and the latter by a national program team who support the structure, and reports to the WCD and CPMU on all programmatic aspects related to POSHAN Abhiyaan. Preraks ensure that through the learning by doing approach, frontline workers become skilled, thus supporting the ILA and E-ILA closely. POSHAN Abhiyaan largely relies on multi-sectoral and multi-ministerial convergence and Preraks oversee the drafting of CAP at district and block levels. As master trainers, they ensure that frontline workers are adept in using ICDS-CAS, providing for transparent, reliable and readily available data, a prerequisite for any programme's effective monitoring. The Abhiyaan envisioned making nutrition as a people's movement a Jan Andolan. To make this a reality, the Preraks utilize social media, community radio and public spaces to promote and advocate messages linked to good nutrition.

Key findings: The SBP program is a system strengthening program. In two years, Preraks have developed a niche understanding of strengths, gaps and challenges at the systemic and service delivery and brought forth some scalable and replicable initiatives. Use of ICDS-CAS for growth monitoring efficiency, contextual and cultural platforms for SBCC activities, rural and urban addressal to malnutrition, amla gur candy for iron supplementation are only some examples of initiatives adopted at state level. Preraks subsided the gap on human resource availability in many states, supporting the completion of ILA and E-ILA training, >80% SBPs are part of SRG and DRG. Convergence as a component is largely looked at by Prerak and they are instrumental in coordinating with the line departments, preparing the CAP at blocks and district levels and sharing with the state. They have been driving community engagement across the year and during special milestones such as POSHAN Maah. A team of researchers from IIT Gandhinagar have done an assessment of the SBP program and the final report is underway. (Specific scalable initiatives will be presented in the detailed paper).

Significance and application: - The entry point to aid ICDS services in communities is through anganwadi centers. Therefore, a sound infrastructure is to be looked at to make them more useful for the beneficiaries. - Convergence is a key to efficient service delivery; brings about a systematic mainstreaming in order to strengthen the service delivery. Linguistic dissonance is one of the most understated and overlooked barriers in health.- The system is still largely dependent on only the anganwadi workers, their movement from one

place to another; focus laid on the use of technology for communication, a realization largely arose on behest of the global pandemic.

Area(s) of adaption in the COVID-19 context: Yes, this is a system strengthening program and largely based on the day-to-day functioning of anganwadi centers - which were one of the first institutions to be shut in the rise of COVID-19 pandemic. SBCC and CBE activities, E-ILA, ICDS-CAS data entry and analysis, and even ILA training were done using technological communication medium. Preraks have developed tutorial videos catering to front line workers using different vernaculars and supported the state with knowledge resources around it.

Quality assessment of MIYCN service delivery in the 'First 1000 Days of Life'; Shailesh Jagtap, Alive & Thrive

Background: Evidence suggests that improving the quality of maternal, infant and young child (MIYCN) services is more than twice as impactful as improving coverage. Alive & Thrive (A&T) and the Indian Association for Preventive and Social Medicine (IAPSM) partnered with NITI Aayog to pilot regular quality assessment of the MIYCN services provided by health and ICDS frontline workers (FLWs) by local medical college teams to identify gaps and develop local solutions.

Approaches/methods of program implementation: Quality Assessments were conducted in good performing and poor performing blocks of Muzaffarpur and Kannauj districts over 8 months, in monthly visits of 3-4 days undertaken by 3-member teams composed of faculty from AIIMS Patna & GMC Kannauj Medical College. The visits involved i) observation of home visits, community based events (CBE) and Village Health Sanitation & Nutrition Day (VHSND); ii) interviews with FLWs; iii) interviews with beneficiaries; and iv) interviews with block program managers to assess the quality of MIYCN services and to identify reasons behind identified gaps using semi-structured assessment tools. 79 home visits, 19 CBE and 11 VHSND were observed over the period. Onsite feedback was given to FLWs and their supervisors and shared with district /state officials to develop action plan to address identified gaps. Results were shared at national level with NITI Aayog and subsequently communicated to ministries for facilitative action.

Key findings: The project provided district program managers with actionable data on the quality MIYCN service delivery during home visits, CBE and VHSND. For each platform, the assessment specified what services and counseling were provided. For example, for VHSND, it was assessed whether PLW registration, medical assessments, supplementation, vaccination, deworming were conducted and whether MIYCN messages delivered with sufficient precision. Some of the reasons for non-delivery of services and messages were also captured, such as insufficient stocks, lack of functional equipment and infrastructure, knowledge, training, availability and use of counselling tools, availability of logistics and supportive supervision/mentoring, fund availability, etc. Medical college level, district, block, and field level authorities were supportive of the initiative, but there were difficulties contacting front line supervisors. Medical college staff's feedbacks on the quality of service delivery were well received during system review meetings, however their participation to such meetings remained low throughout the project.

Significance and application: This initiative showed that it is feasible to engage Community Medicine department faculty from Medical Colleges to undertake regular assessments of and provide relevant feedback on the quality of MIYCN service provision to district officials to aid programmatic decision-making. The effective linkages formed between the medical education department and the state health mission have the potential to be replicated in other states/districts. State and district Governments can look up to the 500 plus medical colleges in the country as resource centres to provide them with evidence for improving program planning and implementation.

Area(s) of adaption in the COVID-19 context: The first phase of this pilot initiative across the above-mentioned two districts was implemented prior to the COVID pandemic situation in India. The project is now being expanded to three more districts in Uttar Pradesh and Bihar. The tools have been revised taking into account the new global and national

recommendations pertaining to MIYCN practices and modified ways of service delivery in the context of the COVID 19 pandemic.

Social Audit under National Food Security Act 2013; Tapan Gope, GIZ

Background: India's National Food Security Act (NFSA), 2013, safeguards food and nutritional security through Public Distribution System (PDS), Integrated Child Development Services (ICDS), Mid-Day Meal (MDM) and Pradhan Mantri Matritva Vandana Yojana (PMMVY). However, all these public services have been plagued with serious implementation problems related to challenges in proper monitoring, planning gaps and limited engagement of the community, lacking knowledge of the citizens on service entitlements, staff absenteeism and leakage of fund. The NFSA has specified regular social audits (Chapter XI) to ensure transparency and accountability of different line departments in the implementation of the Act, whereby the civil society and the beneficiaries can collectively monitor and evaluate the planning and implementation of the entitlements under the NFSA. However, the main issue regarding social audits under NFSA is that these are conducted by only a few states (Tamil Nadu, Chhattisgarh, Odisha and Andhra Pradesh) that too irregularly. The challenges of other states to introduce and institutionalize social audits under NFSA could be attributed to – absence of simplified national NFSA social audit process guidelines and manuals that can be adapted and adopted by different states to their local context; lack of capacity such as trained human resources on social audit processes; low-level of monitoring and awareness generation regarding Act entitlements.

GIZ Food and Nutrition Security, Enhanced Resilience Project in collaboration with the Department of Food, Civil Supplies and Consumer Protection, Government of Madhya Pradesh and with active involvement of the Women and Child Development and Rural Development Departments of Madhya Pradesh, piloted in August 2018 a Social Audit model as envisaged in NFSA 2013 in a few villages in the Khandwa district of Madhya Pradesh. The objective of the pilot was to design and implement a replicable model of Integrated NFSA Social Audit and Awareness Building aiming at improved awareness of entitlements under NFSA and effective and efficient delivery of all services under NFSA by improving community participation, ownership of schemes and improving programme monitoring.

Approaches/methods of program implementation: District Khandwa of Madhya Pradesh state was chosen to conduct the pilot work of Social audit. The district was chosen due to: i) Largely representative of socio-economic and geographic conditions of MP ii) Have a considerable tribal population (Khandwa has 35 % ST population) and iii) Availability of administrative support to enable participation of all departments. Out of 6 blocks in the district, 5 Gram Panchayats (GP) and 1 urban ward were selected viz. Khalwa, Pandhana, Punasa, Chhaigaon Makhan, Harsud and Khandwa Municipal Corporation. These 5 Gram Panchayats represented a mix of large and small population villages. One largely tribal GP from Khalwa block was also included in the sample. The urban ward was selected to have representation of heterogeneous socio-economic set up (different castes and slum population) and proximity to the market and other urban facilities. Each selected GP had one FPS, Anganwadi center, primary school where mid-day meal was served. For the social audit pilot, a door-to-door survey was conducted, i.e. a survey of 100 % households, to be able to identify the excluded households from schemes. Group discussions were conducted with ICDS, MDM and PMMVY entitled community members, and information collected as per the group discussion schedules. Observation schedules were also filled for physical verification of MDM, ICDS and Fair Price Shop centres. The scheme-wise report was presented at the Gram Sabha (assembly of the electorate) and participants were asked to share their issues and grievances related to the schemes. These grievances and the emerging action points were recorded in the Gram Panchayat (village council) meeting register. The Gram Sabha reports, and minutes of meetings were submitted to the District Food Officer, who forwarded them to respective departments / officials at the district level.

Key findings: This social audit pilot has succeeded in shedding light on several programme deficiencies. It revealed the gaps in the execution of the NFSA schemes. These were compiled by the Social Audit Team and a report was prepared for each of the 6 GPs.

Although several problems that surfaced during the social audit were already rectified locally by the local officials. This social audit pilot suggested a simplified concurrent social audit model on a periodic basis at least once in six months for the states.

Significance and application: To achieve the overall goal of the POSHAN Abhiyan, there is a need to increase the quality and coverage of ICDS, by improving governance structure, reducing staff absenteeism, leakages of funds and supply and false reporting of coverage. This is possible by increasing community participation, ownership of the scheme and improving programme monitoring. The suggested social audit model may be replicated for the ICDS and other services by the states.

Social identity, recognition and redistribution in health service delivery; Soumya Pancholi, Government of Haryana and Ashoka University

Rationale/objective: Rationale: The dominant discussions in India when it comes to nutrition services have often over emphasized the more visible issues in access and utilization, such as scarce resources, unequal spending, poor coverage and infrastructure, human resource shortage, affordability and issues of governance, etc. However, not enough attention has been given to questions of discrimination and exclusion due to one's social identity and belonging. Research Objectives: • Understand the access, distribution and utilization of public services put in the larger framework of principles of group differentiated citizenship. • Understand how the principles of differentiated citizenship have been followed in the conceptualization of the ICDS programme. • Understand how perceptions and attitudes are defined by the social location and experiences of different social groups and how they, in turn, shape the outcomes of welfare programmes. Research Questions: Q1. Has the design of the 'Anganwadi Services Scheme' under the ICDS Programme taken into consideration the idea of differentiated citizenship? Are the policy documents at the Centre and State level reflective of the same? Q2. How does the interaction of people belonging to different social groups, as service providers and beneficiaries affect the delivery and reception of ICDS (Anganwadi Services Scheme)? Q3. How does the specific social positioning of citizens within a community and their experiences determine their perception and attitude of the service delivery?

Methods/analyses: Research Design: Cross-Sectional - Qualitative Study Data Collection Methods: An independent survey of two villages (one with a homogenous population composition and the other with a heterogenous population on the basis of caste) was conducted. These villages, although from the same district, fell under different blocks. In the survey, pregnant and lactating mothers and mothers of children aged between 0-6 years were the participants. Along with this, there were structured interviews conducted with the AWW, AWH and the Lady Supervisors of the two villages. Apart from this, a thorough and detailed policy review was conducted by analysing the Centre and States' policy documents, government manuals on training of the AWW, other circulars, guidelines and directives, etc. Lastly, Supreme Court orders related to ICDS (especially Writ Petition (Civil) 196 of 2001) were also reviewed. Data Collection Tools: a) Structured and Semi-Structured Interviews with the intended beneficiaries (mothers of children between 0-6 years of age, as well as pregnant and lactating women), Anganwadi Workers, Anganwadi Helpers and Lady Supervisors. b) Facilities Checklist for the Anganwadi Centres (for non-participant discussion). c) Vignettes were employed for Focus Group Discussions with women from different communities. Data Analysis was both inductive and deductive. Framework analysis was used on the field, during the analysis process as it allowed the researcher to either collect all the data and then analyze it or do data analysis during the collection process. The results produced gave meaning to experience and views of the beneficiaries belonging to different social groups. Steps for data analysis involved - Arranging > Organising > Coding > Thematization > Interpretation > Documentation. The entire research was designed to be grounded or generative, i.e. based in, and driven by, the original accounts and observations of the people it is about. It is dynamic and systematic. It is comprehensive, data collected from the field was triangulated by other sources such as an observation checklist of the

Anganwadi Centre, allowing a full rather than partial or selective review of the material collected. Finally, the research called for a within-case and between-case analysis, to enable

Results: Key Findings: This study shows that a universal policy such as ICDS has failed to give recognition to the group identities of the marginalised and acknowledge their group specific demands. Research Q1. a) The study showed that the social realities and social relations contribute to furthering of the 'health-divide' between different communities. An extensive content analysis of policy documents revealed that the policy depends a great deal on the discretion of the service providers. It is instructive and lacked orientation towards action. b) The study also revealed the active role of judiciary in ensuring that the policy benefits all. Perhaps, most of the innovations in the design and the measures taken to promote inclusivity and accessibility to Anganwadi Services can be attributed to the courts of justice. c) A review of the training manuals of ICDS highlighted the inadequacies in training of AWWs. The curriculum designed for job training as well as refresher courses revealed that the policy is largely caste-blind. No training or sensitization workshops have been conducted for the AWW to equip her to deal with the complex social realities of the place and the people whom she serves. d) Not providing the minimum wages, not recognising them as government employees, no incentives or additional benefits, are some examples of how the State has failed its frontline health workers. Research Q2. It was found that the women and children from the SC and ST continue to face deprivation in the access to these services. This study identified two main barriers to access, one being the way the AWW discharged her duties, which was inherently biased. While the other one being how the systemic issues in implementation furthered this deprivation. Research Q3. The study found that social exclusion was visible in the everyday interactions of people with each other. This study identified five forms of everyday discrimination in service delivery. The roots of the structural oppression of the SCs and STs were found in the based in social relations of hierarchy and subordination. The way in which services were delivered in turn influenced the marginalised people's perception of themselves.

Policy implications: Policy Implications and Scope for Further Study: This study was a testament to the fact that the debates of redistribution and recognition do not merely exist in theory, but also persist in reality. This research makes it easier to theorize the links between socio-cultural and material injustices. When recognition injustices are regarded in terms of status subordination and misrecognition of group identities, it becomes next to impossible to ignore their links to different kinds of discrimination and, thus, to economic injustices. Such a dilemma could be resolved only by incorporating and operationalizing the principles of group-differentiated rights in policymaking. When recognition is understood as a matter of status and participatory parity, it becomes the responsibility of the policymaker to ensure that it is fulfilled. The political theory of differentiated citizenship helped in highlighting that universality is not uniformity, and hence, does not guarantee equality of status and participation. For policy makers, it is essential that policies focus not just on economic redistribution but also on the restructuring social relations which result in exclusion. It suggests that there needs to be a tailored approach in ensuring that specific needs of the disadvantaged groups are met. Perhaps the idea of 'targeting within universalism' (Skocpol 1991) is worth exploring. It essentially means making special provisions for those marginalised groups who are disproportionately disadvantaged. In the Indian context too, the policy makers need to come up with a tailored approach such as this one, to realise the twin goals of economic equity and social justice. The COVID Pandemic that has affected the entire world, has shown how the existing inequities in access to health make certain sections of the population more vulnerable. In this scenario, as far as services of the AWC are concerned, while some on the top of the social ladder might manage to go on without the services, there are certain sections of the society which simply cannot. As is known to us, malnutrition has an intergenerational cycle. Without the interventions and services of the government, especially in times like these, one cannot claim to ensure that this cycle breaks.

Financing nutrition in India; Ritwik Shukla, Accountability Initiative

Rationale/objective: This study estimated the potential costs to deliver at a core set of direct nutrition interventions (DNIs) scale (i.e., 100 per cent coverage) across India for the year 2019-20.

Methods/analyses: This study estimated the potential costs to deliver at a core set of direct nutrition interventions (DNIs) scale (i.e., 100 per cent coverage) across India for the year 2019-20. The study adapted the costing methods used in Menon et al. (2016) and Chakrabarti et al. (2017), while updating unit costs based on latest available data. Data was collected through secondary sources, including scheme guidelines and document reviews. The study entailed the following steps: 1. Breakdown of each intervention including determining target population for each intervention. 2. Estimating the size of the target population in 2019 across states for each intervention. 3. Determining relevant sources to update the local unit cost data. The target population multiplied by the relevant unit cost provided the cost estimate for implementing each intervention at full coverage.

Results: India should have spent at least ₹38,571 crore in 2019-20, across Union government Ministries and State government Departments to fully finance a set of core direct nutrition interventions (DNIs), at scale. In 2020-21, spending on nutrition will need to be benchmarked at least at this level, unless target populations or unit costs for key interventions change substantially. A bulk of this investment should have been for the Integrated Child Development Services (ICDS) Supplementary Nutrition Program (SNP) interventions for adolescent girls out-of-school, pregnant women, lactating mothers, children aged 6 months to 3 years[1], and malnourished children amounting to an annual allocation of ₹20,796 crore. This estimate is based on the new unit cost norms announced in 2017. Analysis of approved budgets however indicate that actual allocations stood at 44% of total costs required.

Policy implications: 1. Most core DNI's require multiple ministries and departments to work together, a key pillar of POSHAN Abhiyaan. These cost estimates can contribute to a more informed debate on resource allocation priorities, enabling states to prioritize the rapid scale-up of interventions with high benefit-cost ratios. 2. Costing studies can enable better planning, budgeting, and decision-making especially with changing needs. This is critical, given the pandemic when funding is constrained. 3. Comprehensive data on allocations and expenditures for all core DNIs are currently unavailable. For what is available, benchmarking these cost requirements with data on allocations and expenditures is useful to understand potential gaps.

Systems strengthening: Human resources, infrastructure, and financing

Poster presentations

Affordable innovative community-based strategies to improve attendance in anganwadi centers for children 3-6 years in selected rural areas in Bharuch district of Gujarat, India; *Archana Joshi, Deepak Foundation*

Geographic location of implementation: 7 Anganwadi Centres (AWCs) of 6 villages of Vagra block of Bharuch district

Background: Poor attendance in ICDS program impacts children's nutritional status with nearly 36% children <5 years in India remain underweight. Less than a quarter (22%) receive morning snacks and only 39% of them received pre-school education in [OBJ]. Increasing attendance in AWCs, could help in meeting a third of their recommended daily dietary requirements. An innovative strategy aimed at improving attendance of children was implemented with the hypothesis that improved attendance will increase supply of services through AWCs. An intervention research was piloted in seven AWCs in a rural block of Bharuch district comprising 363 children 3 to 6 years in AWCs.

Approaches/methods of program implementation: The intervention research was part of a larger study to understand utilization of Govt's health and nutrition schemes among eligible households. A baseline door-to-door listing was conducted to enumerate households with support from local volunteers. Socio-economic and demographic profile of 1775 households and utilization of govt. schemes was obtained using pre-tested structured questionnaire in local language. Trained researchers were engaged in conducting anthropometric measurements using age-appropriate scales among household members. BCC strategies, aimed at improving attendance to AWCs, were implemented with support from Anganwadi functionaries for 18 months. These included: i) pretested short cartoon films with health & nutrition messages, ii) disposable customized plates promoting cognitive development and spot-feeding and 3) life-size inflatable balloons worn by helpers to attract children to AWC. Attendance by AWWs and independent attendance was recorded by researchers. Post intervention end line survey was conducted to assess impact of BCC interventions on utilization and nutritional outcomes of AWC children.

Key findings: Data analysis was done using SPSS (version 25.0). Paired t-test was used to measure statistical significance. Consumption of hot cooked meals increased significantly from 78% to 93% within 18 months of intervention. Attendance of children improved from 62% to 73%. Of the 540 children enrolled, 187(35%) children were undernourished. They were tracked for consumption of hot meal at AWC. Proportion of wasted children among the undernourished children reduced from 64% to 58% Mean weight-for-age Z score for children improved from -1.78 in baseline to -0.52 within 18 months. Wasting among children tracked. (n=170, r=-0.11, p=0.001). Gender-based statistical differentials were observed in wasted male children which improved significantly (n=87, r = -0.006, p=0.010), The study shows that simple strategies like inflatable toys worn by helpers, IT enabled messages through cartoon films and cartoon disposable plates improved regular attendance in AWCs improved the nutritional status of undernourished children.

Significance and application: The results demonstrate that participative govt. grassroots functionaries in using innovative strategies and engagement of community volunteers for monitoring improves utilization of ICDS scheme and improves nutritional outcomes. Increasing the footfalls among children 3-6 years in AWCs improves supply of services and the AWC remains open for over 250 days. With >75% population living in households having per capita calorie consumption less than RDA (DetonA, 2009); strengthening mechanisms in accessing health and nutrition schemes can go a long way in mitigating undernutrition especially children <6 years. In the current COVID-19 pandemic, services of AWCs have been limited to home-delivery of supplementary nutrition packages. Short cartoon films in local language on food that makes children strong intergraded with concept of color and imagination is an effective BCC tool. Tech-enabled health and nutrition messages

customized bio-degradable plates could serve as an effective tool in delivering age-specific ECE interventions along with supplementary nutrition package.

Area(s) of adaption in the COVID-19 context: During the COVID-19 pandemic, the ICDS functionaries could effectively use short films showing health and nutrition messages to parents and children during door-to-door distribution of foods to children. Similarly disposable plates with cartoon depicting animals and foods could simultaneously help in cognitive development of children and promote parents engagement. The learnings of the intervention research have been scaled in other CSR intervention sites comprising 67 AWCs of rural block of Vadodara districts. Nutritious meals such as ladoos, etc. prepared from the ICDS supplementary packages are delivered to intervention households along with engaging ECE activities to promotive cognitive and nutritional development. The initiative helps in ensuring continuum of nutritional care services during COVID—19 pandemic when AWCs are not able to physically open.

Understanding the frontline bureaucrat: Role and challenges of the Lady Supervisor; Ruchi Junnarkar, Ritwik Shukla, Accountability Initiative, Centre for Policy Research

Rationale/objective: The Lady supervisor (LS) is a key functionary in the delivery of ICDS services. As a mid-level manager, she acts as a bridge between the block level and the Anganwadi (AWW) worker at the village. Officially, she is responsible for providing supportive supervision to the AWW by assistance in planning, training, ratifying financial documents such as bills, and sorting out other difficulties faced by the AWW. Despite her key role, the position is relatively under-studied. This paper sought to understand how LSs view their own role and the challenges they face.

Methods/analyses: The study uses a combination of quantitative and qualitative methods. Two survey districts were chosen in 3 states and within each district, 50 villages were chosen randomly. In each village, one Anganwadi Centre (AWCs) and its corresponding Lady Supervisor was surveyed. The total sample comprised 193 LSs across these states. In addition, in-depth interviews were conducted with 72 LSs across sample states. The quantitative data collected was analysed using STATA. For the qualitative data, a codebook was developed, and the data analysed based on the defined codes.

Results: The role of LSs in supportive supervision: 1.LS' articulated their main role as monitoring AWW performance. Yet, there was no standard response for how LS' assessed this. Most reported checking different data-based and non-data-based information to evaluate the Anganwadi Centre (AWC) and AWW. The average time LS' reported spending at AWCs during visits ranged from 45 min to 3 hrs across districts. The top 3 things they reported checking included children's attendance (94%), PSE activities (94%), and updated registers (90%). 2.LS' report taking different forms of corrective action when AWWs underperform, including providing additional training, enabling peer-support, or taking disciplinary action.3.LS' also helped AWWs solve problems, by mediating between her and beneficiaries, garnering community support, and coordinating with Panchayats and other functionaries. However, almost all interviewed LS' were overburdened due to several vacancies. On average, 1 LS was responsible for monitoring 44 AWCs, and travel allowances were frequently delayed.

Policy implications: As a key functionary providing supportive supervision to AWWs, the LS is uniquely placed to impact the implementation of Poshan Abhiyaan. This research unpacks her role, highlighting the following - 1.Objectives of Poshan Abhiyaan, while clearly defined, need reinforcement at the ground level through standardized guidelines and training for assessing processes, outputs and outcomes at AWCs.2.Numerous vacancies and delays in Travel Allowances release constrain LS' implementation capacity.3.There is a duplication of effort by LSs in data collection and monitoring, (such as the requirement to fill Rajdhara along with CAS in Rajasthan), that needs to be addressed.

Implementation of Integrated Nutrition Program in Andhra Pradesh; *Sandesh Kotte, Tata Trusts*

Background: India has a robust system of Integrated Child Development Services (ICDS) to deal with essential nutrition interventions. However, the coverage of basic services in ICDS is low. Nutrition practices at homes are poor. Moreover, ICDS centres do not have the child-friendly infrastructure, adequate growth monitoring devices and the staff are not skilled enough to implement the objectives of ICDS. This resulted in slow and uneven progress on nutrition front. To create a proof of concept, Tata Trusts initiated the integrated nutrition program. Major thrust under this program is to strengthen the ICDS and implement a convergence approach in nutrition specific and nutrition sensitive interventions. The project put especial emphasis on improving ICDS service delivery and coverage of services to target populations.

Approaches/methods of program implementation: Tata Trusts and Vijayavahini Charitable Foundation (VCF) have taken the initiative to transform AWCs with the collaboration of local communities, PRI and ICDS department which includes capacity building of ICDS functionaries focusing on 1000 days and provision of growth monitoring devices along with basic amenities. We have converged with multiple government departments and mobilized funds towards the Transformation of Anganwadi centres. The plan for the Transformation of Government-owned AWCs included undertaking minor civil works, construction of child-friendly toilets, playgrounds with equipment and the development of a nutrigarden. Additionally, efforts were taken to paint concept-specific drawings on the walls - from pictorial depictions of diet and care during pregnancy to early education tools on alphabets, numerical, vegetables, etc. The program majorly relied upon active community participation to attain sustainability and improve the quality of services.

Key findings: • Increase in the retention of children thus a lower rate of diseases due to malnutrition • Acceptance from the parental side as they are sending their kids daily to the Anganwadi centre • Timely disbursing all the services in AWCs by Anganwadi workers and taking responsibility in the work. • There has been significant improvement in the learning outcomes of the children. • Community participation ensured more transparency in delivering the ICDS services and strengthened the governance and Management of AWCs. A third party evaluation study has undertaken to capture the outcomes of the transformation initiative and based on that and other government documents, we have monitored and measured the program impact from time to time.

Significance and application: An outwardly simple intervention like overhauling the optics of AWCs and people centricity had a considerable effect on the health of beneficiaries in the region. It highlights the essentiality of the ICDS in delivering its obligations to ensuring the nutritional rights of children and women - an essential escape from the cycle of deprivation that so often renders them as being malnourished. The integrated approach is a step in the right direction to break this vicious cycle and ensure the well-being of children below the age of six and pregnant and lactating women. The intervention strengthened the ICDS delivery mechanism and implementation of POSHAN Abhiyan on the ground.

Development of a model for efficient delivery of healthcare, nutrition, and ECCE by the state government through ANMs, ASHAs and AWWs; *Shaileja Yadav, University College of Medical Sciences, University of Delhi*

Rationale/objective: The frontline workers play a crucial role in the uptake of services by beneficiaries and within this intersection of nutrition and health system, there appears to be a 'grey area' where these frontline workers are unable to deliver optimum services. These emerging gaps lead to inefficient service delivery by the public systems. There is inefficient delivery of health care, nutrition and Early Childhood Care and Education (ECCE) by AAA due to malpractices which are augmented by system deficiencies such as infrastructure and manpower challenges. The objective of this study was thus to map out and find policy level solutions for these malpractices at AAA nexus level and the system deficiencies in NHM and ICDS.

Methods/analyses: The study design has employed a qualitative methodological framework. A mix of primary and secondary data collection tools have been employed through – telephonic interviews, case studies accessed from audio-visuals (AV) sources (Video Volunteers and YouTube) and an extensive literature review. A multi-stakeholder perspective has been used to understand the underlying theme of malpractices. Two interview schedules were prepared for semi structured interview. 1. Interview guidelines for ICDS officials- CDPOs, Supervisors and Anganwadi workers 2. Interview guidelines for village sarpanch and District level bureaucrats. Analysis framework identified problems in mainly two domains - 1. Malpractices - performed by AAA nexus (data forging, absenteeism, corruption) and 2. System Level deficiencies (inadequate remuneration, delayed payment, lack of manpower, resources and infrastructure). The policy options were analysed using SWOT and PASTEL analysis. A theory of change was developed and was used to analyse the policy options in the end.

Results: The data from our research for this project reflects a vicious cycle of Malpractices and System Deficiencies. AAA Nexus - has made a token acceptance of convergence. And this nexus is plagued by Malpractices- Bribery, Data manipulations. and they are Incentive oriented. Socio cultural issues act as facilitator for these malpractices (Individual biases, Caste hierarchy, Lack of awareness) and System deficiencies create a breeding ground for these malpractices (Structural issues, Financial constraints, Monitoring challenge, Mentoring deficiencies). Therefore, in order to stop the malpractices, it is not only the frontline workers actions that need to be penalised; but the cycle of malpractices and system deficiencies that needs to be crushed. Our review of the government guidelines suggest that problem lies in the execution of the policies. Though the government guidelines themselves are comprehensive, their execution is severely affected the attitude of stakeholders involved. Therefore, our theory of change is to implement policy changes that bring about attitude changes at three levels – 1. Community Level, 2. AAA (frontline) level and 3. Higher (Block, District and State) Official Level.

Policy implications: Our study has brought out a vast scope and listed out implementation steps of policy options for inclusion of technology driven customized platforms (such as mobile application for tracking and monitoring the public system activities and using CAS application and software for addressing grievance redressal to effectively resolve challenges such as data discrepancy, and data related problems). Need for a third-party evaluation via Social Auditing of initiatives was felt, and implementation steps were laid out for same. Innovative IEC approaches to increase awareness in the community and deal with socio-cultural issues were also suggested. The convergence is all about collaboration communication and compliances. Transparent mechanism with sensitive workforce and enlightened community are the three pillars for success of any convergent platform.

Area(s) of adaption in the COVID-19 context: This document was developed as a Policy white paper for a hands-on project for Public Policy Programme for Executives by Vision India Foundation, under the mentorship of Sh Ashish Modi, IAS, Joint Sec., Deptt of Personnel, Govt Of Rajasthan. Instead of originally planned in person in depth interviews and field visits, telephonic conversations had to be done for in depth interviews of stakeholders.

Scaling up interventions to tackle anemia

Oral presentations

Factors associated with increased adherence to iron and folic acid supplementation among pregnant women: Results from a cross-sectional study in the states of Madhya Pradesh, Chhattisgarh and Gujarat in India; Mini Varghese, Nutrition International

Rationale/objective: According to the NFHS 4 (2015-16), 50% of pregnant women in India are anaemic (<11.0 g/dl) while 78% of women received IFA tablets only 30% consumed IFA for 100 or more days. To address this severe public health problem, Anaemia Mukht Bharat program was launched by the Government of India under the POSHAN Abhiyan in March 2018. One of its targets is to reduce anaemia prevalence by 3 percentage points per year. Iron and Folic Acid (IFA) supplementation along with counselling for diet diversity from the second trimester of the pregnancy are the approaches to address anaemia among pregnant women in India. The present study aimed at assessing the various determinants, which influence the consumption of IFA tablets among recently delivered women during their most recent pregnancy period in the three states of Chhattisgarh, Madhya Pradesh and Gujarat of India.

Methods/analyses: The present study covered 11,725 recently delivered women with an infant 0-5 months of age, covering 13 NHM divisions and 32 districts in three states. The sample size was estimated assuming 0.5 as the value of prevalence of adherence to daily IFA and Calcium among post-partum women during their last pregnancy. The study design followed a three-stage random sampling design quantitative method of data collection with a structured questionnaire used to answer the research questions. Multivariate binary logistic regression was carried out to understand the effect of maternal age, education status, social category, wealth index, family structure, mass media exposure, 4 or more ANC visits during pregnancy, awareness about anaemia, benefits of IFA and management of side effects of IFA on the adherence to at least 90 IFA tablets among the women, as the outcome variable. Data analyses were performed using SPSS for Windows software (Version 21.0).

Results: While 82% of mothers received 90 or more IFA tablets, only 72% consumed the same during their last pregnancy. Women who had received 4 or more ANC visits were found to be about 11 times more likely to adhere to at least 90 iron and folic acid supplements, making it the most significant predictor of adherence to IFA [Adjusted Odds Ratio (AOR): 11.07, 95% CI: 9.99, 12.27].. Women from older age groups, women with exposure to mass media, and women from nuclear families were more likely to consume IFA. Those with enhanced awareness about benefits of IFA, management of side effects of IFA and knowledge had more chances to intake at least 90 IFA tablets.

Policy implications: As per NFHS 4, the proportion of women, who received the recommended four or more ANC visits was 51% at the all India level. The study shows that ensuring and increasing the recommended number of ANC visits coupled with counselling and awareness about IFA supplementation increases consumption of IFA tablets. Study findings also suggest extending added attention to younger and lower educated to augment adherence levels of consumption iron supplements. The current ASHA incentives can be extended to cover ensuring four ANCs and consumption of IFA and calcium as their performance indicators. Regular review of these indicators at all levels enhances overall maternal health and nutrition services.

A Socio-Normative Intervention to Reduce Anemia in Odisha - Learnings from the Reductions in Anemia through Normative Innovations (RANI) Project; Lipika Patro, IPE Global

Rationale/objective: Iron and Folic Acid (IFA) supplementation is a key anemia-control strategy in India. The government recommends daily IFA supplementation for pregnant

women and weekly IFA for adolescents and all WRA. While adolescents and pregnant women can avail IFA free of cost, initial uptake and adherence remain inadequate. Non-pregnant WRAs remain uncovered. The RANI Project aims to demonstrate the efficacy of a norms-based behaviour change intervention to reduce anemia among WRA in Odisha by increasing IFA supplement use. RANI is led by a consortium of George Washington University, IPE Global and DCOR Consulting and is supported by the Odisha Livelihood Mission.

Methods/analyses: RANI uses a cluster randomized control design having a control and a treatment arm. Randomization has occurred at the village levels with a 1:1 allocation into each arm. Thirty villages have been randomly selected from each arm to be included in the impact evaluation. Data collection was conducted approximately nine months apart between baseline & mid-line, and end-line data collection will start in January 2021. Formative research was conducted in Angul to understand barriers and facilitators to IFA use among women. Focus group discussions, key informant interviews and perceptual mapping exercises were used and included family members as well. Based on these findings and direct observations in health centers, pharmacies and village health & nutrition days; an adaptive intervention package comprising of community-based group anemia testing, participatory learning modules, communication products (i.e. videos), demonstration of results and doorstep IFA delivery is being implemented in 130 intervention villages.

Results: The preliminary findings at mid-line have shown that the intervention has made significant positive impacts on social norms around women's health, dietary diversity and iron folic acid consumption among the WRAs in the intervention area. Over 10,366 women were tested in the first six months of project roll-out, with a population coverage of 61%, and the demand for testing continues to grow. Group testing has established greater understanding around the results of mild, moderate, and severe anemia levels and is resulting in action in most cases. 33% WRAs were taking IFA supplements in the intervention villages at mid-line against 5% at baseline. Improved community anemia knowledge and IFA use has led to an enormous pressure on the IFA supply chain as a result of which, IFA supply has almost doubled in the area. This has played a key role in improving accountability of front-line workers and the government.

Policy implications: Rani's policy implication will be two-fold. First, we expect the findings of the study to influence institutionalisation of strong BCC work at State level so that RANI interventions could be sustained and expanded across Odisha. Second, we believe that, at federal level RANI will provide a template for what should be the broad framework of behaviour change interventions under Anemia Mukt Bharat. Through RANI, we see that it is possible to design interventions that bring stakeholders from both the supply and demand sides together. RANI also demonstrates how community-based testing acts as a vehicle for change and increases community knowledge.

Area(s) of adaption in the COVID-19 context: Intervention activities under RANI had to be suspended owing to the pandemic from 19th March till 13th May 2020. A much-curtailed version of the intervention is currently being rolled out without anemia testing and community training sessions, in line with the latest government guidelines on social distancing and banning public gatherings. Training sessions, IFA distribution and adherence follow-up is currently being conducted through household visits rather than community gatherings. Being a social norms-based intervention, RANI has adapted to leveraging the norms at the household level by interacting with husbands, mothers and fathers-in-law and other family members in the absence of social interaction between WRAs owing to the pandemic. Additionally, the COVID-19 pandemic has also affected the IFA supply in the area as a result of which we have had to limit doorstep delivery of IFA tablets to only 60 intervention villages. As a research adaptation, we have divided the intervention arm (of 130 villages) into two sub-arms - 60 intervention villages with both IFA demand and supply intervention activities and 70 intervention villages with only IFA demand generation activities, to study the difference in impact.

Addressing adolescent anaemia in vulnerable urban Indian communities: A qualitative exploration; Rama Shyam, Society for Nutrition, Education and Health Action, Mumbai

Geographic location of research: Slum communities of Mumbai and Thane in Maharashtra.

Rationale/objective: Anaemia is a health menace for adolescents in India. A community-based anaemia intervention with adolescents from vulnerable urban communities followed a multi-pronged strategy towards anaemia management. Along with working directly with the adolescents, the programme strived to create an enabling environment, through interventions with families, schools and the community as well as the public health system and the local administration system, involving the adolescent participants as key collaborators in this effort. Documenting the nuances of transformations triggered by these interventions seemed relevant in view of the paucity of literature capturing the experiences of this target group.

Methods/analyses: The qualitative study is rooted in the critical theory paradigm. Two independent women researchers collected data at different points in the programme timeline after introduction of each intervention, including the group education modules on health, hygiene and nutrition, sessions with parents, community campaigns, collaborations with local government systems and consultations with public health care personnel. Evidence was gathered through 21 focus-group discussions and 30 in-depth interviews with adolescents, parents and other stakeholders. The adolescent participants were selected purposively, ensuring representation across variables such as age, sex and different programme sites. Parents were selected considering age, sex and location of their children. For collecting data from stakeholders such as health workers and teachers, a convenience sample had to be used. Content analysis of 214 drawings of a nutritious food plate by the participants supplemented the data. Thematic analysis was undertaken manually using the constant comparative method, and findings were presented thematically.

Results: The data suggested an interdependent relationship between enabling environment and health related knowledge and behaviour of adolescents, both supported by programme interventions. Nutrition education with adolescents led to reduction of junk food consumption though reinforcement of the messages was necessary to sustain the change. Transfer of information by the adolescents to their families and friends, resulted in their support towards this change. Parental support emerged as a crucial factor for ensuring anaemia treatment compliance. However, it was affected due to lack of awareness regarding consequences of anaemia and nutritional requirements of anaemic adolescents. Gendered barriers to nutrition and health care were excessive burden of care on mothers, neglect of daughters and pampering of sons. Adolescent participation could propel the community to improve environmental sanitation and hygiene. They were able to secure cooperation from the local administration system, and their involvement held promise to improve access to public health care.

Policy implications: The findings highlight the need for a holistic approach to address anaemia among adolescents, supporting the interdepartmental convergence among Health and Family Welfare, Education as well as Women and Child Development proposed by Rashtriya Kishor Swasthya Karyakram (RKSK) which focuses on comprehensive adolescent health. Investment into peer educators recommended by RKSK found support in our findings showing adolescents to be major catalysts of change. Behaviour change communication, an integral part of any effort to tackle anaemia, needs to consider the family as a unit and focus not just on health prioritisation but also on gender equity.

Area(s) of adaption in the COVID-19 context: Telephonic coordination with the public health system ensured continued health care to the adolescent participants during COVID - 19.

Scaling up interventions to tackle anemia

Poster presentations

Mirror Tool – A self-assessment tool for primary diagnosis of anemia; *Kunal Bhardwaj, Indian Institute of Public Health, Gandhinagar*

Rationale/objective: Anemia is one of the most prevalent nutritional deficiencies among children and adolescents in many developing countries like India. It is affecting the general health and development of adolescents due to poor food practices, testing mechanisms, and awareness. There are social barriers and lack of availability and affordability to the health services because of which they are not able to access the health facilities and get them checked up for anemia at the early stages of development. This study will help to assess the validity of the primary screening tool to improve the health-seeking behavior and early diagnosis of anemia.

Methods/analyses: Cross-sectional community-based study among 250 adolescents (15-19 years) belonging to urban slum areas of 4 districts across 3 states of India (Noida, Lucknow, Chennai, and Bangalore). The adolescents were selected by a non-random purposive sampling method. Primary screening was done based on pallor in eye, tongue, and palm of mirror tool, and BMI was also calculated. To confirm and validate the tool, Hb testing was done by using the Hemocue machine (gold standard). The statistical analysis was done to calculate the sensitivity, specificity, positive predictive value (PPV), and negative predictive value (NPV) of the mirror tool.

Results: The study found from the primary screening data that most of the adolescents who are having pallor tongue and palm (31.2% and 31.2% respectively) have also abnormal BMI. Out of total primary screened adolescents, females (53.9%) were more underweight than males (46%). The study also calculated the sensitivity of examination sites separately and found that conjunctiva has the least sensitivity (83%) and tongue has the highest sensitivity (89%) to primary diagnose the anemia. The sensitivity of the mirror tool calculated as 66% and specificity 65% in the field which is higher than WHO recommended HCS method.

Policy implications: Mirror tool is a self-assessment tool that can help in early diagnosis of anemia. The tool might be helpful in those high prevalent areas where there are no direct lab facilities available so that ASHAs, ANMs & FLWs can refer for the confirmatory test and intervention after the primary screening using the mirror tool. It is a cost-effective tool and user friendly and can be adopted at the community level for primary screening purposes. Such tool should be promoted during the public health emergency when the health facilities are limited for regular check-ups.

Use of locally available food supplement for anemia prevention and mitigation; *Krati Jain, former SBP & The India Nutrition Initiative; Sanjeev Kumar Maurya, Government of Uttar Pradesh*

Rationale/objective: Objective - To establish that intake of locally available Iron and Vitamin C rich supplements along with Iron Folic Acid tablet can substantially reduce Anaemia. Rationale - Anaemia is a major health problem, especially among women. It can result in maternal mortality, increased morbidity from infectious diseases, perinatal mortality, premature delivery, low birth weight, and diminished physical-mental capacity. Despite a number of dedicate government schemes to cure and prevent anaemia, its prevalence among women has only increased in last decade from 50% to 52% as per NFHS data. Therefore, it's time to integrate government schemes with local supplements to have self-sustainable solutions.

Methods/analyses: Baseline data of Hb levels was collected through lab technician using Sahli's method over a period of 2-days covering. ANM, ASHA, AWW, AWH were the core team on ground who collected and maintained the data of beneficiaries which was used for the study. The baseline assessment covered 177 samples which included –all pregnant and lactating women in village, all non-school going adolescent girls, and most of the school going adolescent girls that could get covered in 2-days. Out of 177 samples of baseline, 35

participated were selected who agreed to attend AWC 6 days a week for one month (20% sample). Daily supplement intake, which was monitored by AWW, ICDS supervisor and SBP. Health issues faced by females before the study was shared through discussion sessions. Symptoms relating to that of anaemia were noted and improvement were submitted during the study in form of short oral and written excerpts.

Results: Baseline recorded 98 % of anaemia. Out of 177 participants, 173 were anaemic. 3% were severe anaemic, 78% moderate anaemic and 17% mild anaemic. Women from tribal areas were particularly found to be severe anaemic. Monitored intake of Sehjan/ Moringa (Drumstick), Amla (Indian Gooseberry), Gud (Jaggery) and Chana (Black gram) was undertaken. Due to pandemic induced lockdown, the study was paused after 15 days of supervised ingestion and endline couldn't be conducted. Qualitative evidences suggest towards reducing tiredness which is one of the most common and prevalent symptoms of anaemia indicating towards improved status. 10 participants reported that they feel less weakness, 6 reported not feeling dizziness anymore, 2 reported improvement in diet intake, 2 reported feeling more energetic. All participants started reporting improvement in their energy levels from day 3 of the consumption practice. Submissions by participants indicate towards improved absorption of nutrients and increase in bio-availability of iron.

Policy implications: There are comprehensive guidelines and schemes in place to control Iron Deficiency Anaemia with regard to children, pregnant women and lactating mothers. However, the results are not indicative of successful implementation of the same. For sustainable impacts, there is a need to localize the solutions. The research clearly indicates towards improved results with the use of Sehjan, Amla, Gud and Chana, which is locally available and affordable as well as can be availed locally during the time of pandemic when supply of IFA might be disturbed. Such interventions shall lead to self-sustaining communities and strengthen the implementation of Poshan Abhiyaan.

Area(s) of adaption in the COVID-19 context: Keeping in mind the safety of people amid pandemic induced lockdown, the study was put on pause after March 30, 2020 (after 15 days of intake by participants). Participants started to consume the local supplements from March 16, 2020. Soon enough, outbreak of pandemic was announced by Govt. During week 1, monitored ingestion took place in AWC with social distancing norms. During week 2, packets with supplementary diets were given for home intake due to lockdown. Furthermore, participants were encouraged to continue consuming the suggested food supplements at home. Since the study includes local food material, it becomes even more relevant in times of pandemic.

“Test, Treat and Talk” (T-3) anemia camp: An innovative model to expedite anemia control in India; Ritika Khandelwal, CCM All India Institute of Medical Sciences

Background: India launched Anemia Mukt Bharat (AMB) strategy in 2018, to deal with the high burden of anemia with a target for 3% annual reduction in burden among selected vulnerable groups. Of the six interventions of AMB, two of them focus on testing and treatment using point of care digital methods for anemia and to provide intensified year-round behavior change communication campaign (Solid-body, Smart mind). AMB explores innovative ideas to tackle the high burden of anemia in the country. Test, Treat and Talk Anemia camp (T3 anemia camps) is one such innovative strategy embedding the above two interventions and calls for active engagement of various stakeholders towards demand generation. The T3 anemia camp strategy was formulated in September 2018 by Ministry of Health and Family Welfare (MoHFW), Government of India supported by academic and development partners.

Approaches/methods of program implementation: Test, Treat and Talk (T3) camps is an innovative strategy under AMB, focusing on demand generation and social mobilization for anemia. Under this strategy the participants attending the T3 camps are tested for anemia using digital hemoglobinometers, treated with iron-folic acid (IFA) tablets and delivered a talk (counselled) on a diet rich in iron, vitamin C and protein. Pamphlets highlighting information on inhibitors and enhancers of iron absorption, importance of dietary diversity, promotion of IFA tablets and low-cost iron rich recipes using indigenous foods are shared with the

participants for awareness creation on anemia and demand generation. As requested by MoHFW, National Centre of Excellence and Advanced Research on Anemia Control (NCEAR-A), AIIMS, New Delhi piloted a month long T3 anemia campaign during POSHAN Maah (National Nutrition Month) in September 2018, with support from AIIMS – Bhopal, Bhubaneswar, Jodhpur, Patna, Raipur and Rishikesh, National Centre of Excellence and Advanced Research on Diets (NCEARD) along with development partners such as UNICEF and others. The camps were conducted at the seven AIIMS institutions, their respective primary care centres and key stake holder offices such as NITI Aayog, Nirman Bhawan and Shastri Bhawan in New Delhi. More than one lakh people visited the camps and around 40,000 people were tested and treated for anemia. The overall prevalence of anemia was 39.2% (anemia in men: 26.0%; women: 52.4%).

Key findings: Following the success and active community participation the T3 camps were scaled-up across the country. In March 2019 (Poshan Pakhwada - reached out to 1.6 crore participants) and September 2019 (Poshan Maah), T3 camps were conducted primarily in the schools and during the village health and nutrition days under Poshan Abhiyaan. The details of the T3 camp activity were uploaded on the Jan Andolan website. Innovative manpower resources such as National Service Scheme (NSS) volunteers from AIIMS, New Delhi and volunteer community dieticians were involved successfully in T3 campaign conducted as part of Volunteer for Indian Women (V4IW) campaign by NCEARD in collaboration with NCEAR-A at 25 sites in Delhi under Pradhan Mantri Surakshit Matritva Abhiyan (PMSMA) day. T3 camps were also conducted in professional gatherings (The Partnership for Maternal, Newborn & Child Health [PMNCH] forum and Indian Public Health Association Conference – IPHACON 2020) and India International Trade Fair 2019 to reach out to wide range of beneficiaries.

Significance and application: Test, Treat, and Talk (T3) camp for anemia is a strategy aimed to improve visibility of anemia, create awareness about anemia among the general population and generate demand for anemia control efforts. The T3 camp is recognized as the AMB program activity and MoHFW in its budget funding to the states has allocated 15,000 rupees per camp. Empirical research on the effectiveness of T3 camp strategy would aid in evidence-based decision making for future scale-up.

Area(s) of adaption in the COVID-19 context: None. As T3 camp is community participatory event, it might be resumed after the COVID pandemic and as soon as normalcy is resumed. Innovative ways are being explored to conduct T3 campaign during the current new normal situation due to COVID-19 pandemic.

Reducing anemia among adolescent girls through Behaviour Change Communication; *Smita Maniar, Deepak Foundation*

Background: Anemia affects 32% of the adolescent girls aged 10-14 years and 48% of girls aged 15-19 years in India¹. The situation is similar in Gujarat. Considering the vulnerability, Poshan Abhiyan targets to reduce anemia in adolescent girls by 3% per annum². ICDS is a national scheme that also aims to address malnutrition among adolescent girls and other beneficiaries. Deepak Foundation has been allocated 67 Anganwadi centers (AWCs) of Vadodara (rural) block to further strengthen the implementation. The foundation initiated a value-added program to address anemia among adolescent girls through focused behavior change communication (BCC) strategy in 2019.

Approaches/methods of program implementation: Deepak Foundation is implementing BCC program to promote positive change in knowledge, attitude and behavior among adolescent girls to address anemia. The key approaches of the program are:• Identification of local women volunteers on the basis of willingness to undertake BCC. • Capacity building of women volunteers by experts to undertake effective counselling on key nutritional messages. • Identification and enrollment of adolescent girls registered in AWCs by selected women volunteers. • A pictorial flipbook is designed and pretested. It facilitates counselling of girls in key focused areas, enabling better retention of messages. • Each woman volunteer undertook monthly home visits of adolescent girls for~ Counselling on key nutrition messages~ Ensuring weekly IFA supplementation with lemon juice through Direct

Observation Treatment method (DOT) as many times as possible.~ Ensuring that the girls receive supplementary nutrition packets (Purna Shakti). ~ Group awareness sessions including recipe demonstration to promote nutrition through peer influence.

Key findings: The BCC program elicited positive change in the nutritional status of the girls. A total of 210 girls were tracked over a period of one year by 10 trained women volunteers (20 girls by each volunteer). Baseline and endline survey was conducted for assessing their nutritional status. The hemoglobin testing was done using haemoglobin comparator instrument (Sahli's method). At the time of endline, 189 girls were available for survey out of the total 210 enrolled (10% dropout rate). The key results are:• Reduction in the prevalence of anemia by 14% from 46.6% to 31.7%.• Reduction of underweight status (BMI<18) by 7.6% from 75.6% to 68.0%.The primary reason for improvement in the nutrition status was intensive BCC done on monthly basis by local women for an entire year. The main barrier faced was the dropout of the girls as many girls shifted their residence and could not be tracked.

Significance and application: This program is significant as it addresses one of the target of Poshan Abhiyan-reduction in Anemia among Adolescent girls. The program is easily replicable in other areas where women are participatory. It uses home-based approach hence can be implemented during COVID-19 pandemic situation. Involvement of local women volunteers ensure consistency of delivering key messages regarding IFA supplementation and nutrition. The program also ensures community participation as the girls and the volunteers are from same village/area. The engagement during counselling and adaptation to suggested practices by adolescent girls is better owing to familiarity with the volunteers, leading to positive deviance.

Area(s) of adaption in the COVID-19 context: The program uses home-based approach and hence implementation not affected even during the COVID-19 pandemic situation. Precautionary measures such as use of masks, sanitizers, and maintaining social distancing is practiced during home visits by volunteers. Group activities need to be avoided like recipe demonstration due to the Covid-19 pandemic situation.

[From research to policy to program: Diagnostic accuracy of point of care testing hemoglobinometers for estimation of anemia; Kashish Vohra, National Centre of Excellence and Advanced Research on Anemia Control](#)

Rationale/objective: Anemia Mukht Bharat (AMB) was launched in April 2018, with a highly ambitious target of 3% annual reduction in anemia burden. Point of care testing (POCT) of anemia and treatment is one of the primary interventions under AMB to achieve this target. Point of care testing provides hemoglobin results instantly and indeed aids in appropriate and timely management of anemia. POCT also has other advantages such as requirement of less blood sample (one drop of capillary blood sample); usage at primary health care and community settings; non-requirement of sophisticated laboratory or trained laboratory technicians. POCTs with poor diagnostic accuracy or complicated procedure will lead to erroneous estimation of hemoglobin level and eventually leads to incorrect management of anemia affecting both the individual and health system. This study aimed to assess the validity of POCTs – i) invasive digital hemoglobinometers (DH)- A and B among pregnant women and ii) invasive DH-A, a non-invasive DH and Sahli's hemoglobinometer (invasive non-digital POCT) among under-five children for diagnosis of anemia compared with hematology analyzer.

Methods/analyses: Pregnant women were recruited from the antenatal clinics of the Primary Health Care centers (PHC) - Dayalpur and Chainsa and Sub District Hospital (SDH) Ballabgarh, Haryana, India (2018-19). Under-five children were recruited from the Under-five clinics of the SDH (2019). Hemoglobin levels of all study participants were estimated in POCTs using capillary blood samples and hematology analyzer using venous blood samples. Additionally, a pulse co-oximeter based non-invasive DH was also used to capture hemoglobin level from finger/toes of the under-five children. Bias (SD), sensitivity, specificity

and concordance correlation coefficient of the hemoglobin values estimated in POCTs were assessed against hematology analyzer.

Results: A total of 110 pregnant women and 120 under-five children were included in this study. Compared to hematology analyzer, the bias (SD) of hemoglobin (g/dL) values estimated using invasive DH-A was 0.25 (0.85) and invasive DH-B was 0.04 (0.9) among pregnant women. The sensitivity of invasive DH-A was 90%; invasive DH-B -79% and specificity of invasive DH-A was 80% and invasive DH-B -81% for diagnosing anemia among pregnant women. Both invasive DH – A and Sahli's hemoglobinometer diagnosed anemia in under-five children with similar sensitivity (invasive DH-A - 92% and Sahli's - 96%) but varying specificity (invasive DH-A - 83% and Sahli's - 70%). Non-invasive DH had 24.4% sensitivity and 96.7% specificity for diagnosing anemia among under-five children.

Policy implications: Digital hemoglobinometers (particularly the invasive ones) have high sensitivity, specificity and narrow bias (SD) among pregnant women and under-five children and should be successfully introduced in AMB. More research and development (R&D) including bench research is required before non-invasive methods (including those based on Artificial Intelligence) can be deployed in program mode in AMB for hemoglobin estimation. Similar research potential for development of other POCT devices for complete blood count, high performance lipid chromatography and ferritin should be explored to enable diagnosis of cause of anemia.

What we eat: How different aspects of food systems come together

Oral presentations

Empowered State Food Commission led convergence efforts enhances food and nutrition services: Learning of last 4 years from Odisha; Niranjana Bariyar, Odisha State Food Commission

Background: National Food Security Act 2013 aims to provide food and nutrition security in the human life cycle approach by ensuring access to adequate quantity and quality of food at affordable prices, besides focusing on the nutritional needs of children, pregnant women and lactating mothers. Programs like TPDS, AAY, ICDS, MDM and maternity benefit scheme come under the purview of the Act. Constituted in May 2016, the Odisha State Food Commission (OSFC), quasi-judicial body has been actively pursuing to bring together various line departments on a common platform for smooth and quality delivery of food and nutrition services (both nutrition specific and nutrition sensitive) at various levels by addressing address gaps and fixing accountability.

Approaches/methods of program implementation: OSFC has led the Convergence efforts at various levels with the larger objective to improve of nutritional status of the vulnerable groups. Key departments delivering various nutrition specific and nutrition sensitive services like W&CD, H&FW, MDM, FS&CW, PR&DW, Rural Development, NRLM, SSEPD, P&C and ST SC Development were involved in the convergence efforts. Progress related to process and output level indicators of the programmes of these Departments were obtained beforehand and the achievements were discussed in the meeting. At the state level, the Commission used to have quarterly meeting with the Nodal officers of these Departments and at the District level, a convergence meeting was organized with the district & block officials. Mandatory field visits and review meeting at the village/Gram Panchayat level were held before each district level review. Local NGOs and elected Panchayat representatives also attended these review meetings. Agenda were shared and compliances from the Departments were regularly followed-up and revised advisories were issued.

Key findings: The regular convergence efforts have led to some important decisions within Departments:

- Extension of special provisions for those PVTGs living outside the micro-project boundary like maternity benefit scheme and AAY. Three more micro-projects to be added for the PVTGs.
- Most districts conducted special joint meetings to streamline IFA procurement and last mile distribution. Procurement of Hemocue initiated for extensive Haemoglobin testing at VHNSD.
- SMS based real time monitoring of daily MDM consumption and weekly IFA administration at schools started.
- Provision made for payment of food security allowance under MDM and TPDS.
- State reported full utilization of the quota under Antodaya Anna Yojna.
- Replacement of all private fair price shop dealers with institutional ones (WSHG/PRI).
- Optimal utilization of the state ceiling of ration cards by removal of dead beneficiaries and addition of the waitlisted in the priority list.
- Increased focus on role of WCD on identification and referral of SAM children to NRC.
- Inclusion of special schools under SSEPD Department with enrolment above 7000 under programmes like NIPI, RBSK, NDD and MDM. MDM started in newly started Odisha Adarsha Vidyalayas.
- More than 1200 new AWCs started in the previously tagged distant villages.

Significance and application: The indicators shared for discussion by the Commission found a place in the agenda of the district level convergence meetings. The review meetings

of the Commission have also oriented many district Collectors on the way to facilitate these meetings with the involvement of converging departments. In some district level meetings the local MLAs also participated to learn about the status of their constituencies. The learnings from the field have also helped the Commission to issue specific advisories to the respective departments. All this was all the more important with POSHAN Abhiyan yet to kick start in the state.

Area(s) of adaption in the COVID-19 context: In these COVID-19 times, the Commission has been actively pursuing up with the concerned Departments and have been issuing relevant advisories. The FS&CW Department has been urged to be geared up in identification and coverage of all households who fall back into the poverty bracket and meet the income criteria for a ration card. W&CD Department has been requested to develop a SoP for tracking, provision of THR/SNP, registering at AWC, growth monitoring and referral of SAM children to NRC for home bound migrant children in convergence with Health Department. Department of Agriculture & Farmers Empowerment have been requested to promote millets cultivation and also converge with Mission Shakti, Horticulture directorate and Odisha Livelihoods Mission to promote kitchen gardens for household and community level.

Long-term double fortified salt usage for child health in rural Bihar; Liza von Grafenstein, Goettingen University

Rationale/objective: Relatively few existing randomized controlled trials have been evaluated over the long run trying to elicit the most suitable period of a nutrition treatment for child development. We want to bridge this gap by examining the effectiveness of a government directive in India that postulates all government run schools to improve children's diets by using iron and iodine fortified salt in the school feeding program. Our goal is to elicit how a childhood intervention unfolds in outcomes for young adolescents considering an early or later start and a shorter or longer duration of the treatment of up to 4 years.

Methods/analyses: We build on a pre-existing cluster randomized controlled trial supplying DFS for the Indian midday meal scheme. We have conducted an endline data collection in 2019 that included a household survey, cognitive ability tests, health assessments, observations at the school level, administrative records of attendance as well as interviews of headmasters and school cooks. The sample includes about 80 government middle schools with a sample of about 1,000 school children with on average 11 years of age at endline. Using three waves of panel data, we analyze the difference in means of the health, cognition, and education outcome variables of four different exposure groups of double fortified salt with ANCOVA estimation techniques considering endline and midline separately.

Results: Our results show that short-term treatments can decrease the likelihood of any anemia (at midline) and moderate anemia (at endline). Compared to a child group that is hardly exposed to the treatment (for 4 months in later childhood), children who receive the treatment for almost 4 years or only in early childhood increase the hemoglobin level by 0.2 g/dL. Early childhood exposure reduces the likelihood of a child being moderate or severe anemic by 7.5 percentage points compared to hardly exposed children.

Policy implications: The results have high policy relevance as they show the potential of fortified foods in the midday meal scheme to increase health of adolescents. Unlike other supplementation programs at schools that need additional staff capacity, this type of treatment does not crowd out other programs as salt is anyways used when cooking lunch. The results highlight that early childhood exposure is in particular long-lasting and so could even in a situation where schools are closed benefit the children who have received it earlier.

Technical assistance and research for Indian nutrition and agriculture; Soumya Gupta, Tata- Cornell Institute for Agriculture and Nutrition

Background: TARINA promotes the design and implementation of nutrition- sensitive food systems in India. Its multi-sectoral approach includes production system diversity, diet diversity, women empowerment and WASH, and leverages agriculture for enhancing the rural poor's year-round access to affordable, diverse and nutritious foods. The program emphasizes both, a reorientation of India's agricultural policies towards nutrition security, and convergence between ministries and stakeholders focused on food supply and nutrition improvement. TARINA is led by the Tata- Cornell Institute for Agriculture and Nutrition at Cornell University, and funded by the BMGF (2015- 2020). Its partners are IFPRI, BAIF, CARE India and GDS.

Approaches/methods of program implementation: The TARINA approach includes field level implementation, policy advocacy, and the establishment of a Center of Excellence in Delhi. The convergence of agriculture and nutrition activities is a common theme across these three approaches.

1. Field level implementation at the household/ community level:
 - a. Increased supply of nutritious non- staples: promoting crop diversification, kitchen gardens, biofortified crops
 - b. Increased demand for nutritious foods: Behavior Change Communication, women's empowerment
 - c. Nutrition- sensitive food environment: Markets, WASH, food storage and safety, gender- sensitive mechanization
2. Policy advocacy
 - a. Engagement with government
 - b. Policy research that enhances diet quality at affordable prices
3. Centre of excellence
 - a. Design and implementation of food systems metrics
 - i. Context-specific indicators for women's empowerment in agriculture, production diversity
 - ii. High-frequency assessment of markets as a source of nutritious foods diversity and prices
 - iii. Women's dietary gap
 - b. Capacity building through trainings, workshops, internship programs

Key findings: The outcomes of the field- level interventions in the program were related to increased demand for nutritious food, enhanced production system diversity, reduction in seasonal food deficits and empowerment of women's SHGs. The outcomes with respect to policy advocacy took the form of engagement with various national and state- level policy dialogues. The Centre of Excellence led the design of nutrition- sensitive indicators for tracking food systems outcomes in the project. Program input, activity and outputs were tracked through a Monitoring and Information System (MIS) that was reported quarterly. Outcomes were tracked through nutrition- sensitive metrics in multi- topic baseline (2017) and midline (2019) surveys carried out with a panel of 3600 households that collected data related to agricultural practices, women's empowerment in agriculture, demand for food at the individual and household level as well as anthropometry.

Significance and application: TARINA highlights how convergence of different components of the food system can support the objectives of the POSHAN Abhiyaan. Given the persistence of malnutrition in India, we outline a detailed policy agenda for strengthening the POSHAN Abhiyaan by convergence with other ministries in order to: - Increase the supply and affordability of nutrient; - dense foods through diversification of the production system and food safety nets, and investments to make markets more nutrition-sensitive; - Increase the demand for such foods through women's empowerment & positive nutrition behaviour; - Improved absorption of nutrients by investing in clean drinking water and sanitation.

Area(s) of adaption in the COVID-19 context: Given the exogenous shock due to Covid-19, the program has had to undergo major changes in its design and delivery in its final year

(2020). An endline is proposed to be carried out in August 2020 is expected to capture the major changes in outcome parameters related to food and nutrition security due to the sudden shock. For the purpose of the conference we will present outcomes level findings from the first two rounds of survey. TCI- TARINA has analyzed implications of the COVID-19 pandemic for nutrition security, and therefore the objectives of the POSHAN Abhiyaan, in India. An immediate outcome of the pandemic- induced lockdown has been the halt in functioning of programs like the Mid- Day Meal and ICDS that provided nutritious meals to young children. This scarcity in access to nutritious foods comes at the same time as there was a massive reverse migration of people back to villages, especially in the Eastern states of Bihar, UP, Odisha, Jharkhand and West Bengal. Such a reverse migration meant extra mouths to feed in rural areas, while remittance incomes were down to zero. The pandemic also affected agricultural supply chains adversely as farmers were unable to sell their produce in the face of markets that had shut down. This in turn resulted in a reduced availability of nutritious foods and an increase in prices of non- staples like fruits, vegetables, pulses and eggs. The CPI price index for food in India stood at 9.28% and 7.87% in May and June respectively. Poultry and meat prices came down due to rumors of animals being COVID-19 carriers. It is likely that high cost of more nutritious food will force people in rural areas and the urban poor to consume more calorie-rich food, which in the short to medium term could reverse gains made in malnutrition reduction during the last few years. It is against this background that programming for the POSHAN Abhiyaan, going forward, will have to take into account such disruptions in the supply, and unaffordability, of key non- staples.

[Novel framework to engage with government and other stakeholders: Experience of staple food fortification program implementation in 15 states of India; Agnita RN, Karnataka Health Promotion Trust](#)

Background: Government and stakeholder engagement is fundamental to effective and efficient implementation of public policy. Engaging with the governments is often a challenge for civil society organizations and private sector due to say lack of continuity, leadership, say lack of platforms for sufficient engagement or lack of adequate contextualization to the local context and hampers implementation on the ground. The SDG-Nutrition goals invite convergence of sectors and institutions for achieving population-based indicators. Karnataka Health Promotion Trust with the support of Global Alliance for Improved Nutrition (GAIN) implemented a large-scale Food Fortification project across 15 Indian states. The project being implemented since 3 years aims at exploring gaps and developing mechanisms and process to strengthen stakeholder engagement. The project activities focused on championing the government and leveraging private sector partnerships to achieve maximum scale of impact.

Approaches/methods of program implementation: Several steps were followed in a chronological order which are mutually exclusive one following the other to engage with different stakeholders. The landscape analysis was performed to identify policies, guidelines, circulars, act, framework and other relevant documents in the context of fortification in the country from a literature search in the food fortification context. A thorough mapping and assessment of various stakeholders in the area of food fortification within the country was performed. A proof-of-concept framework for effectively engaging with government and stakeholder in food fortification platform was developed for implementing of an ongoing food fortification initiative. The framework was developed from expert input, review of existing frameworks and practical experience of working with state governments and other stakeholders in the food fortification context. The overarching vision was to develop a framework which is fragmented yet coordinated and one that is adequate to the need and is sustainable. The framework would essentially assist in establishing institutional arrangements that will mobilise resources of different sectors and establish partnerships to catalyse adoption of sustainable delivery systems. In the absence of an existing framework guiding the sequential steps to stakeholder engagement in the context of large-scale staple

food fortification, we derived at each step based on practical implementation in a low- and middle-income setting.

Key findings: The project has engaged with multiple departments of 15 state governments. As a result, about 1,000 food safety officials of state food safety authority were sensitized for effective implementation of food fortification. Collaboration of government and private sector resulted in capacitating 160 edible oil units, 75 milk dairies and 113 wheat flour industry. Inter-departmental convergence meetings were organised in 6 states and 4 states have constituted task force to ensure effective coordination and implementation of fortification with directives issued leading to several policy changes. As a result of these efforts, 5 state governments are supplying fortified edible oil and 3 states are supplying fortified wheat flour in Integrated Child Development Service (ICDS) and Mid-day Meal program (MDM). Four states have started supplying fortified edible oil and 3 states supplying wheat flour through Public Distribution System (PDS). Four states have committed for additional budgetary allocation in the upcoming financial year for supplying fortified edible oil in all safety net programs of the state.

Significance and application: The goal of the project was to champion the government and leverage private sector partnerships to achieve the maximum scale of impact. A partnership linking government, private sector and civil society was designed which was participatory in nature. The engagement framework developed will assist in designing and planning of programmes of national importance and conducive to policy implementation which can be applied to even other priority national/state programmes in future. The program implementation aimed at reducing micro-nutrient deficiencies will directly benefit in pandemic situation by improving immunity of the population. No unintended consequence of the implementation is foreseen. The program implementation will improve micro-nutrient status and hence prevent under-nutrition among the population which is in line with target of POSHAN Abhiyaan.

Area(s) of adaption in the COVID-19 context: Project moved from physical outreach and onsite based engagement with government and food industry to virtual connectivity options. Continuing of capacity building and provide technical support to edible oil, milk and wheat flour industries¹. Many national and international agencies started conducting webinars and other such remote connectivity efforts, soon after COVID related restrictions were imposed. However, reach to large MSME group, language related barriers and contextualization to local issues were few limitations. Project capacity building activities moved to regional and individual level virtual training, video based learning and live meetings, addressing pertinent challenges faced by local industries.² Technical material on importance of micronutrients in the context of COVID were developed and shared with industry. Encouraging industry to pursue marketing strategies highlighting role played by various micronutrients for healthy living, which are part of fortified food. 3. Simple online survey tools are being used to collect feedback and to understand impact of COVID on food industry. Advocacy and technical support to state governments 1. Unique positioning of the project between government agencies and staple food producing industry was utilized to the hilt to enhance communication and coordination. Scope of the project was expanded to support industry to adopt COVID related safety measures and directives issued by government, besides updating state food regulatory agency about challenges faced by the industry. Thus paving way to ensure supply of essential premix, access to laboratory services etc. 2. Communication material released by government of India were quickly translated to multiple state level languages and were shared with government agencies as well as concerned industries.

[Improving nutrition through safe, healthy, sustainable diets: Experience from Eat Right India; Arun Singhal, Food Safety and Standards Authority of India](#)

Background: Launched in 2018 by FSSAI, in response to India's high food borne disease (FBDs) burden, undernutrition and rising burden of non-communicable diseases, Eat Right India seeks to address at scale the supply and demand sides of safe, nutritious and

sustainable food consumption by all to complement national efforts to address undernutrition. FBDs contribute to child undernutrition (under-fives carry 40% of the burden). Engaging multiple sectors and actors, it targets all segments of the population across age-groups, gender, socioeconomic status, and geography. Combining food regulatory approaches with empowerment and capacity building, the program promotes consumer and industry-centric approaches for behavior change.

Approaches/methods of program implementation: FSSAI and state food authorities implement the program. Drawing upon emerging global thinking and innovating to address India-specific context, the program adopts a 'food systems' approach. It uses 'five key levers of change' to maximize efficiency and the program's potential to achieve large scale change: (i) partnerships with multiple stakeholders, e.g., national programs, like NHM, professionals, food industry, scientists, academia; (ii) 'Engage, Excite, Enable' stakeholders to gain and enable their support; (iii) leveraging a private ecosystem to complement government efforts and extend outreach cost-effectively; (iv) technology to expand reach and efficiency; and (v) mass mobilization to engage and promote change.

Key findings: While early to assess outcomes and impacts, testing over its two-year implementation has demonstrated the success of strategies and approaches. Food fortification has expanded to 19 states and 5 UTs; mass mobilization initiated with the Swasth Bharat Yatra reached 25 million citizens. Engagement and collaborative approaches tested across stakeholders and initiatives, e.g., 30,000 Eat Right Schools, 30 places of worship, 3 Eat Right railway stations and 20 clean street food hubs are being rapidly scaled. 350,000 certified Food Safety Supervisors at food business premises and 9,200 Food Safety Mitras demonstrate the feasibility and cost-effectiveness of private sector partnerships to expand outreach, including informal food businesses. Behavioral economic theory-based BCC has reached masses through television, social media and the network of professionals (NetProFAN). FSSAI's regulatory and convening power, links with states and partnerships with multiple stakeholders are enablers; challenges include India's size, population, diverse food habits and huge unorganized food sector.

Significance and application: Eat Right India's systems change approach to drive complex change is different from the national Mission approach of several national programs. 'Flexibility' and 'adaptability' and 'whole of government' approach, engaging with new stakeholders have proven valuable. For example, Eat Right School targets adolescent girls; Eat Right Toolkit helps train frontline workers on food safety and nutrition issues; highlighting the importance of nutritional interventions during the first thousand days of life; expands reach across age, gender and socio-economic groups; and promotes food fortification to address micronutrient deficiencies –all of these complement the POSHAN Abhiyan efforts.

Area(s) of adaption in the COVID-19 context: During the pandemic, FSSAI has leveraged online systems for regulatory activities such as licensing/registration, training of food testing staff and monitoring activities with states through regular VCs. Online training of Food Safety Supervisors through the FoSTaC programme is being conducted. A detailed guidance note, 'Food Hygiene and Safety Guidelines for Food Businesses during Coronavirus Disease (COVID-19)' and 'Eat Right During COVID-19' guidebook has been released to educate citizens. Outreach and engagement with citizens is being done through social media. Collaboration with partners and networks are being done through webinars and e-meetings.

What we eat: How different aspects of food systems come together

Poster presentations

How to design a complex behaviour change intervention: experiences from a nutrition-sensitive agriculture trial in rural India; *Emily Fivian, London School of Hygiene and Tropical Medicine*

Background: Many public health interventions aim to promote healthful behaviours, with varying degrees of success. With a lack of existing empirical evidence on the optimal number or combination of behaviours to promote to achieve a given health outcome, a key challenge in intervention design lies in deciding what behaviours to prioritise, and how best to promote them. We describe how key behaviours were selected and promoted within a 32-month four-arm cluster nutrition-sensitive agriculture intervention (UPAVAN) that aimed to address maternal and child undernutrition in the Keonjhar district of rural Odisha, India.

Approaches/methods of program implementation: First, we formulated a Theory of Change, which outlined our hypothesised impact pathways. To do this, we used the following inputs: existing conceptual frameworks, published empirical evidence, a feasibility study, formative research and the intervention team's local knowledge. Then, we selected specific behaviours to address within each impact pathway, based on our formative research, behaviour change models, local knowledge and community feedback. As the intervention progressed, we mapped each of the behaviours against our impact pathways and the transtheoretical model of behaviour change, to monitor the balance of behaviours across pathways and along stages of behaviour change.

Key findings: By collectively agreeing on definitions of complex concepts and hypothesised impact pathways, implementing partners were able to communicate clearly between each other and with intervention participants. Our intervention was iteratively informed by continuous review, by monitoring implementation against targets and by integrating community feedback. There is a delicate trade-off between time taken to design the intervention and time taken to reach consensus across partners. We spent around one year on the set-up of this intervention, which included formative research. Time-consuming factors were the complexity and number interventions (as this was a four-arm trial), our consensus-based approach and, relatedly, the large number of partner organisations. However, we think this investment in set-up resulted in efficiencies later on, due to less reliance on international technical expert inputs, smooth intervention delivery and equitable partnerships.

Significance and application: This documentation of the lessons learnt from the experience through which the team leading a complex NSA trial (UPAVAN) selected key pathways to impact, and identified which behaviours to promote and barrier to address are valuable reflections for identifying successful components of intervention design. Key inputs were highlighted; of which the most useful was thought to be the shared understanding of impact pathways and strong community feedback loops. The impact and process evaluations (forthcoming) will reveal whether these approaches to prioritise behaviours and design a behaviour change intervention are effective for improving maternal and child nutrition.

Dietary energy and cost contribution of ultra-processed foods in the diets of adolescent urban slum dwellers of Delhi; *Shweta Kampani, Lady Irwin College*

Rationale/objective: Overweight and obesity has become a major public health problem in low and middle-income countries. Furthermore, the consumption of easily available and accessible, low-cost, energy dense snacks and packaged foods is increasing among urban slum dwellers (WHO | Nutrition insecurity and unhealthy diets 2016). Adolescents living in urban slums are walking a tight rope, i.e. balancing living an urbanized lifestyle with limited

monitory means. This study assesses the consumption of ultra-processed foods (UPF)/street foods and the cost and energy contribution of UPF/street foods in relation to the overall diet of the adolescents aged 10 to 15 years.

Methods/analyses: The present cross-sectional study was conducted in urban slums of Kirti Nagar, New Delhi among 100 adolescents aged between 10 to 15 years. Data was collected through face-to-face interview using a pre-tested structured questionnaire. Consumption of ultra-processed/street foods and beverages was assessed using a two-day 24hour dietary recall, food frequency questionnaire along with a dietary pattern questionnaire. Cost contribution of UPF/street foods was calculated using local retail prices of items listed in FFQ and 24hour dietary recall. Statistical analysis was performed using SPSS (version 25).

Results: The average number of UPFs/street foods consumed by the adolescents in a day was 4. Consumption of foods such as biscuits, chips, namkeen, chocolates and samosa were high on a day to day basis. The main reasons motivating consumption of ultra-processed food items/street food were taste, mood and peer influence. The average cost of their diet was Rs.40 and cost of UPFs/street food items was around Rs. 10 per day which formed 25% of their total diet's cost. The contribution of dietary energy from UPFs/street food were significant in comparison to the overall dietary energy consumed in a day. Packaged foods such as chips, extruded snacks, biscuits and namkeen were consumed 2 - 3 times a week and street foods like samosa, kachodi, pakoda, aloo tikka, spring rolls, chole bhature, french fries and chowmein once a week. Other food items such as maggi (instant noodles), chocolates, toffees were also consumed once a week.

Policy implications: In resource poor settings, significant amount of energy is coming from UPFs which indicates poor diet quality and perhaps meal replacement. Such routine consumption might cause various micro-nutrient deficiencies and can have serious health implications. 1. High consumption of UPF/street foods among adolescents, calls for policy level action on obesogenic food environments to reduce poor eating habits of school going children. 2. School children should be made aware about nutritive value of UPFs and their adverse effect on health. 3. Nutritional labelling of UPFs which indicates presence of high fat-salt-sugar will assist in making informed decision while buying the products. 4. Policy pertaining to incentivising and promoting healthier food products should be introduced.

Market-based Approach to Assessing Availability, Affordability, and Marketing of Foods in the National Capital Region of India; *Shweta Khandelwal, PHFI*

Rationale/objective: Shifts towards healthier diets can only be achieved through strengthening the food environment i.e. improving the availability and affordability of healthier food items and enhancing their marketing. This study was conducted to assess these factors in food establishments of the Delhi National Capital Region of India.

Methods/analyses: The catchment area for survey administration was defined as the circle surrounding the central market with a 1-km radius. For each of the four catchment areas, a comprehensive list of food establishments was generated using multiple databases and online delivery platforms; and was updated via physical verification. 60 food establishments (28 stores, 16 restaurants, and 16 mobile food vendors) out of a total of 796 were randomly selected. The surveying was completed in a period of three months (June, July, and August 2018).

Results: In the current study, only 14.2% of stores advertised unprocessed or minimally processed foods. 39.2% of stores had processed food products near the checkout counter. Only 13.3% of sampled food establishments sold fruits and vegetables. Stores were more likely to sell vegetables and sold a greater variety of both fruits and vegetables as compared to mobile food vendors, but these healthy food items were more expensive at stores. The availability and variety of ultra-processed foods across all food establishments was higher than that for fruits and vegetables.

Policy implications: • One of the first systematic assessments of the food environment in India. • Low availability and promotion of fruits and vegetables in food establishments. •

Greater availability and promotion of processed foods across food establishments. • Large variability in price between stores and mobile food vendors. This instrument can be used in longitudinal studies to assess changing food environments in rapidly developing Indian cities and the observed measures can inform new approaches to conduct and evaluate nutrition interventions.

Nutrition perceptions and dietary practices during pregnancy and lactation among disadvantaged groups in Andhra Pradesh; Sandesh Kotte, Tata Trusts

Rationale/objective: Findings of the Comprehensive National Nutrition Survey (CNNS) are alarming. That the children of Andhra Pradesh are not getting adequate nutrition is evident from these findings. While income and education are the main reasons for lack of adequate nutrition, there are also several social and cultural factors at play, often in tandem with the former. These social and cultural beliefs shape nutrition perceptions and dietary practices of various communities. The study has undertaken to capture the nutrition perceptions and dietary practises during pregnancy and lactation. Key Objectives: • Qualitative research approaches to assess the knowledge, behaviours, and practices relating to maternal and child nutrition among the vulnerable communities in specific geographic areas. • To identify key social and cultural barriers to optimal maternal and child nutritional practices. • To identify key triggers and tools that could potentially motivate communities to adopt better nutritional practices.

Methods/analyses: A total of about 996 respondents from 168 villages in all the 13 districts of Andhra Pradesh participated in the study. It was a descriptive, observational study with cross-sectional design and was done through qualitative research methods. Data was collected through semi-structured Focus Group Discussions (FGDs), In-depth Interviews (IDIs) and participant observation. Anganwadi Centres that had a sizeable number of either pregnant woman (>6) or lactating mothers from these communities (>6) have been studied. Extensive literature review has been carried out to understand and build upon. Discussion Guides for each respondent type were prepared in English and Telugu. The field investigators worked in teams of four comprised of a moderator, a note taker, a video recorder and an observer. Extensive training has been imparted to the field investigators before embarking the fieldwork. The qualitative data was analysed and interpreted using the thematic framework approach in NVIVO 12 software.

Results: • Major influencers for dietary behaviours are mothers, mothers-in-law and Anganwadi workers. • Key social barrier with respect to maternal and child nutrition is consuming fish and prawns; they are not considered culturally preferable and thus avoided during lactation. • Consumption of country liquor is a tradition in many pockets of the state though it affects the health and well-being of the people. • Consuming papaya is harmful to the pregnant women and lactating mothers as are sesame seeds and red chili pepper though they all have rich nutrients and are good for mother's health. • Coconut is avoided by pregnant women and lactating mothers in several areas of the state as are pineapple and fish products. • Though considered as taboo food for pregnant and lactating mothers, egg is widely consumed product across the state. This behavioural change has been possible because of a major awareness campaign and more importantly, making them readily available at all Anganwadi centres.

Policy implications: Food taboos have been identified as one of the factors contributing to maternal under-nutrition in pregnancy. A granular understanding of this diversity in dietary practices and nutrition perceptions helps design suitable policies, programmes and strategic communication campaigns to address the critical issues around nutrition during the '1000 Critical Days'. The major policy implication is that health education programs should take cognizance of the popular beliefs regarding food during pregnancy different regions of the state and use innovative means to minimize their negative and maximize their positive nutritional effects.

To assess the Minimum Adequate Diet in the young children (6-23 months) and promoting nutri-kitchen garden to improve dietary diversity in the aspirational district of Gujarat; *Halak Mehta, The Maharaja Sayajirao University of Baroda*

Rationale/objective: Region-specific dietary diversity data on the young children is scarce. Evidence-based interventions recommend that making improvements in complementary feeding is a priority intervention in children aged 6-23 months to improve nutrition during the first 1000 days of life and the need to arrive at cost-effective intervention strategies to have maximum impact on young children nutrition. Agricultural diversification has excellent potential to improve the availability and accessibility of nutrient-rich foods and to improve access to diverse children's diets. Production and use of locally available & affordable foods can ensure long-term sustainability. The objective of the study was to assess Minimum Dietary Diversity, Minimum Meal Frequency and Minimum Adequate Diet.

Methods/analyses: A community-based study was conducted to assess the dietary practices for young children in terms of MMF, MDD, and MAD and promotion of Nutri-kitchen garden. There were a total of 23 AWCs covered in the randomly selected six villages. Dietary practices elicited using a one-day 24-hour recall from mothers of the enrolled children. MDD was calculated as children (6–23 months) who obtained foods from ≥ 4 food groups (out of 7) during the previous day. Two days training workshop was conducted to sensitize the Local grass-root functionaries on promotion and use of Nutri-kitchen garden. A total of 55 functionaries were identified and trained using two banners and booklets containing key messages. AWW were chosen to deliver the key messages of Nutri-kitchen garden and its use on 3 Community Based Events (Mamta Diwas, Annanprasan Diwas and Suposhan Diwas) for sensitization of children dietary diversity for the period of 3 months.

Results: MDD is determined very low at 38% and MAD at 30.6%. The overall MMF for breastfed children was obtained 68%. The MMF for breastfed children of 6-8 months (2 times meal) was 65%, and for 9-23 months (3 times meal) was 86%. More than one-half of the households (61.6 %) never had Kitchen-garden. It was observed that nearly 1/4th of children consumed from home-grown foods. Overall, 44 Annanprasan Diwas, 58 Mamta Diwas and 66 Suposhan Diwas were covered during 3 months period and were monitored and supportive supervision was carried out. It was observed that all AWWs were able to deliver the messages using the banners distributed to sensitize the mothers of children (6-23-months) on importance of Nutri-kitchen garden for improving child dietary diversity. On an average, 8-10 mothers of young children were present during CBEs and those mother attending CBEs could gather better knowledge on importance of Nutri-kitchen garden.

Policy implications: A cause for concern is the minimum acceptable diet in infants and young children aged between 6 and 23 months is low. Promotion on Nutri-kitchen garden to improve the dietary diversity of young children of the tribal area should be reinforced by local grassroots health and ICDS functionaries along with other departments like KVK and PRI with effective use of IEC material. It can be concluded that strengthening Community Based Events to promote Nutri-Kitchen garden for improving dietary diversity can serve as novel approach at community level to create Jan Andolan for achieving targets of Poshan Abhiyaan by 2022.

Factors affecting nutritional status of farm families: A case study from Nalanda & Samastipur districts of Bihar; *Bhoopesh Punera, ICAR - Indian Agricultural Research Institute*

Rationale/objective: The objective of the study is to identify factors that affect the nutritional status among farm families and how these factors are being affected by other social, economic and institutional parameters. As nutritional status can be ascertained mainly by anthropometric measurement, to achieve reliable results these measurements were taken from respondents.

Methods/analyses: Primary data was collected from 611 respondents of 120 families. Anthropometric measurements along with data on demographic, social and economic

indicators was collected. Data was analysed using multiple regression model and factors significantly affecting nutritional status were identified.

Results: Farm size was found positively related to Index of Production Diversity. Incident of underweight adults was found more in 18-30 age group while overweight adults were more in 30-60 age group. Stunting was found more severe in children (0-8 age) in comparison to adolescent (8-18). High rate of wasting was prevalent among girl child as compared to boys of same age. Dietary diversity followed by water, sanitation & hygiene and education level of family head are the factors affecting nutritional status of family significantly.

Policy implications: The study shows how consumption is important in determining nutritional status of farm family. Although, production diversity at farm also affects level of nutrition but it is mainly consumption followed by sanitation and hygiene practices that affect nutritional status. Educational status of head of the household is another important factor that affect nutritional status positively.

Nutrition garden: Succor the tribal families during COVID-19; Ankita Sharma, Adani Foundation

Background: Narmada District of Gujarat is aspirational district with poor nutrition indicators i.e. wasting, stunting and anemia prevalence (NFHS-4). Adani Foundation in collaboration with district administration is implementing project SuPoshan since October 2018 for curbing malnutrition and anemia. SuPoshan Sangini spearheads project for prompting curative and preventive action with emphasis on behavior change at family level. Project works closely with Anganwadi Worker and Asha worker at village level and ICDS department at district. Objective of Nutrition Gardens is to sustain local & indigenous vegetables and preserving nutritional value. KVK - Dediapada and Transchem Agritech - chottaudepur provided training and guidance with kits for demonstrations.

Approaches/methods of program implementation: Project uses life cycle approach and address nutrition needs of 0-5 children, adolescents and reproductive age women. Project is community based, which build understanding on 1000 days of life and correct MIYCF in terms of health and nutrition. Project facilitates Poshan Abhiyan for creating access to quality services. Sangini identified target families with poor dietary diversity and cases of malnutrition, and having land for nutrition garden. 1000 beneficiaries were selected by 195 Sanginis with help of project team. Transchem Agritech finalized summer vegetable varieties based on prevailing food practices. Sangini were given detail training on cultivation of vegetable and for subsequent use in food at family level. In turn, Sanginis provide guidance to families i.e. -Selection and preparation of land, -Diverting waste water to plantation- Protection against pest -Harvesting & preservation A seed kits were provided by project for plantation, which was done in supervision of project team and Sangini.

Key findings: 1000 families received direct benefits in terms of supply of fresh vegetable for 3-4 months (Mar-June). They also exchange surplus vegetables with neighbors. The role of Sanginis was to monitor use of vegetables at family level particularly of malnourished member. Being a COVID situation, Sangini telephonically collected details of harvest and guided families for use. Wherever is possible, Sangini demonstrated different recipes for example spinach puri for anemic mother. Selection of indigenous varieties for reviving practice of Nutrition garden facilitated, which also supported by local food practices. Incensed cash crop cultivation is reducing available free land surrounding house, which is a barrier. On an average 500-750gm of vegetables were harvested daily during lockdown period of March- May which saved their money and maintain to consume good nutritional dietary intake by beneficiary families. Families have saved seeds from the harvest, which can be used for next cycle of cultivation.

Significance and application: Nutrition Garden is simple interventions, which can enhance vegetable intake of families even in pandemic situation. It can be coupled with some herbal plants like basil, turmeric, ginger etc. to be used as immunity booster. Many village women notices well developed nutrition garden with continuous supply of vegetables, which encouraged them to take up an approach. During lockdown, tribal families were hit by poor

diets and simply cannot buy costly vegetables from market. Nutrition Gardens successfully supported nutritional security of benefiting families. SuPoshan Project is sync with objectives of POSHAN ABHIYAN to promote and strengthen nutrition base of tribal community.

Area(s) of adaption in the COVID-19 context: The unintended implementation of Nutrition Garden supported the major families of tribal community during COVID-19 pandemic situation when tribal community were worried about the food, Nutrition garden turned as a Succor of the tribal families of the community.

Building multisectoral partnerships to scale-up staple food fortification in India; *Shakun Sharma, Global Alliance for Improved Nutrition*

Background: Malnutrition, including micronutrient malnutrition, impacts millions of people in India, though children and women are more seriously affected. Various national surveys conducted over time show that levels of micronutrient malnutrition, impacting anaemia, vitamin A & D deficiencies, etc. have remained high, affecting more than 50% of India's population. As Food Fortification is a proven, cost effective, and complementary strategy to reduce micronutrient malnutrition, GAIN implemented its 'Staple Food Fortification Programme' across 18+ States, ensuring consistent delivery of key micronutrients, through wheat flour fortified with iron, folic acid, vitamin B12, and milk and edible oil fortified with vitamin A and D.

Approaches/methods of program implementation: To ensure effective multisectoral engagement, GAIN implemented a sequential model of (1) technical consultations with the food industry, development sector partners, national and state governments and regulatory authority to understand their incentives and priorities; (2) advocacy with policy makers to position staple food fortification as an efficient, scalable and sustainable approach to positively impact reduction in micronutrient malnutrition at population level; (3) building, through partner agencies, the capacity of food industry to incorporate fortification into their processing, ensuring quality assurance and quality control, and GMPs, GHPs. Taken together, these were essential ingredients for voluntary adoption of fortification as an industry norm. To strengthen the fortification value chain and ensure mechanisms for compliance and course corrective actions, GAIN trained State FSOs on regulatory monitoring. Finally, we engaged with the premix suppliers, and NABL labs, to ensure the optimal quality and availability of premix and protocols to test micronutrients in fortified staples.

Key findings: GAIN has trained over 400 food industry partners to produce appropriately fortified edible oil, milk and wheat flour. Consequently, we have quantified annual fortification of 7.6 MMT of edible oil, 1316 million litres of fortified milk and 0.38 MMT of fortified wheat flour. This translates to 890 million consumers reached through fortified staples and delivery of added nutrients to this number. Fortification is verified through regular monitoring, although market or household coverage assessments might provide additional data on potential for impact. Furthermore, we convened premix suppliers to ensure adequate and steady supply of quality-assured premixes and price stability. This led to a steady supply of fortified staples in the open market as well. However, in the absence of fortification being mandatory and additional costs on account of laboratory testing and premix addition, industry partners are reluctant to initiate fortification.

Significance and application: Due to national lockdown/movement restrictions and supply chain disruptions during COVID-19 pandemic, availability and affordability of nutrient-rich fruits and vegetables are compromised, leading to increased consumption of foods with low micronutrient density. This is likely to impact the nutritional status of vulnerable population groups adversely. POSHAN Abhiyaan recognises food fortification as an important complementary strategy to improve nutritional outcomes and GAIN's programme is aligned with its vision and mission. Adoption and compliance of Government's directives to include fortified staples in the food safety-net programmes would help in combating onset/escalation of micronutrient malnutrition across the population.

Area(s) of adaption in the COVID-19 context: The program is being implemented across the States, with continuous engagement with all stakeholders. Regular interface and follow-up with the food industry partners and premix suppliers has ensured that the premix supply chain is maintained without any price escalations. Altered scenario during pandemic has impacted business-to-business demand (bread / biscuit / confectionery producers), but the sale of fortified staples to the consumers is not affected. Continuous sensitisation and training of food industry is being convened through virtual platforms and live, online demonstrations, simulating the real time experiences. These adaptations will ensure the continuity till the situation normalizes.

Improving nutritional outcomes through rice fortification under public distribution system in India: India's experience on fortification; Vedeika Shekhar, NITI Aayog

Background: Despite various programmes on nutrition, there has been no perceptible decline in anaemia among 15 to 49-year old women in the last decade. It still affects around 60% of women and 50% of children. Government of India (GoI) recognises that food fortification is the way forward to win the battle against malnutrition and micronutrient deficiencies. 65% of the Indian population predominantly consumes rice as a staple food, most of which are located in high malnutrition burden States. Thus, supply of fortified rice through a network of Fair Price Shops in the Public Distribution System (PDS) is a cost-effective single intervention to address anaemia across all sections of the population. Recognizing its significance, GoI, spearheaded by NITI Aayog, recently launched a Centrally Sponsored Pilot Scheme on Rice Fortification under PDS which is initially designed to cover 15 Districts for 3 years, a landmark scheme to fight anaemia.

Approaches/methods of program implementation: Fortified rice is produced by blending fortified rice kernels with rice in the ratio 1:100. The fortification of rice in PDS supply chain at district level by State Governments seems to be the most feasible approach for distribution of fortified rice through PDS. Under this approach, fortification of rice will be done at milling stage, both in DCP and Non DCP states. Rice is blended with fortified rice kernels during the paddy process at the rice mill level for the purpose of systemic efficiency and cost effectiveness. The Scheme comprehensively covers all aspects like capacity building of various stakeholders (millers and their staff, FPS owners, AWW, and so on); IEC for awareness about the benefits of fortified rice; quality control and assurance which is the foundation of the program and is integrated at all levels; and monitoring and evaluation. The Scheme details out the institutional mechanism at national, state and district level for its smooth implementation.

Key findings: The Pilot Scheme was launched in February 2019. The objective of the Pilot Scheme is to introduce fortified rice through PDS in 15 Districts, one District each in one state/UT and based on experience and learnings gained from these pilot projects, the distribution of fortified rice will be scaled up pan India. As the pilot scheme intends to reduce micronutrient deficiencies in the target population, the outcomes are aligned with the same of POSHAN Abhiyaan. POSHAN Abhiyaan is committed to reduce stunting, under-nutrition, anaemia (among young children, women and adolescent girls and low birth weight by 2%, 2%, 3%, and 2% per annum respectively).

Significance and application: Food fortification is a complementary and sustainable strategy address anemia and micronutrient malnutrition, among others which include dietary diversification, nutrition and health education, micronutrient supplementation and other public health measures. As per the National Sample Survey Office (NSSO) survey, 65% of Indian population consumes rice as staple food across all population groups in India. Further, rice is the most widely distributed cereal in the food safety net schemes, which are universal to India, and thus supply of fortified rice through a network of fair price shops, thus, is a cost-effective intervention to address anemia across all sections and income groups of the population. Two pilot projects for fortification of rice were taken up in Gajapati and Dhenkanal districts of Odisha under MDM Schemes and 2 blocks of the Aspirational District of Ghadchiroli in Maharashtra under PDS have amply proven that use of rice as a vehicle for

fortification is technically effective and operationally feasible in existing government systems and schemes.

Area(s) of adaption in the COVID-19 context: Fortified rice was continued to be provided in Narmada district in Gujarat.

Ensuring Food Security through Redressal of Grievances in two Districts of Jharkhand: Pakur & Sahibganj; Jagjeet Singh, Piramal Foundation

Background: Post the CoVID-19 lockdown imposed throughout the country, several districts saw a huge incidence of reverse migration, leading to an influx of migrants back to their rural homes, often without any means to sustain themselves and disconnected from safety net programs. As a response measure, in Pakur and Sahibganj, District COVID-19 Control Rooms (104 helpline) were set-up. The purpose of the Control Rooms initially was to facilitate active surveillance and contact tracing. However, realizing the challenges especially with respect to delivery of food programs, the strong need for a grievance redressal mechanism was established. Piramal Foundation has been working in both the Districts since 2018 with the mandate to improve the health and nutrition outcomes under the Aspirational District Transformation Programme anchored by NITI Aayog. Aware of the gaps in the current food/ration distribution system and absence of effective grievance redressal mechanism, the District and State Teams of the Foundation advocated for the creation of Grievance Redressal Cells within the Control Room which will monitor the status and address grievances related to food security and related issues.

Approaches/methods of program implementation: The Team addressed both system as well as community side issues. At the outset, a study was conducted with the frontline workers and PRI representatives to identify critical gaps in the existing food distribution and delivery mechanism. The findings of the study (including under coverage, consistent delays, supply chain gaps and quality of food grains) was shared with the DC and concerned officials, highlighting the urgent need to plug-in gaps due to increased burden on the Districts due to migration. The Team's strong advocacy with the Districts led to the decision to establish the Grievance Redressal Cell. The intervention was designed, and the role of each stakeholder was planned in the overall process, starting from the PRI members on the ground to officials at the District level. In parallel, the Team worked with the community to spread awareness regarding the 104 helpline number as one-step solution for all COVID-19 related issues, including food security. The ongoing work of Piramal Foundation enabled the team to leverage existing linkages on the ground.

Key findings: A total of 1059 and 1338 grievances were received from Pakur and Sahibganj respectively in a span of 1 month. Of the total grievances, food security and distribution related grievances accounted for 42% in Pakur and 52% in Sahibganj. 95% (424/448) and 99% (690/697) of the food security and distribution related grievances were resolved in Pakur and Sahibganj respectively.

Significance and application: Nearly half of all the grievance calls were related to food security indicating that food security was an important issue where people faced multiple challenges. This included procurement of ration under various programs. The establishment of a grievance redressal cell resulted in quick redressal of over 95% of these grievances indicating that the grievance redressal cell was a timely intervention and COVID-19 Control Rooms can be effectively used for such purposes.

Area(s) of adaption in the COVID-19 context: The study demonstrates how food security was ensured through redressal of grievances in two districts of Jharkhand utilizing District COVID-19 Control Rooms.

Systems strengthening: What role can technology play?

Oral presentations

IT-based nutrition performance review tool for strengthening review mechanism in National Health Mission, Jharkhand; Sraban Kumar Badayanak, WeCan & IPE Global

Background: Health Management Information Systems (HMIS) is one of the major building blocks essential for health system strengthening. Readily available information is one of the key factors in addressing challenges that hinder the strengthening of health systems catering to maternal, child and adolescent nutrition. The launch of Nutrition Performance Review Tool (NPRT) has significantly reduced the time taken in data analysis, which was previously conducted using excel spreadsheets. WeCan-IPE Global team in Jharkhand has developed NPRT working closely with the National Health Mission (NHM) in the state since Feb 2019. NHM felt a strong need for such a tool to enable improved decision-making at all levels.

Approaches/methods of program implementation: WeCan IPE Global in consultation with NHM data cell, Maternal Health Cell, Child Health Cell, Adolescent Health Cell and C-DAC team had several rounds of consultations to have ready to use HMIS data converted into information without human intervention for analysis. The core group discussed how the data should be represented, the time-period of analytical presentation (monthly, quarterly and cumulative) and the format of the output (map presentation, line graph, factsheets, etc). The core group suggested district and block wise data analysis using NPRT to be best suited for programmatic requirements in the state. The tool has provisions to analyse a total of 37 key indicators based on three thematic program areas- Maternal Health (13), Child Health (11) & Adolescent Health (13). In addition, it also features data elements from DVDMS/E-Ausadhi to check the stock status of 8 of the drugs. Data on these indicators are automatically fetched from HMIS portal on a weekly basis.

Key findings: Review at state level and district level forms an essential component for any program. A data driven approach based on scientifically analysed data enables decision makers to improve program implementation. This tool has been assisting the state and district level officials to access analysed data instantly, leading to better planned and more effective review meetings. Analysis of block level data that earlier took 4-5 working days, can be instantly accessed now with a few simple clicks. The output after analysis is available in representations such as maps, factsheets and query-based reports in ready to use form. One of the limitations of this tool is that, it depends on HMIS report available in the public domain and if the block level data is not available on time in HMIS, the tool cannot fetch the data.

Significance and application: NPRT can be replicated in other states as well and nutrition programs can benefit from its use. It analyses the data, gives option to users to give feedbacks and generates automatic composite index which aids the program officers in making informed decisions. This tool captures most of the health-related thematic areas of POSHAN Abhiyaan and nutrition indicators for these thematic areas. The application of NPRT at the state, district and block level also assists in prioritizing nutrition interventions that need attention. Since there are discussions on overhauling the HMIS reporting system, all over the country, the NPRT might have to be tweaked accordingly in future.

Real-time screening and monitoring of Malnutrition; Krati Jain, UNICEF & Nikhil Tikaram Funde, Government of Uttar Pradesh

Background: Implementation was focused on correct and real-time monitoring of all indicators of malnutrition for effective convergent intervention for eradication of malnutrition. It is needed for timely intervention to save children from life-long damage caused by malnutrition at an early age, which is compromised currently due to manual process, lack of resources and capacity for handling and understanding the dynamic data of malnutrition.

Pilot study was conducted for 3 months under the leadership of former-CDO, Jhansi with ICDS team in 10 AWC with TUMAAS Foundation and Nitiraj Engineers as technical partners. It is now being up-scaled to 100 AWC across district.

Approaches/methods of program implementation: The implementation has two parts- Part 1: Electronic Physio-Growth Monitoring machine (EPGM) for accurate screening of nutritional status among children Part 2: Malnutrition Assessment and Analysis (M.A.A) centralized web-based software for real-time monitoring of status and interventions. For pilot study EPGM machine and MAA portal was provided was Nitiraj Engineers limited in 10 AWC. For up-scaling, the machines are being procured under GPDP. Nodal department from implementation was ICDS-WCD with the support of Swasth Bharat Prerak-Jhansi under the leadership of CDO-Jhansi. AWW, supervisors, and CDPO were trained to use the machine. It was linked with community management of malnourished children and referral of SAM children.

Key findings: The malnutrition percentage captured by the pilot study was 37 % underweight identified as against 19.4% identified without system. With the system in place, stunting and wasting was also captured very easily. AWW found the operation of machine very easy and felt that their record keeping was improved. Coverage percentage of growth monitoring was improved by to 98%, since the machine makes the growth monitoring process easy and reporting online. The outcomes were measured using suggested WHO parameters of malnutrition- underweight, wasting and stunting, which is in-built in the system. BMI could also be captured. Reluctance to use of technological tool by AWW and fund availability was a challenge initially but was overcome easily.

Significance and application: Manual system takes a lot of time to reach the decision makers and the transparency, accuracy is lost in the way. With real-time monitoring system, better results were achieved with less efforts. As a by-product of this, referral to NRC improved and accurate SAM identification started to take place. In the COVID situation, this system let the decentralised monitoring happen online without physical visit. With investments in right direction, first 1000 days which are most crucial for development of an individual can be turned into an opportunity culminating lifelong benefits especially for the most vulnerable and deprived.

Area(s) of adaption in the COVID-19 context: The pilot was completed before the outbreak of pandemic, however, this can be particularly useful in times of such outbreaks as it allows the AWW to carry the machine at household level easily for growth monitoring and submit the data online. If the system would've been in place, growth monitoring of children would've continued and children could be saved from malnutrition during these unprecedented times.

[The key to harnessing power of technology: Putting the user at the center; Ramkrishnan B, CARE India](#)

Rationale/objective: Frontline health workers (FLW) are often the backbone of health systems but the tools and technologies that they use to do their jobs have not kept pace as their roles and responsibilities have expanded. In Bihar, India the public health system struggles to equitably and efficiently serve a population of more than 100 million but the communication tools, job aids, and reporting systems that FLWs use are often paper-based, inefficient and ineffective. To tackle this challenge, the Bihar Technical Support Program (BTSP) developed a mobile-based application: the Common Application Software (CAS). Acknowledging that other programs that have piloted mobile-data collection tools with FLWs were often unable to scale and sustain these approaches, the BTSP made sure that the FLW, the user of this technology, was at center of the design. As a result, CAS has been proven to be not just effective but scalable and sustainable.

Methods/analyses: A randomized control trial of CAS was first conducted in one district in Bihar with 500 FLWs. The approach was then scaled across the state, to 38 districts, and assessed through routine monitoring using the Government of Bihar's HMIS system and the

BTSPs annual household-level surveys. We will present the results of both these efforts to illustrate CAS' impact on health service delivery and impact at scale.

Results: FHWs that used CAS displayed significant improvements in the quality and timeliness of their reporting and in their ability to equitably deliver services to the most marginalized members of society. Districts where CAS was implemented evidenced better training ($p < 0.05$) as well as better service delivery. As opposed to non-CAS, CAS district evidenced a ~20 percentage point higher occurrence of weight and height measurements for infants (6-8 and 9-11 months). Post anthropometry FLW-beneficiary interaction were also significantly higher in CAS districts (6-8months- 26% vs 19%, 9-11months- 25% vs 17%)

Policy implications: Our findings contribute to the larger body of evidence that illustrates that technology, when designed with the user in mind, can work at scale to improve the quality of health service delivery. The success of this model lies in the BTSP's efforts to put FLWs at the center of the design process -- addressing her challenges with features around customized counseling, and scheduling and coordination of home visits. The systems need for quality, real-time, and more reliable data was viewed as an important, but secondary, design consideration. As a result, CAS will have lasting change across the State and beyond.

Financing technology for nutrition: A case study; Avani Kapur, Accountability Initiative

Rationale/objective: In May 2016, the Government of India launched a real-time monitoring and job aid system known as the Integrated Child Development Services - Common Application Software platform, (ICDS-CAS) to assist Anganwadi Workers and Lady Supervisors efficiently reach women and children through a mobile-based application. This study undertook a cost evaluation of the program through a detailed understanding of its roll out in Madhya Pradesh to estimate resources requirements for scale-up and sustainability of the program. The objectives were: 1) Create a cost profile of the program 2) Analyse the start-up, maintenance and scale up costs for MP 3) Estimate scale up across years, pan-India.

Methods/analyses: This research uses the Activity Based Costing - Ingredients (ABC-I) method. The activity-based approach aims to break down the program and look at it as a sum of all activities within it. These activities can be described as 'cost centres' or Activity Based Cost-Centres (AB-CCs) which should be mutually exclusive and exhaustive. The geographical area of study was limited to Madhya Pradesh (MP), through which we were able to isolate AB-CCs and develop estimations of pan-India scale-up. Information was collected from key stakeholders during interviews, and several documents were reviewed such as POSHAN Abhiyaan guidelines.

Results: ICDS-CAS can be broadly broken into 3 activities: Administration, Devices, and Training. The MP government spent ₹40.68 crore (\$5.8 million) to roll-out CAS in 16 districts from 2016-17 to 2018-19. Devices cost the highest share of any sub-activity (49%). These costs, however, do not include costs of centralized activities common across states such as the administrative costs for the Central Program Management Unit, software development, etc. Implementing ICDS-CAS at scale and across all states will cost ₹1,758 crore (\$251 million) in year 1. While upfront costs such as in devices are substantive – these are concentrated across some years. Costs, thus, range from as high as ₹12,563 in year 1 per AWW to as low as ₹ 5,169 per AWW in year 3. Certain elements including provision of incentives to AWWs, higher device costs etc, if changed, will alter costs substantially.

Policy implications: The analysis presented above outlines a methodology and provides a benchmark to calculate costs for the roll out of the ICDS-CAS program in India. These estimates can be helpful to policy-makers in three ways .(1) As an input into budgetary resource allocation including an understanding of start-up, fixed and variable costs.(2) As a methodology toolkit for governments, policy-makers, donors, and practitioners to determine changes to the intervention and assess resources necessary for similar interventions. (3) First step to cost-effectiveness or the gain in a given outcome per unit of money spent.

Systems strengthening: What role can technology play?

Poster presentations

Use of information technology in supportive supervision of frontline workers and monitoring of infant and young child feeding program; *Tarique Hasan, Nutrition International*

Geographic location of implementation: 8 districts (4 each in Uttar Pradesh and Gujarat)

Background: Nutrition International (NI) is supporting in implementation of a Maternal, Newborn Care and IYCF (1000 days) Program in Gujarat and Uttar Pradesh since 2016. To monitor the coverage of IYCF practices, NI initiated monitoring through a paper-based checklist to capture data on breastfeeding and complementary feeding practices for children (U2) and also provided printed forms to all service providers of ICDS to collect information on the same. A Web-based MIS was developed by NI for real-time monitoring of infant and young child feeding practices at household level, assessing the knowledge, attitude and practices (KAP) of service providers (Anganwadi workers) for ensuring supplementary nutrition services at the community level and better decisions making and course of actions.

Approaches/methods of program implementation: In 2017, web-based monitoring and information system (MIS) and mobile application was developed with support of an IT agency, who also provided backend support. A district information sheet was prepared to capture information of villages, FLWs, Anganwadi centers, Subcentres, PHCs and blocks. The mobile application worked both offline and online. The MIS had tools for house-to-house monitoring (H2H), KAP for AWWs and follow-up of Severe Acute Malnutrition (SAM) children. H2H tool captured the information to assess the age appropriate breastfeeding and minimum acceptable diet and other feeding- practices and services. KAP tool was used for supportive supervisions of AWWs. SAM follow-up tool monitored the progress of nutritional status among the NRC/CMTC discharged children at regular intervals. After the data is uploaded by field coordinators, graphs and cross tabs are automatically generated on the Web-MIS, based on the pre-existing coding and algorithms up to the block level for the two states.

Key findings: The Web-MIS contains data of 84 blocks, 352 PHC/UPHC, 2,616 Subcentres, 9,678 Villages and 14,986 FLWs (Accredited Social Health Activists (ASHAs) and AWWs). Information on IYCF practices from 25,992 households were captured, 104 discharged SAM children were followed up and KAP of 8,573 AWWs were carried out in both the states. The findings were also shared periodically with the district officials of ICDS for taking corrective actions.

Significance and application: The web-based platform provided an efficient system for data collection and real-time program monitoring at various levels. Over the program period, it helped in the timely identification of data-recording errors, outliers and rectification, and supported in the decision-making process for strengthening the IYCF program. Some of the learnings from the IT platform-based monitoring system can also be applied to the Common Application Software (CAS) system.

Severe wasting in India: Technical and programmatic insights

Oral presentations

Early identification: Key to improve nutritional status of SAM and MAM children; Lahari Yaddanapudi, Centre for Technology Alternatives for Rural Areas, IIT Mumbai

Geographic location of research: Mumbai, Maharashtra, India

Rationale/objective: Malnutrition rates in densely populated urban slums are extremely high due to impoverished living conditions, insufficient feeding, poor sanitation and hygiene; and lack of access to safe water. Foundation for Mother and Child Health (FMCH) has been working in urban slums of Mumbai for 14 years to ensure the nutrition of children, women, and pregnant mothers. The objective of this research study is to analyze the impact of the intervention and identify practices that worked in reversal of wasting in these children.

Methods/analyses: Longitudinal data (2013-2018) of 4634 children (0-5 years) was used to analyze nutritional status after FMCH's intervention. Children were categorized into four groups as per their age at registration and one-way ANOVA and Tukey's post-hoc test were used to determine whether there was a statistically significant difference between the age groups in the improvement of z-scores of the children and to identify the age at which if identified, wasting can be reversed. Binary logistic regression analysis was run to identify relationship between the mother's score on the breastfeeding checklist (calculated with higher weightage to latching) and positive deviance of her child.

Results: Cross-sectionally, wasting reduced by 48% from baseline to end line in the 0-6 months age category after which the reduction was only 16-20% in higher age groups. Longitudinally, in children who registered before 6 months of age, severe wasting reduced by 58.8%. 130 SAM and 388 MAM children became normal by end line. One-way ANOVA results revealed that there is a significant difference between age groups in the improvement of z-scores in weight-for-height ($F=16.6$, $p\text{-value}=0.001$) with an average difference of +2 SDS in all wasted children. Tukey's post-hoc test revealed that identification before 3 months is essential for reversal of wasting. Binary logistic regression on breastfeeding score revealed that a higher score results in higher odds ($OR=1.561$, $p\text{-value}=0.01$) of positive deviance in nutritional status of child, highlighting the importance of an effective latch during breastfeeding. A comprehensive list of 45 points to assess breastfeeding using the cross-cradle hold is proposed.

Policy implications: Early identification and intervention to curb malnutrition is highlighted through this analysis which supports the effectiveness of intensified nutrition services during the first 1000 days as envisaged by the POSHAN Abhiyaan. The results reveal that even focusing on only effective breastfeeding techniques in mothers of children < 2 years of age can have a huge impact on bringing the child out of malnutrition. Since prolonged wasting leads to eventual stunting, this could also be prevented by early intervention.

Incidence of severe acute malnutrition among children under five in Bihar; Aritra Das, CARE India

Rationale/objective: Estimates of the burden of severe acute malnutrition in India largely rely on prevalence data from cross-sectional designs, which likely underestimate true burden. Although the prevalence of wasting and stunting in Bihar are among the highest in the country, no studies to date have documented SAM incidence in the state. Our objective is to study the incidence and natural course of SAM among children under five in Bihar, including differences by sex, season and age; infants under 6 months are an important target group often excluded from screening for identification of SAM despite experiencing higher prevalence and mortality.

Methods/analyses: The study was implemented by CARE India from December 2016 to July 2018 in 30 purposively selected villages across ten districts of Bihar. The study design was a longitudinal open cohort of all children 0 to 59 months in selected villages.

Anthropometric data including weight and MUAC were collected monthly by trained study staff based at the village level. Height/length was collected quarterly; missing anthropometric values were imputed based on preceding and succeeding months' measurements.

Sociodemographic characteristics were collected upon enrollment. We defined SAM and moderate acute malnutrition (MAM) incidence as presence of SAM or MAM during month of assessment following absence of SAM/MAM during the previous month's measurement. Our analysis utilizes data from August 2017 to July 2018, when they were digitally collected on tablets. The sample size for analysis included person-time from 7,289 children under five.

Results: Among all children 0 to 59 months, incidence of MAM and SAM was 5.2 and 1.4 per 100 child-months, respectively. Overall, males had a higher incidence of both MAM ($p = 0.003$) and SAM ($p < 0.001$) compared to females. SAM incidence among infants under 6 months of age (3.6/100 child-months) was 6 times higher than SAM incidence among children 36-59 months (0.6/100 child-months). SAM incidence was lowest during the winter in January (0.8/100 child-months), and increased during the summer months into monsoon when incidence was highest (1.7/100 child-months in July). Steep fluctuations in overall wasting incidence and prevalence demonstrate a large burden of MAM. Average duration of SAM episodes was 2 months. Among children with SAM, 43% remained SAM the following month, 26% improved to MAM, and 31% recovered into normal status. 14% of children with SAM experienced at least one recurrent SAM episode during the study period.

Policy implications: Our study has important implications on identification and management of SAM among infants under 6 months. Community-based identification currently misses SAM children in this group. This study also has implications for follow-up of recovered children as a substantial proportion had a recurrent case during our study period. There is a large burden of MAM, especially in the summer and rainy seasons, which needs to be addressed to prevent deterioration into SAM. SAM identification, referral and treatment is particularly weak in Bihar; there is an urgent need to strengthen health systems and capacities within the state.

Rehabilitating undernourished children through Poshan Sanjha Chulah approach; Harish Chand, World Vision India

Geographic location of implementation: Municipal Corporation

Background: Considering a significant prevalence of undernourished children, Poshan Sanjha Chulah (PSC) approach was implemented by World Vision India. The focus of PSC approach was to quickly rehabilitate undernourished children in their homes through community mobilization, use of local knowledge and resources. The PSC program promoted food which was accessible, acceptable and affordable to the families. In collaboration with ICDS functionaries and community-based organizations, WV India implemented PSC program to rehabilitate children aged 6-59 months. Coordination with ASHAs/ANMs was done at the local level to ensure deworming and VAS services. The programme intervention period was from January to December 2019.

Approaches/methods of program implementation: The Poshan Sanjha Chulah approach was applied in communities where prevalence of mild, moderate and severely underweight children was above 30%. Wealth ranking of households and anthropometric assessment of all children 6-59 months was conducted. A PD inquiry was conducted to observe positive coping mechanisms of PD families who have access to the same resources and share the same risk factors. A PD child was identified who was a well-nourished child from poor family. Only 10-12 undernourished children were enrolled in one PD session for 2 hours per day for 12 days. At each session, the caregivers prepared energy-rich, calorie dense food with their contribution and feed their children in PD session under the guidance of the health workers. 12 days health education plan was implemented during the course of PDH session. Children were monitored till 12 months at their homes, and special visits were made to children who did not gain weight during 12-day PSC program.

Key findings: The focus PSC program was to achieve minimum 400 gm weight by 12th day followed by 200-250 gm weight every month. 254 children were included in PSC program. At

the end of 12th day 34% children gained weight up to 200 gm and 60% children gained weight above 200 gm. The mean weight gain was 334 gm. Post PSC session 31% and 66% children gained weight up to 400 gm and more than 400 gm respectively after one month. At 6 months 48% children gained weight up to 1600 gm and 51% children gained more than 1600 gm. A less than 3% children did not recover. 70% children gained weight up to 2900 gm and 28% gained weight more than 2900 gm. The mean weight gain was 2300 gm at the end of PSC program. 43% girls and 57% boys gained weight above 2900 gm at end of program. Timings of sessions, food grain contribution were some of the barriers, but collective learning and BCC sessions were key facilitators.

Significance and application: Undernutrition can be averted if nutritional status of children can be identified through regular screening and timely intervention such as Poshan Sanjha Chulah. If mother's knowledge and skill is equipped on preparing diversified food with nutrition density, the outcome will exceedingly be good. Learning through demonstration with follow up for first 2-3 weeks is important to sustain the behaviour for growth of children. Experience sharing by mothers in PD sessions have motivated other mothers as well. Physiological change was quite evident within 2 weeks which enabled to gain mother's confidence. This intervention contributes directly to promotion of health and nutrition behaviour for the first 1000 days, and more specifically to IYCF indicators.

Area(s) of adaption in the COVID-19 context: This program was implemented before Covid-19.

Experience with community management of SAM in Abu Road block of Sirohi district, Rajasthan; Ishaprasad Bhagwat, The India Nutrition Initiative, Tata Trusts

Background: A programme on Integrated Management of Acute Malnutrition was implemented by TINi, from October 2019 - March 2020, in 32 villages of Abu Road Block of Sirohi District, Rajasthan, in partnership with CmF and the National Health Mission. This was to promote management of uncomplicated SAM at the community level. While the CNNS of 2018 has shown a significant decline in severe wasting in Rajasthan, there continue to be pockets with a high incidence, where a proactive approach is needed to address the challenge.

Approaches/methods of program implementation: Active screening of all children in 32 villages using MUAC (cut off value < 12.5) was followed by further screening during a POSHAN Diwas (MUAC < 11.5 and / or WHZ% - 3SD) Children failing the Appetite Test / bi pedal oedema / other complications were referred to the MTC. Children enrolled in the program were provided EDNS and were monitored for 12 weeks, followed by further monitoring 4 weeks later.

Key findings: 96% (8953) of total children 6-59 months in 32 villages were screened using MUAC. 13% (1193) had MUAC < 12.5 cm. 83% (991) of children proactively screened were further screened on POSHAN Diwas and 45% (411) were identified as children with SAM. 12 were referred to the MTC. 56% of children admitted into the programme were females, and 64% were in the age group 0-23 months. Recovery rate at 12 weeks was 54%, 34% were non-responders, and 12% were non-responders. 4 weeks later, 89% of the cured children were followed up; 65% had relapsed to Moderate Acute Malnutrition, and 11% to SAM.

Significance and application: The focus needs to be on early identification of SAM. Children with SAM need EDNS, however, the gains of intervention are lost due to socio-economic factors, household food insecurity, caregiver's own health status and workload, access to public health and WASH services, and gender and social inequities. A comprehensive programming must include these factors into account to ensure sustainability of gains made. Such synergy calls for interdepartmental convergence at District level, under the aegis of POSHAN Abhiyan.

Severe wasting in India: Technical and programmatic insights

Poster presentations

Behaviour change strategies to improve utilization of services for severely malnourished children through ICDS scheme in selected villages of Vadodara district in Gujarat; *Archana Joshi, Deepak Foundation*

Rationale/objective: Caregivers engagement in management of SMN children below five years is critical in improving their nutrition status. Parents and caregivers of Severely Malnourished (SMN) children are relatively ignorant of special package of services offered to improve nutritional status of SMN children which adversely affects its utilization. A baseline survey conducted in 10 villages having 65 AWCs revealed that among 244 households having SMN children, only 30% caregivers were aware of package of services offered for SMN children. An intervention research was designed to test behavior change strategies (BCC) to improve awareness and utilization of services for SMN children.

Methods/analyses: Formative research was conducted comprising 15 in-depth interviews with grassroots functionaries to assess their knowledge, physical audit of a CMTC to ascertain the acceptability and utilization of services provided to SMC children. Baseline survey was conducted covering 244 households having SMN children using structured questionnaires to assess knowledge, awareness and utilization of services by care givers. Focus Group Discussions (4) were held with caregivers of children below five years. BCC strategies aimed at bridging gaps in awareness among functionaries and caregivers were developed. Messages were communicated through wall paintings, 32 Bhavai shows, 51 group meetings with caregivers, counselling during 185 home visits and exposure visit to CMTC. A pre-post quasi experimental research design was used to assess the outcome of BCC intervention on awareness among functionaries and caregivers and utilization of services for SMN children. Quantitative data was analyzed using SPSS software/Stata 14.2. Content analysis of FGDs was done.

Results: The results of 12 months' intervention showed an increase in awareness among caregivers about availability of extra take-home-ration provided to SMN children by 37%, age appropriate feeding by 18%, growth monitoring by 16% and need for dietary diversity by 4% from the baseline values. Awareness among functionaries about benefits of RUTF increased by 66.7%, sharing the growth chart and progress of health and nutrition status of SMN children to caregivers increased by 16% and 18% respectively. The practice of conducting height and MUAC measurements among functionaries improved by 16% and 18% respectively. The use of job aids for counselling among grass root functionaries increased from 0 to 42%. Utilization of hot cooked meals through AWC increased by 7.5%, supplementary nutrition services increased by 5%, for and growth monitoring services increased by 21.5%. Consumption of ration by child increased nearly by 30%. Enrolment of SAM children in CMTC increased by 5%.

Policy implications: The results demonstrate that success of POSHAN Abhiyaan is rightly pivoted on social and behavioral change communication. Multi-pronged BCC strategy including Group counseling and interpersonal counseling with job aids repeated at periodic intervals does help in uptake of essential services for the SMN children. The BCC model is scalable and would require more outreach in the community for which different NGOs or partners can be roped in. However, it also paves way for other researches. If IT enabled platform is used, this strategy will enable delivery of key messages and counseling services in times of crises like disasters or any pandemic.

Sneh shivir - A way forward for supplementary feeding; *Sheetal Patel, Adani Foundation*

Background: Narmada District of Gujarat is aspirational district with poor nutrition indicators i.e. wasting, stunting and anaemia prevalence (NFHS-4). Adani Foundation in collaboration with district administration is implementing SuPoshan since October 2018 for curbing malnutrition and anemia. GOG is providing supplementary feeding for malnourished

children, pregnant women and anemic adolescents namely Bal Shakti, Matru Shakti and Purna Shakti. Use of this supplementary food is limited mainly due to awareness. Villagers do not understand value of product as well as don't know possible recipe. Efforts are made to increase use by Sneh Shivar (SS), which is cooking for mothers and feeding for children.

Approaches/methods of program implementation: SuPoshan Sangini spearheads project for prompting curative and preventive action with emphasis on behavior change at family level. Project works closely with Aganwadi Worker and Asha worker at village level and ICDS department at district. After identification of SAM/MAM children, Sneh-Shivirs is organized either at any convenient locations in the village. There are about 15-20 mothers participate in SS, for 14 days. Sangini cooks different nutritious dishes out of balshakti adding local ingredients. Along with cooking demonstration, subject related to nutrition also discussed. Food served to children for lunch. Weights of children are regularly taken to exhibit change in their health. SS provides platform for mothers to share their experiences and mutually learn. Sneh-Shivirs are organized by Sangini with help of Aganwadi workers, Asha workers and project team. Sneh-Shivirs has a set menu for 14 days and schedule for subjects for discussions with related IEC materials.

Key findings: 4412 severe wasted and severe underweight children were covered in 14 days Sneh Shivirs (nutrition camps) for providing healthy meal. Their mothers were provided training and demonstration on nutritive recipes. Weight of each child is being monitored during 14 days of Sneh Shivar by Sanginis and team. There is about 400-600 gm increase in weight of participating children, in addition, health of child improves significantly and can be seen from hair and skin texture. Sangini and team visit few mothers during evening and motivate them to use Balshakti for child. In few cases, they cook with mother for winning trust of family. Hygienic cooking habits are discussed during Sneh Shivirs, i.e. demonstration and practice of hand washing done all the 14 days. It is also explained about controlling diarrhea by hand washing. Trust between mothers and Sanginis is crucial for success of SS. However, mother's engagement in agriculture is barrier for success.

Significance and application: Sneh Shivar is improvised concept based on proven positive deviance, Focus of SS is to promote use of supplementary feeding provided by government. As it is highly nutritious and make impact in child health within short time. Increased use of supplementary food also creates pressure on government for maintaining regular supply. Supplementary feeding is the one of the next way to achieve for curative action for malnutrition. Poshan Abhiyan also targets the same. Wasting and Stunting among 0-5 years children are arrested by regular use of supplementary food for malnourished children.

Area(s) of adaption in the COVID-19 context: Nutrition and particularly for groups, which are at receiving end could be adversely affected during pandemic situation like COVID -19. It has been observed that during crisis situation undernourishment among children and women increases significantly. If by Sneh Shivar approach, villagers and families are made ready to use supplementary food provided by government, such adverse impact can be averted.

Improving nutritional status of below 5-year old children using positive deviance approach in rural Vadodara: A case control study; *Chitrapita Saha, The Maharaja Sayajirao University of Baroda*

Rationale/objective: Undernutrition is a problem of staggering size worldwide—large enough to threaten the world's sustainable development ambitions for the post-2015 period. The objective of the study was to evaluate and improve the nutritional status of <5y old children in the study area using positive deviance approach.

Methods/analyses: A case-control community trial aided by a local industry, wherein all households (HHs) with mother-child (<5y) pairs registered in ICDS, were enrolled (n=160) from 4 clusters, randomly divided into experimental and control group. Baseline data were elicited on their anthropometric indices and z-scores were calculated for weight/age, height/age and weight/height using WHO Anthro software. Nutritional status (wasting, stunting, underweight, SAM, MAM) of the children were determined as per WHO 2006 guidelines and results compared with NFHS 4 Gujarat report. Following 1-year intervention

trial using positive deviance approach where mothers with positive practices identified as Positively Deviant (PD) and promoted as change agents. Data were analysed using SPSS 23 software.

Results: Undernutrition status of 160 children recorded in the study area was alarming as 60% Stunted (HAZ<-2SD), 36% wasted (WHZ<-2SD), 59% underweight (WAZ<-2SD), 20% MAM (WHZ<-2SD and >-3SD) and 16.88% SAM (WHZ <-3SD) children were identified in four clusters. Comparison with NFHS-4 revealed that there were almost 1.5times more stunted children and much higher (7.5%) wasted children present in the area in respect of overall Gujarat. After intervention in the experimental group wasting reduced by 17.7% ($p<0.01^{**}$) as compared to only 5.8% ($p<0.05^*$) reduction in control group, underweight reduced by 6.25% ($p<0.01^{**}$) in experimental group whereas in control group it increased by 7.69%. Stunting though increased by 5.21% in the experimental group, the increase rate was much higher in the control group (11.54%). All the severely undernourished children were provided referral services.

Policy implications: Undernutrition status of children in the study area was much higher than undernutrition status of Gujarat mentioned in NFHS 4 Report. Positive deviance approach promoting women from the community itself along with the existing ICDS services can be effective in improving nutritional status of children.

Study of case finding, diagnosis & treatment of TB in children with moderate and severe acute malnutrition utilizing ready to use therapeutic food; *Rama Krishna Sanjeev, Rural Medical College, Pravara Institute of Medical Sciences*

Rationale/objective • The study was done in Anganwadi centres for screening under 5 children for MAM & SAM; • It utilized RUTF to treat children with malnutrition (SAM & MAM) for weight gain; • Those with poor weight gain were screened for Tuberculosis (TB) in a Tertiary care Paediatric centre; • This is followed up by initiation of treatment on diagnosis of probable or confirmed TB. Tuberculosis is a common underlying contributor to malnutrition. Screening for childhood tuberculosis requires focussed investigation in Hospital. Those with poor weight gain here were subjected to testing as per laid down protocol for ruling out TB.

Methods/analyses: Medical camps were organised in Anganwadi centres after declaring them beforehand utilizing social workers. Under 5 children in vicinity of the camp area were screened for malnutrition (MAM & SAM) by Paediatric team (Paediatrician, three Nurses, Pharmacist & Social worker). Treatment for common ailments was given. Ready to use therapeutic food (Nutrivita / plumpy nut: one per day for two weeks) was distributed among children with SAM & MAM. Follow up was done after two weeks or more. Those with poor weight gain were offered screening at RMC. Screening was done as per protocol by doing thorough physical examination, Radiology, CBNAAT testing of induced sputum, Mantoux and other laboratory investigation as needed. Radiology was done using frontal and lateral x-rays. Two paediatric experts independently analysed x-rays as per laid down protocol. Those with probable or confirmed Tuberculosis were initiated anti tubercular treatment as per DOTS (Directly Observed Treatment Short course) regime.

Results: A total 866 children were screened over 15 camps. The number of children with SAM & MAM were 373. The number of children with SAM & MAM available for follow up were 96. The number with poor weight gain was 44. The number of children available for screening was 26. The number of children with diagnosed Tuberculosis was 19. Radiological evaluation was contributory to diagnosis in all cases. CBNAAT (Cartridge based nucleic acid amplification test) by induced sputum was not contributory to diagnosis in these cases.

Policy implications: Ready to Use therapeutic food (RUTF) can be utilised in a focussed manner among children with MAM & SAM for screening of Tuberculosis by utilising poor weight gain after a period of two weeks.

Area(s) of adaption in the COVID-19 context: The study was done before the pandemic.

Women together: Consolidating insights from women's group programs for nutrition

Oral presentations

[Leveraging and institutionalization of community-led multi-sector integrated interventions to improve food, nutrition, health and WASH outcomes for adolescent girls and women through DAY-NRLM: Implementation learnings from Swabhimaan; Monica Shrivastav, ROSHNI Lady Irwin College](#)

Background: Recent evaluations observe that members of SHGs experience substantial economic loss and reduced productive workdays due to recurrent illnesses and health expenses leading to loss of savings/credit. Swabhimaan (2016-2020) is a multi-sectoral community-led programme implemented by DAY-NRLM to improve adolescent girls' and women's nutrition. The programme leverages institutions to improve access to ENIs through community cash grants received based on village integrated plans, strengthen VHSND services for women and identify at-nutritional risk women to link with special care package by VOs and culturally appropriate nutrition-sensitive agriculture as well as form adolescent groups linked to village organization platform, integrated within SRLMs.

Approaches/methods of program implementation: DAY-NRLM implements a multi-sectoral intervention integrating nutrition, health, WASH and social development strategy in their framework. The programme strengthens last mile delivery of women's nutrition services and promotion at community level as an invested service through SHG federated institutions as grantees, shifting from mobilisation and voluntary actions. They receive cash grants based on community-need based plans. It is implemented in matured federations of resource blocks of DAY-NRLM. Trained community cadres mobilize and build capacity of women to generate demand, promote behavior change through participatory learning and action cycle methodology, identify, track and follow-up at-nutritional risk women and conduct home visits, food demonstration and counselling sessions, develop nutrition-based livelihoods and nutrition-sensitive agriculture practices, increase access to social protection schemes and vulnerability reduction funds. System strengthening interventions include strengthening measures and fostering convergence, engaging government departments – Woman and Child Development, Health and Family Welfare, Water and Sanitation, and Civil and Food Supply.

Key findings: The SRLMs evaluate the programme prospective, non-randomised controlled baseline, midline and endline cross-sectional surveys. Process monitoring is conducted through reporting structures via monthly progress reports on coverage of community-led interventions. The programme has recorded increase of 5-20% in the coverage of 18 key nutrition-specific and nutrition-sensitive interventions. It has developed the programmatic know-how and assessed the “added value” and challenges of engaging of federation of women agencies for girls and women's nutrition actions (as an invested service) in DAY-NRLM. Availability of trained cadre enabled initial rollout however, the pace of implementation varies given varying stability and maturity of SHG-VO-CLF platforms. The annual programme implementation plans of SRLMs and NRLM have integrated health, nutrition and WASH strategies based on microplans with appropriate fund allocation, making the interventions nutrition sensitive. The model is recognized as a best practice by DAY-NRLM and scaled up to 24 resource blocks through 144 SHG cluster federations.

Significance and application: The programme focuses on inter-ministerial convergence, promotion of social behaviour change, mobilizing for access to entitled services, promote the use of common infrastructure by other nodal departments under POSHAN Abhiyaan, and promote nutri-based livelihoods, in alignment to DAY-NRLM's mandate under joint convergent action plan for POSHAN Abhiyaan. Women collectives ensure delivery of maternal nutrition services by managing community cash grants, accessing social protection schemes and entitlements for maternal nutrition services in underserved areas through convergence with frontline-workers. The programme thus builds programmatic know-how for

layering nutrition interventions into existing livelihoods programmes and support implementation of the convergent action plans.

Area(s) of adaption in the COVID-19 context: Standard operations of the programme were disrupted; group-based meetings, counselling and behaviour change interventions were halted and accessing social protection schemes was a challenge. Advisories and guidance notes were issued on how the programme's activities could be adapted and continued with adherence to prescribed physical distancing norms. IEC materials were adapted with key messaging specific to COVID-19 and shared via alternate platforms. There was also an increased emphasis on targeted individual counselling specifically for at-nutritional risk women, supporting doorstep delivery of essential services and awareness generation on virus containment. Further, the existing paper-based monthly programme monitoring information system was adapted, and a remote concurrent monitoring system was established using telephonic phone-based survey methodology. Online infrastructure was set up and capacities of block and district level staff were built up for the same. This ensured the continued process monitoring of the programme and systemic response for continuity of public goods and services during COVID-19 pandemic.

Changing dietary diversity in 6-23-month-old children through women's collectives; Rakesh Jha, Project Concern International

Background: Inappropriate complementary feeding (CF) practices significantly contribute to undernutrition among children under 2 years of age. According to NFHS 4, less than 10% children between 6 to 23 months, received adequate diet in Bihar. Household surveys undertaken by CARE (2017) showed that 65% households had at least 4 food groups, which indicated a practice rather than provision issue, in these households. The JEEVIKA federated women's institutions provided multiple touch points and opportunities to roll out a comprehensive behavior change effort for improving CF. This was undertaken for a year in 2018, with technical support of Project Concern International.

Approaches/methods of program implementation: A novel set of behaviour change interventions was co-designed with JEEVIKA's community members using the human centred approach. Mothers agency and efficacy were built to undertake simple doable activities related to Complementary feeding practices; which was enhanced through an enabling environment of family, peer and community support. Novel messages and techniques were created and used to enhance key behaviours using multiple channels and touch points, including negotiation at family level, cooking and feeding demonstration to mothers who learnt from peers and by doing, and through community events which had fun learning components of recipe demonstration, community feeding and recognition of positive deviants. Behaviour nudges were also applied through household visits and regular self-help group meetings. These activities were led largely by women leaders of JEEVIKA groups, and women cadre called Community Mobilizers, whose capacities were built by a small group of Block level facilitators deployed by Project Concern International.

Key findings: The program outcome was evaluated among SHG families, through household surveys, both by PCI's measurement team and through CARE's large-scale household surveys. PCI's team conducted monthly assessments through several months of 2018 and were able to consistently observe that in areas where the package of interventions was rolled out, there was over a two-fold improvement in CF practices of minimum dietary diversity and minimum acceptable diet. CARE's large scale household survey which measured the CF practices in the periods before (2017 LQAS) and after the intervention period (2019 LQAS), showed a similar increase in minimum dietary diversity, in children 6-11 months, from 12.8% to 26.1%; and minimum acceptable diet from 9.8% to 19.1%. As quality had to be assured for implementation fidelity of the entire set of interventions, the only limitation was the Village wise-staggered approach, which took the entire year to cover all villages of the block.

Significance and application: Two major learnings have emerged from this implementation experience. The first is around the extensive reach and enabling environment of women's

collective platform, which has allowed for an intersection of pathways of livelihoods, women empowerment and collectivization and behavior change to directly and indirectly influence CF practices. The second is around designing and implementing an interesting mix of behavior change interventions through multiple channels, which includes nudges, learning by doing and recognition of positive deviants. These learnings have been further used in Poshan Maah 2018- 2019 and in 2020 for COVID 19 related behavior change interventions by JEEViKA in Bihar.

Area(s) of adaption in the COVID-19 context: The human bandwidth and positive influence of women's collectives have been used extensively to quickly raise awareness for precautionary behaviors during the COVID 19 pandemic. JEEViKA in Bihar, with its earlier learning and experiences, was quickly able to roll out a cascade of awareness and behavior change sessions for COVID 19, in April 2020, reaching 4.8 million SHG members in a short period of one month. This process, of rapid awareness generation around 5 precautionary behaviors, called Panchsutra, was replicated across the country by the Ministry of Rural Development and the National Rural Livelihoods Mission reaching 31 million SHG members in 29 states in a record time of 2 months. Project Concern International provided technical support in this as well. The only adaptation that was made, was using virtual medium such as zoom calls, to directly reach from National to block level to train block level trainers, who in turn, went on to train Community cadre for spreading awareness and facilitating precautionary behaviors among SHG members and their families.

[Learnings from a comprehensive evaluation of a nutrition-focused pilot intervention through women's SHGs in Bihar; Avishek Hazra, Population Council](#)

Rationale/objective: Evidence on improving child nutrition practices using women's self-help groups (SHGs) is limited. We evaluated a one-year pilot intervention that sought to accelerate behavior change communication and improve child feeding practices. The program was implemented through JEEVIKA SHGs in four blocks of Nawada district in Bihar. Intervention activities included nutrition messaging in SHG meetings using a new concept called Navratna, targeted reinforcement through home-visits, community-level campaigns and rallies, Annaprasan Diwas, Samarohs and Village Health Sanitation and Nutrition Days (VHSND), and convergence with frontline workers (FLWs). This paper presents results on the program's effectiveness and fidelity in improving child dietary diversity.

Methods/analyses: We used a mixed-method approach that included quantitative and qualitative techniques to gather information. The quantitative surveys followed a quasi-experimental design and were administered to 997 eligible women with children aged 6-23 months from SHG households at baseline (2017) and 1,392 at endline (2018). The respondents were from SHG households, where at least one woman was an SHG member in the intervention (intensive nutrition messaging and activities through SHGs) and the comparison areas (no health intervention through SHGs). Qualitative data was collected, as part of the process evaluation, through 150 in-depth interviews with various stakeholders and 178 observations of community meetings and events. The differential effects in child nutrition practices among women in the intervention and comparison areas over time were estimated using multilevel mixed-effects regression adjusted difference-in-differences (DID) analysis. Qualitative data analyzed through Atlas.ti and a thematic analysis approach, were used to substantiate quantitative findings.

Results: Significant improvement was observed in timely initiation of breastfeeding (DID: 9.4, $p < 0.05$), exclusive breastfeeding (DID: 13.0, $p < 0.001$), child dietary diversity (DID: 12.9, $p < 0.001$), minimum meal frequency (DID: 24.9, $p < 0.001$) and minimum acceptable diet (DID: 16.1, $p < 0.001$). We found that 59% women received information on nutrition through the intervention activities. In the comparison area women received information primarily through FLWs, while the key sources of information in the intervention area were JEEViKA cadre, FLWs and Navratna chart. Home visits and discussions in group meetings emerged as the two most effective sources of information with significant positive influence on correct

feeding practices. The mean duration of the home visits was 13 minutes and women's engagement were higher during home visits as compared to other program activities. The number of topics covered in community events was restricted, as was the time spent by focal persons during those discussions.

Policy implications: The results demonstrate that SHGs and the federations can be a beneficial platform through which nutrition programs can reach target women and their families. Future programs should consider approaches that have been proven effective on focused interventions to ensure that a larger proportion of target communities are exposed to multiple program doses to have a greater impact on outcomes. The results also highlight the benefits of linkages between SHGs and FLWs and underscores the importance of a targeted approach with potential for effective convergence between various sectors. The feasibility and extent of intense programming at scale and population level effect, however, should be investigated further.

[Role of participatory women group-based intervention in improving health and nutrition behaviour of lactating mothers in Eastern India: Evidence from Swabhimaan programme; Reshmi RS, International Institute for Population Sciences](#)

Rationale/objective: Women's self-help groups and their federations supported by the Deendayal Antyodaya Yojana-National Rural Livelihoods Mission (DAY-NRLM) remain an untapped platform for improving reach and use of essential nutrition interventions in underprivileged settings. These collectives have the potential to manage grants for improving last-mile delivery of essential nutrition services for women. Swabhimaan programme delivers a comprehensive package of 18 nutrition interventions through DAY-NRLM-supported women SHGs, to improve the nutrition of adolescent girls and women in Bihar, Chhattisgarh and Odisha. This paper evaluates the influence of delivering interventions through female-community-resource-persons on nutrition-related behaviour of lactating mothers and their reach to the most-marginalised sections.

Methods/analyses: Swabhimaan is a package of essential nutrition interventions for adolescent girls, pregnant and lactating women, delivered through combination of community and systems-led interventions in intervention areas, and only systems strengthening interventions in control areas. A trained female community-resource person at VO-level delivers community-led interventions – facilitating integrated nutrition microplanning, monthly women's and adolescent girls' group meetings, home visits, counseling and food demonstration sessions for "at-nutritional risk" women, linking to vulnerability reduction funds and promoting nutrition-sensitive agricultural practices. System strengthening interventions include strengthening measures and fostering convergence. To assess the improvement in coverage of essential nutrition interventions, a cross-sectional midline-survey was conducted (October 2018–June 2019). Using multi-stage stratified-cluster-sampling, 1625 lactating mothers of children under age two years (15–49 years) were selected. Pretested questionnaires were used to collect information from lactating mothers. The questionnaires were administered through face-to-face computer-assisted personal interviews. Bivariate analysis and t-tests were used to analyse the data.

Results: Twenty percent of lactating mothers attended maitri baithaks organised by community-resource person (Poshan Sakhis). 44% and 20% of mothers at nutritional-risk received home visits and food demonstration, respectively. More than one-tenth of mothers attended health camps and social drives. Lactating mothers in Bihar had a higher participation in all the intervention activities than mothers in Chhattisgarh and Odisha. Lactating mothers attending monthly women's meeting (maitri baithaks) had better nutrition and health-related behaviour. In all the states, involvement in maitri baithak was significantly related to consumption of tiranga bhojan or at least three food groups, having a kitchen garden, using iodised salt, attending village health sanitation and nutrition day (VHSND), antenatal care utilisation, having a toilet and using modern family planning methods ($p < 0.10$). Findings reveal that intervention activities are percolating to the most marginalised lactating mothers.

Policy implications: This study adds to the compelling evidence that interventions delivered through female community resource persons can improve health and nutrition through behavioural change in rural India. The higher exposure of most marginalised women to intervention activities in the intervention area implies the potential benefits of community-based participatory learning programs in the underprivileged low-resource settings, to diminish health and nutrition disparities among socioeconomic strata. However, there is need to promote women's participation in such interventions to ensure maximum benefits. Since Swabhimaan layers the essential nutrition interventions onto the ongoing livelihood programme (DAY-NRLM) of the Government, these findings highlight that bolstering women's involvement and participation in ongoing POSHAN Abhiyaan could prove a milestone in combating malnutrition.

Area(s) of adaption in the COVID-19 context: The midline survey was completed before the COVID-19 pandemic; but due to the pandemic, programme's intervention activities were selectively halted. PDS and ICDS services continued in alternative ways but other nutrition and health-related services were disrupted. Counselling for women at nutritional-risk and development of nutri-gardens were continuing with precautions. Halted group-based activities are now resumed in compliance with precautionary measures for COVID-19. The female community-resource-persons (Poshan Sakhis) were actively involved in COVID-19 awareness generation and delivery of essential goods and services to the community.

Women together: Consolidating insights from women's group programs for nutrition

Poster presentations

Early learning program to improve maternal, infant and young child feeding practices in the 1st 1000 days of life, through women's collective platforms; *Appolenarius Purty, Bihar rural livelihood promotion society - JEEViKA*

Background: A set of behavior change interventions called NISE (Nutrition Intensive Social Engagement) was implemented through JEEViKA women's collective platforms, through the technical support of Project Concern International, in 2018 for a period of one year. The objective was to garner experiences around using JEEViKA platforms, to design and test behavior change interventions to improve maternal, infant and young child feeding practices, which could be scalable across JEEViKA platforms. These interventions were implemented through existing and newly inducted community cadre and utilized a combination of interventions hinged on multiple touch points of JEEViKA such as Community meetings, events and household interactions.

Approaches/methods of program implementation: A series of behavior change interventions were designed in coordination with JEEViKA 's community cadres like Master resource person (MRP) at cluster level federation, community nutrition resource person (CNRP) at Panchayat level and community mobilizers (CM) at VO level. It involved women leaders of SHG of JEEViKA for collective approaches in organizing community-based events, undertaking household visit to the lactating mothers, pregnant women and their family members in adopting the nutrition practices related to breast feeding, complementary feeding and maternal dietary diversity. To adopt the key nutrition behavior among the lactating mothers and pregnant women, NAVRATAN calendar (nine key health & nutrition behaviors were called Nine Gems) was created to felicitate the best practicing SHG members. Community Cadres of JEEViKA like MRP, CNRP & CM largely led all the activities. Their capacities were built by block level facilitators of JEEViKA and JEEViKA Technical Support Project of Project concern International (JTSP-PCI).

Key findings: An impact evaluation was undertaken by Population Council, using a quasi-experimental design with cross-sectional and longitudinal samples interviewed at two points of time, involving 513-631 women in the intervention arm and 484-751 women in the comparison arm. 60% of women were exposed to the targeted interventions through five different opportunities for health and nutrition interactions. Through this, significant effectiveness of NISE effort was observed in key nutrition practices through computation of difference-indifference (DID) between the intervention and comparison arms from baseline to end line. These included maternal dietary diversity (DID: 6.5), timely initiation of breastfeeding (DID 9.4), Exclusive breastfeeding (DID 13), Child dietary diversity (12.9), minimum meal frequency (24.9) and minimum acceptable diet (16.1). The program used an innovative mechanism of self-monitoring, called Navratna, by SHG members, of a set of seven behaviors related to health and nutrition in the first 1000 days' period, and, two sanitation behaviors among SHG households.

Significance and application: The process evaluation of NISE shows that home visits and health discussions during SHG meetings as more effective modalities of disseminating information to the target women and their family members. The extensive reach of women's collective platform has allowed the opportunity to disseminate the correct key messages and behavior change interventions. It has provided an opportunity for nutrition focused intense interventions that have significantly improved the nutrition indicators. There is opportunity of implementing different interventions like number of topics involved in NAVRATAN discussion. These learnings have been further used in Poshan Maah related behavior change interventions by JEEViKA in Bihar.

Area(s) of adaption in the COVID-19 context: This was not adapted during the COVID 19 pandemic.

Systems strengthening: Using data to improve programs

Oral presentations

M-Health intervention has the potential to alleviate constraints in using administrative data systems for improving service delivery in India; Rasmī Avula, IFPRI

Rationale/objective: Administrative Data (AD) are a key component of nutrition data systems, but little is known about how AD are used or can be reshaped for accountability and action. We studied factors influencing AD use in India's Integrated Child Development Services (ICDS), in two Indian states; and assessed how an m-Health intervention (Common Application Software (CAS)) changes it. ICDS-AD system consolidates data from 11-recording registers updated every month by ~1.3 million frontline workers (FLW). CAS digitizes these records and creates dashboards for real-time monitoring.

Methods/analyses: We conducted semi-structured interviews (n=82) with supervisory staff at sub-district [Lady Supervisors (LS); Child Development Project Officer (CDPO)] and district level [District Program Officer (DPO)] to understand AD use patterns, facilitators and barriers. Data were coded, summarized and analysed across levels of supervisory staff.

Results: LS supervise FLWs, visit villages monthly to monitor data, and collate it to the sub-district level. Due to limited time and pressures to update AD on time, LS focus on data completeness and not on quality or data use. At the next level, CDPOs review and discuss program targets for indicators with LS, and check data completeness. They create monthly reports on targets for the districts, based on LS reports. At the district, DPOs use compiled reports to review subdistrict performance and discuss any gaps with CDPOs. CAS makes the data entry, compilation and report generation easier for all users. LS can monitor data entry daily in CAS and data collation is automated. CDPOs can review the CAS dashboard and use it to discuss issues with LS and DPOs. However, program target indicators dominate use of data. In CAS areas, these include growth monitoring completion, home visits, identification of malnourished children, and their referral. Overall, data use is target-driven, with indicators for monitoring prioritized by program management.

Policy implications: Focus of data use has been on reporting up on target indicators rather than on local program improvement, due to staff and time constraints. CAS can address some AD use constraints by easing data entry and data compilation but a data culture that focuses on predetermined target indicators can limit use for local program improvement.

Strategic use of program data (SUD) as system strengthening measure to improve the implementation of maternal nutrition interventions; Vishal Shastri, Alive & Thrive

Background: Maternal nutrition (MN) has been a long-standing concern globally and in India. Despite availability of proven, affordable interventions, progressive policies and program platforms such as Reproductive, Maternal, Newborn, Child Health (RMNCH+A), a streamlined package of proven MN services is not reaching most pregnant women. Alive & Thrive (A&T) and IPE Global undertook efforts to improve the delivery of MN services including counselling, and micronutrient supplementation through government antenatal services in Unnao and Kanpur Dehat districts. Promoting use of routine data during sector/block and district level review meetings to enable timely corrective actions was a key strategy for improving service delivery.

Approaches/methods of program implementation: A&T strengthened data-based reviews to inform decision-making during cluster/sector review meetings. A health management information system (HMIS)- based monthly report card at sub-center and block levels of key MN indicators was put in place to facilitate a data-driven review process along with a dashboard with data based on the HMIS, stock availability and supportive supervision visits. To make the change possible, A&T documented process notes on conducting data-based review meetings and trained government frontline supervisors and block level supervisors from Health and ICDS to review the routine data to identify gaps and challenges in delivering MN services through community/outreach (esp. Village Health Sanitation & Nutrition Day) and facility-based platforms. Guidance notes to conduct effective data-driven

meetings at cluster/sector and block levels were created to help the supervisors. Technical handholding support was subsequently provided to conduct data-based reviews during cluster/sector meetings of health & ICDS and block-level meetings of functionaries.

Key findings: 237 Health and ICDS Supervisors from 13 blocks participated in the refresher training to provide tools for using data for review, conducting review meetings, and providing feedback. From December 2018 onwards, overall, every month 13 block level review meetings of supervisors (1 per block) and 77 sector/cluster level review meetings with an achievement rate of 100% were activated. Block meetings that focused on institutional delivery and immunization, started emphasizing review of MN coverage. Program data suggest that regular review of stock of IFA and Calcium, resulted in adequate stock availability. Analysis of monthly HMIS data demonstrated that certain common errors like reporting >100% for an indicator dropped significantly overtime as ANMs started submitting data reviewed for discrepancies, discussed during meetings and corrected before submission. Supervisors feedback suggested acceptance and confirmed that block level report cards were helpful for review and understanding of program progress and to take corrective actions.

Significance and application: Strategic use of program data is critical for decision making to support intervention planning, providing targeted supervision and supporting improved performance of FLWs in provision of quality maternal nutrition services. Active engagement of block level management team and supervisors and ownership facilitated the use of data on regular basis, but structural barriers such as staff vacancies, supply gaps in micronutrient supplements, and a culture of data use for improvement needs to be addressed for sustaining the momentum generated.

Systems strengthening: Using data to improve programs

Poster presentations

Enhancing Survey Questions on Maternal and Child Nutrition Intervention Coverage through Cognitive Interviewing in India; *Sattvika Ashok, International Food Policy Research Institute*

Rationale/objective: Structured questions are administered as part of household surveys to measure coverage of essential interventions. Designing survey questions that clearly and precisely communicate the question's intent and elicit responses based on the intended interpretation is critical but often undervalued. We used cognitive interviewing methodology to qualitatively assess respondents' interpretation and response to questions pertaining to maternal and child health and nutrition intervention coverage.

Methods/analyses: We conducted interviews with women (N=21) with children younger than one year to cognitively test 25 survey questions on exposure to maternal and child nutrition interventions in Madhya Pradesh, India. For each survey question, we developed probes to capture the four cognitive stages- comprehension, retrieval, judgement, and response. During the interview, the survey question was posed, followed by probing questions related to the cognitive stages. The interview guide was translated into the local language, Hindi. Interviews were recorded and notes were taken on verbal and non-verbal cues. The responses to the 25 questions were tabulated and the transcript data on the cognitive stages were summarized in Excel. Data were analyzed for common and unique patterns across the survey questions within the cognitive domains and grouped into challenges.

Results: We identified four cognitive challenge categories. 1) Issues with multiple concepts within a question: Women could not comprehend and retain all the elements in questions that had three or more key concepts; 2) Temporal confusion: Questions with recall periods such as 'in the last 6 months' were difficult for women to conceptualize as compared to questions with life stage anchors such as 'during pregnancy' ; 3) Misinterpretation of concepts: Questions on information received during counseling was misinterpreted as questions about knowledge; the phrase 'animal-source foods' was considered as referring to meat products only and not milk and eggs; the phrase 'talk with you' in referring to counseling was interpreted in different ways by respondents; and 4) Difficulty in understanding technical terms: Technical words such as "breastfeeding" and "antenatal care" were less understood compared to the simplified versions that refer to concepts pertaining to the terminology. To address challenges concerning comprehension, we propose simplifying questions or splitting multiple concepts into separate questions. For issues related to misinterpretation of concepts or terminologies, questions should be carefully framed to suit geographical or cultural contexts. Problems that relate to anchoring recall may be addressed during training of survey enumerators on how to emphasize and trigger correct recall periods.

Policy implications: Our study builds on existing literature on the value of cognitive interviewing in pre-empting survey questions and thereby measurement errors. Findings from this study will be useful for stakeholders involved in survey design and implementation, especially those conducting large-scale household surveys to improve coverage data of essential nutrition interventions, which is critical for policy actions.

Use of situational vignettes to assess the competence of frontline health workers in nutrition counseling programs; *Sumati Bajaj, International Food Policy Research Institute*

Rationale/objective: Behavior change communication effectiveness depends on the knowledge of frontline health workers (FLWs) who counsel clients. Most studies assess content-based knowledge of FLWs but do not examine their ability to apply this content. We tested the use of situational vignettes to assess 'application knowledge' and examined the association of FLW having content and application knowledge with mothers' knowledge.

Methods/analyses: Data are from a survey of 1342 FLWs and 8886 pregnant mothers and mothers with children <1y in Madhya Pradesh and Bihar, India. Content knowledge was assessed using a standard knowledge test of health and nutrition. We created and implemented innovative situation-based vignettes and follow-up questions to assess FLWs' application knowledge of topics to cover in specific counselling contacts. We cross-tabulated FLWs' content and application knowledge and ran logit regression to assess their association with mothers' knowledge.

Results: Vignette-based questions were feasible to be implemented in the field along with standard knowledge tests. A majority of FLWs (>90%) had content knowledge of family planning and exclusive breastfeeding, but fewer FLWs had content knowledge of iron-folic acid during pregnancy (60%) and complementary feeding (39%). Substantial gaps were observed between content and application knowledge. Maternal knowledge of family planning and complementary feeding was strongly associated with FLW having only its content knowledge as well as FLW having both its content and application knowledge. The magnitude of association was higher for the latter.

Policy implications: Assessing application-based knowledge using situational vignettes was feasible and helped understand FLW competence more than content-based standard knowledge tests alone. Counseling programs must strengthen both content and application knowledge.

COVID-19 and nutrition: Early insights from around India

Oral presentations

Monitoring POSHAN Abhiyaan in Rajasthan and Jharkhand; Aditi Gupta, IDinsight

Rationale/objective: The main objective of this study is to monitor and support the effective implementation of POSHAN Abhiyaan. We collect data from about 2000 pregnant and lactating women in Jharkhand and Rajasthan on maternal and child health and nutrition indicators, both quantitatively and qualitatively over a period of 1.5 years. The overall study aims for evidence-based course corrections to enable better nutrition programming by state government officials. We hope that the recommendations from the study will increase the coverage and quality of nutrition and related programs and help POSHAN Abhiyaan achieve its objectives. In this paper, we will present insights on the coverage of key nutrition and health services pre and during lockdown due to COVID.

Methods/analyses: We have completed two rounds of quantitative data collection with pregnant and lactating women as the main respondents in Rajasthan and Jharkhand. We collected data on many key indicators including, but not limited to, supplemental nutrition, growth monitoring, Anemia, and IFA supplements. We surveyed about 2000 women in person, in Round 1, which was conducted in Jan-Mar 2020 and about 1200 PLWs telephonically in May 2020. Our sampling strategy ensured that the district selection was representative at the state level. We have conducted a pre-post analysis between Round 1 and Round 2 to capture the effect of COVID-19 on nutrition service delivery. Additionally, to avoid the bias emerging from the non-response and non-coverage of certain sections of the society, we have applied weighting class adjustment for the Round 2 estimates to ensure the state-level representation is maintained.

Results: In the context of COVID19, we find that the nutrition service delivery in May 2020 has declined since January 2020. Distribution of THR and IFA supplements for mothers and children has reduced as compared to pre-COVID-19 by about 7pp and 12pp respectively. Weight measurement is the only form of growth monitoring that is taking place for only 16% of children in our sample. Additionally, the occurrence of Village Health Sanitation and Nutrition Days (VHSNDs) has significantly gone down by 38pp. We find that access to relief is high, with more than 60% of the households reporting receiving any kind of relief. More than half of the respondents reported receiving in-kind relief whereas 1/3rd reported receiving cash-based relief. The proportion of children who are receiving high-quality diets has gone down by 15pp and only 6% of the children are reported to receiving food that meets minimum dietary diversity requirements.

Policy implications: As the study assesses the progress of POSHAN Abhiyaan with NITI Aayog, results and recommendations have a direct use in improving nutrition programming in the two states and beyond. In addition, a number of the indicators being collected are outcome-focused and are not collected through ICDS-CAS or HMIS systems, and therefore this study provides important new evidence to the states for course corrections. Considering the disruption in nutrition service delivery due to COVID and children not receiving high-quality diets, wasting and severe wasting cases are bound to increase. The results and emerging recommendations from this study will inform programming decisions for various key stakeholders.

Area(s) of adaption in the COVID-19 context: While we had initially conceptualized this study around in-person surveys, we adapted to phone surveys in the second round of the survey because of the lockdown and health concerns. We plan to continue speaking to our respondents over the phone for the upcoming rounds this year. This adaptation introduces a bias of excluding the respondents from our sample who didn't have phones or didn't respond to our calls for some reason or the other. We corrected for both these biases by applying weighting class adjustments to our Round 1 weights and ensured that the data collected was representative at the state level.

The agriculture-nutrition nexus in the time of COVID-19: Results of a national telephone survey of 1429 farmers; Lindsay Jaacks, University of Edinburgh

Rationale/objective: It is now well-established that agriculture plays an important role not only in achieving zero hunger, but also in nourishing populations. To date, the effects of the coronavirus disease 2019 (COVID-19) pandemic on agricultural production in India, and the food security and dietary diversity of those employed in agriculture, has not been systematically assessed. The aim of this study was to longitudinally assess the impact of the COVID-19 lockdown on agricultural production, livelihoods, food security, and dietary diversity. This timely knowledge will be invaluable for updating program implementation to achieve the POSHAN Abhiyaan goal of a malnutrition-free India by 2022.

Methods/analyses: Phone interview surveys were conducted by trained enumerators across 12 states and 200 districts in India from 3 to 15 May 2020 (baseline) and 3 to 19 June 2020 (follow-up 1). A second follow-up survey is planned for 20 to 24 July 2020. The initial list of farmers was contacted via a pre-existing network of civil society organizations and the sample was expanded via snowball sampling. The response rate at baseline was 78.4% and the final baseline sample size was 1,429 (93.6% male; 29.3% <35 years old; 38.3% with secondary schooling). With regards to specific components of the survey, agricultural production questions were similar to those asked in routine government surveys (e.g., Agricultural Census and Input Survey). Food security was assessed using three questions from the FAO Food Insecurity Experience Scale and diet diversity was assessed using a non-quantitative food frequency questionnaire. Verbal informed consent was obtained from all respondents.

Results: At baseline, 10.5% of farmers did not harvest in the past month with primary reasons cited being unfavorable weather (40.7%) and the lockdown (29.7%). A total of 63.4% of farmers harvested in the past month (primarily wheat and vegetables), but only 44.0% had sold their crop; 12.4% were still trying to sell their crop, and 39.3% had stored their crop, with more than half (55.0%) reporting lockdown-related issues as the reason for storing. Small/marginal farmers were significantly less likely to sell their crops as compared to large farmers (32.6% versus 56.3%, respectively, $p < 0.0001$). Landless farmers were 10 times more likely to skip a meal as compared to large farmers, but a majority reported receiving extra food rations from the government. More than 75% of all farmers regardless of size reported consuming grains, pulses, and vegetables in the past week and more than 50% reported consuming dairy and potatoes.

Policy implications: Support systems that allow farmers to sell their crops and livestock products at fair prices, and that address affordability and access to inputs, are urgently needed to prevent a worsening of the situation reported here. In addition, inter-sectoral convergence that leads to a diversification of the foods offered by PDS, particularly livestock products and vegetables that would otherwise be wasted, could help achieve national nutritional goals. Longitudinal results will be presented in September and will provide further insights, particularly as relates to changes in cultivation patterns during Kharif, and trends in food security and dietary diversity in these households.

Area(s) of adaption in the COVID-19 context: The primary aim of this research study related to the COVID-19 pandemic.

Complementary feeding practices among children of age 6-24 months in four districts of Rajasthan; Vanita Dutta & Minakshi Singh, UNICEF India

Background: The COVID-19 scenario, lockdown and disruption in essential nutrition service delivery, limited the availability and accessibility to nutritious food choices among several rural households. Assessing the potential for inadequacy of diets among children, handholding support was provided by UNICEF and five partner organizations; as a part of strengthening convergent platforms for effective transaction of Early Childhood Development packages; to front-line functionaries, mothers and caregivers on safe and age-appropriate complementary feeding practices. The program has been initiated from March 2020 and is in progress.

Approaches/methods of program implementation: The teams being unable to make field-visits in the current scenario, 84 WhatsApp groups were created across 4 districts of Rajasthan to connect with 1237 beneficiaries (mothers of children of age 6-24 months) and 4241 frontline functionaries for supportive supervision. IEC materials on complementary feeding, dietary diversity, Tiranga bhojan; videos as available under flagship programmes and a few developed by CSO partners on preparing complementary food from the available dry ration and local ingredients were shared at regular intervals. The key messages from the takeaways (under the POSHAN Abhiyaan) were explained and handholding support was provided through tele-conversations, messaging and video-calling. For better understanding videos dubbed in Hindi and audios of the key-takeaways were also developed and shared. Follow-ups from frontline functionaries, mothers and caregivers were taken using the platform.

Key findings: To assess the status of the complementary feeding practices, questionnaires were developed using the online platforms of Google Forms and ODK-Collect. 24-hour diet recall was used as a part of the questionnaire to assess dietary diversity and quantity of the feeds consumed. The data was collected through tele-conversations with the mothers/caregivers of the children (n=1237) who were provided handholding support. To avoid data gaps and wait-time of respondents, the conversations were recorded with consent and later used to fill the data. For evaluation, Government/UNICEF guidelines were used. It was found that complementary feeding was timely initiated among 85% children; 39% did not receive appropriate consistency of feeds and 59% did not receive the age-appropriate quantity. 78% children had received the minimum meal frequency over the last 24 hours while only 20% children achieved minimum dietary diversity through their diets. Therefore, the children receiving minimum acceptable diet were only 17%.

Significance and application: Majority of the children were receiving the recommended minimum meal frequency, but their diets were not providing them the required dietary diversity. Subsequently, a low number of children were receiving a minimum acceptable diet. Therefore, to promote the diversity of diets, handholding of the mothers and caregivers is required. Mothers need to be made aware to feed a diet consisting of at least 4 food groups to the child. This can be done through the advocacy of feeding Tiranga bhojan to the child. The mothers/caregivers should also be provided support on preparing a complementary feed of the recommended consistency.

Area(s) of adaption in the COVID-19 context: COVID 19 complete lockdown along with phase wise restricted mobility led to a paradigm shift from physical to virtual interactions under the ECD Programme umbrella. Multiple virtual meetings, orientation of teams were undertaken for a seamless information flow of information to partners, to frontline functionaries, to beneficiaries and backwards, online information collection was a mechanism followed for identifying and addressing the challenges of virtual communication at all levels. The tele conversation with the beneficiaries highlighted two major issues a) Dietary diversity and b) consistency of complementary feeding. The underlying issue was awareness to the beneficiaries and, knowledge to the Frontline workers and hence more than 84 WhatsApp group were created across 4 districts of Rajasthan to connect with 1237 beneficiaries (lactating and pregnant women), the Frontline functionaries (AWW, ASHA and ANM) and PRI members. These WhatsApp groups had regular discussions around the bottlenecks, solutions and innovation between stakeholders. On a regular basis information on strengthening complementary feeding was disseminated to its partners, who in turn percolated it to their FLFs and beneficiaries. Videos and audios developed for POSHAN Abhiyaan and a few innovative videos were developed by partners on dietary diversity based on the SNP -THR being provided as dry ration and on availability of local food. Powerful knowledge video was audio-dubbed from English to Hindi to tailor according to the language of beneficiaries; text information of ILA modules translated into audio messages to cater to beneficiaries, and also disseminated the videos under POSHAN Abhiyaan. During this lockdown, the efficacy of virtual communication, connecting people and timely dissemination of vital information, amongst stakeholder was recognized. It also helped in developing

adaptation strategies that an amalgamation between physical and virtual interaction during critical times for delivery of essential services.

[The effects of early and repeat migration on nutrition among circular migrant children in Bihar; Reshma Roshania, Emory University, CARE India](#)

Rationale/objective: Circular migration for livelihood is undertaken by an estimated 100 million people in India, yet nutrition among circular migrants, especially women and child migrants is understudied. Bihar, among the states with the worst nutrition outcomes experiences the highest movement in the country, much of which is intrastate. Children who experience repeated, short-term movement and shifts in environment are disconnected from essential health and nutrition services both at their homes and destinations. We study nutrition status and the underlying and immediate determinants of nutrition among circular migrant children, focusing on identifying gaps in access to health and nutrition services.

Methods/analyses: We conducted our study in randomly selected brick kilns throughout Bihar; traditional brick kilns rely on migrant labour and operate during the dry months. Per kiln, three children 0-3 years of resident circular migrant families were randomly selected. Two rounds of cross-sectional data were collected in June 2018 and January 2019. CARE India block level staff digitally collected anthropometric and household survey data, which included migration histories, feeding practices, dietary intake, food security, illness, FLW interaction, and immunization. Primary outcomes included height-for-age and weight-for-height z-scores. Exposures included child age at first migration, total duration of migration, and number of migration episodes. We ran multiple variable logistic regression models for stunting and wasting as separate outcomes, adjusting for age, season, pre-migration characteristics, and factors influenced by the destination environment. All models were stratified by child sex and we tested for interaction among exposures. N = 2564 children 0-3 years.

Results: Over half (55.5%) of children in our sample were born during migration or first migrated before 6 months, and 45% experienced more than one migration episode. The prevalence of stunting and wasting was 51.6% and 25.7%, respectively. 43% of children 12-23 months were fully immunized, 85% of respondents reported open defecation during migration, 5% reported FLW interaction on the kiln, and 4% reported receiving THR. Males were more likely to have a minimum acceptable diet compared to females (17.3% vs 13.3%, $p = 0.038$.) Among females who first migrated at birth or < 6 months, those who migrated multiple times had higher odds of stunting compared to those who only migrated once (aOR 3.8, 95%CI: 1.9-7.8). The odds of wasting were 3.2 times higher in the summer compared to winter for both sexes; for females, diarrhea prevalence additionally predicted wasting (aOR 2.0, 95%CI: 1.20-3.39).

Policy implications: Our research demonstrates the criticality of providing convergent intersectoral services to circular migrant women and children. Because families often reside in destinations for 6-8 months of the year, there is an opportunity to target pregnant migrant women and children who are born during migration to ensure they receive essential services. Our findings show effects of early and repeat migration of females on stunting, implying the potential to address differential care and feeding practices by sex within this population. These findings are especially relevant in the context of COVID-19, which brings to light the exclusion of migrants from the health system.

[Community response and re-training of frontline health workers during COVID-19 crisis: A qualitative inquiry; Nikhat Shaikh, Society for Nutrition, Education and Health Action](#)

Rationale/objective: The COVID-19 pandemic hit every country at every level and India is no exception. The Indian healthcare system is under tremendous pressure where all resources including human resources are diverted to COVID-19 units. As an NGO working on maternal, child and adolescent health in urban informal settlements of Mumbai, Society for Nutrition Education and Health Action (SNEHA) took immediate steps to understand the

needs of the community to help them to cope after the lockdown in March 2020. This study presents the community's perceptions on COVID-19 and documents health worker's response to the pandemic in terms of implementing intervention strategies.

Methods/analyses: A qualitative inquiry was undertaken between March-June 2020. The themes explored were community knowledge on origin of COVID-19, its spread, fears and misconceptions, and how COVID-19 changed the community health workers' method of working. Data were collected from the SNEHA's frontline workers and staff. Oral informed consent was taken from all respondents. Data were collected by two qualitative researchers and verbatim notes were taken. Focus group discussions (FGDs) were conducted over Google Meet and WhatsApp calls. A total of 14 telephonic FGDs were conducted which included 110 participants. The FGDs lasted on an average for about 45 to 60 minutes. Sixty participants chose to give their responses in writing. All data were collated, manually coded and thematically tabulated. Generic thematic analyses technique was used for the data reduction process, wherein data were sifted through and codes were affixed to blocks of text. Finally, findings are presented on broad thematic categories.

Results: Initial community response was one of panic emanating from lack of awareness. Television and social media were the main source of information about the pandemic. News of death in the community created an atmosphere of fear and eventual acceptance of the disease. The community equated the disease to untouchability giving rise to social stigma. They also feared going to government hospitals and getting quarantined. Also, the threat of getting infected was a major reason for migration to villages. SNEHA took the opportunity to build capacity of the community and other stakeholders by disseminating COVID-19 related information which was based on Government of India guidelines. Frontline workers were trained to use technology to connect with community members and volunteers. Along with working on maternal and child health issues the NGO organically took up much needed issues of food security (Public Distribution System), WASH (advocacy for clean toilets) and social protection.

Policy implications: Currently, informal settlements of Mumbai have limited access to government maternal and child health services. Unsurprisingly, the focus of the public health machinery and the community is on COVID-19. Organizations working on public health have to adopt a three-pronged approach. One, in the short term they need to focus on issues directly related to COVID-19 (messaging, information and referral). Two, concentrate on community needs arising due to COVID-19 crisis. Finally, the frontline workers need to continue their routine work, learn and unlearn things to facilitate provision of maternal and child health services to the extent possible in the current situation.

[Understanding Access to Nutrition in the Context of the Covid-19 Pandemic – Insights from a rapid assessment; Alok Vajpeyi, Population Foundation of India; Vasudha Chakravarthy, Development Solutions](#)

Geographic location of research: State, The study was undertaken in five states in India – Bihar, Jharkhand, Odisha, Rajasthan, and Uttar Pradesh (UP).

Rationale/objective: A rapid study, done in May 2020, was undertaken to assess the impact of the COVID-19 pandemic, and subsequent preventive and lockdown measures, on the availability and access to health and nutrition services. Specific objectives (in the context of the COVID-19 pandemic), were: • To understand access to community-based nutrition and health services • Understand challenges faced by front-line workers in the provision of these services • To understand how the shift in nutrition provision from Aanganwadi centres (AWCs) and schools (from hot cooked meals, mid-day meal) to take home ration has impacted women, children, and households.

Methods/analyses: The study used mixed methods, comprising: • Review of secondary literature – Government orders, media articles, policy briefs, studies/ reports • Phone survey with 263 frontline workers (FLWs) – AWWs, ASHA's, and ANMs (approx. 50 from each state) • Qualitative phone interviews with frontline workers (45), grassroots NGOs (10), pregnant and lactating women (10), and adolescent girls (10). The phone survey with FLWs

enabled quantitative insights on the provision of services. Qualitative interactions helped understand gaps and challenges in service provision, and perceptions on access to health and nutrition services, and the impact of the pandemic. An analysis plan was developed to guide the quantitative analysis – to enable overall and state-wise insights. Qualitative narratives were thematically analysed. Data from the secondary review, and primary analyses were triangulated.

Results: Access to nutrition services through AWCs and schools was disrupted owing to the pandemic and lockdown. In Jharkhand, Bihar and UP, an average 40% FLWs reported not providing nutrition support to children 0-6 years; and 30% reported not providing the same to pregnant women. School going children were deprived of nutrition in the absence of the mid-day meal. Despite a focus of the Government in ensuring take home nutrition, several were getting left out. Interactions indicate that these beneficiaries were likely those who lived far away from the AWC, or in remote hamlets. Regular food supplies and their home delivery were also a challenge. Within households, given limited income and food; ration provided was distributed and eaten among all family members. Limited access to nutrition, coupled with inequitable distribution, would likely adversely affect women and children. Stakeholders fear that it may hamper gains made in addressing nutritional challenges.

Policy implications: To ensure that gains made in addressing childhood malnutrition, nutrition of pregnant women and adolescent girls, are sustained; it is critical for nutrition programs to adapt to the emerging COVID-19 contexts – (a) to understand household nutritional status and enable adequate support through food supplementation; (b) communicate on the importance of health and nutrition of women and children; and (c) revive provision of cooked meals through AWCs and schools to children, ensuring distancing and hygiene measures. A consistent focus on nutrition programs and strengthening systems of delivery are also critical.

Area(s) of adaption in the COVID-19 context: The study was undertaken in May 2020, when the lockdown measures, owing to the COVID -19 pandemic, were in force. All interactions were undertaken through phone conversations. Interactions were done, where partner organizations could enable phone numbers and introductions to FLWs and community members. To that extent, the sampling was purposive; and the study, while enables insights on the impact of the COVID-19 pandemic on access to nutrition services, is not generalizable.

Enhancing the reach and impact of cash transfers in the first 1000 days: What will it take?

Oral presentations

The Impact of Conditional Cash Transfers on the Height and Weight of Young Children: Evidence from the Mamata Scheme in Odisha, India; Vedavati Patwardhan, University of Washington, Seattle

Rationale/objective: In 2011, Odisha state in eastern India introduced a CCT scheme named “Mamata”. Intended as a partial wage compensation for pregnant and lactating women, the program also aimed at improving health service utilization and infant and young child feeding (IYCF) practices. This paper provides the first causal estimates of the effect of the Mamata scheme on nutritional outcomes of young children in Odisha. Following increases in national budgetary allocations and implementation of conditional maternity benefit schemes throughout India since 2017, it is important to understand program impacts that go beyond uptake and short-term consumption.

Methods/analyses: I use two rounds of the nationally representative India National Family Health Survey (n=8726) to test the effect of the Mamata Scheme on three anthropometric measures of child nutrition: wasting, stunting and underweight. I employ a difference-in-difference intention-to-treat (ITT) regression, based on program eligibility criteria.

Results: Being eligible for receiving Mamata Scheme benefits improves weight-for-height (WHZ) and weight-for-age (WAZ) for children between 0-5 years of age, but has no statistically significant effect on height-for-age (HAZ). Disaggregated analyses show that improvements in WHZ and reduction in wasting probability is concentrated amongst male children.

Policy implications: This study contributes to the sparse evidence base on CTs and child nutrition in India. CT programs may need to specifically target female children to improve girls’ nutritional status in the Indian context. Second, the lack of reduction in stunting suggests that improvements in nutritional status may attenuate with time, if complementary factors such as maternal education, access to clean water and sanitation, care practices and health care do not improve. Reducing long-term malnutrition in India may require a more comprehensive set of interventions that include CTs as well as other policies to improve health care, sanitation, and maternal education.

Role of intersectoral convergence in effective implementation of Pradhan Mantri Matru Vandana Yojna (PMMVY) scheme; Heena Shaikh, Piramal Foundation

Background: In an attempt to improve Health and Nutrition outcomes among Pregnant Women & Lactating Mothers (PW&LM) and children, the Government of India (GoI) launched the Pradhan Mantri Matru Vandana Yojana (PMMVY) in 2017 to provide a Conditional Cash Transfer (CCT) of Rs. 5,000 to first living child. NITI Aayog has been mandated with the task of carrying out a Concurrent Monitoring of the PMMVY Scheme. With an objective to improve the number of beneficiaries getting registered under the scheme and to improve the beneficiaries receiving the 2nd and 3rd instalment. One of the major challenges noted were the lack of convergence between the department.

Approaches/methods of program implementation: NITI Aayog with support of Piramal team, deep dived into the causes of the of low outreach and the discrepancies in the disbursement rate of the installments in the Aspirational districts of Bihar (Araria, Katihar, Shekhpura, Begusarai and Sitamarhi) directly mentored by NITI Aayog. Through monthly meeting of LS and AWWs, the challenges were identified. There were limited understanding in the nature and coordination required at the various level since the services delivered under the schemes is from the Health departments while Cash benefits are to be received from the ICDS department. Like POSHAN Abhiyaan, PMMVY schemes too calls for intersectoral convergence for smooth implementation of the scheme. The approaches

adapted were at sector level capacity building of frontline workers focusing on the importance of filling the MCP Card to address the issue of record maintenance and their individual role in the scheme, special campaigns and spot registration during Village Health Sanitation Nutrition Day (VHSND), at block level a structured monitoring and supervision with CDPO and Lady supervisor, and at district level adequate availability of forms was ensured at all the CDPO offices by ICDS, while adequate availability of MCP card was ensured by Health department. Special more initiative by ICDS department were taken like timely disbursement of incentive money to DEO and AWW for motivation., AWWs worker was trained to issue Birth Certificates for Home deliveries and Lady supervisor were trained to make adhar card.

Key findings: Close collaboration at district, block and sector level was observed in developing guidelines, planning, and reviewing scheme, facilitated by a shared motivation and recognized leadership for coordination. At the district level, there were joint planning and review meetings under DM chairmanship. While at the block level there is improved supervision and coordination. Strong collaboration among FLWs was facilitated by close interpersonal communication and mutual understanding of roles and responsibilities. During the process, there has been a steady rise in the number of beneficiaries being registered from an average of 62% to 90% above from October onwards. The disbursement of 2nd and 3rd installment has also been resolved to a larger extent.

Significance and application: Congruent or shared priorities and regularity of actions between sectors across all levels will likely improve the quality of coordination, and clear roles and leadership and accountability are imperative. As convergence has proved to in achieving effective coverage and delivery of services and cash benefits under the PMMVY schemes. Further it also fulfills the objectives of supplementing nutrition requirement during pregnancy and lactation, Providing partial compensation for the wage loss in terms of cash incentives so that the woman can take adequate rest before and after delivery of the child, to promote improved health seeking behaviour amongst the PW&LM.

An evaluation of PMMVY in Rajasthan; Nilesch Yadav, The India Nutrition Initiative, Tata Trusts

Rationale/objective: The Pradhan Mantri Matru Vandana Yojana (PMMVY), a conditional cash transfer scheme, was launched in January 2017, with the motive of improving health seeking behavior of pregnant and lactating mothers, which would impact the health of the child. With the provision of paid work maternity leave under the Maternity Benefit (Amendment) Act, 2017 being restricted to only formal sector female workers, the Government resolved to address similar plight of female workers in the informal sector through the PMMVY scheme. To assess the critical implementation gaps, TINI partnered with Indus Action to conduct an Impact evaluation research for PMMVY in two districts in Rajasthan – Dausa & Dholpur and evaluated the findings under four broad themes – process evaluation, awareness and target assessment, immediate outputs and behavior change.

Methods/analyses: Objectives 1. Understand gaps in implementation of the scheme. 2. Evaluate the impact of the scheme.

Methodology The study was conducted using a mixed method (qualitative and quantitative) approach. Survey questionnaires were prepared, and interviews conducted of stakeholders involved such as beneficiary and non-beneficiary mothers, family members (mothers in law and husbands) and frontline workers (Anganwadi workers, ASHAs, ANMs).

Results: Following observations were noted post analysis – 1. Lack of awareness about the specifics of the scheme amongst beneficiaries and frontline workers. 41.5% non-beneficiary mothers were noted as unaware of the scheme. 2. Documentation issues –a. 35% of surveyed women faced issues with document collection and 19% had Aadhar related issues. b. 60% beneficiary mothers were unaware about the number of times the forms need to be filled. c. 45.5% beneficiary mothers faced challenges in withdrawing the received money from the bank. 3. Issues such as late receipt of money, forms rejection due to incorrect

documentation. 4. Issues regarding consumption pattern of the money received as the money was used for purposes other than availing maternal care and nutrition. This is due to financial decision-making being under the husbands or mother in law in the family.

Policy implications: This research revealed the impediments to the intended impact reaching the beneficiaries. Some encouraging points were also noted such as increase in seeking and uptake of healthcare services by mothers, more female workers taking leave from work during pregnancy with the option of the money received under the scheme to take care of their ante natal health etc. However, addressing the surmounting challenges associated with the implementation could be done through below recommendations - 1. Documentation paperwork and its collection frequency should be reduced. 2. Effective monitoring and tracking of application should be enabled with the frontline workers to avoid form rejections and make minor edits to inaccurate applications. 3. Potential migration of paperwork to digital platforms to avoid loss and entering inaccurate data. 4. Husband's Aadhar card and having his name on the mother's card should not be compulsory. 5. Husbands and mothers in law should be made aware of the benefits of PMMVY as they influence the decision making in the family. 6. Awareness campaigns for the scheme should be made more rigorous, crisp and comprehensible for the general public.

Systems strengthening: Building technical and operational capacities

Oral presentations

Trends in ICDS service awareness and uptake: A study of NGO-ICDS partnership in implementing child health and nutrition program in urban informal settlements of Mumbai, India; Apurva Tiwari, Society for Nutrition, Education and Health Action, Mumbai

Background: An integrated child development service (ICDS) is one of the world's largest and most distinctive programs for early childhood development. However, even after 3 decades of its implementation, non-uniform uptake of its services hinders the achievement of improved child health outcomes. In recent times, Public- Non-Government Organizations (NGO) partnerships have emerged as a means of improving the public health services in many low- and middle-income countries. This study aims to document the trends of awareness and uptake of six ICDS services during the course of an intervention implemented by an NGO in partnership with ICDS in informal settlements of Mumbai.

Approaches/methods of program implementation: The intervention was implemented in two urban informal settlements of Mumbai. It addressed both demand and supply sides of service delivery challenges by building capacity of 310 ICDS staff through monthly training, mock sessions and service delivery support. Simultaneously, 754 unpaid community volunteers were recruited and trained. They created awareness about ICDS services in the community and supported in identification, mobilization and referral of beneficiaries. The study explored effectiveness of the intervention by using cross-sectional time trend analysis. Mothers of children aged between 0 – 2 years were interviewed to assess awareness and uptake of ICDS services through five survey rounds conducted over a period of three years (January '17 – March '19). The proportions of service awareness and uptake were analysed and trend analyses of proportions were conducted to measure progress. The evaluation protocol was approved by the Institutional Ethics Committee, the Bandra Holy Family Hospital and Medical Research Centre, Mumbai.

Key findings: Findings demonstrated marked increase in awareness of all six ICDS services in the intervention areas. However, the increasing trends were more pronounced for nutrition and health education (20% to 67%; X^2 for trend 517.9, $p=0.000$) and immunization services (12% to 51%; X^2 for trend 569.9, $p=0.000$). Although there was an increase in awareness about referral services, the proportion remain low at the end of intervention period (29%). Uptake was assessed for five ICDS services. Preschool education service is not provided to children aged 0 – 2 years and hence not included in the analysis. Service uptake trends mirrored awareness trends and depicted significant increase for all 5 services. Trend analysis showed notable increase in uptake of nutrition & health education (4% to 32%; X^2 for trend 251.26, $p=0.000$) and immunization Services (3% to 24%; X^2 for trend 306.75, $p=0.000$). Uptake of referral services remained low (10%) at the end of intervention.

Significance and application: The above findings indicate that the ICDS service delivery could be bolstered with the addition of effective training, resilient monitoring options and securing improved community participation and behavior change. Our findings suggest that NGOs could play an important role in making sure that the vulnerable population receive ICDS services in a timely manner. Resource-poor population are even more likely to be affected during the pandemic and this paper demonstrates that both awareness of availability of services and use of those services can be improved with a right mix of implementation strategies while delivering child health and nutrition programs.

Experiences of strengthening IYCF services in select districts of Uttar Pradesh and Gujarat for children 6-23 months; Vinay Koparde, Nutrition International

Background: Nutrition International (NI) supported the Integrated Child Development Scheme (ICDS) under Department of Women and Child Development (WCD) in UP and Gujarat states through its First 1000 Days Program, to improve the quality of services - built the technical capacities of functionaries, supportive supervision, generating real-time data through technology for the course corrections & review mechanism and specially focused on social behaviour change intervention (BCI) in eight districts during 2016-2020 .

Approaches/methods of program implementation: Operational and technical support to ICDS was provided by NI to improve counselling on breastfeeding and complementary feeding; growth monitoring, identification, referral and follow up of severely underweight children; advocacy at the district level for ensuring commodities and supplies at Anganwadi centres; supporting in timely updating of records and reporting; review of programs, facilitated Incremental Learning Approach training for improved IYCF services. Built capacities for ICDS functionaries (17,000 plus) through cascading training approach and reached 26,000 households during 2016-20. Regular supportive supervision carried out to identify gaps and follow up of beneficiaries through a web-based application which also captured KAP of AWWs – these were augmented with mentoring support to frontline workers (FLWs). To create awareness at the community level, a comprehensive BCI strategy on the First 1000 days was developed and adopted by WCD in both states. To evaluate program performance, regular robust cross-sectional mix-method surveys through independent third-party agencies were conducted.

Key findings: Evaluation findings revealed that though awareness of mothers on the importance of exclusive breastfeeding (EBF) increased (1 percentage point (pp) overall, 5pp increased in UP and 2pp declined in Gujarat), breastfeeding practices decreased marginally (2pp in both the states) Also, 84% of FLWs correctly-reported at-least 3 benefits of EBF (increased 6pp in both states). The proportion of 6-23 months of children reporting consumption of Minimum Dietary Diversity (MDD) improved by 5pp (6pp in UP and 4pp in Gujarat). However, Minimum Meal Frequency (MMF) did not show any increase and Minimum Acceptable Diet (MAD) reported a marginal increase (1.5pp overall, 2pp in UP and 1pp in Gujarat), though awareness of benefits of complementary feeding amongst mothers showed considerable improvement. Continued breastfeeding at 12-23 months year increased by 17pp (10pp in UP and 27pp in Gujarat).

Significance and application: Strengthening the ICDS platform through quality improvement measures along with improved behaviour change communication and mentoring of the ICDS functionaries can facilitate the adoption of better practices.

Assessment of ILA trainings in 11 Aspirational Districts across seven states; Punit Kumar Mishra, Piramal Foundation

Rationale/objective: Incremental Learning Approach (ILA), designed on the principles of 'learning by doing', was introduced under POSHAN Abhiyaan to enhance the capacities of frontline workers to effectively and efficiently deliver nutrition and health services on the ground. Comprising of 21 modules covering a range of issues, the ILA trainings were rolled out across the country in a cascade mode, soon after the launch of the Abhiyaan. Objective: Piramal Foundation in partnership with NITI Aayog undertook a study in 2019 to assess (i) the quality of ILA trainings and (ii) the knowledge, skills and practice of Anganwadi Workers post ILA trainings in the Aspirational Districts of India.

Methods/analyses: This mix-method study was conducted in 11 Aspirational Districts (across seven states) mentored by NITI Aayog. Quantitative survey was done to assess the knowledge, skills, and practice of AWWs through pre-tested questionnaire. A total of 264 AWCs were selected through two stage sampling. One hundred fifty-four In-depth Interviews (IDIs) were conducted with AWWs, Block Resource Group, District Resource Group and State Resource Group members across seven states. Separate interview guides were

developed for each target group in Hindi, Assamese and Marathi languages. Additionally, observation of ongoing ILA trainings was performed at different levels.

Results: 1. Observation of the trainings: highlighted the gaps in the quality of trainings, quality of trainers and lack of compliance with guidelines. Resources Group members across State, District and Block levels shared their concerns about the language of the modules, time allotted to finish each module and the infrastructure at the block level. Further they emphasized on the importance of demonstration in trainings as well as the need for a strong monitoring system. 2. Assessment of Knowledge, Skill and practice of AWWs: 93% of surveyed AWWs reported receiving any ILA training. All the respondents who received training reported correct knowledge of Kangaroo Mother Care (KMC), but only 37% of these were able to demonstrate the correct way. Only 35% of the trained respondents could correctly plot the growth chart to identify wasting among children while only 26% of the non-trained AWWs could correctly plot the growth chart. Similarly, 26% of trained AWWs could demonstrate all the steps of handwashing whereas only 11% of non-trained AWWs could do so. Overall, it was found that AWWs believe that ILA trainings are informative and have brought change in their quality of work.

Policy implications: The quality of sector-level training needs to be improved in terms of time allotted to the module, batch-size and making the trainings more interactive. Skills of AWWs can be enhanced with regular handholding and refresher trainings. There is also a need for mop-up rounds of training for the left out AWWs. The capacity of Government trainers should be enhanced, and these should be engaged in training and monitoring to improve the ownership of Government functionaries. Participation from the Health department is observed to be limited so far. There is also a need for convergence between the Departments of Health and WCD.

High in the morale or down in the dump: Motivation of frontline workers and its predictors - the Bihar story; Sweta Kumari, CARE India

Rationale/objective: In India, frontline workers (FLWs) have been bestowed the responsibility for disbursing healthcare services aiming at better reproductive-maternal-newborn-child health and nutritional (RMNCHN) outcomes. Low FLW morale can severely undermine the quality of community-based service delivery and may lead to under-utilization, still predictors of their motivation were rarely explored. In Bihar, a resource-poor Indian, the community-level engagement of FLWs remained suboptimal and predictors of such underperformance needed a detailed investigation.

Methods/analyses: A cross-sectional study involved a state-wide representative sample of 1031 Anganwadi workers (AWW), 1033 (Accredited Social Health Activists (ASHA) and 522 Auxiliary Nurse Midwives (ANM) selected through a multistage cluster random sampling from all 38 districts of Bihar. Information regarding their knowledge/perception/training and motivation (categorized in poor/average/good based on the distribution of internally validated composite index for each) were collected through a color-coded, tablet-PC-based, audio-integrated, self-interview to avoid social desirability bias with pre-recorded questions enquired through headphones and anonymous, confidential answers were digitally captured through color-coded self-response. Collected information were analyzed using SAS-version-9.4 through multiple, binary and multinomial logistic regression analysis to determine the predictors of motivation among FLWs in Bihar.

Results: Knowledge and motivation of FLWs in Bihar revealed a huge scope of improvement, especially because motivation was found to be largely dependent on training quality and knowledge level. In a state-level sample of front-line workers, more than one-third FLWs had poor knowledge regarding vaccination, family planning, danger signs of pregnancy and overall RMNCHN aspects. Only 19% received two trainings in last six months. About one-third reported that their overall training was not good. While a third reported that they have too much workload, about half admitted working <four hours/day. Nearly half of them were quite unhappy with payments. More than 70% had payment pending for >a month while for 41% the delay was for >six months. Less than half reported

to experience good acceptance in their catchment area whereas only 37% had good motivation for work. Relatively older age (adjusted odds-ratio, AOR=1.02, p=0.024), belonging to Hindu religion (AOR=1.66, p=0.041), higher education (for >higher-secondary, AOR=1.97, p=0.001), good knowledge (AOR=1.58, p=0.008) were positive predictors of good motivation. Having good quality training (AOR=3.35, p<0.001) was the strongest positive predictor of motivation while irregularity of payment was a huge barrier.

Policy implications: Targeted intervention to ensure quality training appeared to be the need of the hour to improve community-based RMNCHN-related service delivery through FLW-channel aiming at reduction of maternal and infantile morbidity and mortality in Bihar. Building in intrinsic motivation drivers into a multi prong alternative non-cash motivational mechanism keeping the frontline worker and her self-recognition at the center of the focus appears to be critical policy implication.

Strengthening the capacity of industries to fortify staple foods in India; Shakun Sharma, Global Alliance for Improved Nutrition

Geographic location of implementation: 18 + states across India

Background: India has achieved a relatively stable economic growth since independence, but most of our population remain malnourished and micronutrient deficient. India loses 1 percent of its GDP amounting to Rs. 27,720 crore per annum in terms of loss in productivity, increased health care costs and deaths. National surveys like NFHS-4 (2015-16) and CNNS (2016-18) and state surveys of NNMB (2002-03) demonstrate widespread micronutrient malnutrition across different geographies and age groups. Considering the positive impact of fortified staples and their production at industry level, GAIN initiated its programme in India, in 2011, focusing on capacity building of industry to fortify staples.

Approaches/methods of program implementation: Fortification requires technical expertise at industry level to ensure the adequacy of added micronutrients. This also represents a paradigm shift for industries, encompassing convergence of social responsibility for public good and profit optimization goals; leading to enthusiasm and scepticism; in assessing impact on business models and profits. These concerns were addressed by providing them with onsite trainings on the process of fortification, facilitating the linkages with quality assured premix suppliers and equipment manufacturers, providing support for quality assurance and quality control and aligning with regulatory compliance on packaging and labelling. They were also provided with ready reckoners on premix calculations, flex sheets, posters and films on the processes, GMPs and GHPs. Furthermore, the industry was facilitated for FLRS registration and getting their fortified brands displayed on FFRC website. The e-commerce players were also sensitised on fortifying their private brands and create a fortified foods category on their respective platforms

Key findings: The staple food fortification program focused on training and capacity building of edible oil, milk and wheat flour industries, has not only helped in developing useful resource material and establishing systems but has also strengthened them for sustainability. More than 400 edible oil, milk and wheat flour industries and FSOs of 18 states were trained resulting in the annual production of 7.6 MMT fortified edible oil reaching 845 million beneficiaries, 1316 million litres of fortified milk reaching 18 million beneficiaries and 0.38 MMT of fortified wheat flour reaching 27 million beneficiaries. The industries fortifying their brands were closely monitored on monthly basis, backed up with corrective actions as and when needed. Meetings with premix suppliers were convened to ensure the quality and availability of premixes. Food fortification is an unfinished agenda and requires more efforts in overcoming the challenges to ensure the balance between demand and supply of fortified staples.

Significance and application: The nationwide lockdown and supply chain disruptions during the pandemic has not only affected the availability and affordability of nutrient rich foods like fruits and vegetables but also reduced the sunlight exposure i.e. natural source of Vitamin D. Body needs micronutrients to build its immunity and fight against infections. As

this pandemic has high potential to push us into extreme malnutrition, efforts were made to ensure an uninterrupted supply chain for industries providing fortified staples and improve the nutritional status of vulnerable population. The program being aligned with the interventions of POSHAN Abhiyaan will add value in strengthening its implementation.

Area(s) of adaption in the COVID-19 context: Engagements with state governments, industry partners and regulatory authority are ongoing, and efforts are being made to ensure the implementation of fortification of edible oil, milk and wheat flour by taking necessary safety measures. Though, a few adaptations were required to be made in order to sensitize and train stakeholders without compromising with their health as well as quality of program. Therefore, instead of conducting face to face onsite trainings, virtual, live sessions are planned, which will be designed to simulate the real-time experiences and include on the spot feedback to their queries.

Systems strengthening: Building technical and operational capacities

Poster presentations

Training on 'First 1000 days – maternal & child nutrition': Evidence-based skill building to prevent acute and chronic malnutrition in children; *Deepali Fargade, Shrimati Malati Dahanukar Trust*

Background: According to NFHS-4 (2015-2016), 7.5% of children under the age of 5 years are still found to be wasted and 38.4% are stunted. Established in 1960, Shrimati Malati Dahanukar Trust (SMDT) aims at working with the community by addressing the issues within it. In order to improve the health and nutritional status of mothers and children, the Training of the Trainers program on Infant & Young Child Nutrition was envisaged to prevent malnutrition in mothers and children, thereby preventing underweight, stunting & wasting. SMDT conducted 28 IYCF trainings all over India, training a total of 2353 master trainers.

Approaches/methods of program implementation: 997 ICDS Aanganwadi Sevika and supervisors, 370 ASHAs, 147 ANMs, 689 NGO front-line health care workers and 150 nutritionists were trained as master trainers through this program. The training approach was based on the principles of skill development in breast feeding & complementary feeding counseling as well as nutrition counseling in pregnant and lactating mothers using a training kit which included a breast model, doll, food charts and pregnancy charts along with instructive videos. The 4 full-day training module employed variety of training methods, including cooking demos, demonstrations, discussions, case studies, critical thinking, team building, drama, role-play & problem solving. Focus was also given on behavior change communication training so that they feel empowered to convince caretaker to adopt latest evidence-based advices. Participants completed pre and post-course assessment questionnaires in their local languages to understand the baseline knowledge and gain in knowledge; and discussed the results of the module.

Key findings: A total of 1060 trainees attended pre and post-course assessment tests which includes 490 ICDS Aanganwadi Sevika and supervisors, 157 ASHAs, 118 ANMs and 295 NGO front-line health care workers. At baseline, the ASHAs performed the poorest, scoring 8% on first thousand days, 19% on breastfeeding techniques, 4% on complementary feeding and 1% on counselling techniques. While the ICDS sub-group scored 24% and 21% on breastfeeding and complementary feeding, ANMs scored only 20%. The post-training assessment revealed that the average knowledge score on counselling techniques of the ICDS sub-group improved to 65% from as low as 3% at baseline. Another incredible increase in counselling scores was observed in the ASHAs from 1% to 65% on counselling techniques. The scores on breastfeeding techniques improved to 79% for both ICDS and ASHAs and up to 90% for ANMs. Complementary feeding and first thousand days scores also increased to as much as 70-85%.

Significance and application: The training program improved the knowledge of field workers tremendously. Focusing on behavior change communication training so that trainees are empowered to convince caretakes on the importance of nutrition interventions in the first thousand days of life, the training also employed innovative ICT tools such as videos and apps. Emphasizing on improved hygiene and sanitation practices by making the participants understand the correlation between diarrhoea and malnutrition, the role of inter-sectoral convergence in tackling malnutrition was also highlighted. Supporting the pillars of the POSHAN Abhiyaan, this training ensures local nutrition delivery and effective implementation of the national objectives.

Improving IYCF practices in Sitamarhi and Sheikhpura districts of Bihar through system-based actions; *Taruna Juneja Gandhi, Mamta Health Institute for Mother and Child*

Background: MAMTA-HIMC partnered with UNICEF, Bihar to strengthen children's nutrition-related service delivery at different levels in two aspirational districts of Bihar (Sitamarhi and Sheikhpura) comprising a total of 23 blocks. This one-year project was initiated in August 2019; the districts were chosen as they have poor maternal and child health indicators and suffer from low socio-demographic status. With the launch of National Nutrition Mission, concerted efforts have been made for improving community awareness through Jan Andolan (social mobilization) but it was noted that the systems response needs further strengthening. The aim is to enhance quality service provision of nutritional services and improve the nutritional status of under-5 children through a system strengthening approach.

Approaches/methods of program implementation: The project aims to act through a system-based approach, exclusively working on strengthening the service delivery of nutrition-related services to mothers and under-five children. We are aiming to improve knowledge, counselling, and growth monitoring skills of Anganwadi workers (AWWs) and Lady supervisors (LS) on infant and young child feeding (IYCF) practices and early childhood development. The intervention was specifically developed after a detailed research on the determinants of poor nutrition indicators of mother and child in these two districts. A mentoring plan has been developed, following which the project field team directly interacts with the AWWs through personal visits and IPC sessions, demonstrations, calls, capacity building sessions and virtual training sessions. A holistic package of services including nutrition, pre-school education, Annaprashan events, and quality engagement with mothers and children (6-23 months) is being provided at the AWCs. The team is also working to improve the delivery of home-based young children care through enhanced monitoring and supportive supervision.

Key findings: Improved capacity of AWWs and knowledge related to complimentary feeding (age, portion size, frequency etc), effective counselling on IYCF (reinforcement of exclusive breastfeeding, timely initiation and continuation of complementary feeding), anthropometric measurements will be the main outcomes of the project (as the project is till October 2020). The team is also supervising the organization of events at the AWCs, including demonstrating recipes on Annaprashan Utsav and Upri Aahar Abhyaas Diwas; along with assuring no disruption in distribution of supplementary nutrition. Referral of severely malnourished (SAM) children to nutrition rehabilitation centers is also being reinforced by the team. A diligent landscape analysis was carried out before the initiation of project activities, including mapping of factors responsible for poor performance related to maternal and infant and child nutrition. This included partner's mapping, district resource mapping, review of available IEC and training materials, assessing the quality of ICDS services in terms of availability of services, its coverage and service provider's knowledge, lastly the food product availability of survey of complementary food available in the market space. A mentoring framework, supportive supervision formats, and ODK tool for data have been developed for monitoring all the project activities.

Significance and application: This innovative project of mentoring support through visits and inter-personal communication has helped in increasing the knowledge, counselling, and growth monitoring skills of frontline workers on IYCF practices and early childhood development. It has helped us to know where the AWWs lag behind in terms of provision of quality services to beneficiaries, such as anthropometric measurements, provision of THR, knowledge of correct IYCF practices. Various issues, such as quality engagement of mothers and children (6-23 months) in the events, technological incapacity of AWWs, lack of clear-cut instructions during the pandemic – have been highlighted during the project implementation. This project adds value and strengthen the implementation of POSHAN Abhiyaan as it supports the pillars of Poshan Abhiyaan, such as use of technology (ICT) for

real time growth monitoring and tracking of women and children, intensified quality health and nutrition services for mother and child.

Area(s) of adaption in the COVID-19 context: During the nationwide lock-down period, when the visits to AWCs were not possible, AWWs were approached telephonically by the team for providing mentoring support. During these calls, field team mentored AWWs about COVID-19, IYCF practices like Breastfeeding, Complementary feeding, Growth Monitoring and Anthropometry. In addition to this, team counselled AWWs to use beneficiary registration application as instructed by the ICDS department. They were also informed about the objective and the importance of registration of beneficiaries that is for money transfer to the beneficiaries' account for THR. We served as a critical link between the government and AWWs during this pandemic: LSs, CDPOs were given accurate and reliable information on COVID-19 pandemic and IYCF; and State was informed about the shortage of safety kits for AWWs. Developed Counselling material: Presentations, counselling material has been developed for COVID-19 & IYCF practices. Training of the field staff, Lady Supervisors, AWWs regarding COVID 19 was carried out during the lock-down period.

Cross-sectional study on knowledge and practices of nursing staff related to MIYCN during antenatal, postnatal and Paediatric OPD and immunization services at Rajendra Institute of Medical Sciences, Jharkhand, India; Manisha Kujur, Asha Kiran, Rajendra Institute of Medical Sciences, Ranchi, Jharkhand

Rationale/objective: This study was conducted to explore the level of knowledge and practices of the nursing staffs in delivering maternal, infant and young child nutrition (MIYCN) services at the point of care, in the Departments of Obstetrics & Gynaecology and Paediatrics, at Rajendra Institute of Medical Sciences (RIMS). Medical colleges and hospitals are strategically placed in the health care delivery system to lead the policy and program on the 1,000-day window of opportunity when foundation of overall optimum health and neurodevelopmental growth across the lifespan is established. Maternal nutrition during pregnancy has effect on mother and foetal growth and development.

Methods/analyses: The cross-sectional study was conducted in the Departments of Obstetrics & Gynecology and Pediatrics from May to September 2019, after obtaining approval from the State Government Officials. 5 sets of respondents were interviewed in the study, which included the nursing staff, pregnant women, recently delivered women, mothers of Children 0 to 6 months and 7 to 12 months of age. Structured questionnaires were developed to interview the respondents. The sample size was calculated as per point of care. (References for sample size calculation stated in link below). Data collection was done by post graduate students and interns. The survey data were collected in Kobo toolbox and data analysis was done using Epi Info version 7.2.3.1 software. Summary data were expressed as frequencies (percentage). Correlation of indicators within the respondent groups was done using Spearman's rank correlation method. The study was conducted to capture the current knowledge and practices of nursing staffs for further quality improvement of MIYCN services.

Results: The practices and counselling skills of nursing staff on maternal nutrition interventions like micronutrient supplements and minimum dietary diversity and their benefits were good. 79% of the respondents who delivered normally, breastfed the newborn within one hour, which was only 7% who delivered by caesarean section. In the post-natal ward, 41% recently delivered women (RDW) were counselled on colostrum, 17% on positioning and attachment and 38% on exclusive breastfeeding (EB) during the first six months. In the Pediatrics OPD and immunization clinics, 93% of mothers with infant below 6 months of age, received counselling on EB and 47% on feeding during illness, but only 13% mothers counselled on breastfeeding difficulties. 60% mothers of children 7 to 12 months received counselling on timely introduction of complementary feeding, 40% on minimum dietary diversity and feeding techniques during and after illness and 30% on safe preparation and storage of complementary food.

Policy implications: In-service capacity building of service providers in MIYCN with focus on individual counselling or group education, on MIYCN at various point of care as per standards. Efficiency of counselling skills can be improved by use of job aids and IEC materials at point of care for better understanding of the clients. The quality of MIYCN services at point of care can be improved by regular monitoring and CME programs for improving knowledge on recent evidences, guidelines and program developments. By focusing on ANC check-ups with micronutrient supplementation, maternal dietary diversification, optimal breastfeeding and complementary feeding.

Centre of Excellence and Anemia Mukht Bharat: Experiences and the way forward; Gomathi Ramaswamy, National Centre of Excellence and Advanced Research on Anemia Control

Background: Anemia is an important public health problem in India, with more than 40% population are anemic. To accelerate anemia control efforts, the Government of India has launched the Anemia Mukht Bharat (AMB) program in April 2018 with an ambitious target of 3% annual reduction in the burden, as one of the key themes under POSHAN Abhiyaan. Ministry of Health and Family Welfare (MoHFW), Government of India (GoI), established the National Centre of Excellence and Advanced Research on Anemia Control (NCEAR-A) as one of the institutional mechanisms of AMB. This abstract describes the conception and two years of experience of NCEAR-A as a technical support unit for AMB.

Approaches/methods of program implementation: NCEAR-A was established in May-2018, at the Centre for Community Medicine (CCM), All India Institute of Medical Sciences (AIIMS), New Delhi. The objectives of the centre are to provide technical inputs to MoHFW, training and capacity building of national and state-level program officers, address the research needs in anemia, program monitoring and evaluation, mentoring the regional and state level centres of excellence and function as an apex reference laboratory for anemia. Anemia Research Consortium has been established under NCEAR-A to design and conduct research to combat anemia and to explore various innovative anemia control interventions. UNICEF and other development partners collaborate with NCEAR-A to translate the research to policy and program.

Key findings: Since its inception, the centre has provided technical inputs to MoHFW such as, incorporating test and treat strategy for anemia, use of digital hemoglobinometers as point of care testing devices for estimation of hemoglobin, parenteral iron for management of anemia and mandatory iron folic acid fortification in the public distribution system as policy level changes and incorporated as interventions in the AMB guidelines. Policy briefs on the use of ferric carboxymaltose, a parenteral-iron formulation for the management of anemia in pregnancy and postpartum and multiple micronutrient supplementations in pregnancy were developed to provide technical support to the MoHFW. The centre also developed a 'Training Manual' on AMB for capacity building of health workforce, in collaboration with other partners. Two national-level training of master trainers' workshop has been conducted by NCEAR-A and 55 master trainers were trained. NCEAR-A also participated in 25 state-level capacity building workshops in 14 states. NCEAR-A was instrumental in piloting and national wide scale-up of an innovative demand generation campaign viz., Test-Treat and Talk (T3) camps during POSHAN Maah and Poshan Pakhwada observations under POSHAN Abhiyaan. A budget of 15000 per camp is approved by MoHFW for inclusion in the state budgets. NCEAR-A leads the Comprehensive National Nutrition Survey – Anemia policy group as designated by MoHFW. The centre has conducted two partners meeting with an objective of harmonizing and coordinating action by partners at the national and state level for implementing AMB with quality. More than 50 partners from 31 partners organizations and MoHFW participated in this meeting. The activities of the NCEAR-A are being monitored quarterly by MoHFW. In the next five years, the centre envisages to support GoI in the countrywide roll-out of AMB, mentor and provide leadership to state and regional level state centres of excellence, act as an apex reference laboratory for anemia and conducting impact assessment of the anemia control activities in India.

Significance and application: Academic institutions as the Centres of Excellence are a crucial platform to bridge evidence-based research and health program. NCEAR-A, in its two years of the journey, provided technical support to the MoHFW for implementing AMB with quality. It also provided mentorship for capacity building of states, appropriate recommendations through research and optimizing the efforts for effective service delivery. It also envisages supporting AMB for achieving the target of 3 per annual reduction in anemia through scientific and evidence-based approach.

Area(s) of adaption in the COVID-19 context: The services related to anemia control, such as the distribution of iron-folic acid to the beneficiaries and treatment of anemia in pregnancy are identified as essential services by MoHFW as part COVID-19 essential service delivery. NCEAR-A has adapted online platforms for capacity building for AMB. The centre is also involved in developing an online training module for AMB in collaboration with partners.

Capacity building of PRI members on POSHAN Abhiyaan - comparison between trained vs non trained districts; *Heena Shaikh, Piramal Foundation*

Background: To mobilize the Panchayati Raj Institution (village council) members as nutrition champions, the NITI Aayog along with Piramal Foundation have initiated the training of close to 100,000 PRI members from 25 aspirational districts spread across 7 states. The initiative is to mobilize panchayat members to take greater ownership of POSHAN Abhiyaan in their community. Recognizing the panchayat members as central to the process of positive nutrition behavior and norm change, the training was designed to augment their capacity, which would help them in awareness raising and addressing context specific social norms and behaviors.

Approaches/methods of program implementation: NITI Aayog with the support of Piramal Foundation initiated the training in Jharkhand. A meeting was facilitated a meeting under chairmanship of the DM. It was decided to target on an average 12 members from each gram panchayat for training to make a difference. The target PRI member in Pakur were 1536 and in Sahibganj 1944. The training was rolled out in Pakur in Cascade mode. A training-of-trainers was conducted directly at the district to save time and retain the quality. Master trainers visited the district, the trainers identified from the blocks were the Block Transformation officers (BTO) of Piramal team, the BPM or BCM of the block and the CDPO or LS from the block. A resource of 3 people then rolled out the training parallelly at every block. Total 44 batches and 1484 PRI members were trained in Pakur in the month January to February 2020. The training in Sahibganj was postponed as the district was busy in other activities. After 3 months' post COVID the Piramal team monitored PRI activity in both the district to see if there is an impact of training in Pakur when compared to Sahibganj which is not trained.

Key findings: 1. Immediate Outcome-Pre-post Analysis of 1439 PRI members in Pakur shown there has been an increase in knowledge about Health and Nutrition programs. Out of the 13 questions asked, on an average the PRI members could answer 6 questions correctly pretraining, while post training they could answer 11 questions correctly. The major knowledge difference has been noted in the following questions 1. The PRI member is the Chairperson of Village Health Sanitation committee (VHSNC) - Correct answer Pre training 25% Correct answer Post training -87% 2. Stunting means children are shorter for their age and it is irreversible correct answer-39%, correct answer post training-88% 2. PRI activities were monitored in the month of July post COVID. A tracker was put in place and the information was captured by Block Transformation officer (BTO) during monthly meeting of FLWs or either physically seen an activity of PRI members. It was noted that 133 PRI members from 70% of Gram Panchayat in Pakur were actively supporting Health and Nutrition Program while 35% were active in Sahibganj. S.no Activities supported by PRI members Pakur Sahibganj 1 VHSNC meeting conducted in month 60% 30% 2 Supported in VHSND 65% 58% 3 Infrastructural support using untied funds 75% 18% 4 Minor procurement through untied funds 27% 6%

Significance and application: Capacity building of the PRI members in the Pakur district has demonstrated that engagement of these Community leaders can bring significant change. Convergence between PRIs and FLWs under POSHAN Abhiyaan has resulted in better service delivery and community engagement. Active VHSNC committee meeting with discussion around gaps in health and nutrition service delivery is setting up pace. Piramal foundation is looking forward to scale up the training in all the 25 aspirational districts mentored by NITI Aayog.

Area(s) of adaption in the COVID-19 context: The training of PRIs was completed in February 2020. However, during the lockdown, virtual trainings were conducted for PRIs to orient them about COVID in batches. We found that above 80% PRI members were actively supporting during COVID crises in creating awareness and addressing stigma and discrimination.

Improving early initiation of breastfeeding in uncomplicated C-section deliveries using point of care quality improvement (POCQI) approach; *Praveen Kumar Sharma, FHI360 Alive & Thrive*

Geographic location of implementation: All India Institute of Medical Sciences (AIIMS), Patna, in the state of Bihar, India

Background: Early initiation of breastfeeding (EIBF) was not a common practice post cesarean section delivery at AIIMS, Patna, the leading medical college cum hospital in Bihar. Doctors and nurses lacked the skills and confidence to keep the newborn with the mother in the immediate aftermath of the C-section, leading to separation for 1 to 3 hours. To address this issue, from June to December 2019 Alive & Thrive trained 54 faculty and 86 nurses from the departments of Obstetrics & Gynecology (OBGY), Pediatrics, and Community & Family Medicine (CFM) to adopt evidence-based service delivery protocols and a quality improvement (QI) approach.

Approaches/methods of program implementation: QI is a systematic teamwork approach to raise practices to desired standards by improving problem identification and processes. A Technical Expert Committee including senior national experts and faculty from partner medical colleges developed maternal, infant and young child nutrition (MIYCN) service delivery protocols based on global and national evidence. A QI team comprising doctors, faculty, senior residents, and nurses from the departments of OBGY, Pediatrics and CFM was formed under the leadership of the OBGY department head to change processes to improve EIBF in non-complicated C-section deliveries. The QI team was trained and mentored by experts in Point Of Care Quality Improvement. The following changes were instituted: making zero separation of newborn from mother the norm, evaluating mothers post-delivery by an anesthetist, allowing staff nurses to initiate skin to skin contact and EIBF after cord cutting and counselling support to pregnant women by a birth companion in the operating theatre.

Key findings: The baseline for EIBF in C-section was assumed to be zero before the implementation of the QI approach since no data was available. Post the QI training and QI approach applied in all units, EIBF reached 79% with regular review of progress by Head of the OBGY department and appropriate communication and support to all the units to ensure non-complicated C-section deliveries. A mechanism to record EIBF in OT by designated nursing staff was introduced. Initially staff was apprehensive to apply the QI approach, considering adoption of new processes as additional work but positive results acted as motivating factors to sustain the change. Proactive leadership from the head of the department, involvement of the entire team of doctors and nurses and interdepartmental coordination acted as key enabling factors. Positive coaching and mentoring were factors that allowed the team to quickly learn the QI approach.

Significance and application: Early Initiation of Breastfeeding (EIBF) is a globally recommended practice known to reduce infection-specific neonatal mortality and associated with the establishment of successful exclusive breastfeeding. While EIBF promotion is a priority under the National Nutrition Mission, it was not supported during normal C-section

deliveries. The intervention in AIIMS, Patna demonstrated that it is feasible to normalize EIBF in non-complicated C-section deliveries in the medical college hospitals without any resources. Initial capacity building and mentoring for QI, proactive leadership of the college and institutionalization of processes helped sustain the practice of EIBF in C section, even during COVID 19.

The effectiveness of training and service delivery support on motivation of frontline workers: Insights from NGO-ICDS partnership in implementing child health and nutrition program in urban informal settlements of Mumbai, India; *Apurva Tiwari, Society of Nutrition Education and Health Actions: Society for Nutrition, Education and Health Action, Mumbai*

Background: The Integrated Childhood Development Services (ICDS) aims to provide health, education and pre-school education to children under 6 and support pregnant and lactating mothers. Under this scheme, the Anganwadi Workers (AWWs) are responsible for implementation of the program at the grassroots' level. Therefore, keeping them motivated is critical for the success of the program. This study thus seeks to measure the temporal changes in motivation among AWWs working in collaboration with a Non-Government Organization (NGO) to implement a child health and nutrition program in urban informal settlements of Mumbai. The NGO supported ICDS in training and delivery of its services.

Approaches/methods of program implementation: This study was carried out in two vulnerable, urban informal settlements of Mumbai. All 150 AWWs posted in the program intervention area were approached at three points in time: 2016, 2017, and 2019. The motivation of AWWs was measured by a tool devised by Mbindiyo et al. The tool was revised to make it suitable for the current settings and it consisted of 23 items distributed across nine constructs. These items were answered on an agreement scale ranging from 1 to 10. The data were then analysed using STATA 13. The motivation scores were summarized by median and Inter Quartile Range (IQR) and Wilcoxon signed rank test was performed to compare baseline results with results of the first and second follow-up rounds in a matched set of samples. The program evaluation protocol was approved by the Institutional Ethics Committee, the Bandra Holy Family Hospital and Medical Research Centre, Mumbai.

Key findings: A matched sample of 119 AWWs was obtained across all three rounds of the study. The program demonstrated enhanced motivation levels of AWWs. The median (IQR) motivation scores improved significantly from 158 to 172 out of a total score of 230 (p-value=0.000). Over the time, this change in the score was also significant after both first and second follow-ups. Construct-wise analysis showed that the median motivation score under all constructs increased significantly, namely, general motivation, burnout, intrinsic motivation, conscientiousness, supportive supervision (Wilcoxon test, P=0.000) from baseline to second follow-up. However, no significant difference was detected under the construct of extrinsic job satisfaction (Wilcoxon test, P=0.889) comparing baseline with second follow-up. Additionally, the median score under the construct of resource availability did not exhibit significant improvement (Wilcoxon test, P=0.132) from baseline to first follow-up and the construct of job satisfaction did not improve (Wilcoxon test, P=0.460) between first and second follow-ups.

Significance and application: The study findings indicate that the non-financial motivators such as training and support from supervisors can improve the motivation of the health workers. In order to sustain motivation levels over longer period of time, efforts are required to institutionalize program inputs into the system policies. This can be achieved by development of human resource policy for these workers which includes career development opportunities such as training, regular refresher courses and education. Additionally, these policies should also include better packages of monetary and non-monetary incentives as these workers are motivated by both intrinsic and extrinsic factors.

NEEV- Ensuring healthy start through 1000 days care; *Rekha Purnima Xalxo, World Vision India*

Background: World Vision India, partnered with CINI for strengthening of VHSNDs in an attempt to reduce malnutrition in 4 locations in Ranchi, Bokaro, Dumka and Sahebganj districts of Jharkhand. This project was implemented from March 2017 to September 2019. A baseline assessment revealed that although 95.2% of VHSNDs were held every month, the services delivered through them were not adequate. Only 14.9% pregnant women received 4 ANC check and up to 44.7% ANMs delivered the services as per the micro plan. There was dearth of logistical support at the VHSND sites. 41.5% of the pregnant women had home delivery and 23.6% of the deliveries were conducted by untrained dais. These factors contributed to high MMR of 165 which was far above the national average.

Approaches/methods of program implementation: In order to strengthen VHSND a dual approach was undertaken. One was supportive supervision and handholding at the VHSND sites. The ANMs and AWWs were regularly provided support for VHSND planning which included microplanning, due list preparation, indenting, line listing of beneficiaries. The second was capacity building of the frontline workers. A training module on VHSND was prepared in collaboration with WCD and Health and Family Welfare departments consisting of clear roles and responsibilities of the different frontline workers. As part of the module pictorial cards on 9 issues (ANC, birth preparedness, immunization, growth monitoring, nutrition of pregnant women, children below 6 months and up to 24 months and PNC) were developed and used for counselling the pregnant women, lactating mothers and mothers of children below 5 years.

Key findings: The participation of the frontline workers in VHSND, like Sahiya in Ranchi Urban increased from 40% in 2018-19 to 71% in 2019-20. Similarly, the participation of the poshan sakhis increased remarkably. The advocacy efforts led to the improvement in the availability of the equipment for ANC like HB kits, weighing machines and growth monitoring equipment like stadiometers and infantometers. The most significant area of impact was in the services delivered during the VHSNDs like HB examination of pregnant women which improved from 15% to 38%. Likewise, the weight measurement and abdominal examination also showed improvement. There was an improvement in the supplies related to family planning, micronutrients and vaccines particularly JE and measles. Monthly Project base monitoring using direct observation method of services was done using a mobile based app. The support of both WCD and Health and Family welfare was crucial.

Significance and application: The VHSND, counselling as a technique to induce the correct behaviour among the pregnant women and lactating mothers is essential whether one to one or through phone as it was during the COVID lockdown. The close coordination between the WCD and the Health dept is essential for proper service delivery. Periodic review with the frontline, middle and district level teams helps to sort out hurdles. This also helped to take recommended action in order to resolve issues. Supportive supervision and handholding support at the sites in due list preparation, microplanning, indenting helped the FLWs to learn the job well.

Area(s) of adaption in the COVID-19 context: Covid 19 lock down resulted in restriction of physical movement, therefore, alternative ways of reaching to the target groups were explored. Training on 1000 days counselling was done through zoom. Telephone numbers of beneficiaries were collected and used for collection of information on their current needs, gaps of the COVID-19 schemes available and sharing of information. A template was developed for the identification of issues/problems of pregnant women, lactating women and mother of <2y child, to assess the cause of the problem and accordingly provide relevant counselling messages. Based on this template an application-based MIS for telephonic counselling was developed. Telephonic survey was done with about frontline workers and VHSNC members of target areas to assess the status of distribution of THR and other government schemes during the lock down period. In collaboration with another agency a helpline number was shared with the community members for sensitizing them on Covid related issues through Interactive Voice Response.

An urbanizing world: Implications for nutrition programs

Poster presentations

Food security and rising double malnutrition burden in urban poor settings in India; *Richa Malik, Institute of Home Economics*

Rationale/objective: This cross-sectional study was performed among mother-child dyads (child aged 3-5 years) enrolled from an urban poor setting in West Delhi to determine the prevalence of double burden of Malnutrition (DBM) among dyads within the same households and to compare the dyads with different forms of Malnutrition. The research also aimed to identify the influential factors or common predictors for different forms of Malnutrition, as over and under nutrition together receives very little attention and needs to redirect policy and programme strategies. Thus, the objective was to determine the prevalence of different forms of malnutrition and to assess whether food insecurity contributes to the dual burden situation in the poor households.

Methods/analyses: This data was a part of a cross-sectional study of 400 children (3-5 years) from urban poor settings of Delhi, India. Anthropometric measurements (weight, height, waist-circumference, hip circumference in mothers and weight, height in children) were taken from a stratified random sample of mothers aged >18 years with children aged 3-5 years. Interview schedule was used to elicit information on various factors at individual as well as household level. 3 day 24-hour dietary recall was administered on both mother and the child for dietary assessment. Households were categorised into different forms of malnutrition using z scores and Food security status was also assessed using Household Food Insecurity Assessment Scale (HFIAS).

Results: Based on BMI-for-age (BAZ) and Height-for-age (HAZ) scores of the child and BMI of the mothers, the prevalence for Double Burden (DB) was 41.3%; Single burden (SB) was 44.3% and No Burden (NB) was 14 %. More than half of DB and SB households (50.3 and 59.3 respectively) were food secure as compared to 48.2 percent NB households. Only 4.3 percent households were severely food insecure. Interestingly, NB households had greater levels of food insecurity as compared to the households with malnutrition which implies that food security does not translate into nutrition security and therefore the focus should be on nutrition security of the households and not food security alone. Maternal and child anthropometric profile revealed significant differences among all three in the categorized households ($p < 0.05$).

Policy implications: The emerging double burden of malnutrition especially among urban poor presents a challenge for developing and transitional countries like India. While maternal education is at the core, poverty alleviation strategies coupled with awareness about diets and lifestyle is imperative. Evidence shows that food insecurity is one of the risk factors for child stunting, but lack of evidence is available to prove it as a risk factor for DB of malnutrition. There is currently no program combining efforts to address both under and over nutrition among the same set of population. Despite some progress on undernutrition, national and regional efforts now need to be streamlined to target this emerging dual paradox and if micronutrient deficiencies are pooled, then it swiftly turns into triple burden. Availability of such data from this kind of research would definitely help policy and programme planners. Apart from behavior change communication improving knowledge regarding consumption of healthy balanced diet which also strengthens the concept of POSHAN abhiyaan ensuring nutrition for children, women and pregnant women; it is also essential to address the food system and the food environment by studying these coexisting factors for different forms of malnutrition.

Does mid-day meal scheme improve student achievement; *Mahima Soni, Meghnad Desai Academy of Economics*

Geographic location of research: City- Mumbai, Maharashtra

Rationale/objective: This study aims to understand the Mid- Day Meal (MDM) Scheme as a Developmental and Behavioural Policy. As a Developmental Policy, the impact of the MDM scheme is studied on nutrition and learning outcomes of students. As a behavioural policy, the study explores how students and parents can be nudged towards MDM scheme, improving the scope and effectiveness of this policy.

Methods/analyses: This study is conducted across 9 (4 MDM and 5 Non- MDM) schools in Mumbai. The schools selected are similar in observable characteristics (socio- economic background, medium of education etc) but differ on provision of MDM. Students of fifth standard are chosen as fifth grade is the transition year between primary and secondary education. The total sample size of this primary study is 668 including students and their respective parents. A questionnaire is administered for each of the respondent group. Further, a standardized test (comprising qualitative and quantitative questions) based on Pratham's ASER Test is administered to the students. Moreover, data on height and weight of the students is collected to measure their BMI. Attendance and the grades secured in school's examination are also recorded from the administrative data. The analysis framework uses descriptive statistics and multivariate regression to evaluate the impact of MDM on nutritional and learning outcome variables.

Results: Controlling for demographic factors, we find that students having access to MDM have significantly higher scholastic achievements than those who do not have access to MDM. One of the possible explanations of this relationship emerges from our qualitative analysis which indicates that MDM helps in solving the problem of classroom hunger. However, we do not find any significant impact of MDM on nutritional outcomes of students as measured by their BMI. This can be the case because of the existing implementation problems in the scheme as well as the quality of the MDM that is provided in our study schools. We find that despite its shortcomings, there is a significant demand for MDM. 72% of the parents and 60% of the students from the Non-MDM schools in our study want a provision of MDM in their school.

Policy implications: The potential policy implication of our findings is that the MDM scheme should be extended to the schools that currently do not have access to it and to ensure proper nutritional composition of MDM in order to improve the nutritional and learning and outcomes of students.

Child growth and development

Poster presentations

Study on relationship between nutritional status and motor development among the children of age 6-30 months using BDSTI tool at Dadri sub-district, Uttar Pradesh;

Kunal Bhardwaj, Ambuja Cement Foundation

Rationale/objective: Child undernutrition is rampant in many middle and low-income countries. The first 1000 days consider as critical period because the major development including neuron and motor development occurs in this period. Proper and adequate nutrition contributes to a child's long-term health and also influence his or her ability to grow and learn. This study helps to find out how the nutritional status and its determinants affect motor development in early childhood.

Methods/analyses: Cross-sectional community-based study among 226 children of age 6-30 months belonging to 6 villages in Dadri, Sub-district of Gautam Buddha Nagar, Uttar Pradesh. A proportionate stratified random sampling method was used to assess the eligible infants and young children. The mothers were interviewed with the help of a questionnaire for the assessment of the health-related quality of life. The anthropometry measurements i.e., length-for-age z scores (LAZ), weight-for-length z scores (WLZ), and weight-for-age z scores (WAZ) for children 6-30 months were calculated and analyzed by chi-square test. The motor development assessment of the children was done with the help of the "Baroda Development Screening Test for Infants" tool.

Results: The study found that out of total assessed children, 52% and 48% were male and female children respectively. Out of 226 children, 31.4% found as stunted, 24.3% wasted and 30.1% underweight. The motor development delay was observed in 22 (9.7%) children. The logistic regression carried out and found that socioeconomic status was significantly associated with stunting ($p = 0.056$) and underweight ($p = 0.002$). Whereas, the number of times the child being fed per day was found to be associated ($p = 0.004$) with underweight. After adjusting for different variables, the stunting was found to be associated ($p = 0.002$) with motor development delay.

Policy implications: The study proves that the nutritional status of the child and its determinants determine motor development in early childhood. The stunting should be considered during the policy making to improve the motor development at the community level. The interventions and strategies should be planned on the nutritional determinants at the household level to improve the nutritional status of the child. The interventions promoting IYCF practices help the child to maintain the overall growth and development even during public health emergencies or crisis.

Synergy of childhood obesity and diet in peri-urban school-going children: an exploratory study; *Aheibam Sharmila Devi, NIMS, ICMR*

Rationale/objective: Childhood obesity is a serious public health concern around the globe. India is improving in terms of nutritional status of children under five years over last two decades. Globally there is consensus of attaining improved nutrition by 2025. According to National Family Health Survey, the prevalence of stunting, wasting and underweight among children aged under five years decline from 36, 9 and 22 percent to 29, 7 and 14 percent respectively in Manipur. In spite of the aforementioned facts, there is a lack of evidence on energy, macronutrients and micronutrients consumption among children. Moreover, large scale surveys fail to capture the age group 6-10 years old children to understand the growth pattern and impact of nutrition on growth and development. This study is an attempt to access the nutritional status and dietary intakes of peri-urban school-going Meitei children in Manipur.

Methods/analyses: This study is a cross-sectional study of Meitei school-going children aged 6 to 10 years. Meitei is the major ethnic group which are predominately found in the valley district of Manipur. The data was obtained purposively from 150 Meitei children which

are randomly selected from three selected schools located in peri-urban. The survey was conducted during December 2018 to April 2019. Data on anthropometric measurement was taken from children after getting consent from their parents, and 24-hr dietary recall was obtained by interviewing the parents of the study population. Written consents were also taken from the head of the institution. Data were entered in Microsoft Excel and NSI diet calculator. Univariate, bivariate and multivariate statistical analysis along with graphical techniques were carried out using STATA 14 and MS excel to fulfil the objective.

Results: The result of the study found that total daily calorie intake of Meitei children were found below Recommended Dietary Allowance (RDA) of National Institute of Nutrition, Indian Council of Medical Research, and it is found that the daily calorie intake is higher in boys than girls. The daily macronutrients intake of protein, fat and carbohydrate are 27.52g, 6.86g, and 206.78g respectively. The mean intake of micronutrients like Vitamin A, Folic acid, Vitamin C, Calcium and Zinc is found lower than RDA, and are likely to decrease with increased energy consumption. The calorie intake of children whose z-score of BMI-for-age < +1SD is lower than those who have z score > +1SD and Meitei boys have higher energy intake than that of Meitei girls.

Policy implications: From the findings the daily energy intake and consumption of macro and micronutrients is found lower than the RDA. Despite having a lower intake of macro and micronutrients, the prevalence of overweight is high in the study. This could be due to the fact that irrespective of high or low-calorie intake, lower intake of micronutrients may lead to overweight. Therefore, a rigorous systematic study of the real cause of overweight among children for effective intervention is recommended from this study.

Area(s) of adaption in the COVID-19 context: Obesity leads to mental health disorder and therefore during COVID-19 pandemic mental health issue is a concern among these groups.

The Impact of Dairy Intake on Anthropometric Failures of Children consuming Vegetarian Diets (6-24 months) and fulfilling Minimum Dietary Diversity in India; Sakshi Pandey, IITB - UNICEF India

Rationale/objective: Food security has always been a pressing issue in many parts of the world. The latest survey reports have shown the prominence of vegetarianism and Lacto-vegetarianism in India, especially among children. The study looks beyond food security in terms of nutrient adequacy and dietary diversity among children with vegetarian dietary intake in India, fulfilling the conditions of minimum-dietary diversity. In this study, we used the most recently available nationally representative cross-sectional data from the National Family Health Survey (NFHS-4, 2015–16) of India to analyze 5772 children of 6-24 months having vegetarian food intake.

Methods/analyses: The consumption data of seven food groups constituted of 21 food items, and adequately diversified dietary intake (ADDI) was collected through the child's 24-hr dietary recall. We have come up with three 'vegetarian food combinations' using the seven food groups following the WHO guidelines maximum adequacy of food combination (dairy plus four food groups), medium adequacy (dairy + three food groups), and minimum adequacy (four food groups excluding dairy). Targeting the children having vegetarian meals and fulfilling the condition of minimum dietary diversity, we evaluated the association between the consumption of milk or dairy-based products and anthropometric failures by calculating odds ratios (ORs) with 95% confidence intervals (CIs) using logistic regression models. The results were adjusted for socioeconomic status (SES) of the household. We also explored the modification effect by breastfeeding status of the child on the association between the dietary intake and risk of anthropometric failures.

Results: About 35% of children in the sample were stunted, 20% were wasted, and 27% were underweight. The majority of children (92.2%) consumed dairy or dairy products while only 21.76% consumed more than four food groups. The OR showed a significant increase in the risk of anthropometric failures, notably underweight, in children having adequately diversified diets but not having dairy intake. Adjusted OR for underweight for children who had minimum adequacy combination (not taking dairy) was 1.44 (95% CI: 1.14–1.83). The

adverse effects were more pronounced among non-breastfed children than those breastfed during survey. The adjusted OR (wasting) for children who had minimum adequacy combination (breastfed) was 1.13 (95% CI: 0.85–1.5), while OR for non-breastfed was 2.58 (95% CI: 1.24–5.39) (P-interaction=0.03). Similarly, adjusted OR for underweight (breastfed children) was 1.32 (95% CI: 1.03–1.71), but OR for non-breastfed children was 2.53 (95% CI: 1.24–5.16) (P-interaction=0.07).

Policy implications: The study signifies the importance of inclusion of nutrient-dense food in diets of children apart from just increasing diversity. Dairy is the only animal-sourced food for children consuming predominantly vegetarian diets, and it becomes an essential source of nutrients required for wholesome growth and development of younger children. Children who are having adequately diversified diets, but no dairy intake show increased risks of anthropometric failure compared to the ones having dairy. Breastfeeding status modifies these associations showing a decrease in risk even in children without dairy intake. Hence, the study paves way to dive deeper into nutrient adequacy of diets.

Area(s) of adaption in the COVID-19 context: The study uses NFHS data for analysis, hence was not adapted during COVID-19 Pandemic.

Growth patterns of children under 5 in India with special reference to stunting; Diksha Rani, IIPS

Rationale/objective: Objective: to examine the overall growth pattern of Indian children under 5. 1.To examine the varying heights of under 5 children in across India in the context of the WHO standard.2.To examine the varying weights of under 5 children in across India in the context of the WHO standard.3.To analyse the growth pattern, distribution and factors of stunted children by age across India, and Rationale: Despite growing interest in the study on nutritional status of children, there are still gaps in our understanding of the nature and impact on the society, particularly on issues related to growth pattern and differentials of Indian children across the regions, and other socio-demographic and health perspectives. Studies need to specifically focus and explain where the problem lies for intervention to enable remedial policies within the available limited resources.

Methods/analyses: 1. Data for Age-wise average (mean) height of under five children from WHO Child Growth Standards: Methods and Development; a technical report by WHO as the result of Multicentre Growth Reference Study (MGRS) conducted between 1997 to 2003. The MGRS combined a longitudinal follow-up from birth to 24 months and a cross-sectional survey of children aged 18 to 71 months. Primary growth data and related information were gathered from 8440 healthy breastfed infants and young children from widely diverse ethnic backgrounds and cultural settings (Brazil, Ghana, India, Norway, Oman and USA). The MGRS is unique in that it was purposely designed to produce a standard by selecting healthy children living under conditions likely to favour the achievement of their full genetic growth potential. 2. For analysis and comparison purpose the same data for Age-wise average height of under five children from the most recent round of the National Family Health Survey (NFHS-4) conducted in 2015–2016 by the Ministry of Health and Family Welfare, Government of India (IIPS and ICF 2017). The survey is based on a sample of 1,315,617 children born to a total of 699,686 women aged 15–49 years from 601,509 households. For this study purpose, a filtered sample of 259,627 children born five years prior to the survey used. 3. The individual level data are available from the Demographic Health Survey (DHS) data repository and can be accessed upon request. Sampling weights used at the national level. STATA software is used to derive and calculate average Height and Weight of the children and in order to get the growth pattern of the children for comparison within the state and with WHO Growth Standard. Secondly, statistical tool used is the logistic regression to determine factors associated with height and weight and also for stunting and severe stunting. Dependent variables are height, weight, stunting and severe stunting. Cross Tabulations: Binary logistic regression undertaken to determine which background characteristics have a statistically net association with the prevalence of stunting and severe stunting. Adjusted odds ratios from a logistic model are presented with 95% confidence intervals. The dependent variable 'stunting' assumes a value of 1 if the

study population is stunted, and 0 for not stunted. Likewise, for dependent variable 'severe stunting' a value of 1 is taken if the study population is severely stunted, and 0 for not severely stunted.

Results: Nutritional status of children, particularly the prevalence of stunting in India remains a public health concern. With limited data and time for analysis, the study however could explore certain fundamental issues related to child growth, and highlights risk factors of stunting, based on selected household wealth quintile, mother's education, child's weight at birth, mothers' height and child anaemia. In addition to the policies and programmes aimed at improving maternal and child nutrition, equal focus should be given to improving mothers' education. Findings also suggest that Indian children grow like any other child in developed countries, but as age increases growth become a casualty due mainly to poverty and lack of access to healthy and nutritious diets. Also, it is important to address income inequality when implementing nutritional interventions.

Policy implications: Policy makers and development planners can make use of the evidences to better understand specific nature of the growth pattern of children, especially issues related to stunting. Lessons: Indian Children grow normally upto 6 months. After 6 months the growth in terms of height is less than the cut-off provided by WHO. Which is true for all the states of India.

Area(s) of adaption in the COVID-19 context: Various programs by the govt. viz. delivering nutrition (food) and vaccine to the pregnant mother and ANCs as well as the anthropometric measurement activities might be hampered due to COVID-19.

Nutrition and cognitive ability of school going children (7-9 yrs) and impact study of ICT-based nutrition education on their dietary patterns; Shobika S, Rathnavel Subramaniam college of arts and science, Sulur, Coimbatore

Geographic location of research: studies conducted in two school at Krishnagiri district

Rationale/objective: Diet can affect cognitive ability and behavior in children. Daily dietary intake can exert immediate or long-term, beneficial or adverse effects on the academic performance and the cognitive performance. Well formulated nutrition education programmes can contribute to changes in dietary behavior and provide them with the information to make healthy food choices. The rapid growth and access to mobile devices around the world has enabled educational transformation. Objectives: The present study was conducted to assess the nutritional status, cognition and academic performance of children and also to understand the impact of ICT based nutrition education on their dietary patterns.

Methods/analyses: Two hundred school going children (7-9 years) in Krishnagiri district in Tamilnadu participated in the study. An interview schedule was formulated to collect details pertaining to anthropometry, clinical, dietary, cognitive and academic performance of children. In the anthropometric parameters were recorded and compared with NCHS standards and WHO standards. Six cognition tests developed by NIMHANS, Bangalore were used to assess the Cognition abilities. An ICT based nutrition education programme using Whataspp was conducted among the 53 (n=53) volunteered parents and their children. The nutrition education was designed to impart knowledge on the general hygiene and sanitation practices, food habits, food choices that improve children academic performance and importance of physical activity. The whatsapp messages were sent daily to the parents daily for a period of 15 days. A questionnaire was given at the beginning and at the end of the study to check the impact of the study.

Results: The results of the anthropometric parameters show that the height, weight and BMI of all the subjects were lower than the reference value. The prevalence of underweight was 44% and obesity was 25%. Consumption of all the major nutrients by the students was comparatively less than the recommended dietary allowances. Data on cognitive performance showed that maximum subjects scored average marks in all the tests. Comparison of BMI with the cognitive and academic performance also showed that maximum underweight children scored average marks. The ICT based Nutrition education

through whatsapp showed to have greater impact on the habits, food choices and nutritional preferences of the children. It was noted that the skipping of breakfast reduced, intake of healthier snacks and involvement in outdoor games increased among the participants

Policy implications: The results of the study establish a link between nutrition status and cognition of the children studied. Parent education schemes by the governmental and nongovernmental groups and inclusion of nutritional information in the education curricula can help in improving the dietary habits of children. The ICT based intervention showed good response and have great impact on the food preference. Hence educating students and parents through such platforms will have greater impact on long term intervention.

Reversal of stunting, wasting and underweight in urban slums of Mumbai: Implementation experience of nutrition delivery by strict growth monitoring and caregiver engagement; Lahari Yaddanapudi, CTARA, Indian Institute of Technology, Mumbai

Geographic location of implementation: Mumbai, Maharashtra

Background: Maharashtra has the largest share of urban population in India (13.5%) and 42% of the capital, Mumbai's population lives in slums. Malnutrition rates in these settlements are very high. Founded in 2006, Foundation for Mother and Child Health (FMCH) has been working in the urban slums of Mumbai since the last 14 years to ensure the nutrition of children, women, and pregnant mothers. Focusing on preventive health, balanced nutrition and child developmental practices in underprivileged communities, a holistic approach of embracing, educating and empowering mothers and children in their own social environment was adopted.

Approaches/methods of program implementation: Growth monitoring: by nurse, nutritionist, doctor, field officers and social workers with frequent visits for target weight gain, showing weight gain on growth charts to motivate mothers and one-on-one counselling.

- i. Remote growth monitoring: recording data using salesforce software and use of engaging IEC material to monitor whether child is doing well remotely.
- ii. Home visits: to identify beneficiaries and check home environment; to counsel on breastfeeding, complementary feeding.
- iii. Cooking demos: using locally available, low cost nutrient dense foods; providing hands-on training to women.
- iv. Mommy and me class: to support development and stimulation of child by teaching mothers how to play different age appropriate games with babies.
- v. Pregnancy club: using a module on MIYCF with special emphasis on cross-cradle techniques of breastfeeding developed by maternal health experts to ensure a healthy baby is born.
- vi. Community awareness: weight, anaemia and dental check-up camps and awareness programs.

Key findings: A subsample of a total 286 exclusively breastfed children belonging to the clinics Ganesh Nagar, Ramdev Nagar and Sukhawani analyzed for studying the status of stunting, underweight and wasting at average baseline of 2.2 months and average end-line age of 13.9 months showed that there was a decline of 18.7%, 47.5%, 16.7% in prevalence of stunting, underweight and wasting respectively. Also, severe wasting declined by 67.7%, severe underweight by 67.4% and severe stunting by 32.7%. The reduction in undernutrition in a short period of 1-1.5 years was high for stunting (6.3 percentage points) and underweight (16.1 percentage points). Data of another subsample of 80 children analyzed at the baseline of 0-6 months and average end-line age of 25.9 months recorded a reduction of 28.1% in stunting, 50% in severe stunting, 33.3% in underweight and 46.2% in severe underweight. However, there was an increase of 33.3% in wasting while severe wasting reduced by 40%.

Significance and application: Supporting the pillars of the POSHAN Abhiyaan, this experience reiterates the importance of intensified nutrition services during the first 1000 days, which is seen in the reversal of malnutrition upon early identification. Strict growth

monitoring and documentation in software helped understand the existing infant feeding and care practices, the reasons for observed practices followed by caregivers, identifying the common avoidable gaps and synthesizing what doable action was required. A holistic approach involving mothers as well as children ensures reduction in low birth weight incidences and a normal growth trajectory along the WHO standards.

