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Delivering for Nutrition in Odisha: Insights from a study on the state of essential nutrition interventions

Report

No. 7 | July 2015

Led by IFPRI

Partnership members:

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ACKNOWLEDGMENTS

This report was prepared by an assessment team led by Rasmi Avula, Sunny Kim, and Purnima Menon (IFPRI). Suman Chakrabarti and Parul Tyagi, and Neha Kohli (IFPRI) conducted data analysis and prepared the tables for this report. Sunny Kim and Rasmi Avula prepared the initial draft. Suneetha Kadiyala reviewed and revised the draft report. Purnima Menon provided intellectual leadership and reviewed and revised the draft report.

We thank Dr. Rajani Ved (National Health Systems Resource Centre) for helpful comments on previous drafts. We thank Smt. Arti Ahuja, Principal Secretary of the Department of Health, Odisha; Smt. Aswathy, Director, Social Welfare; Dr. Panda, Team Lead, State Health Resource Center; the Technical Management and Support Team, Odisha for their support to the study; Sambodhi Research and Communications Pvt. Ltd. and the field research staff for data collection; and all the study participants for their time and information. We thank Kavita Singh (Delhi University), Elizabeth Becker (Yale University), Shibani Kulkarni (University of South Carolina), and Mara van den Bold (IFPRI) for coding and summarizing the qualitative data.

Financial support for this paper was provided by the Bill & Melinda Gates Foundation through POSHAN, led by International Food Policy Research Institute. This report has been prepared as an output for POSHAN and has not been peer reviewed. Any opinions stated herein are those of the authors and do not necessarily reflect the policies or opinions of IFPRI.

SUGGESTED CITATION

Avula, R., S. S. Kim, S. Chakrabarti, P. Tyagi, N. Kohli, S. Kadiyala, and P. Menon. 2015. *Delivering for Nutrition in Odisha: Insights from a Study on the State of Essential Nutrition Interventions*. POSHAN Report No 7. New Delhi: International Food Policy Research Institute.

ABOUT POSHAN

POSHAN (Partnerships and Opportunities to Strengthen and Harmonize Actions for Nutrition in India) is a 4-year initiative that aims to build evidence on effective actions for nutrition and support the use of evidence in decision-making. It is supported by the Bill & Melinda Gates Foundation and led by IFPRI in India.

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Acronyms and Abbreviations

ANC	antenatal care
ANM	auxiliary nurse midwife
ASHA	accredited social health activist
AWC	*anganwadi* center
AWW	*anganwadi* worker
BF	breastfeeding
BPL	Below Poverty Line
CF	complementary feeding
DHFW	Department of Health and Family Welfare
DWCD	Department of Women and Child Development
ENI	essential nutrition intervention
FLW	frontline worker
ICDS	Integrated Child Development Services
IFA	iron and folic acid
IFPRI	International Food Policy Research Institute
IIPS	International Institute for Population Sciences
IYCF	infant and young child feeding
NIPI	National Iron Plus Initiative
NRHM	National Rural Health Mission
OBC	Other Backward Class
ORS	oral rehydration solution
POSHAN	Partnerships and Opportunities to Strengthen and Harmonize Actions for Nutrition in India
Rs	rupees
SAM	severe acute malnutrition
SC	Scheduled Caste
ST	Scheduled Tribe
THR	take-home ration
USD	United States dollar
VHND	village health and nutrition day

Executive Summary

In India, policies are in place to address the set of nutrition-specific interventions that will accelerate progress in nutrition, if implemented at scale. These interventions include iron and folic acid supplementation during pregnancy, breastfeeding counseling, complementary feeding counseling, vitamin A supplementation, and food supplementation for pregnant and lactating women and young children (Avula et al. 2013). However systematic data on the coverage of these interventions is limited, as are insights into how best they may be designed and delivered to reach full coverage.

Two national programs in India—Integrated Child Development Services (ICDS) and National Rural Health Mission (NRHM)—together are designed to cover all of these nutrition-specific interventions (Avula et al. 2013). Frontline workers (FLWs) of these two programs—i.e., *anganwadi* workers (AWWs) (from ICDS) and accredited social health activists (ASHAs) and auxiliary nurse midwives (ANMs) (from Health/NRHM)—are expected to work together to deliver the interventions. However, there are challenges to working across sectors, and there has been historically little horizontal coordination because of vertical structural constraints (Mohmand 2012). Lack of coordination between these two sectors leads to insufficient coverage, inconsistent data reporting, and some redundancy in work (Kathuria, Orbach, and Anand 2014). Therefore, in addition to the challenges of policy financing and capacity strengthening, the issue of coordination is a key to successful service delivery at scale in India.

Odisha, a state of 42 million people in eastern India, has taken steps in recent years to enhance service coverage and foster coordination between ICDS and health programs. These include the initiation of supply-side mechanisms, such as the Village Health and Nutrition Days (VHNDs, locally known as *Mamata Diwas*) and Village Health and Sanitation Committees, as well as the creation of demand-side mechanisms, such as the maternal conditional cash transfer scheme (*Mamata Scheme*).

This report presents findings of a study conducted in three districts of Odisha to examine the state of delivery and use of ten select essential nutrition interventions (ENIs) and the role of intersectoral coordination in their delivery.

Ten select essential nutrition interventions studied

During pregnancy: Counseling on maternal nutrition and care, iron and folic acid (IFA) supplementation, and food supplementation
0–6 months after birth: Counseling on breastfeeding and food supplementation
6–24 months after birth: Counseling on complementary feeding, vitamin A supplementation, pediatric IFA supplementation, food supplementation, and growth monitoring/screening for severe acute malnutrition

Methods

Using a set of indicators on service coverage and household conditions from district-level health survey data from 2006 and 2010, the we grouped 30 total districts in Odisha into three categories: better-performing districts (i.e., those with a positive change over time), average-performing districts (i.e., no change), and poorly-performing districts (i.e., those with negative change). State officials from the Department of Women and Child Development (DWCD) and the Department of Health and Family Welfare (DHFW) randomly selected one district from each category to be included in our study: Jagatsinghpur (better performing), Keonjhar (average performing), and Kalahandi (poorly performing).

Then, four blocks (n=12) per district and 25 villages (n=300) from each block were randomly selected. From each village, one *anganwadi* center (AWC) with an AWW, along with the ASHA and the ANM working

in the same area, were included in the study. Four households (two with children 0–5.9 months of age and two with children 6.0–23.9 months of age) were selected randomly from the list of households at the AWC. Across the three study districts, the study sample included a total of 759 FLWs and 1,187 households.

Mixed methods were applied in this study. Semi-structured interviews were conducted with the ICDS and health staff and FLWs in July 2013. Interviews focused on understanding the roles and responsibilities of respondents and how they coordinate in service delivery. Household and FLW surveys were conducted between February and March 2014. The household questionnaire gathered data on household conditions, exposure to services and FLW contacts, sources of health and nutrition information, and knowledge of infant and young child feeding. The FLW surveys covered topics such as training, knowledge, interactions with other FLWs, types of services provided, and work motivation and satisfaction.

Descriptive statistics from the quantitative data were used to describe maternal, household, FLW, and AWC characteristics; exposure to interventions; and state of service delivery and coordination. From the qualitative data, interview transcripts were coded and summarized to draw on findings related to service delivery and coordination.

Results

Characteristics of mothers, households, FLWs, and AWCs

Mothers: The mean age of mothers in our study sample was 26 years. Nearly half of the mothers had secondary school education or higher, while 20 percent had no schooling. Almost all of the mothers reported to be housewives. In relation to their dietary diversity, mothers consumed about 4.3 of the nine food groups on average, reflecting relatively low to moderate dietary quality.

Households: The mean household size was 5.5 members. Study households had low resources, in terms of assets and infrastructure. Most households belonged to disadvantaged communities, where 82 percent had a Below Poverty Line (BPL) card, and 46 percent had an employment guarantee card issued by the government. On average, households owned about seven out of 27 asset items and two types of livestock out of a possible five. Less than one-quarter of households owned their homes, and only 27 percent had a toilet. More than half of the households were food insecure (mild to severe), and half of the households reported using their BPL card to purchase cereals at a reduced price for consumption. Interdistrict variations reflected expected patterns by sampling design.

FLWs: The mean ages for AWWs, ASHAs, and ANMs were 39, 36, and 40 years, respectively. Years of experience on the job among AWWs and ANMs (14 years) were more than twice as long as those of ASHAs (6 years). This is as expected, because ASHAs were introduced as frontline cadres in 2006, while the other cadres have existed longer. Nearly 90 percent of AWWs and 70 percent of ASHAs had secondary education or higher, and all ANMs had secondary education or higher, as required by their work position.

Nearly all of the FLWs received training. However, there was variability in their exposure to training topics. For example, most AWWs, ASHAs, and ANMs were trained on antenatal care, but less than 10 percent of all of the FLWs were trained on pediatric anemia and administration of iron tablets. Among the FLWs, more AWWs and ASHAs reported receiving training on breastfeeding compared with ANMs, and more AWWs were trained on complementary feeding compared with ASHAs and ANMs.

Anganwadi centers: In our study sample, 96 percent of AWCs were open at the time of the survey visit. Nearly 70 percent of the AWCs had a permanent structure, and most had a separate kitchen and access to potable drinking water. However, only 42 percent of the centers had space for storage of

supplementary foods, and less than 15 percent had electricity. Overall, the AWCs observed in the study had limited space and structural constraints.

Exposure and delivery of essential nutrition interventions

Exposure to ENIs: Exposure to interventions during pregnancy was high. More than 85 percent of mothers were exposed to counseling on pregnancy care and the importance of IFA supplements, and also received food supplements. This high exposure may be due to several actions taken by the Odisha government to focus on service delivery during pregnancy, such as establishing policies on Infant Mortality Reduction Mission (2001) and Maternal and Perinatal Death Inquiry, and the Reproductive & Child Health Programme–II under NRHM (2005). Additionally, in 2011 the DWCD introduced a conditional cash transfer program called *Mamata Scheme,* which provides money to mothers to encourage ICDS and health service use. The first installment of money in this program is conditioned on health and nutrition service use during pregnancy.

Exposure to interventions during 0–6 months after birth was more variable compared with during pregnancy. Nearly 90 percent of mothers reported being advised on initiating breastfeeding immediately after birth, and 89 percent of mothers reported receiving food supplements. But only 30 percent of mothers received counseling on breastfeeding at home from FLWs.

During 6–24 months after birth, exposure to interventions was even more mixed compared with during pregnancy and 0–6 months after birth. While a majority of the mothers reported receiving food supplements for their young children (90 percent) and vitamin A supplementation (70 percent), exposure to pediatric IFA supplementation (less than 5 percent), counseling on complementary feeding (32 percent), and growth monitoring (51 percent) was low. Given the high exposure to ENIs achieved during pregnancy, efforts should focus on improving those that are to be delivered through early childhood.

Delivery of ENIs: Two common delivery points for the ENIs are VHNDs, which are held once a month at AWCs, and home visits. Several of the ENIs (e.g., distribution of food supplements, counseling on infant and young child feeding (IYCF), and growth monitoring) were delivered during VHNDs. Exposure to ENIs at VHNDs was very high among those in attendance, but only 59 percent of mothers attended VHNDs. Low attendance at VHNDs could be due to supply- and/or demand-side issues. For example, the number of hours of operation of VHNDs and space for delivering interventions for large numbers of beneficiaries on a single day were identified as limitations. It is plausible that FLWs may not have reached all of the beneficiaries to inform them about VHNDs. Beneficiaries also may not be able to attend on the fixed day or may wait to receive services because of time constraints or other commitments. Therefore, the main reasons for low attendance at VHNDs should be identified and addressed.

Exposure to ENIs at home was low. Nearly 90 percent of mothers reported being visited by FLWs in the last 3 months, but *less than a third* reported receiving any counseling on IYCF practices. Thus, lack of home visits was not a constraining factor affecting the poor reach of counseling. There could be multiple reasons for low exposure to counseling at home, such as lack of time or lack of incentives to provide the service. Given that counseling may be more time intensive than other interventions, FLWs with heavy workloads are likely to face time constraints and may overlook counseling during home visits. Additionally, counseling during home visits is not an incentivized activity for ASHAs, who receive performance-based incentives for other activities. Therefore, ASHAs may focus on services that require home visits but are incentivized. Key reasons for missed opportunities should be identified and addressed to increase home-based counseling.

Coordination in service delivery: Overall, we found positive results on coordination among FLWs. Nearly all of the FLWs reported that they always coordinated to deliver the interventions, and usually planned

and implemented them together. For IFA supplementation of pregnant women, vitamin A supplementation, provision of food supplements, and growth monitoring/screening for treatment of severely malnourished children, FLWs were aware of their roles and responsibilities. These results largely mirrored the currently available guidelines for FLWs related to delivering these interventions. However, for IYCF counseling and pediatric IFA supplementation, FLWs were less clear about who is primarily responsible and their roles in delivering the interventions. These findings were also reflected in the gap of exposure to these ENIs.

Recommendations

Based on our study findings, several priority actions for the DWCD and DHFW to improve services for nutrition in Odisha include:

1. Identify and address the major supply- and demand-side constraints to participation in VHNDs. AWWs and ASHAs should reach out to beneficiaries prior to the VHND and remind them to attend, and follow up with beneficiaries who have not attended the VHND and deliver appropriate services during home visits.
2. Identify and address the reasons for missed opportunities for IYCF counseling during home visits, to close that service delivery gap. Supervisors should review and discuss FLW workload, capacities, and motivation and identify strategies to mitigate constraints. For example, supervisors should review FLWs' work responsibilities during monthly meetings and help them organize their schedules to incorporate sufficient time for home-based counseling. Checklists and job aids may be useful to remind them about and reinforce their counseling. For ASHAs, who receive performance-based incentives, the possibility of incentivizing IYCF counseling during home visits may be considered.
3. Ensure that all FLW cadres are clear about their roles and responsibilities, particularly for IYCF counseling and pediatric IFA supplementation. Examine the current guidelines on provision of these ENIs to ensure that they articulate clear roles, and invest in orienting all staff at the district, block, and frontline levels of the DWCD and DHFW on the contents of these guidelines.
4. Harmonize key health and nutrition messages, particularly related to IYCF, across the training materials used for all DWCD and DHFW staff. This would avoid any conflicting information or misinformation provided by different FLW cadres. Furthermore, given that counseling involves more than the provision of key messages and requires communication skills to address barriers to behavior change and negotiate appropriate practices, operational guidelines and training for FLWs should incorporate these critical components.
5. Purposively target and reach households in the lowest socioeconomic quintile for financial inclusion (e.g., access to bank accounts), particularly to reduce any impediments to participation in programs involving cash transfers, such as the *Mamata Scheme*.
6. Invest in simultaneous efforts to address the underlying determinants of malnutrition, such as poverty, food insecurity, low education, and poor sanitation, and hygiene, which are essential to support the benefits of nutrition-specific interventions. This investment will require focusing on multisectoral approaches that intervene at the same time, in the same place, for the same household, mother, and child.
7. Build in mechanisms, such as improved monitoring and operations research, to assess and track the progress of service delivery and exposure to the ENIs, in order to enhance learning about the process and take corrective actions.

Introduction

Undernutrition among women and children remains a major development challenge across India, and is a substantive challenge in the poorer states of India, including Odisha. The global and Indian nutrition literature (Bhutta et al. 2013; Swaminathan 2009) and India's nutrition policies recognize the multifaceted nature of interventions necessary to accelerate progress in nutrition. There are a set of broadly agreed upon nutrition-specific interventions to be delivered along the continuum of care, to improve maternal and child nutrition (Avula et.al. 2013). These include iron and folic acid (IFA) supplementation during pregnancy, breastfeeding promotion, complementary feeding education, vitamin A supplementation in early childhood, and food supplementation. Even though it is acknowledged that investments to improve nutrition must be fundamentally multisectoral in nature, it is also estimated that scaling-up ten of these direct nutrition interventions to 90 percent could reduce stunting by 20.3 percent and severe wasting by 61.4 percent (Bhutta et al. 2013), thereby highlighting the importance of attention to strengthening the delivery, reach, and utilization of nutrition-specific interventions.

Although many of the evidence-based nutrition interventions are already being implemented in countries, systematic data on the coverage of these services is limited, as are insights into how best they may be designed and delivered to reach full coverage. Ensuring full coverage and reach requires strengthening policies, providing adequate financing, and building system-wide commitment and capacity for delivering nutrition (Bezanson and Isenman 2009; Gillespie et al. 2013). Furthermore, ensuring large-scale delivery of interventions requires that they be successfully rolled out in subnational settings, including states, districts, and communities, in order to reach all target groups.

In India, two national programs—Integrated Child Development Services (ICDS) and National Rural Health Mission (NRHM)—are designed to cover all of these interventions (Avula et al. 2013). ICDS, under the Ministry of Women and Child Development, and NRHM, implemented by the Ministry of Health and Family Welfare, both aim to improve maternal and child nutrition and health and have extensive reach to potentially cover the entire target population. Across these two programs, cadres of frontline workers (FLWs) are expected to work together to deliver the interventions. Yet, there are challenges to working across sectors, and there has been historically little horizontal coordination due to vertical structural constraints (Mohmand 2012). Although ICDS and NRHM have developed coordination mechanisms through the work of their frontline cadres, there continues to be a need for enforcing them and for more clarity in task definition at the operational level to ensure service delivery. Lack of coordination leads to insufficient coverage, inconsistent data reporting, and some redundancy in work (Kathuria, Orbach, and Anand 2014). While there are reports of close coordination—particularly during service delivery among FLWs, facilitated by interpersonal relationships and shared understanding of actions (Avula et al. in press)—as well as the sense of "teamwork" and building trust with the community (Mishra 2014), elucidating this coordination in the context of delivery and reach of specific interventions may help to reinforce their provision and use.

Odisha, a state of 42 million people in eastern India, has taken steps in recent years to enhance service coverage and foster coordination between ICDS and health programs. These include the initiation of supply-side mechanisms, such as the Village Health and Nutrition Days (VHNDs, locally known as *Mamata Diwas*) and Village Health and Sanitation Committees, as well as the creation of demand-side mechanisms, such as the maternal conditional cash transfer scheme (*Mamata Scheme*). We conducted a study in three districts of Odisha to examine the state of delivery and use of ten select essential nutrition interventions (ENIs) and the role of intersectoral coordination in their delivery. The study covered several critical nutrition interventions across the continuum of care (pregnancy to 2 years of age), ranging from behavior change counseling to micronutrient supplementation and provision of supplementary food, and their points of delivery (Table 1). The overall objectives of the study were to:

1. Assess the state of service delivery for and exposure to a select set of the ENIs; and
2. Document and examine the extent to which frontline workers coordinate actions related to the delivery of the ENIs.

TABLE 1. SELECT ESSENTIAL NUTRITION INTERVENTIONS AND DELIVERY POINTS STUDIED

Life-cycle stage/age	Intervention type	Delivery point/platform
Pregnancy	1. Counseling on maternal nutrition and care 2. IFA supplementation	• Antenatal care service, including at VHNDs
	3. Food supplementation	• Take-home ration (THR) distribution at *anganwadi* centers (AWCs)
0–6 months	4. Counseling on breastfeeding	• Home visits • VHNDs
	5. Food supplementation	• THR distribution at AWCs
6–24 months	6. Counseling on complementary feeding 7. Vitamin A supplementation 8. Pediatric IFA supplementation	• Home visits • VHNDs
	9. Food supplementation	• THR distribution at AWCs
	10. Growth monitoring/screening for severe acute malnutrition	• VHNDs

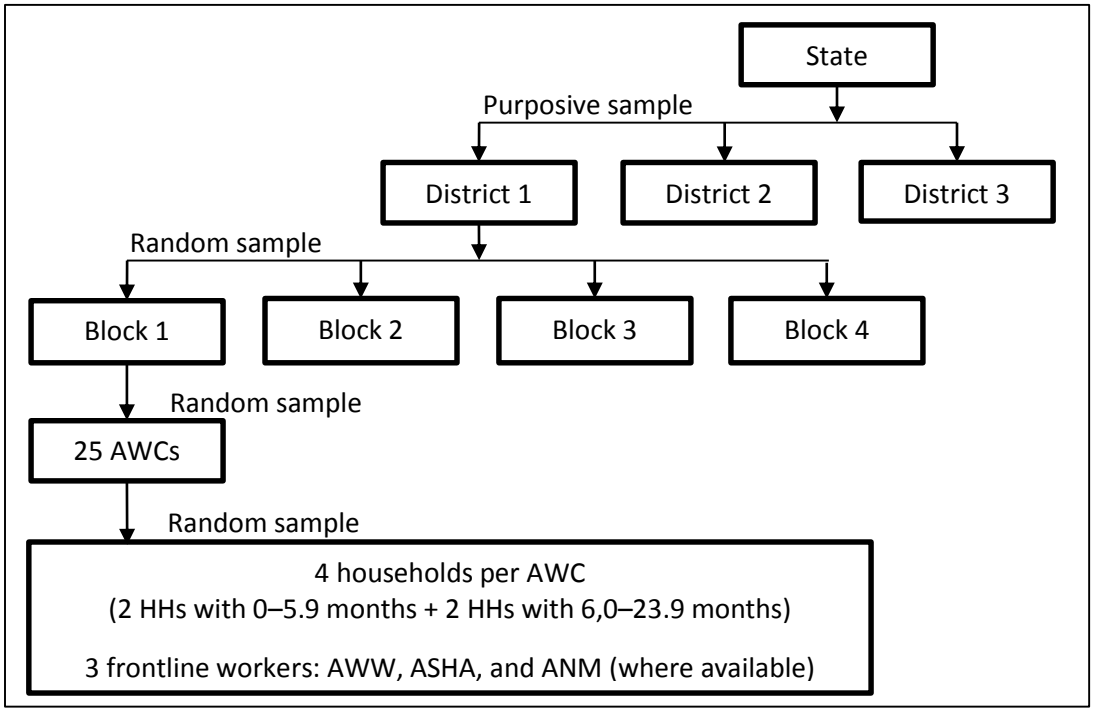
Methods

A mixed-methods study, consisting of a qualitative study among service providers and quantitative surveys with FLWs and households, was conducted in three districts of Odisha. In this section, we discuss the following aspects of the study methods: sample selection procedure, sample sizes, and data collection and analysis.

SAMPLE SELECTION AND SAMPLE SIZE

Three districts were selected from among the 30 total districts in the state (Figure 1). Existing district-level survey data (IIPS 2007, 2010) were used to construct a set of criteria pertaining to service coverage and household factors (e.g., coverage of immunization and vitamin A supplementation, three or more antenatal care visits, and institutional delivery; access to toilet and electricity; and type of cooking fuel), and to examine the changes in these indicators between two survey rounds. All districts were grouped into three categories: better-performing districts (i.e., those with positive change over time), average-performing districts (i.e., no change), and poorly performing districts (i.e., those with negative change). Then, state-level officials from the Department of Women and Child Development (DWCD) and the Department of Health and Family Welfare (DHFW) randomly selected one district from each category: Jagatsinghpur, better performing; Keonjhar, average performing; and Kalahandi, poorly performing.

FIGURE 1. SAMPLING DESIGN FOR HOUSEHOLD AND FRONTLINE WORKER SURVEYS



In each district, we randomly selected four blocks (n=12) and 25 villages (n=300) from each block. In each village, there is usually one AWC with an *anganwadi* worker (AWW). The AWW in each village, along with the accredited social health activist (ASHA) and the auxiliary nurse midwife (ANM) working in the same area, were included in the study. Four households (two with children 0–5.9 months of age and two with children 6.0–23.9 months of age) were selected randomly from the list of households at the AWC. The

final sample sizes for the household and FLW surveys are shown in Table 2. Brief descriptions of the cadres of FLWs follow the table.

TABLE 2. SAMPLE SIZES FOR HOUSEHOLD AND FRONTLINE WORKER SURVEYS, BY DISTRICT

	District			
	Jagatsinghpur	Keonjhar	Kalahandi	All
Respondent type	**N**	**N**	**N**	**N**
Household survey sample				
Households with children 0–5.9 months	172	185	195	552
Households with children 6.0–23.9 months	225	206	204	635
Total	**397**	**391**	**399**	**1187**
Frontline worker survey sample				
Anganwadi worker	100	100	99	299
Accredited social health activist	96	97	96	289
Auxiliary nurse midwife	55	61	55	171
Total	**251**	**258**	**250**	**759**

Anganwadi worker: The AWW is a female FLW, who has been part of the ICDS program since 1975. The AWW, with the support of an *anganwadi* helper, is responsible for the AWC and delivers health and nutrition services and preschool education under the ICDS program. AWWs are honorary workers selected from the local community. They are considered agents of social change, mobilizing community support for better care of children, girls, and women.[1]

Accredited social health activist: The ASHA is a locally resident female worker, who has been part of NRHM since 2006. The ASHA is expected to undertake three roles: facilitator of health services, mobilizer/activist, and community-level provider for basic health care. The ASHA receives performance-based incentives for delivering specific services. The coverage area of the ASHA and the AWW are co-terminus—i.e., areas with populations of 750-1,000 or fewer in tribal and geographically dispersed areas.

Auxiliary nurse midwife: Also referred to as a multipurpose female health worker, the ANM provides outreach services for a large number of preventive and curative functions, largely focused on mothers and children. A single ANM manages the subcenter, mandated at a population of 3,000–5,000 for rural areas, covering approximately six to eight villages.

For the qualitative study, the sampling procedure for districts and blocks was the same as that described above in Figure 1. However, in each block, only two villages (instead of 25) were randomly selected. A total of 133 semi-structured interviews were conducted with ICDS and health staff at the district (n=19), block (n=66), and village (n=48) levels to understand their roles and responsibilities, service delivery, and coordination process.

DATA COLLECTION

Data collection was conducted in July 2013 for the qualitative study and from February to March 2014 for the household and FLW surveys. The qualitative study focused on service providers at different

[1] Ministry of Women and Child Development (http://wcd.nic.in/icds/icdsteam.aspx).

administrative levels and understanding their processes of implementation and coordination in the delivery of ENIs. It also aimed at identifying the mechanisms for coordination and the facilitators and barriers to coordination.

The survey applied four separate questionnaires: one household questionnaire and three FLW questionnaires—one each for AWWs, ASHAs, and ANMs. The household questionnaire focused on exposure to services and FLW contacts and knowledge, while the FLW surveys covered topics such as training, knowledge, interactions with other FLWs, types of services provided, and work motivation and satisfaction.

To examine the state of delivery and use of ENIs and the role of intersectoral coordination in service delivery, we covered ten nutrition-specific interventions (Table 1) provided by FLWs and received by households. To study the extent and nature of coordination among FLWs, we included questions about who provides, leads, and coordinates in the delivery of the interventions, as well as the ways they work together. Table 3 presents an overview of the data collected in the household and FLW questionnaires.

TABLE 3. MODULE/QUESTIONS INCLUDED IN HOUSEHOLD AND FRONTLINE WORKER QUESTIONNAIRES

Survey type	Questionnaire module/questions	How used
Household questionnaires	• Background information and household roster • Household assets and food insecurity	Describe sample characteristics (at child, maternal, and household levels)
	• Awareness and sources of information about nutrition interventions and services • Awareness of and contact with FLWs during pregnancy, at delivery, or after delivery	Describe mothers' awareness of and sources for nutrition interventions, as well as their contacts with FLWs and facilities
	• Infant and young child feeding (IYCF) knowledge	Describe mothers' knowledge about IYCF and recommended practices
	• Pregnancy and antenatal care • Child immunization • Village Health and Nutrition Days • Supplementary nutrition and other health services • Interventions for adolescent girls • Community groups/gatherings	Present exposure to and reach of various interventions and services received, including as part of a service package or during delivery platforms
Frontline worker questionnaires	• Observations and information about AWC (for AWW questionnaire only)	Describe the conditions of AWC facilities
	• Background information and workload • Training • Supervision and sector meetings • Work incentives and job motivation	Describe FLW characteristics
	• IYCF knowledge	Describe FLWs' knowledge about IYCF and recommended practices
	• Service provision and coordination (e.g., food supplementation, health checkups, referrals, counseling, immunization)	Indicate who provides, leads, and coordinates in the provision of each intervention/service
	• Supplementary nutrition • Home visits • Community nutrition and health education • Referrals • Village Health and Nutrition Days	Describe specific interventions and services provided, including implementation of delivery platforms

Ethical approval

Informed consent was obtained from all study participants prior to interview. Ethical clearance for this research was provided by IFPRI's Institutional Review Board. The study was also approved by the DWCD and DHFW.

DATA ANALYSIS

Quantitative data were analyzed using Stata 12. Descriptive statistics were generated to describe the sample characteristics of mothers, households, FLWs, and AWCs and to present percentage distributions on service delivery and exposure to and coordination in service delivery.

For the qualitative data, all interviews were audio-recorded, transcribed, and translated from Odiya to English. Content analysis and coding of transcripts were conducted using the qualitative data analysis software NVivo 10. Outputs of thematic code queries (on conditions of specific services, mechanisms, facilitators, and barriers) were interpreted and summarized for findings at the district, block, and village levels. Only findings related to service delivery were used for this report. The complete analysis of qualitative data on the operationalization of coordination will be elaborated in a separate paper.

Results: Sample Characteristics

In this section, we present the main characteristics of our various study sample—children, mothers, households, and FLWs (AWW, ASHA, and ANM), as well as the AWCs. Additional household and FLW characteristics are included as supplementary tables in the Annex.

HOUSEHOLD SAMPLE

As a criterion for household sampling, the distribution of children by age group (0–5.9 months and 6–24 months of age) was similar across the three districts, and about half of the children were female. The mean age of mothers in our study sample was approximately 26 years. Nearly half of the mothers had secondary education or higher, and most reported to be housewives (95 percent) (Table 4). Except for educational status, where mothers in Jagatsinghpur had higher education (nearly 75 percent had secondary education or higher) compared with those in Keonjhar and Kalahandi, other maternal characteristics were similar in the three districts. In relation to their dietary diversity, mothers consumed about 4.3 of the 9 food groups on average, reflecting low to moderate dietary quality (Table 4).

TABLE 4. MATERNAL CHARACTERISTICS

	Jagatsinghpur N=397	Keonjhar N=391	Kalahandi N=399	All N=1187
Indicators	**Mean ±SD/%**	**Mean ±SD/%**	**Mean ±SD/%**	**Mean ±SD/%**
Age (years)	27.0 ± 4.0	24.5 ± 3.9	25.9 ± 4.5	25.8 ± 4.3
Education level				
No schooling	4.3	25.4	30.6	20.0
Primary (1–5 grade)	11.3	12.3	26.7	16.7
Middle school (6–8 grade)	10.5	13.2	20.6	14.8
Secondary school	58.0	36.8	17.7	37.5
Senior secondary	4.7	8.2	2.6	5.2
College	11.3	4.2	1.9	5.8
Main occupation				
Housewife	98.5	91.7	95.0	95.0
Salaried worker	0.8	0.8	0.3	0.6
Wage employment	0.3	2.6	3.5	2.1
Agriculture/livestock	0.0	1.8	0.5	0.8
Unemployed	0.3	0.3	0.0	0.2
Maternal dietary diversity:				
No. food groups consumed (range: 0–9)[a]	4.7 ± 1.6	4.2 ± 1.5	4.1 ± 1.5	4.32 ± 1.5

[a] Maternal dietary diversity was calculated using nine food groups: staples, legumes, nuts, dairy, flesh foods, dark green leafy vegetables, vitamin A-rich fruits, vitamin A-rich vegetables, and other fruits and vegetables.

The mean household size in our sample was 5.5 members (Table 5). Caste patterns across districts were different. Most households in Jagatsinghpur belonged to the Other Backward Class (OBC), indicative of a disadvantaged group, or general caste categories, while most households in Keonjhar and Kalahandi were of the Scheduled Tribe (ST) and OBC categories. The ST category is considered a more disadvantaged group compared with OBC and the general categories.

Overall, study households had low resources, in terms of assets and infrastructure (Table 5). Only 22 percent of households owned homes, and 27 percent had a toilet on the premises. Most households who had a toilet facility reported using them. On average, households owned about seven out of 27 asset

items, and two types of livestock out of a possible five. More than 80 percent of households had Below Poverty Line (BPL) cards, which are issued by the government to identify households eligible to receive certain staple foods at a low price, and nearly all reported using BPL cards to procure cereals, sugar, and/or kerosene (cooking fuel). Nearly half of the households possessed an employment card issued by the government, which guarantees work for each household for 100 days during a year. More than half of the households were food insecure (mild to severe), as per the Household Food Insecurity Access Scale, with more than one-third of the households experiencing anxiety about their food security and one-quarter consuming smaller meals due to insufficient food (Annex Table A1).

As expected by purposively sampling of the districts, interdistrict variations of some household characteristics were observed. Jagatsinghpur was more food secure (57 percent) compared with Keonjhar (45 percent) and Kalahandi (39 percent) (Table 5). Fewer households in Jagatsinghpur had BPL cards, compared with the other two districts. Also, more than half of the households in Jagatsinghpur had a toilet, while only one in ten households in Kalahandi had a toilet facility.

TABLE 5. HOUSEHOLD CHARACTERISTICS

	Jagatsinghpur N=397	Keonjhar N=391	Kalahandi N=399	All N=1187
Characteristics	**Mean ±SD/%**	**Mean ±SD/%**	**Mean ±SD/%**	**Mean ±SD/%**
Household size	6.0 ± 2.2	5.5 ± 1.6	4.9 ± 1.3	5.5 ± 1.8
Household caste				
Scheduled Caste	25.9	12.5	15.0	17.9
Scheduled Tribe	0.5	48.9	32.1	27.0
Other Backward Class	36.5	32.0	48.9	39.2
General	35.8	5.4	3.8	15.0
Household asset status				
Home ownership	21.0	23.6	21.0	21.9
Toilet facility in the household	52.0	18.8	9.0	26.6
Used toilet	93.8	71.1	86.1	87.5
Total number of durable assets (0–27)	10.3 ± 3.6	6.2 ± 3.6	5.2 ± 3.3	7.2 ± 4.1
Total number of livestock	1.4 ± 2.3	4.0 ± 5.8	1.7 ± 3.2	2.3 ± 4.2
With employment guarantee card	45.0	50.9	43.7	46.5
With Below Poverty Line (BPL) card	73.4	92.2	82.3	82.4
Household food insecurity access scale	**N=397**	**N=391**	**N=399**	**N=1187**
Food secure	57.4	45.3	38.6	47.1
Mildly food insecure	17.6	17.9	19.1	18.2
Moderately food insecure	10.3	15.9	18.1	14.7
Severely food insecure	14.6	21.0	24.3	20.0
Household perception of food security				
Anxious	31.5	27.1	43.6	34.1
Insufficient quality of food	40.6	50.9	55.1	48.9
Insufficient food intake	21.4	31.0	38.4	30.2
BPL card used to procure	**N=175**	**N=152**	**N=152**	**N=542**
Rice	35.1	41.3	43.7	39.5
Wheat	15.0	6.6	6.5	10.0
Any other cereals	0.2	0.0	0.3	0.2
Sugar	7.8	12.0	12.9	10.6
Kerosene/fuel	41.8	40.2	36.6	39.8

FRONTLINE WORKER SAMPLE

Tables 6, 7, and 8 present the basic characteristics of the three FLW cadres in our study. The average age of AWWs and ANMs was about 40 years and that of ASHAs was 35 years. AWWs and ANMs have about 14 years of experience, whereas ASHAs have 6 years of experience in their current positions. This is likely the result of ASHAs being introduced as a frontline cadre in 2006, while the other cadres have existed longer.

Overall, ANMs and AWWs were more educated than ASHAs. This is as expected, since there is a higher education qualification for ANMs as trained paraprofessionals and for AWWs as providers of preschool education. ASHAs were required to have only eighth grade education. However, in some tribal and remote areas where women with even seventh grade education are not found, requirements are less strict. Interdistrict variation was observed in the education levels of FLWs. A greater proportion of AWWs in Jagatsinghpur (45 percent) had up to college education, compared with those in Keonjhar (11 percent) and Kalahandi (10 percent). In the case of ASHAs, however, greater proportions in Keonjhar (81 percent) and Kalahandi (72 percent) had secondary school education or higher, compared with those in Jagatsinghpur (53 percent).

A majority of AWWs (52 percent) belonged to the OBC category, whereas ASHAs were almost uniformly distributed across Scheduled Caste (SC), OBC and general caste categories. The SC category is a more disadvantaged group compared with the OBC and general categories. Most ANMs (52 percent) belonged to the general category. These caste category differences may be important in the interactions with households, because casteism is still prevalent throughout India.

For more than half of the AWWs (54 percent) in our study, income generation was a primary motivating factor for becoming an AWW, followed by the motivation to serve their community. In contrast, ASHAs reported serving their community (30 percent) and interest in health topics (39 percent) as the primary reasons for becoming an ASHA. For ANMs, income (36 percent) and interest in health topics (38 percent) were the primary reasons for becoming ANMs. Few FLWs (3 percent of AWWs, 18 percent of ASHAs, and 6 percent of ANMs) reported engaging in other work or income-generating activities.

TABLE 6. *ANGANWADI* WORKER CHARACTERISTICS

	Jagatsinghpur N=100	Keonjhar N=100	Kalahandi N=99	All N=299
Characteristics	**Mean ±SD/%**	**Mean ±SD/%**	**Mean ±SD/%**	**Mean ±SD/%**
Age (years)	39.3 ± 8.8	40.4 ± 8.5	38.7 ± 7.2	39.4 ± 8.2
Work experience (years)	12.9 ± 7.9	14.5 ± 8.2	13.4 ± 7.1	13.6 ± 7.7
Married	94.0	93.0	89.9	92.3
Education level				
Middle school (6–8 grade)	4.2	10.3	20.8	11.8
Secondary school	33.6	62.3	58.1	51.3
Senior secondary	16.8	16.9	11.6	15.1
College	45.4	10.6	9.5	21.7
Caste category				
Scheduled Caste	8.0	5.0	36.4	16.4
Scheduled Tribe	5.0	36.0	13.1	18.1
Other Backward Class	66.0	49.0	41.4	52.2
General	21.0	10.0	9.1	13.4
Primary reason for becoming AWW				
Income generation	49.0	51.0	60.6	53.5

Characteristics	Jagatsinghpur N=100 Mean ±SD/%	Keonjhar N=100 Mean ±SD/%	Kalahandi N=99 Mean ±SD/%	All N=299 Mean ±SD/%
Serve community	44.0	38.0	35.4	39.1
Bored/have time	7.0	11.0	4.0	7.4
Engaged in other work for income	1.0	5.0	4.0	3.3

TABLE 7. ACCREDITED SOCIAL HEALTH ACTIVIST CHARACTERISTICS

Characteristics	Jagatsinghpur N = 96 Mean ±SD/%	Keonjhar N=97 Mean ±SD/%	Kalahandi N=96 Mean ±SD/%	All N=289 Mean ±SD/%
Age (years)	40.4 + 5.1	33.9 ± 5.1	32.7 + 5.7	35.6 ±6.2
Work experience (years)	6.8 ± 1.6	5.8 ± 2.3	6.0 ± 2.3	6.2 ± 2.1
Married	65.6	89.7	89.6	81.6
Education level				
Primary school (1–5 grade)	12.6	1.1	2.1	5.3
Middle school (6–8 grade)	34.4	18.2	26.4	26.3
Secondary school	43.6	49.3	63.1	52.0
Senior secondary	9.5	24.0	7.4	13.6
College	0.0	7.4	1.1	2.8
Caste category				
Scheduled Caste	24.0	30.9	31.3	28.7
Scheduled Tribe	0.0	15.5	9.4	8.3
Other Backward Class	16.7	37.1	45.8	33.2
General	59.4	16.5	13.5	29.8
Primary reason for becoming ASHA				
Income generation	20.8	25.8	24.0	23.5
Serve community	29.2	36.1	26.0	30.4
Bored/have time	7.3	4.1	9.4	6.9
Interest in health topic	42.7	34.0	40.6	39.1
Engaged in other work for income	15.6	20.6	16.7	17.6

Nearly all of the FLWs received job training (Annex Tables A2, A3, A4). AWWs reported being trained on several topics (Annex Table A2), including immunization (31 percent), recording weight and height (67 percent), antenatal care (63 percent), breastfeeding (46 percent), complementary feeding (50 percent), handling of complementary foods (45 percent), advising mothers to send children to AWC (69 percent), and maintaining registers (43 percent). Most ASHAs were trained on antenatal care (76 percent), and almost a third received training on immunization, recording weight and height, complementary feeding, and VHND implementation. More than 40 percent of ASHAs were trained on pregnancy care and breastfeeding (Annex Table A2). A majority of ANMs reported being trained on immunization (65 percent), antenatal care (63 percent), and newborn care (46 percent), among several other topics (Annex Table A4). Thus, AWW training covered health and nutrition topics from pregnancy through the first two years of life, ASHA training focused mainly on the period of pregnancy and early infancy, and ANM training focused on pregnancy and newborn care and vaccination.

In relation to supervision, most AWWs identified the Lady Supervisor as their supervisor, and reported receiving a visit from her usually once a month (Annex Table A5). While a majority of ASHAs (57 percent)

identified the Lady Health Visitor as their immediate supervisor, 24 percent of ASHAs also identified ANMs as their supervisor.[2] ASHAs reported receiving supervisory visits twice a month (Annex Table A6).

TABLE 8. AUXILIARY NURSE MIDWIFE CHARACTERISTICS

Characteristics	Jagatsinghpur (N=55) Mean ±SD/%	Keonjhar (N=61) Mean ±SD/%	Kalahandi (N=55) Mean ±SD/%	All (N=171) Mean ±SD/%
Age (years)	40.9 ± 8.5	43.0 ± 8.6	36.9 ± 9.5	40.4 ± 9.2
Work experience (years)	15.1 ± 9.9	16.5 ± 9.2	10.5 ± 8.5	14.1 ± 9.5
Married	100.0	91.8	98.2	96.5
Education level				
Secondary school	36.4	59.0	29.1	42.1
Senior secondary school	45.5	24.6	52.7	40.4
Graduate and above	18.2	16.4	18.2	17.5
Caste category				
Scheduled Caste	12.7	8.2	29.1	16.4
Scheduled Tribe	7.3	4.9	12.7	8.2
Other Backward Category	7.3	37.7	21.8	22.8
General	72.7	49.2	36.4	52.6
Primary reason for becoming ANM				
Income generation	23.6	45.9	36.4	35.7
Serve community	30.9	23.0	23.6	25.7
Bored/have time	5.5	1.6	1.8	2.9
Interest in health topic	40.0	29.5	38.2	35.7
Engaged in other work for income	7.3	4.9	5.4	5.8

ANGANWADI CENTERS

AWCs are the platform for delivering the six services under the ICDS scheme: supplementary nutrition program, immunization, health checkups, referral services, health and nutrition education, and informal preschool education) There is one AWC per village for a population of 400–800, and a mini AWC for a population of 150–400.

Under the supplementary nutrition component of ICDS, take-home rations are distributed to pregnant and lactating women and children 6–36 months of age fortnightly or once a month, and hot-cooked meals are provided to 3–6-year-olds every day at the AWC. In addition to provision of supplementary foods, preschool education (for about 25–30 children age 3–6 years), immunization, health checkups, and health and nutrition sessions are provided at the AWCs. All of these activities require a well-lit and well-ventilated facility with clean and safe storage, cooking, washing, cleaning, serving, and seating areas. However, the

[2] According to the 2011 handbook for ASHA Facilitators (http://pib.nic.in/newsite/PrintRelease.aspx?relid=116029), ASHA Facilitators are responsible for supportive supervision of ASHAs. However, the study team did not come across any ASHA Facilitators in the study areas. , .

conditions of AWC facilities across the country have been reported to be quite variable (Right to Food Campaign, 2006).

In our study, 67 percent of AWCs have a permanent structure (Table 9). A majority of AWCs (62 percent) in Keonjhar and Kalahandi are in their own building, whereas 50 percent of AWCs in Jagatsinghpur are located in the school building. AWCs appear to have some amenities, such as a separate space for the kitchen (90 percent), access to drinking water (76 percent), and a toilet (64 percent). However, less than a quarter of AWCs have other important amenities, such as electricity (14 percent), light fixtures (11 percent), and a garbage bin (23 percent). AWC facilities in Jagatsinghpur were slightly better equipped than those in Keonjhar and Kalahandi.

TABLE 9. *ANGANWADI* CENTER STRUCTURES AND FACILITIES

	Jagatsinghpur N=94	Keonjhar N=93	Kalahandi N=93	All N=280
Characteristics	**%**	**%**	**%**	**%**
AWC is located in:				
Its own separate building	17.0	62.4	62.4	47.1
A school building	54.3	9.7	5.4	23.2
A villager's home	17.0	20.4	19.4	18.9
AWC is a permanent structure	72.3	65.6	63.4	67.1
AWC has a sign	71.3	85.0	89.3	81.8
AWC is currently open	100.0	92.5	95.7	96.1
	N=94	**N=86**	**N=89**	**N=269**
AWC has:				
Garbage dumps nearby	14.9	20.9	14.6	16.7
Garbage bin	33.0	19.8	16.9	23.4
Covered drinking water pot	57.5	40.7	52.8	50.6
Potable drinking water source	81.9	72.1	75.3	76.6
Electricity connection	21.3	8.1	11.2	13.8
Light fixtures and fan	21.3	5.8	4.5	10.8
Separate kitchen space	89.4	90.7	92.1	90.7
Space for storage of supplementary nutrition food	21.3	60.5	44.9	41.6
Toilet facility	83.0	54.7	52.8	63.9

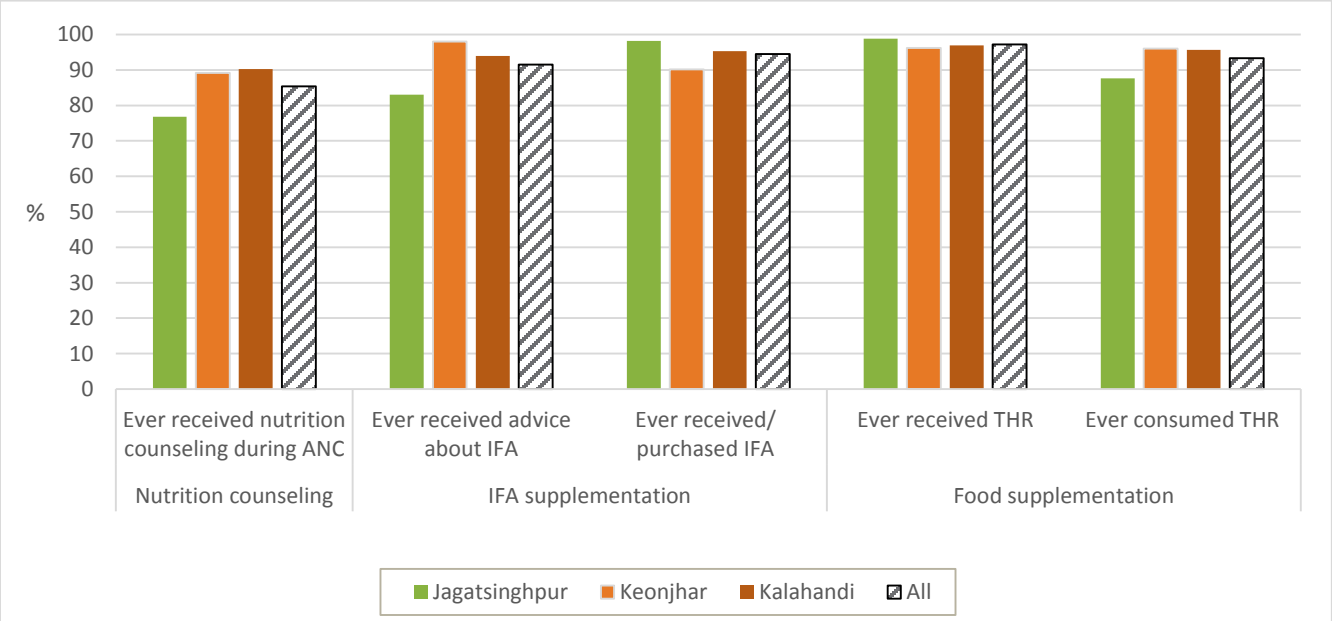
Results: Exposure to and Delivery of Key Nutrition Interventions

In this section, we present the main results of exposure to and delivery of the ten ENIs by district and overall. The descriptive findings are based on the survey data and present exposure to interventions among mothers and children and the provision of interventions reported by FLWs. In addition to the ENI findings, we feature findings about several important health interventions—antenatal care services (Box 1), conditional cash transfer schemes during and after pregnancy (Box 2), and child immunization (Box 3).

NUTRITION INTERVENTIONS DURING PREGNANCY

Overall, exposure to nutrition interventions during pregnancy was high (Figure 2), several of which are provided as part of the antenatal (ANC) service package (Box 1). More than 85 percent of mothers reported exposure to counseling on pregnancy care, IFA supplementation, and food supplementation.

FIGURE 2. EXPOSURE TO NUTRITION INTERVENTIONS DURING PREGNANCY AMONG MOTHERS WITH CHILDREN 0–5.9 MONTHS OF AGE



Counseling on maternal nutrition and care

Counseling about adequate nutrition, rest, and care during pregnancy usually takes place as part of ANC services, which takes place at a health facility or the AWC during monthly VHNDs. Nearly all of the FLWs reported on counseling pregnant women. A majority of the FLWs demonstrated knowledge of nutrition care during pregnancy. Nearly 70 percent of the FLWs identified that consuming a variety of foods and resting during the day were important for the health of pregnant women (Annex Tables A7, A8, A9). In turn, more than 85 percent of mothers reported being counseled on nutrition and care during pregnancy at least once during ANC checkups (Figure 2).

Iron and folic acid supplementation after the first trimester

Distributing IFA supplements and advising pregnant women to consume them usually occur during ANC visits at VHNDs and when needed at subcenters. A majority of ASHAs (95.5 percent) and ANMs (86.5

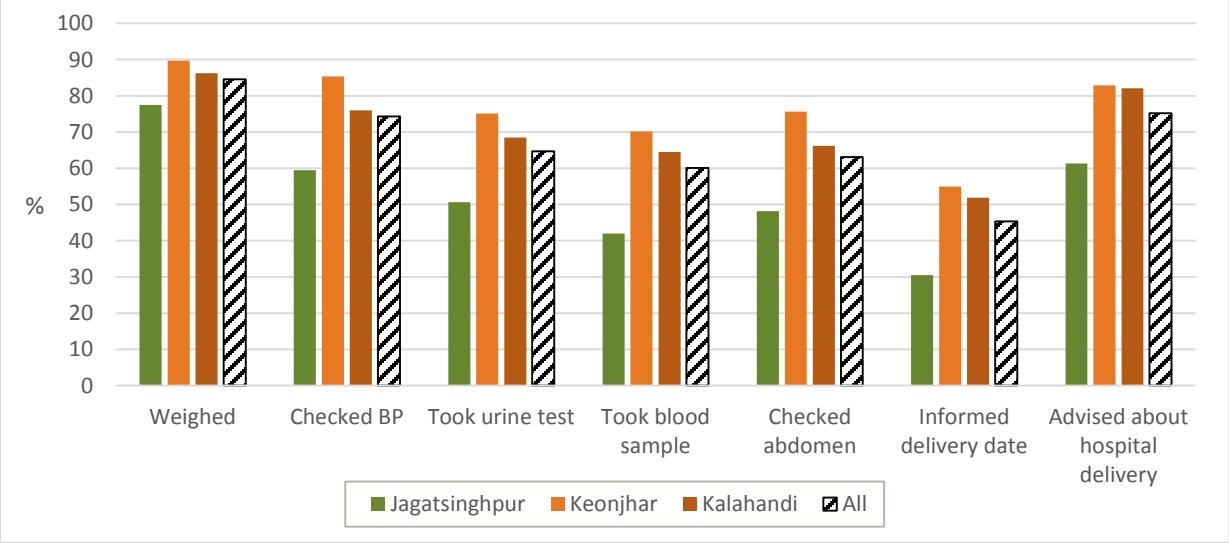
percent) reported giving IFA supplements, while only 45.1 percent of AWWs reported doing so. Most mothers reported receiving advice about IFA supplementation (91.5 percent), as wells as receiving or purchasing IFA supplements (94.5 percent) during pregnancy (Figure 2).

BOX 1. STATUS OF ANTENATAL CARE: AN ESSENTIAL SERVICE PACKAGE DURING PREGNANCY

The Odisha state health department has a standard guideline for ANC, which specifies the frequency, timing, and types of care to be provided during visits. In addition to health professional and medical staff, the FLWs play an important role in ANC delivery (NRHM 2011-2012). ANC provided by FLWs are delivered at the sub-center (where the ANM is located), at home (follow-up for missed visits), and at AWCs during monthly VHNDs. The ANM is recognized as being primarily responsible for ANC, but both the ASHAs and AWWs provide support to ANMs for this service, particularly during VHNDs and home visits.

Nearly all mothers with children 0-5.9 months of age in our study reported registering their pregnancy with one of the three FLWs (i.e., AWW, ASHA, or ANM) and received at least one ANC checkup. Furthermore, 75.4 percent of the mothers reported receiving four or more ANC checkups. (In comparison, only 37.0 percent of mothers who had a live birth in the last five years had four or more ANC visits for their most recent birth, according to the National Family Health Survey-3.) During the ANC visit conducted by a FLW, over 60 percent of mothers reported receiving many of the specific components of the package: getting weighed, examining blood pressure, urine, blood, and abdomen, and receiving advice about hospital delivery (Figure 3). Reported rates of specific care received were consistently lowest among mothers in Jagatsinghpur, compared to the other districts, but this may be due to more mothers in this district visiting private medical professionals for ANC, rather than the FLWs (as also reported in our study).

FIGURE 3. SPECIFIC CARE RECEIVED DURING ANC ADMINISTERED BY FLWS, RECALLED BY MOTHERS WITH CHILDREN AGED 0–6 MONTHS



Food supplementation for pregnant women

The DWCD has guidelines (DWCD 2011) (on procurement, preparation and packaging, and financial disbursements) for delivering take-home ration (THR), locally known as *chattua*. This ready-to-eat, raw

food mixture is produced by local self-help groups.[3] It is then distributed twice a month to pregnant and lactating women and for children 6 months to 3 years of age.

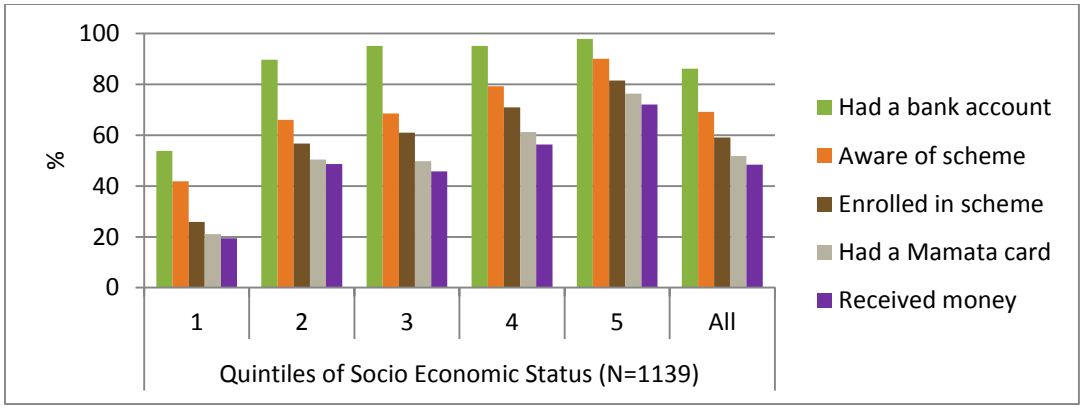
Nearly all mothers (97.2 percent) reported receiving THR at least once during pregnancy (Figure 2). On average, mothers started receiving THR after 3.5 months into their pregnancy, and received it for approximately 5.4 months. A majority of mothers (93 percent) reported consuming THRs, and among those who did not consume it, the most common reason cited was its poor quality.

BOX 2. CONDITIONAL CASH TRANSFER SCHEME FOR PREGNANT AND LACTATING WOMEN

The state of Odisha started a conditional cash transfer scheme called the *Mamata Scheme* in 2011, with a goal of promoting care during the first 1,000 days of a child's life. It aims to (1) reduce maternal and neonatal mortality and (2) improve the health and nutritional status of pregnant and lactating women and their children by providing partial wage compensation. It was founded on the principle of timely cash entitlements through electronic transfers, designed to mitigate the household financial burden at critical stages of child development. All pregnant women above 19 years of age are entitled to receive Rs. 5,000 (USD$100) in four installments (at the end of the second trimester, three months after delivery, after she completes 6 months, and after the child completes 9 months) based on meeting conditionalities (Table A10) for the first two live births.

About 70 percent of the households were aware of the *Mamata* scheme on average, but this varied by district. More mothers in Jagatsingpur were aware of the scheme (87 percent) compared to those in Keonjhar (67 percent) or Kalahandi (59 percent). On average, there was a 10-percent drop from awareness among households to enrollment, and then to possessing a *Mamata* card. A majority of the households that possessed a *Mamata* card received a cash transfer. However, fewer households (19 percent) in the lowest socioeconomic-status quintile received cash compared to those in the highest quintile (72 percent) (Figure 4). This may be contributed by only half of the households in the lowest quintile having a bank account, compared to those in the highest quintile who all possessed an account. Most households that did not have a bank account did not enroll in the scheme. A majority of the households that received the money reported that they either saved it for the future or used it toward the child's healthcare, which was increasingly the case as children got older.

FIGURE 4. REACH OF *MAMATA* SCHEME ACROSS SOCIOECONOMIC STATUS

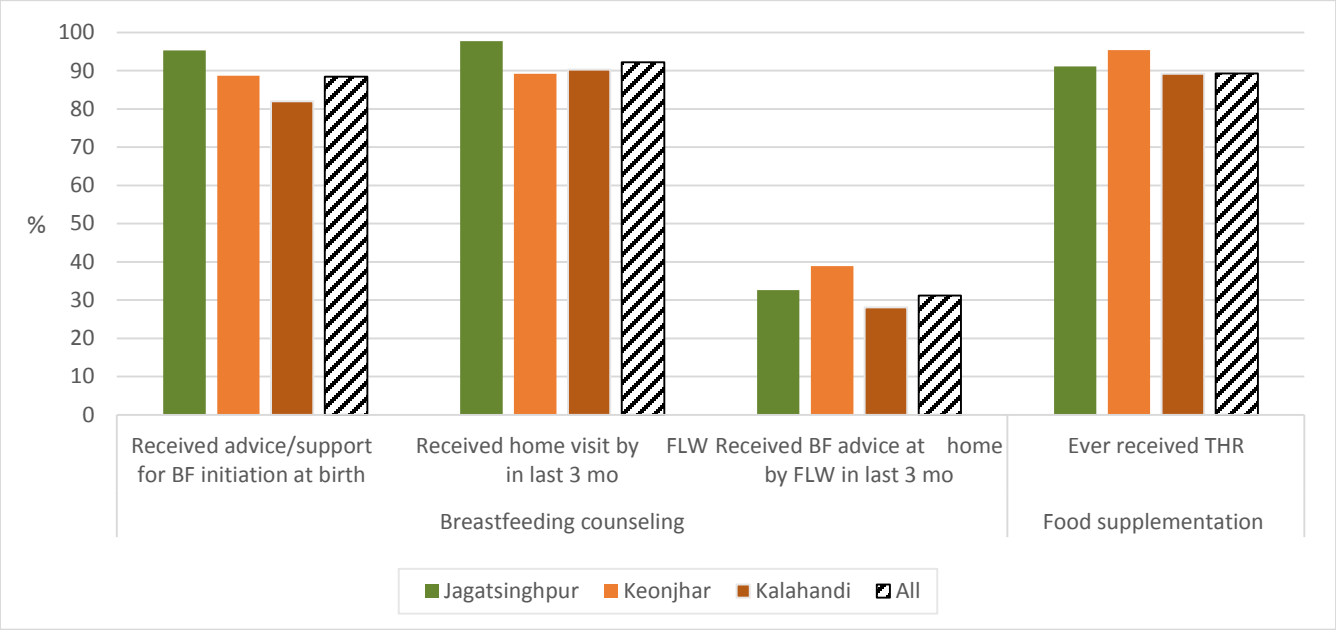


[3] Self-help groups are village-based committees, usually comprised of 10–20 local women who gather to make small, regular contributions to a common fund and to meet financial needs on the basis of mutual help. Besides being financial intermediaries, self-help groups have greatly expanded to incorporate other activities, such as local farmer development, entrepreneurship training, and women's education.

NUTRITION INTERVENTIONS DURING LACTATION/0–6 MONTHS AFTER CHILDBIRTH

Exposure to nutrition interventions during infancy varied for different interventions (Figure 5). However, differences were not observed across the three districts. Nearly 90 percent of mothers reported receiving advice or support for initiation of breastfeeding (BF) at birth, but less than a third of the mothers received breastfeeding advice at home during subsequent home visits. However, 90 percent of mothers continued to receive THR.

FIGURE 5. EXPOSURE TO NUTRITION INTERVENTIONS AMONG MOTHERS WITH CHILDREN 0–5.9 MONTHS OF AGE



Counseling on breastfeeding

A key component of AWWs' role in nutrition and health education is counseling mothers on infant and young child feeding (IYCF), including information about breastfeeding (BF) and complementary feeding (CF) during group discussions and home visits. Under NRHM's Reproductive, Maternal, Newborn, and Child Health + Adolescents initiative, ASHAs are also expected to provide IYCF counseling during group discussions and home visits. Thus, VHNDs and home visits are important platforms for IYCF counseling.

Nearly all of the FLWs in the three districts reported providing BF counseling. Most of the FLWs had good overall knowledge about BF. Almost all of the FLWs (89–100 percent) knew about early initiation of BF, feeding colostrum, and not giving water even when the weather is hot (Annex Tables A7, A8, A9). Although 60 percent of AWWs, 68 percent of ASHAs, and 76 percent of ANMs reported that mothers who think that their babies are not getting enough breast milk should breastfeed more frequently, 40 percent of FLWs also reported that the mother needs to eat more food. About 13–20 percent of FLWs reported incorrectly that the babies should be given other liquids or foods. Although half of the FLWs identified correctly that babies need to be fed whenever they want, 97 percent of the FLWs incorrectly identified crying as being a sign of a baby's hunger. A majority of FLWs also demonstrated knowledge about increasing milk production through frequent BF, and about 60 percent of AWWs and ASHAs and 75 percent of ANMs correctly identified infrequent BF to be the cause of hard or sore breasts. FLW knowledge of BF could be further strengthened to fill in gaps and address specific misinformation.

Nearly 90 percent of mothers reported institutional delivery, and thus were likely to have received BF counseling immediately after childbirth at a health facility. More than 90 percent of mothers reported hearing about timely initiation of BF and exclusive BF (Annex Table A11). FLWs were a major source of IYCF information for mothers. Sixty six percent of mothers identified ASHAs and almost 50 percent identified AWWs and ANMs to be their sources of information on initiation of BF and for not giving water until 6 months of age (Annex Table A13).

Exposure to BF counseling as reported by mothers with children 0–5.9 months of age varied, depending on the timing and location (Figure 5). For instance, more than 80 percent of mothers reported receiving advice about or support for initiation of BF at birth. Almost half of the mothers (51.6 percent) reported receiving BF advice at VHNDs, and 31.2 percent received advice from a FLW during a home visit after giving birth. Despite 92.2 percent of mothers reporting FLW home visits in the last 3 months, exposure to counseling remained low. Thus, there is a coverage gap in this intervention through VHNDs and home-based counseling.

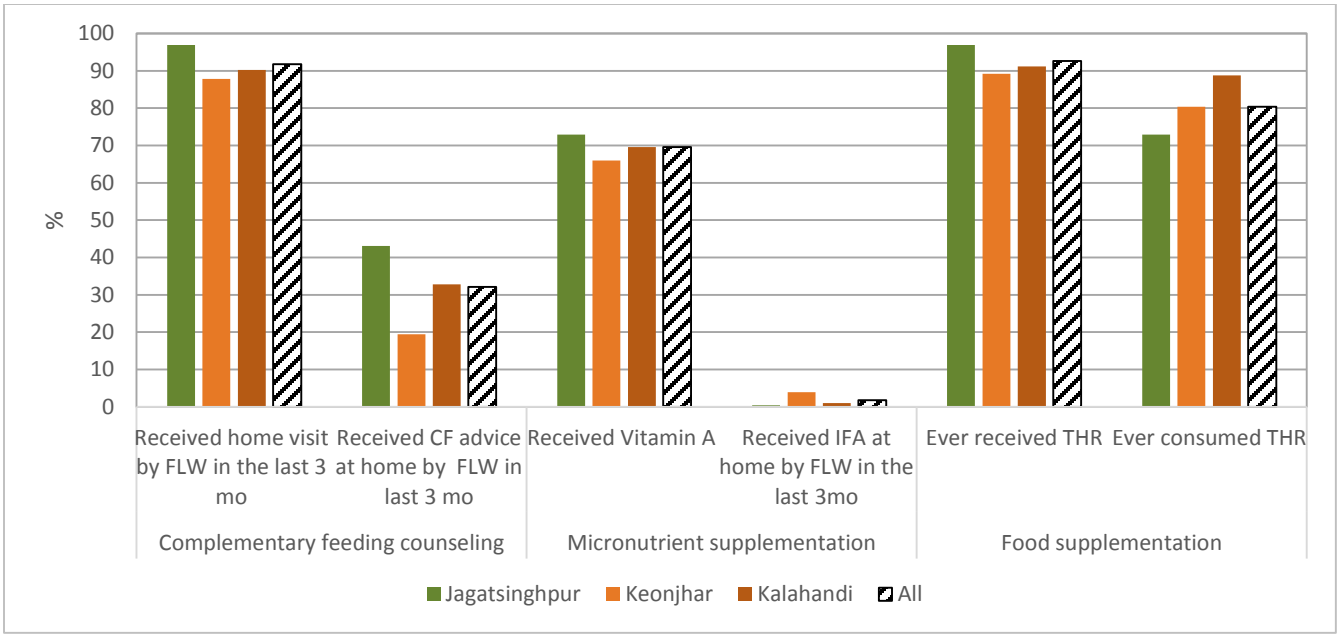
Food supplementation for lactating mothers (with children age 0–5.9 months)

As with food supplementation for pregnant women, AWWs distribute THR to lactating mothers, twice a month. All of the AWWs in the three districts confirmed distribution of food supplements, and 89 percent of mothers reported having received THR during this lactation period (Figure 5).

NUTRITION INTERVENTIONS DELIVERED BETWEEN 6 AND 24 MONTHS AFTER CHILDBIRTH

Exposure to nutrition interventions during early childhood period varied; receipt of THR and vitamin A supplementation was high, but was alarmingly low for IFA supplements and home-based counseling for complementary feeding (CF) (Figure 6). There were only small differences in exposure across the three districts.

FIGURE 6. EXPOSURE TO NUTRITION INTERVENTIONS AMONG MOTHERS AND CHILDREN 6.0–23.9 MONTHS OF AGE



Counseling on complementary feeding

Similar to counseling on BF, counseling on CF is conducted during home visits and/or at VHNDs. More than 95 percent of FLWs knew about introducing various complementary foods at 6 months of age, but only about 70 percent of FLWs reported the correct age for feeding non-breastmilk and eggs. Only 18 percent of AWWs and 30 percent of ASHAs and ANMs knew of the correct timing for introducing meat to a child's diet. Furthermore, FLWs demonstrated limited understanding of child feeding during and after illness. Only 7 percent of AWWs and ASHAs and 45 percent of ANMs identified that children should be fed more than usual after illness. Poor knowledge on introduction of animal sources of food and addressing feeding after illness has implications for promoting and helping mothers to implement appropriate IYCF practices.

Similar to BF, FLWs were a major source of CF information for mothers. Almost 90 percent of mothers reported hearing about the timing for introducing complementary foods and 80 percent heard about feeding frequency, but only 56 percent heard of feeding animal-source foods for children older than 6 months (Annex Table A11). Nearly 75 percent of mothers identified 6–8 months to be the correct timing for introducing semi-solid foods, but less than 20 percent of mothers identified the right timing for introducing animal-source foods (Annex Table A12). Nearly 70 percent of mothers identified ASHAs and more than 50 percent identified AWWs and ANMs to be their sources of information for the timing of initiation of CF, frequency of feeding, feeding of animal-source foods, and feeding during illness (Annex Table A13).

Exposure to CF counseling during home visits, as reported by mothers of children age 6.0–23.9 months, was low (Figure 6). Although 90 percent of mothers reported receiving home visits from FLWs in the last 3 months, only about a third had received counseling about CF. This raises an important concern for improving CF practices, which usually requires counseling during home visits to promote behavior change. Only 48 percent of mothers reported being exposed to CF counseling at VHNDs. Measures to strengthen maternal contact with the FLWs, to ensure counseling during such contacts, and to improve FLW knowledge are important to ensure appropriate CF messaging and promote adoption of CF practices.

Vitamin A supplementation

Vitamin A supplements are intended to be administered to children 9 months to 5 years of age once every 6 months in May and November (fixed months) at the AWC or subcenter, in conjunction with the measles vaccine (MHFW 2006). Most (86.5 percent) of the ANMs, as well as approximately 80 percent of ASHAs and 50 percent of AWWs, reported providing vitamin A supplementation. Fifty-three percent of mothers reported hearing about vitamin A supplementation; 65 percent identified ASHAs and nearly 50 percent identified AWWs and ANMs to be their sources of information (Annex Table A11); and about 70 percent reported that their children received vitamin A supplementation (Figure 6).

Pediatric iron and folic acid supplementation

Pediatric IFA supplements are expected to be given to children 6 months to 5 years of age during home visits. Among the interventions examined, provision of supplements to this target group was the lowest. While more than 90 percent of all FLWs demonstrated knowledge of physical signs to detect anemia among children under 2 years, and nearly 80 percent of AWWs and ASHAs and 70 percent of ANMs identified a daily dose of iron to be one of the strategies for treating pediatric anemia, less than 50 percent of any of the three cadres of FLWs reported providing IFA supplements. A greater proportion of ANMs (54.9 percent) followed by ASHAs (46.3 percent) provided the supplements.

About 30 percent of mothers heard about IFA supplements for children under 2 years, and nearly 60 percent of them identified ASHAs and ANMs and 53 percent identified AWWs as their source of information. However, exposure to pediatric IFA supplements was exceptionally low, with only 5 percent of mothers confirming that their children received them (Figure 6). There was a large gap in the reported

delivery of and exposure to this intervention, which could be caused by the policy on pediatric IFA supplementation being fairly new (National Iron Plus Initiative 2013), and its implementation being in its nascent stage at the time of this study. It is also possible that some FLWs responded about providing this intervention based on their understanding of IFA supplementation for pregnant women and not for children.

Food supplementation for children age 6–24 months

As with the exposure to food supplementation among pregnant and lactating mothers, exposure to THR for young children was also high. Nearly 90 percent of mothers reported receiving THR specifically for their children, and about 80 percent reported feeding THR to their children (Figure 6). A major reason for children not consuming THR was consumption by other family members, and as with the THR for mothers, poor quality was also reported.

Growth monitoring/screening for severe acute malnutrition

Growth monitoring, which involves taking regular anthropometric measurements to track changes in children's physical development, is an important tool for providing individual care (e.g., nutrition counseling), detecting problems in child growth, and screening for severe acute malnutrition (SAM) treatment (facility- or community-based care). Growth monitoring and screening for SAM referral usually take place during monthly VHNDs. Almost 95 percent of AWWs and 53 percent of ASHAs reported measuring growth monthly, and 86.6 percent of AWWs and 76.1 percent of ASHAs reported making referrals for SAM treatment.

Almost all mothers of children under 2 years who attended VHNDs reported that their children were measured (Table 10). However, only 59 percent of the respondents attended VHNDs. This has implications for receiving timely care and services for acute conditions. As the VHND is a monthly activity, children who do not attend the VHND may have to wait another month for their next screening. Therefore, efforts have to be focused on mobilizing the community to attend VHNDs, as well as identifying ways to reach those that could not attend the last VHND.

TABLE 10. EXPOSURE TO GROWTH MONITORING AMONG MOTHERS OF CHILDREN 0–24 MONTHS

Indicator/age group	N	Jagatsinghpur %	Keonjhar %	Kalahandi %	All %
Received growth monitoring					
0–6 months	552	50.6	44.3	39.5	44.6
6–24 months	635	62.7	46.6	44.1	51.5
Received growth monitoring among those who attended VHND					
0–6 months	253	100.0	98.8	96.3	98.4
6–24 months	333	99.3	98.0	96.8	98.2

BOX 3. STATUS OF CHILD IMMUNIZATION

In Odisha, there is a fixed immunization day each month. ANMs provide immunization and are supported by AWWs and ASHAs, as defined in the role guidelines (DWCD 2013) issued by the DWCD. Our results indicate good coordination for this service at multiple levels. At the block level, microplans (with information on place, date, and number of villages to be covered) are jointly developed by the health and ICDS staff. AWWs and ASHAs mobilize the community to receive the service. The immunization day activities are jointly supervised by the district and/or block DWCD and health officials.

All three FLWs expressed the need to coordinate and work together to deliver immunization. One ANM noted: "Suppose, for example, we have to counsel them [beneficiaries] about immunization. It will be better if we provided door-to-door service, and this can be done better by ASHA or *anganwadi didi,* as they are living in those villages, and they can keep contact with all the beneficiaries." Another ANM stated: "If we work together, it will help the process to work better. Suppose there is a child who is left out of immunization according to our register. I will tell the AWW or ASHA to call that particular child for immunization. So working together can ensure 100 percent coverage."

More than 80 percent of the children in our study reported being fully immunized (Table 11). Although this is not a state representative sample, the immunization rate is indicative of a positive trend toward an improved immunization rate, from 51 percent in 2005 (MHFW 2006). Keonjhar and Kalahandi reported lower rates compared to Jagatsinghpur.

TABLE 11. IMMUNIZATION STATUS AMONG CHILDREN AGE 12–24 MONTHS

Vaccine	Jagatsinghpur N=137 %	Keonjhar N=119 %	Kalahandi N=129 %	All N=385 %
Tuberculosis	97.1	100.0	96.1	97.7
Polio 0	94.9	94.1	94.4	94.5
Polio 1	100.0	97.3	100.0	99.2
Polio 2	99.3	97.3	98.4	98.4
Polio 3	100.0	96.2	99.1	98.6
Diphtheria 1	98.5	95.7	97.7	97.4
Diphtheria2	98.5	95.7	96.9	97.1
Diphtheria 3	96.2	93.9	87.6	92.7
Measles	96.4	93.3	82.8	90.9
Full Immunization	90.5	80.7	76.7	82.9

Summary of findings on delivery and use of key nutrition interventions

Our findings indicate that overall delivery of key nutrition interventions is working well in Odisha, particularly during the period of pregnancy. Mothers reported receiving a majority of the interventions during pregnancy, including counseling on maternal care, advice about IFA supplements, and food supplementation. Nearly all mothers made at least one ANC visit, and most had received four or more ANC visits. During ANC visits, mothers reported receiving most of the services.

Exposure to interventions during the 0–6-month period after childbirth was more varied compared with during pregnancy. A majority of the mothers received advice on initiating BF immediately after birth, but had low exposure to counseling on IYCF during subsequent home visits, representing a missed opportunity. Therefore, strategies should be developed to ensure appropriate counseling during currently ongoing home visits. Most mothers reported receiving food supplements during lactation, as in the pregnancy period.

Exposure to interventions in the 6–24-month period after childbirth was also mixed. A majority of the mothers reported receiving food supplements as well as vitamin A supplementation, but their exposure to counseling on CF, pediatric IFA supplementation, and child growth monitoring were low. Home visits are intended to be a key delivery platform for these interventions. However, rather than the lack of home visits, it is likely that the content and quality of interactions between the FLW and mother/caregiver during home visits pose a challenge. Efforts should be made to ensure that counseling takes place during home visits. IFA supplementation for children is a relatively new policy initiative that is in its initial implementation phase, thereby potentially accounting for its low exposure.

VHNDs are an important delivery platform for ENIs. VHNDs were initiated almost a decade ago, to serve as an interfacing platform for the health system and community, to deliver multiple health and nutrition interventions on a fixed day, and to facilitate coordination between the WCD and Health departments, so as to expand the coverage of the interventions. However, our study reveals relatively low attendance at VHNDs. Thus, extensive efforts should be made to mobilize communities to attend VHNDs. As FLWs are a major source of health and nutrition information to mothers, there is significant potential for improving IYCF practices by increasing the frequency and strengthening the quality of their contacts with mothers through VHNDs and home visits.

Results: Coordination in Service Delivery

The results in this section describe the type and extent of coordination in service delivery for the select interventions. As noted in the methods, coordination was assessed by asking FLWs a set of questions for each service about (1) whether they provided a certain intervention, (2) who *led* service delivery for that intervention (with the assumption that a clear "lead" among the FLWs helps to identify who is primarily responsible for ensuring that service delivery and addressing gaps), and (3) how they coordinated delivery with other FLWs. We also feature findings on a key platform for service delivery—i.e., VHNDs (Box 4). Select results from the qualitative data pertaining to service provision and coordination are also presented to illustrate findings.

COORDINATION IN COUNSELING ON MATERNAL NUTRITION AND CARE

Across the three districts, nearly all of the FLWs reported counseling pregnant women on nutrition (Table 12). However, no single person was primarily responsible for the service; each FLW identified herself as leading this service. Yet, most FLWs reported always coordinating on counseling of pregnant women, usually by planning and conducting the counseling together.

TABLE 12. COORDINATION IN THE DELIVERY OF COUNSELING ON MATERNAL NUTRITION AND CARE AMONG FRONTLINE WORKERS

	Jagatsinghpur	Keonjhar	Kalahandi	All
Indicator	**%**	**%**	**%**	**%**
Provides the service[a]				
AWW (ICDS)	99.0	99.0	100.0	99.0
ASHA (Health)	100.0	95.9	97.9	97.9
ANM (Health)	100.0	98.3	96.3	98.2
Identifies "self" as leading the service[a]				
AWW	81.8	70.7	87.8	80.1
ASHA	83.3	77.4	81.9	80.9
ANM	94.5	81.7	96.2	90.4
Always coordinates to provide the service[a]				
AWW	92.5	82.6	89.9	88.3
ASHA	93.4	76.7	94.8	88.3
ANM	94.6	86.4	94.3	91.6
	N=256	**N=264**	**N=254**	**N=774**
Usual ways of coordinating service[b]	**%**	**%**	**%**	**%**
Plan and implement together	83.3	76.3	74.5	78.1
Plan together but implement separately	2.4	5.2	1.0	2.9
Give/receive instructions and exchange information	2.9	3.8	7.0	4.5
Inform only	33.5	38.9	44.0	38.7
Observe or attend only	0.5	1.0	0.5	0.7

[a] Proportion of responses by each FLW type: AWW (N=100, 100, and 99 for Jagatsinghpur, Keonjhar, and Kalahandi, respectively); ASHA (N=96, 97, and 96, respectively); and ANM (N=55, 61, and 55, respectively).

[b] Proportion of pooled responses among all FLWs; multiple responses possible for each respondent.

COORDINATION IN IFA SUPPLEMENTATION AFTER THE FIRST TRIMESTER

Most ASHAs and ANMs reported providing IFA supplements, while only 45.1 percent of AWWs reported providing them (Table 13). This result is congruent with qualitative descriptions about how administration of tests and checkups and provision of inputs take place during ANC visits. They are conducted by the ANM with the support of the ASHA, and the AWW is often present to provide further assistance. Among the FLWs, the ASHA specifically identified herself as being primarily responsible for providing IFA supplements, but all the FLWs reported working together.

"ANM will provide the TT [tetanus toxoid] and IFA tablets. Then they [pregnant women] have been provided with MCP [Mother and Child Protection] card, which is filled up by the ANM, in the presence of *Anganwadi* worker." -ICDS block official

TABLE 13. DELIVERY OF IFA AND FOOD SUPPLEMENTATION TO PREGNANT WOMEN, BY FRONTLINE WORKERS

	Jagatsinghpur	Keonjhar	Kalahandi	All
Indicator	**%**	**%**	**%**	**%**
IFA supplementation				
Provides the service[a]				
AWW	37.0	53.0	45.5	45.1
ASHA	94.8	95.9	95.8	95.5
ANM	96.3	78.7	85.4	86.5
Identifies "self" as leading the service[a]				
AWW	2.7	0.0	0.0	74
ASHA	84.6	88.2	88.0	86.9
ANM	86.7	45.8	80.8	71.6
THR distribution				
Provides the service[a]				
AWW	100.0	100.0	100.0	100.0
ASHA	17.7	32.0	20.8	23.5
ANM	1.8	4.9	3.6	3.5
Identifies "self" as leading the service[a]				
AWW	100.0	100.0	100.0	100.0
ASHA	0.0	3.2	0.0	1.5
ANM	0.0	0.0	0.0	0.0

[a] Proportion of responses by each FLW type: AWW (N=100, 100, and 99 for Jagatsinghpur, Keonjhar, and Kalahandi, respectively); ASHA (N=96, 97, and 96, respectively); and ANM (N=55, 61, and 55, respectively).

COORDINATION IN FOOD SUPPLEMENTATION FOR PREGNANT WOMEN, LACTATING MOTHERS, AND CHILDREN

FLWs demonstrated clear understanding of their responsibilities related to food supplementation. The AWW was identified as being primarily responsible for providing THR, and all AWWs confirmed providing this service (Table 13). Although the AWW is responsible for checking food quality, ASHAs and ANMs also reported providing support for checking food quality and providing food supplements whenever possible at the time of distribution. The patterns of service provision and coordination among FLWs for the delivery of nutritional supplements were the same for all target beneficiaries (i.e., pregnant and lactating women and children 6–36 months of age).

"At distribution time, ANMs and ASHAs are also present and involved with this program due to better coordination. The quality of chattua *is checked by all." –District official*

"ASHA didi and ANM help check the cleanliness [at food distribution]." – AWW

COORDINATION IN COUNSELING ON BREASTFEEDING

Across the three districts, nearly all of the FLWs reported providing BF counseling, but as was the case in nutritional counseling for pregnant women, many of the FLWs identified themselves as leading this service (Table 14). The AWW was identified more often as being primarily responsible, compared with the ASHA and ANM, but there does not appear to be a clear lead role for this service.

TABLE 14. DELIVERY OF COUNSELING ON BREASTFEEDING BY FRONTLINE WORKERS

	Jagatsinghpur	Keonjhar	Kalahandi	All
Indicator	**%**	**%**	**%**	**%**
Provides the service[a]				
AWW	99.0	100.0	100.0	99.6
ASHA	100.0	99.0	99.0	96.3
ANM	100.0	100.0	100.0	100.0
Identifies "self" as leading the service[a]				
AWW	98.9	88.0	96.9	94.6
ASHA	77.1	65.6	71.6	71.4
ANM	98.2	80.3	92.7	90.1

[a] Proportion of responses by each FLW type: AWW (N=100, 100, and 99 for Jagatsinghpur, Keonjhar, and Kalahandi, respectively), ASHA (N=96, 97, and 96, respectively); and ANM (N=55, 61, and 55, respectively).

COORDINATION IN COUNSELING ON COMPLEMENTARY FEEDING

Nearly all of the FLWs across the three districts reported providing CF counseling (Table 15). Most AWWs (94.6 percent), ASHAs (70.1 percent), and ANMs (90.1 percent) indicated they were primarily responsible for delivering the intervention (Table 14). A similar pattern of results as that of BF counseling is indicative of a common issue pertaining to home-based counseling. It appears that without a clear lead, it is possible that there is shifting of responsibilities or assumptions about the service being delivered by someone else, potentially resulting in a service delivery gap. In this case, IYCF counseling has a large gap, as indicated by exposure discussed in the previous section. Given that multiple points of contact may be necessary and beneficial to facilitate behavior change to improve IYCF practices, it is also important that all FLWs provide appropriate information to mothers and reinforce messages. To ensure that there is no ambiguity or misinformation provided by different FLWs, efforts should be made to harmonize training and materials on these topics for all the FLWs.

TABLE 15. COUNSELING FOR AND DISTRIBUTION OF MICRONUTRIENT SUPPLEMENTS TO MOTHERS WITH CHILDREN 6.0–23.9 MONTHS OF AGE, BY FRONTLINE WORKERS

Indicator	Jagatsinghpur %	Keonjhar %	Kalahandi %	All %
Counseling on complementary feeding				
Provides the service[a]				
AWW	99.0	100.0	99.0	99.3
ASHA	100.0	95.9	99.0	98.3
ANM	100.0	98.3	100.0	99.4
Identifies "self" as leading the service[a]				
AWW	98.9	86.0	94.9	93.3
ASHA	65.6	51.6	56.8	58.1
ANM	78.2	73.3	80.0	77.1
Vitamin A supplementation				
Provides the service[a]				
AWW	64.0	51.0	58.6	57.8
ASHA	81.3	77.3	77.1	78.5
ANM	96.3	78.7	85.4	86.5
Identifies "self" as leading the service[a]				
AWW	3.1	17.6	1.7	6.9
ASHA	7.7	2.7	6.8	5.7
ANM	96.3	98.3	100.0	98.1
IFA supplementation for children				
Provides the service[a]				
AWW	14.0	49.0	36.4	33.1
ASHA	21.9	60.8	56.3	46.3
ANM	41.8	63.9	58.1	54.9
Identifies "self" as leading the service[a]				
AWW	57.1	71.4	75.0	70.7
ASHA	47.6	72.8	72.2	68.6
ANM	91.3	61.5	96.8	80.8

[a] Proportion of responses by each FLW type: AWW (N=100, 100, and 99 for Jagatsinghpur, Keonjhar, and Kalahandi, respectively); ASHA (N=96, 97, and 96, respectively); and ANM (N=55, 61, and 55, respectively).

COORDINATION IN VITAMIN A SUPPLEMENTATION

Although a majority of the ANMs (86.5 percent) reported providing vitamin A supplementation, approximately 80 percent of ASHAs and more than 50 percent of AWWs also reported providing this intervention (Table 15). However, nearly all of the ANMs identified themselves as being primarily responsible (98.1 percent) for the delivery of the intervention, with the support of ASHAs and AWWs, while less than 10 percent of AWWs or ASHAs identified themselves as being primarily responsible for providing vitamin A supplementation. Thus, all three FLWs recognized one clear lead for delivering this intervention.

"ANM, ASHA, and AWW work together to accomplish vitamin A supplementation and immunization."
–ICDS Lady Supervisor

"The day before distributing vitamin A, I go to different houses to inform that the next-day distribution of vitamin A will happen at the center, and the AWW gives it out." –ASHA

COORDINATION IN PEDIATRIC IRON AND FOLIC ACID SUPPLEMENTATION

Among the ENIs examined, reported provision of supplements by FLWs was the lowest. Less than 50 percent of any of the FLWs reported providing IFA supplements; a greater proportion of ANMs (54.9 percent) followed by ASHAs (46.3 percent) reported providing the supplements (Table 15). No clear lead was identified for delivering the intervention. Most ANMs (80.8 percent), AWWs (70.7 percent), and ASHAs (68.6 percent) identified themselves as leading the intervention. However, all reported coordinating to provide the intervention.

COORDINATION IN GROWTH MONITORING/SCREENING FOR SEVERE ACUTE MALNUTRITION

Nearly all AWWs (95 percent) across the three districts reported providing growth-monitoring service, along with 53 percent of ASHAs and 66 percent of ANMs (Table 16). However, nearly all AWWs reported leading the service, but only some ANMs (41.4 percent) reported doing so. None of the ASHAs reported taking the lead on growth monitoring.

TABLE 16. GROWTH MONITORING BY FRONTLINE WORKERS

	Jagatsinghpur	Keonjhar	Kalahandi	All
Indicator	**%**	**%**	**%**	**%**
Provides the service[a]				
AWW	98.0	93.0	95.0	95.3
ASHA	49.0	56.7	53.1	52.9
ANM	67.3	70.5	60.0	66.1
Identifies "self" as leading the service[a]				
AWW	100.0	97.9	97.9	98.6
ASHA	0.0	0.0	0.0	0.0
ANM	38.9	61.1	27.3	41.4

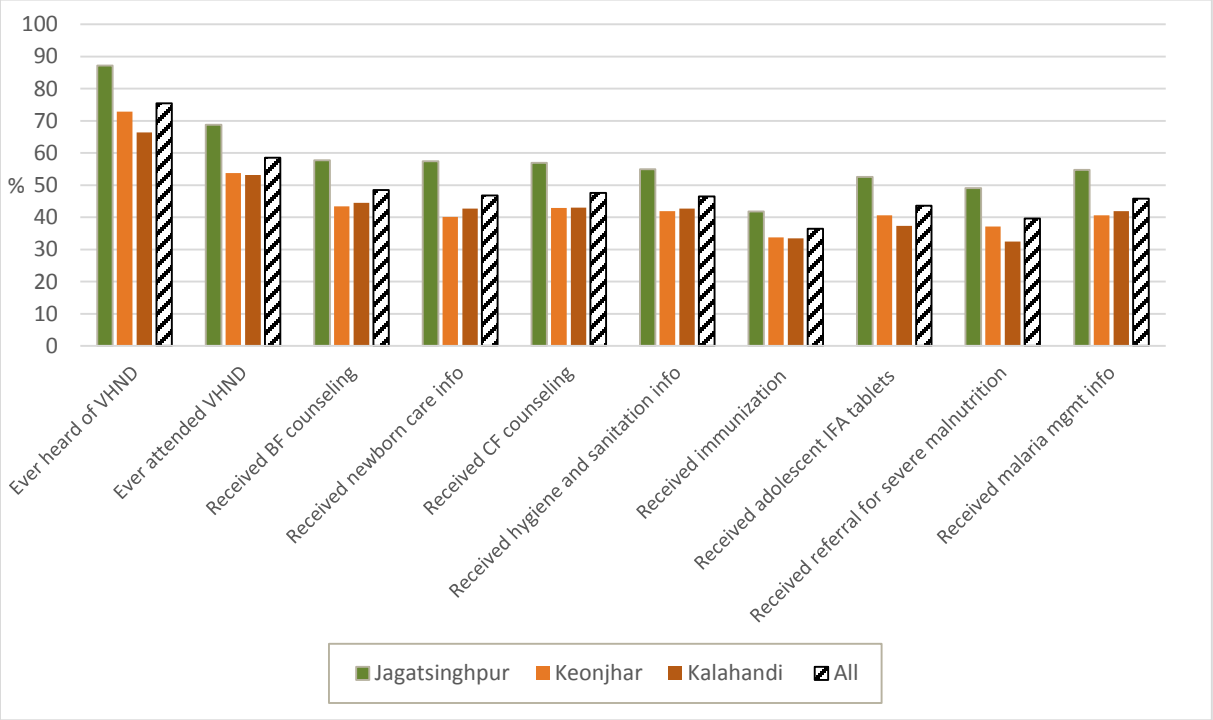
[a] Proportion of by each FLW type: AWW (N=100, 100, and 99 for Jagatsinghpur, Keonjhar, and Kalahandi, respectively); ASHA (N=96, 97, and 96, respectively); and ANM (N=55, 61, and 55, respectively).

BOX 4. STATUS OF VILLAGE HEALTH AND NUTRITION DAYS: AN IMPORTANT PLATFORM FOR BASIC HEALTH SERVICES AND NUTRITION INTERVENTIONS IN INDIA

Village Health and Nutrition Day (VHND), or *Mamata Diwas,* as is locally called, is a common service platform for DHFW, ICDS, and the community to provide various health and nutrition interventions targeted at pregnant and lactating mothers and children under 5 years of age. Among the services, there is a focus on ensuring early registration, identification, and referral of high-risk children and pregnant women, and providing information to families on care of mothers and children through discussion of various health and nutrition topics. VHND is intended to be organized once a month in every AWC on a fixed day, with joint efforts of the ANM, ASHA, and AWW.

All of the FLWs in our study confirmed that VHND is conducted monthly at their respective AWCs. However, only 58.6 percent of mothers with children 0–24 months of age reported ever attending a VHND, with the highest exposure in Jagatsinghpur (Figure 7), with lack of time being the most common reason (55 percent) for not attending VHND. Overall exposure to the different services during VHND was about 40 percent for most services, mostly attenuated by low attendance. Details of FLWs' report of the VHND services are presented in the Annex Table A14.

FIGURE 7. SERVICES RECEIVED DURING VHND, REPORTED BY MOTHERS WITH CHILDREN 0–24 MONTHS OF AGE



SUMMARY OF FINDINGS ON COORDINATION

Overall, we found positive results on coordination among FLWs. Nearly all of the FLWs reported planning and implementing the interventions together. For IYCF counseling, there was ambiguity among FLWs about who was primarily responsible for delivering the intervention; these results also were reflected in the findings on the relatively low exposure compared with other interventions.

A strong sense of role clarity was demonstrated by the FLWs in delivering IFA supplementation to pregnant women, vitamin A supplementation, food supplementation, and growth monitoring/screening for SAM treatment. For IFA supplementation of pregnant women, ASHAs were identified as being responsible, while ANMs were recognized as the lead for vitamin A supplementation. For food

supplementation and growth monitoring, AWWs were clearly the lead. These results largely mirrored currently available guidelines for FLW roles related to delivering nutrition interventions.

However, for interventions where clear operational guidelines do not exist, particularly for IYCF counseling and pediatric IFA supplementation, roles and responsibilities were ambiguous. This may be expected, because IYCF counseling is an integral part of the mandate for all three FLWs, yet without clear guidelines for roles among them, it is likely that they would presume to be leading the service. However, as multiple points of contact are required to reinforce behavior change, the skills of all three FLWs on these topics need to be strengthened, to ensure correct and consistent messaging. Furthermore, counseling involves more than the provision of key messages, requiring communication skills to address barriers to behavior change and negotiate appropriate practices. Thus, these skills should be developed for all three FLWs through training and supervision.

In the case of pediatric IFA supplementation, only about 50 percent of FLWs reported providing this intervention. Given that this program is fairly new and is in its early implementation stage, it may be expected that the FLWs are not yet clear about their roles. Thus, orientation of roles and responsibilities for carrying out this service should be reinforced among FLWs.

Summary and Discussion

This report presents the findings on the state of delivery and use of ten select ENIs in three districts of Odisha and the extent and nature of coordination among frontline workers in delivering the interventions.

STUDY FINDINGS

The findings are summarized as follows:

1. **Exposure to ENIs:** Overall, our findings suggest that exposure to the ENIs was high across the districts, particularly interventions during pregnancy. Nearly 75 percent of mothers received four or more ANC visits, and more than 50 percent received a majority of the services during ANC, mostly from the FLWs. The Odisha state government's initiatives, such as the Infant Mortality Reduction Mission (2001), Maternal and Perinatal Death Inquiry, and the Reproductive and Child Health Programme–II under NRHM (2005), are likely to have brought greater attention to pregnancy and newborn care, resulting in improvements in service delivery during this period. Additionally, the DWCD introduced a conditional cash transfer program called *Mamata Scheme* in 2011 that provides money to mothers to encourage ICDS and health service use. The first installment of money under this scheme is conditioned on use of health and nutrition services during pregnancy.

   Exposure to interventions during 0–6 months after childbirth was more varied. While nearly 90 percent of mothers reported being advised on initiating BF immediately after birth, and 89 percent of mothers reported receiving food supplements, only 30 percent of mothers received counseling on BF at home from FLWs. ASHAs are expected to visit newborns six times (for institutional delivery) within 42 days and seven times in case of home deliveries, to provide home-based newborn care, including BF counseling. Thus, low exposure to BF counseling during home visits indicates a gap in this intervention delivery.

   During 6–24 months after birth, exposure to interventions appears to decline further, compared with during pregnancy and 0–6 months after birth. While a majority of the mothers reported receiving food supplements for their children (90 percent) and vitamin A supplementation (70 percent), exposure to pediatric IFA supplementation (less than 5 percent), counseling on CF (32 percent), and growth monitoring (51 percent) was low. A plausible explanation for low exposure to interventions during this period is that the focus on the first 1,000 days, including CF and pediatric IFA supplementation, has been recent. The National Iron Plus Initiative (NIPI) is a new health program (2013) that includes IFA supplementation to children starting at 6 months of age. The IYCF guidelines were also released recently by the DHFW (2013), and at the time of the study, FLWs were being trained on pediatric IFA supplementation and promotion of IYCF practices. Given the high prevalence of pediatric anemia and poor dietary quality in Odisha, there is a need for immediate action to improving the delivery of these two interventions. While NIPI requires procurement and functioning supply systems as well as the ability of FLWs to reach children twice a week, IYCF counseling is an intervention that may be more readily implemented through ongoing contacts and already familiar to FLWs.

2. **Delivery of ENIs:** Two common delivery points for the ENIs were VHNDs, which are held once a month at the AWCs, and home visits. Many of the ENIs (e.g., IFA supplementation, distribution of food supplements, and growth monitoring) were delivered during VHNDs. For

ENIs delivered during VHNDs, while exposure was very high among those in attendance, overall coverage appears limited. Only 59 percent of mothers reported attending VHNDs. Thus, strategies to increase participation in VHND so as to leverage its use as a platform for delivering ENIs need to be developed and put in place.

Exposure to ENIs at home was low. While nearly 90 percent of mothers reported being visited by FLWs in the last 3 months, less than a third reported receiving counseling on IYCF. Thus, the lack of home visits was not a constraining factor. There could be multiple reasons for low exposure to counseling at home, such as lack of time or incentives to provide the service. Given that counseling may be more time intensive than other interventions, FLWs with heavy workloads are likely to face time constraints and to overlook counseling during home visits.

In the case of ASHAs, home visits for newborns, which involve a set of services including BF counseling, are incentivized. However, while home visits are taking place, counseling does not appear to receive adequate attention. It is likely that ASHAs may be focusing on services that require home visits but are incentivized. Mechanisms to improve counseling during home visits should be explored and implemented, such as the use of specific job aids or reminders to FLWs using mobile phones. This activity requires careful monitoring and repeated reinforcement during monthly review meetings. Key reasons for missed opportunities should be identified and addressed for each cadre of FLWs.

3. **Coordination in delivering ENIs:** Overall, we found positive results on coordination among FLWs. Nearly all of the FLWs reported that they always coordinated to deliver the interventions and usually planned and implemented them together. For IFA supplementation of pregnant women, vitamin A supplementation, provision of food supplements, growth monitoring/screening for treatment of severely malnourished children, FLWs were aware of their roles and responsibilities. These results largely mirrored currently available guidelines for FLWs related to delivering these interventions. However, for IYCF counseling and pediatric IFA supplementation, FLWs were less clear about who is primarily responsible and their roles in delivering the interventions. These findings were also reflected in the gap of exposure to these ENIs, as discussed above.

4. **Frontline worker training and knowledge and implications for the delivery of ENIs:** While nearly all of the FLWs reported receiving job training, their exposure to training topics was variable. For example, most AWWs, ASHAs, and ANMs were trained on ANC, but less than 10 percent of the FLWs were trained on pediatric anemia and administration of iron tablets. Among the FLWs, more AWWs and ASHAs reported receiving training on BF compared with ANMs, and more AWWs were trained on CF compared with ASHAs and ANMs. FLW knowledge of the ENIs may be indicative of training sufficiency and quality. Although most FLWs broadly identified correct information pertaining to the ENIs, some did not demonstrate adequate knowledge of key CF practices, for instance. As FLWs are a major source of information for mothers and variability of knowledge among FLWs could lead to conflicting information or misinformation, steps should be taken to harmonize messages and strengthen FLW knowledge and skills, to improve counseling and communication between FLWs and beneficiaries.

Our study elucidated the state of service delivery and use and highlighted some small strategic steps that could help close the gap in the exposure to ENIs. However, to achieve and sustain intended maternal and child health and nutrition outcomes, underlying household and community-level determinants, such as poverty, food insecurity, and lack of proper water and sanitation facilities, also need to be considered and addressed to support the benefits of nutrition interventions.

STUDY LIMITATIONS

There are limitations to our study. We examined aspects of only ten select ENIs: counseling on maternal nutrition and care, IFA supplementation, and food supplementation during pregnancy; counseling on BF and food supplementation during the first 6 months after birth; and counseling on CF, vitamin A supplementation, pediatric IFA supplementation, food supplementation, and growth monitoring/screening for SAM from 6 months to 2 years after birth. This study does not capture the full extent of delivery of and exposure to certain interventions. For example, we assessed whether children were measured as part of growth monitoring, specifically as a screening measure for SAM, but we did not include assessments of referrals and treatment, which are difficult to capture in a cross-sectional study. We also did not study supply-chain constraints to delivering interventions that involved products, such as IFA supplements, vaccines, and food supplements, or demand-side challenges, such as compliance with recommended dosage, adherence to vaccination schedules, and consumption of food supplements. Finally, we studied the conditions of service delivery and use in only three districts; therefore, our findings are not representative of the entire state of Odisha.

PROGRAM AND POLICY RECOMMENDATIONS

Based on our study findings, several priority actions to improve services for nutrition in Odisha include:

1. Identify and address the major supply- and demand-side constraints to participation in VHNDs. AWWs and ASHAs should reach out to beneficiaries prior to the VHND and remind them to attend, and should follow up with beneficiaries who have not attended the VHND and deliver appropriate services during home visits.
2. Identify and address the reasons for missed opportunities for IYCF counseling during home visits, to close the service delivery gap. Supervisors should review and discuss FLWs' workload, capacities, and motivation and identify strategies to mitigate constraints. For example, supervisors should review FLWs' work responsibilities during monthly meetings and help them organize their schedules to incorporate sufficient time for home-based counseling. Checklists and job aids maybe useful to remind them about and reinforce counseling. For ASHAs, who receive performance-based incentives, the possibility of incentivizing IYCF counseling during home visits may be considered.
3. Ensure that all FLW cadres are clear about their roles and responsibilities, particularly for IYCF counseling and pediatric IFA supplementation. Examine the current guidelines on provision of these ENIs to ensure that they articulate clear roles, and invest in orienting all staff at the district, block, and frontline levels of the DWCD and DHFW on the contents of these guidelines.
4. Harmonize key health and nutrition messages, particularly related to IYCF, across the training materials used for all DWCD and DHFW staff. This would avoid any conflicting information or misinformation provided by different FLW cadres. Furthermore, given that counseling involves more than the provision of key messages and requires communication skills to address barriers to behavior change and negotiate appropriate practices, operational guidelines and training for FLWs should incorporate these critical components.
5. Purposively target and reach households in the lowest socioeconomic quintile for financial inclusion (e.g., access to bank accounts), particularly to reduce any impediments to participation in programs involving cash transfers, such as the *Mamata Scheme*.
6. Invest in simultaneous efforts to address the underlying determinants of malnutrition, such as poverty, food insecurity, low education, and poor sanitation and hygiene, which are essential to support the benefits of the nutrition interventions. This investment will require focusing on

multisectoral approaches that intervene at the same time, in the same place, for the same household, mother, and child.

7. Build in mechanisms, such as improved monitoring and operations research, to assess and track the progress of service delivery and exposure to the ENIs, in order to enhance learning about the process and take corrective actions.

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Annex: Additional Results Tables

TABLE A1. PERCEPTIONS OF HOUSEHOLD FOOD SECURITY AS DETERMINED BY THE HOUSEHOLD FOOD INSECURITY ACCESS SCALE

Perceptions	Jagatsinghpur N=397 %	Keonjhar N=391 %	Kalahandi N=399 %	All N=1187 %
Worry that your household would not have enough food	31.5	27.1	43.6	34.1
Household member(s) unable to eat preferred kinds of foods because of a lack of resources	36.0	38.6	46.9	40.5
Household member(s) ate just a few kinds of food day after day because of a lack of resources	22.9	25.6	30.8	26.5
Household member(s) ate food that they did not want to eat instead of other foods because of a lack of resources	22.7	22.0	30.8	25.2
Household member(s) ate a smaller meal than you felt they needed because there was not enough food	17.4	22.8	29.6	23.3
Household member(s) ate fewer meals in a day because there was not enough food	15.4	17.4	25.8	19.6
No food was in the household because of no resources	10.8	12.5	18.3	13.9
Household member(s) went to sleep at night hungry because there was not enough food	9.3	12.8	14.3	12.1
Household member(s) did not eat anything for a whole day because there was not enough food	8.8	9.7	14.8	11.1

TABLE A2. *ANGANWADI* WORKER REPORT OF EXPOSURE TO TOPICS DURING TRAINING

Indicators	Jagatsighpur	Keonjhar	Kalahandi	All
	N=100	N=100	N=99	N=299
Anganwadi workers received training (%)	98.0	99.0	99.0	93.6
Training topics:	%	%	%	%
Immunization	25.5	39.4	27.3	30.7
Recording weight and height	70.4	71.7	59.6	67.2
Antenatal care	59.2	65.7	64.7	63.2
Breastfeeding	46.9	43.4	48.5	46.3
Complementary feeding	60.2	43.4	46.5	50.0
Hygienic handling of complementary foods	51.0	42.4	42.4	45.3
Pediatric anemia and iron tablets for children	6.1	14.1	10.1	10.1
Iron tablets for adolescent girls	17.4	20.2	14.1	17.2
Take-home ration	7.1	12.1	11.1	10.1
Vitamin A dose	4.1	8.1	2.0	4.7
Diarrhea management	9.2	16.2	15.2	13.5
Severe acute malnutrition management	8.2	30.3	18.2	18.9
Intestinal parasites and deworming	4.1	11.1	5.1	6.8
Malaria management and prevention	21.4	20.2	27.3	23.0
Pregnancy care	33.7	32.3	34.3	33.5
Family planning counseling/service provision	5.1	18.2	14.1	12.5
Advice about sending children to school/*anganwadi* center	72.5	63.6	70.7	68.9
Maintaining registers	39.8	50.5	39.4	43.2
Village Health and Nutrition Days	9.2	8.1	3.0	6.8
Childhood illnesses	3.1	5.1	9.1	5.7
Adolescent girls' health, hygiene, and sanitation	27.6	21.2	21.2	23.3

TABLE A3. ACCREDITED SOCIAL HEALTH ACTIVIST REPORT OF EXPOSURE TO TOPICS DURING TRAINING

	Jagatsighpur	Keonjhar	Kalahandi	All
	N=96	N=97	N=96	N=289
Accredited Social Health Activists received training (%)	97.9	100.0	100.0	99.3
Training topics:	%	%	%	%
Immunization	37.2	35.1	31.3	34.5
Recording weight and height	29.8	35.1	30.2	31.7
Antenatal care	80.9	77.3	70.8	76.3
Breastfeeding	54.3	30.9	42.7	42.5
Complementary feeding	40.4	22.7	31.3	31.4
Hygienic handling of complementary foods	29.8	17.5	31.3	26.1
Pediatric anemia and iron tablets for children	3.2	9.3	15.6	9.4
Iron tablets for adolescent girls	3.2	11.3	5.2	6.6
Take-home ration	0.0	0.0	0.0	0.0
Vitamin A dose	2.1	2.1	1.0	1.7
Diarrhea management	17.0	20.6	18.8	18.8
Severe acute malnutrition management	8.5	12.4	13.5	11.5
Intestinal parasites and deworming	3.2	4.1	3.1	3.5
Malaria management and prevention	21.3	32.0	30.2	27.9
Pregnancy care	41.5	42.3	42.7	42.2
Family planning counseling/service provision	21.3	29.9	21.9	24.4
Advice about sending children to school/*anganwadi* center	24.5	30.9	27.1	27.5
Maintaining registers	14.9	21.7	8.3	15.0
Village Health and Nutrition Days	34.0	32.0	31.3	32.4
Childhood illnesses	0.0	4.1	1.0	1.7
Adolescent girls' health, hygiene, and sanitation	4.3	4.1	2.1	3.5

TABLE A4. AUXILIARY NURSE MIDWIFE REPORT OF EXPOSURE TO TOPICS DURING TRAINING

	Jagatsighpur	Keonjhar	Kalahandi	All
	N=55	N=61	N=55	N=171
Auxiliary Nurse Midwife received training (%)	100.0	100.0	100.0	100.0
Training topics:	%	%	%	%
Immunization	58.2	63.9	72.7	64.9
Recording weight and height	20.0	21.3	30.9	24.0
Antenatal care	56.4	67.2	65.5	63.2
Safe abortion	27.3	21.3	34.6	27.5
Delivering a child	30.9	32.8	30.9	31.6
Newborn care	36.4	52.5	49.1	46.2
Breastfeeding	21.8	26.2	25.5	24.6
Complementary feeding	23.6	8.2	29.1	19.9
Hygienic handling of complementary foods	21.8	13.1	18.2	17.5
Pediatric anemia and iron tablets for children	5.5	11.5	9.1	8.8
ICDS functions	7.3	3.3	5.5	5.3
Vitamin A dose	0.0	9.8	1.8	4.1
Diarrhea management	21.8	19.7	23.6	21.6
Severe acute malnutrition management	1.8	9.8	12.7	8.2
Intestinal parasites and deworming	9.1	4.9	7.3	7.0
Malaria management and prevention	23.6	27.9	23.6	25.2
Pregnancy care	20.0	31.2	30.9	27.5
Family planning	21.8	18.0	10.9	17.0
Village Health and Nutrition Day	3.6	4.9	5.5	4.7
Childhood illnesses	3.6	1.6	12.7	5.8
Adolescent girls' health, hygiene, and sanitation	29.1	8.2	9.1	15.2

TABLE A5. *ANGANWADI* WORKER REPORT OF AWARENESS OF AND CONTACT WITH SUPERVISOR

Indicators	Jagatsinghpur N=100	Keonjhar N=100	Kalahandi N=97	All N=295
AWW identifies Lady Supervisor as her supervisor (%)	98.0	98.0	99.0	98.3
AWW received a visit from her immediate supervisor (days) (Mean ± SD)	31.1 ± 20.3	38.5 ± 35.4	40.3 ± 28.3	36.5 ± 28.8

TABLE A6. ACCREDITED SOCIAL HEALTH ACTIVIST REPORT OF AWARENESS OF AND CONTACT WITH SUPERVISOR

Indicators	Jagatsinghpur N=96	Keonjhar N=97	Kalahandi N=96	All N=289
ASHA identifies ANM as her supervisor (%)	29.2	21.7	20.8	23.9
ASHA identifies Lady Health Visitor as her supervisor (%)	54.2	51.6	66.7	57.4
ASHA received a visit from her immediate supervisor (days) (Mean ± SD)	19.8 ± 11.8	16.0 ± 12.4	17.3 ± 12.7	17.8 ± 12.4

TABLE A7. *ANGANWADI* WORKER KNOWLEDGE OF PREGNANCY CARE AND INFANT AND YOUNG CHILD FEEDING AND HEALTH PRACTICES

Knowledge topics	Jagatsinghpur N=100 %	Keonjhar N=100 %	Kalahandi N=99 %	All N=299 %
Care during pregnancy				
Consume a variety of foods	74.0	62.0	66.7	67.6
Consume more food than normal diet	35.0	39.0	35.4	36.5
Take at least 2 hours of rest during the day	76.0	81.0	80.8	79.3
Take iron and folic acid supplements	51.0	36.0	46.5	44.5
Breastfeeding				
Initiate breastfeeding immediately after birth	99.0	100.0	100.0	99.7
Mother should give colostrum to her baby	100.0	100.0	100.0	100.0
Babies under 6 months should not be given water if the weather is hot	100.0	98.0	100.0	99.3
To get enough breast milk, mother should				
Breastfeed more frequently	66.0	58.0	57.6	60.5
Give baby other liquids/foods	12.0	30.0	21.2	21.1
Drink more water	12.0	7.0	9.1	9.4
Eat more food	48.0	38.0	40.4	42.1
Eat food that increases milk production	38.0	32.0	43.4	37.8
Breastfeeding frequency				
Whenever the baby wants	46.0	60.0	47.5	51.2
When you see the baby is hungry	6.0	7.0	10.1	7.7
When the baby cries	62.0	53.0	56.6	57.2
If a mother has a young baby (less than 6 months) and needs to be away from her baby, what should the baby be fed when hungry?				
Mother's expressed breast milk	66.0	81.0	80.8	75.9
Cow's milk	27.0	14.0	15.2	18.7
Semolina/flour	10.0	6.0	4.0	6.7
Signs of baby's hunger				
Baby sucks his/her fingers	14.0	21.0	23.2	19.4
Baby becomes agitated	2.0	11.0	6.1	6.4
Baby looks for the breast	3.0	5.0	4.0	4.0
Baby cries	97.0	97.0	96.0	96.7
Breastfeeding problem-solving				
Mother with small breasts can produce enough milk	95.0	89.0	95.0	93.0
Mother who is not well fed can produce enough breast milk	33.0	53.0	33.3	39.8
Frequent breastfeeding during the night as well as the day increases milk production	100.0	86.0	93.9	93.3
Reason for overfull, hard, sore breasts is not breastfeeding often enough	65.0	65.0	62.6	64.2
Reason for overfull, hard, sore breasts is poor attachment	35.0	33.0	35.4	34.5
Stop breastfeeding a child under 6 months if mother becomes pregnant	24.0	24.0	33.3	27.1
Timing of introduction of foods at 6-8 months				
Water	100.0	100.0	99.0	99.7
Rice/bread	98.0	93.0	98.0	96.3
Daal	100.0	98.0	99.0	99.0
Green leafy vegetables	100.0	93.0	96.0	96.3
Vitamin A-rich vegetables	99.0	91.0	98.0	96.0
Fruit	97.0	91.0	96.0	94.7
Meat	18.0	16.0	21.2	18.4
Eggs	67.0	69.0	72.7	69.6
Other milk	68.0	72.0	73.7	71.2
Knowledge of introduction of foods (summative score of 9 items [0–9])	7.5	7.2	7.5	7.4
Reasons for children becoming malnourished				
They do not eat enough food/have poor appetite	17.0	35.0	27.3	26.4

Knowledge topics	Jagatsinghpur N=100 %	Keonjhar N=100 %	Kalahandi N=99 %	All N=299 %
They do not eat frequently	25.0	20.0	22.2	22.4
They are ill (e.g., diarrhea)	27.0	28.0	27.3	27.4
They were abruptly weaned	2.0	13.0	11.1	8.7
They are not fed affectionately	5.0	2.0	5.1	4.0
Quantity of food is Insufficient	63.0	51.0	58.6	57.5
Food is of poor quality/not balanced food	72.0	42.0	53.5	55.9
Determining if a child is undernourished				
Using a growth chart	50.0	46.0	53.5	49.8
Child looks too small	46.0	30.0	37.4	37.8
Child looks too thin	37.0	44.0	33.3	38.1
Child looks too fat	2.0	9.0	5.1	5.4
Child looks weak	84.0	73.0	81.8	79.6
If a child is malnourished, then AWW				
Gives the child medicine	33.0	19.0	26.3	26.1
Refers the child to health subcenter	22.0	33.0	24.2	26.4
Refers the child to hospital	47.0	35.0	57.6	46.5
Scolds the parents	9.0	10.0	9.1	9.4
Gives the parents nutritional advice/information	43.0	31.0	30.3	34.8
Registers the child for THR	2.0	2.0	4.0	2.7
Refers the child to ANM	3.0	8.0	1.0	4.0
Refers the child to ASHA	3.0	2.0	1.0	2.0
Refers the child to *pushtikor diwas*	42.0	46.0	37.4	41.8
Physical signs of anemia (children <24 months)				
Unusual paleness (pallor) of the skin of the soles and palms	96.0	94.0	98.0	96.0
Treatment for anemia (children <24 months)				
Daily dose of one iron tablet	82.0	75.0	88.9	81.9
One deworming tablet once in 6 months	3.0	10.0	8.1	7.0
Feed iron-rich foods	55.0	42.0	48.5	48.5
What should a mother do when her child under 2 years has diarrhea?				
Give oral rehydration solution (ORS)/home-prepared ORS	98.0	96.0	91.9	95.3
Feed less than usual	7.0	3.0	8.1	6.0
Continue breastfeeding	63.0	52.0	44.4	53.2
Breastfeed more often	9.0	8.0	6.1	7.7
Give syrups	11.0	24.0	30.3	21.7
Give traditional medicine	21.0	8.0	17.2	15.4
Give treated water	22.0	13.0	13.1	16.1
Give carrot juice or rice water	8.0	8.0	18.2	11.4
What should a mother do AFTER her child has recovered from diarrhea or another illness?				
Feed less than usual	23.0	11.0	21.2	18.4
Feed as much food as usual	52.0	67.0	70.7	63.2
Feed more than usual	8.0	11.0	4.0	7.7
Feed an extra meal every day for 2 weeks	0.0	6.0	4.0	3.3
Give more liquids than usual	45.0	33.0	38.4	38.8
Continue breastfeeding	73.0	42.0	63.6	59.5

TABLE A8. ACCREDITED SOCIAL HEALTH ACTIVIST KNOWLEDGE OF PREGNANCY CARE AND INFANT AND YOUNG CHILD FEEDING AND HEALTH PRACTICES

Knowledge topics	Jagatsinghpur N=96 %	Keonjhar N=97 %	Kalahandi N=96 %	All N=289 %
Care during pregnancy				
Consume a variety of foods	74.0	61.9	71.9	69.2
Consume more food than normal diet	40.6	29.9	30.2	33.6
Take at least 2 hours of rest during the day	67.7	69.1	74.0	70.2
Take iron and folic acid supplements	39.6	33.0	36.5	36.3
Breastfeeding				
Initiate breastfeeding immediately after birth	99.0	100.0	100.0	99.7
Mother should give her colostrum to her baby	100.0	100.0	100.0	100.0
Babies under 6 months should not be given water if the weather is hot	100.0	98.0	100.0	99.3
To get enough breast milk, mother should				
Breastfeed more frequently	77.1	61.9	64.6	67.8
Give baby other liquids/foods	9.4	18.6	14.6	14.2
Drink more water	16.7	12.4	9.4	12.8
Eat more food	44.8	41.2	45.8	43.9
Eat food that increases milk production	34.4	38.1	41.7	38.1
Breastfeeding frequency				
Whenever the baby wants	46.9	61.9	42.7	50.5
When you see the baby is hungry	6.3	6.2	10.4	7.6
When the baby cries	58.3	52.6	62.5	57.8
If a mother has a young baby (less than 6 months) and needs to be away from her baby, what should the baby be fed when hungry?				
Mother's expressed breast milk	62.5	67.0	71.9	67.1
Cow's milk	29.2	19.6	15.6	21.5
Semolina/flour	8.3	6.2	8.3	7.6
Signs of baby's hunger				
Baby sucks his/her fingers	15.6	22.7	20.8	19.7
Baby becomes agitated	1.0	15.5	8.3	8.3
Baby looks for the breast	3.1	1.0	4.2	2.8
Baby cries	100.0	97.9	92.7	96.9
Breastfeeding problem-solving				
Mother with small breasts can produce enough milk	96.9	81.4	93.8	90.7
Mother who is not well fed can produce enough breast milk	39.6	42.3	38.5	40.1
Frequent breastfeeding during the night as well as the day increases milk production	95.8	83.5	89.6	89.6
Reason for overfull, hard, sore breasts is not breastfeeding often enough	61.5	66.0	59.4	62.3
Reason for overfull, hard, sore breasts is poor attachment	38.5	34.0	40.6	37.7
Stop breastfeeding a child under 6 months if mother becomes pregnant	21.9	19.6	30.2	23.9
Timing of introduction of foods at 6-8 months				
Water	100.0	99.0	100.0	99.7
Rice/bread	99.0	99.0	99.0	99.0
Daal	100.0	100.0	100.0	100.0
Green leafy vegetables	97.9	97.9	99.0	98.3
Vitamin A-rich vegetables	99.0	96.9	97.9	97.9
Fruit	100.0	95.9	94.8	96.9
Meat	19.8	34.0	34.4	29.4
Eggs	67.7	77.3	76.0	73.7
Other milk	67.7	77.3	76.0	73.7
Knowledge of introduction of foods (summative score of 9 items [0–9])	7.5	7.8	7.8	7.7

Knowledge topics	Jagatsinghpur N=96 %	Keonjhar N=97 %	Kalahandi N=96 %	All N=289 %
Reasons for children becoming malnourished				
They do not eat enough food/have poor appetite	18.8	38.1	28.1	28.4
They do not eat frequently	26.0	13.4	15.6	18.3
They are Illness (e.g., diarrhea)	31.3	34.0	27.1	30.8
They were abruptly weaned	5.2	14.4	6.3	8.7
They are not fed with affection	3.1	7.2	4.2	4.8
Quantity of food is Insufficient	64.6	49.5	62.5	58.8
food is of poor quality/not balanced food	64.6	54.6	54.2	57.8
Determining if a child is undernourished				
Using a growth chart	43.8	39.2	33.3	38.8
Child looks too small	46.9	16.5	37.5	33.6
Child looks too thin	39.6	41.2	36.5	39.1
Child looks too fat	3.1	10.3	7.3	6.9
Child looks weak	78.1	78.4	79.2	78.6
If a child is malnourished, then AWW				
Gives the child medicine	25.0	15.5	33.3	24.6
Refers the child to health subcenter	19.8	29.9	21.9	23.9
Refers the child to hospital	50.0	43.3	57.3	50.2
Scolds the parents	10.4	10.3	9.4	10.0
Gives the parents nutritional advice/information	35.4	25.8	28.1	29.8
Registers the child for THR	0.0	2.1	2.1	1.4
Refers the child to ANM	0.0	6.2	2.1	2.8
Refers the child to ASHA	38.5	32.0	36.5	35.6
Refers the child to *pushtikor diwas*				
Physical signs of anemia (children <24 months)				
Unusual paleness (pallor) of the skin of the soles and palms	95.8	92.8	94.8	94.5
Treatment for anemia (children <24 months)				
Daily dose of one iron tablet	85.4	71.1	80.2	78.9
One deworming tablet once in six months	4.2	10.3	9.4	8.0
Feed iron-rich foods	47.9	42.3	35.4	41.9
What should a mother do when her child under 2 years has diarrhea?				
Give ORS/home-prepared ORS	98.0	96.0	91.9	95.3
Feed less than usual	7.0	3.0	8.1	6.0
Continue breastfeeding	63.0	52.0	44.4	53.2
Breastfeed more often	9.0	8.0	6.1	7.7
Give syrups	11.0	24.0	30.3	21.7
Give traditional medicine	21.0	8.0	17.2	15.4
Give treated water	22.0	13.0	13.1	16.1
Give carrot juice or rice water	8.0	8.0	18.2	11.4
What should a mother do AFTER her child has recovered from diarrhea or another illness?				
Feed less than usual	20.8	14.4	16.7	17.3
Feed as much food as usual	61.5	67.0	71.9	66.8
Feed more than usual	3.1	11.3	7.3	7.3
Feed an extra meal every day for 2 weeks	2.1	6.2	2.1	3.5
Give more liquids than usual	43.8	35.1	35.4	38.1
Continue breastfeeding	64.6	47.4	68.8	60.2

TABLE A9. AUXILIARY NURSE MIDWIFE KNOWLEDGE OF PREGNANCY CARE AND INFANT AND YOUNG CHILD FEEDING AND HEALTH PRACTICES

Knowledge topics	Jagatsinghpur N=55 %	Keonjhar N=61 %	Kalahandi N=55 %	All N=171 %
Pregnant woman care for woman's and child's health				
Consume a variety of foods	69.1	72.1	74.6	71.9
Consume more food than normal diet	38.2	34.4	32.7	35.1
Take at least 2 hours of rest during the day	70.9	75.4	69.1	71.9
Take iron and folic acid supplements	49.1	39.3	45.5	44.4
Breastfeeding				
Initiate breastfeeding immediately after birth	81.8	93.4	92.7	89.5
Mother should give her colostrum to her baby	98.2	96.7	100.0	98.3
Babies under 6 months should not be given water if the weather is hot	90.9	91.8	85.4	89.5
To get enough breast milk, mother should				
Breastfeed more frequently	78.2	67.2	83.6	76.0
Give baby other liquids/foods	9.1	21.3	10.9	14.0
Drink more water	7.3	13.1	7.3	9.4
Eat more food	54.6	44.3	50.9	49.7
Eat food that increases milk production	40.0	29.5	36.4	35.1
Breastfeeding frequency				
Whenever the baby wants	45.5	68.9	49.1	55.0
When you see the baby is hungry	5.5	4.9	14.6	8.2
When the baby cries	60.0	57.4	67.3	61.4
If a mother has a young baby (less than 6 months) and needs to be away from her baby, what should the baby be fed when hungry?				
Mother's expressed breast milk	65.5	70.5	70.9	69.0
Cow's milk	32.7	26.2	25.5	28.1
Semolina/flour	12.7	18.0	9.1	13.5
Signs of baby's hunger				
Baby sucks his/her fingers	21.8	39.3	36.4	32.8
Baby becomes agitated	1.8	3.3	5.5	3.5
Baby looks for the breast	1.8	8.2	1.8	4.1
Baby cries	98.2	98.4	94.6	97.1
Breastfeeding problem-solving				
Mother with small breasts can produce enough milk	90.9	96.7	100.0	95.9
Mother who is not well fed can produce enough breast milk	38.2	50.8	49.1	46.2
Frequent breastfeeding during the night as well as the day increases milk production	94.6	85.3	96.4	91.8
Reason for overfull, hard, sore breasts is not breastfeeding often enough	69.1	77.1	76.4	74.3
Reason for overfull, hard, sore breasts is poor attachment	30.9	23.0	23.6	25.7
Stop breastfeeding a child under 6 months if mother becomes pregnant	20.0	26.2	21.8	22.8
Timing of introduction of foods at 6-8 months	100.0	100.0	100.0	100.0
Water	94.6	91.8	100.0	95.3
Rice/bread	100.0	100.0	98.2	99.4
Daal	100.0	93.4	96.4	96.5
Green leafy vegetables	98.2	88.5	98.2	94.7
Vitamin A-rich vegetables	94.6	88.5	96.4	93.0
Fruit	16.4	36.1	40.0	31.0
Meat	58.2	73.8	74.6	69.0
Eggs	58.2	70.5	74.6	67.8
Other milk				
Knowledge of introduction of foods (summative score of 9 items [0-9])	7.2	7.4	7.8	7.5

Knowledge topics	Jagatsinghpur N=55 %	Keonjhar N=61 %	Kalahandi N=55 %	All N=171 %
Reasons for children becoming malnourished				
They do not eat enough food/poor appetite	14.6	39.3	30.9	28.7
They do not eat frequently	16.4	9.8	23.6	16.4
They are ill (e.g., diarrhea)	20.0	36.1	23.6	26.9
They were abruptly weaned	5.5	13.1	10.9	9.9
They are not fed affectionately	1.8	4.9	5.5	4.1
Quantity of food is Insufficient	63.6	50.8	58.2	57.3
Food is of poor quality/not balanced	76.4	57.4	60.0	64.3
Determining if a child is undernourished				
Using a growth chart	54.6	60.7	47.3	54.4
Child looks too small	43.6	24.6	47.3	38.0
Child looks too thin	29.1	42.6	41.8	38.0
Child looks too fat	5.5	11.5	7.3	8.2
Child looks weak	81.8	80.3	85.5	82.5
If a child is malnourished, then AWW				
Gives the child medicine	34.6	26.2	38.2	32.8
Refers the child to health subcenter	20.0	29.5	32.7	27.5
Refers the child to hospital	50.9	42.6	52.7	48.5
Scolds the parents	7.3	9.8	9.1	8.8
Gives the parents nutritional advice/information	41.8	34.4	34.6	36.8
Registers the child for THR	1.8	3.3	1.8	2.3
Refers the child to ANM	0.0	3.3	1.8	1.8
Refers the child to ASHA	45.5	49.2	38.2	44.4
Refers the child to *pushtikor diwas*	0.0	0.0	0.0	0.0
Physical signs of anemia (children <24 months)				
Unusual paleness (pallor) of the skin of the soles and palms	98.2	96.7	98.2	97.7
Treatment for anemia (children <24 months)				
Daily dose of one iron tablet	74.6	67.2	76.4	72.5
One deworming tablet once in 6 months	0.0	16.4	7.3	8.2
Feed iron-rich foods	47.3	47.5	56.4	50.3
What should a mother do when her child under 2 years has diarrhea?				
Give ORS/home-prepared ORS	94.6	90.2	94.6	93.0
Feed less than usual	1.8	11.5	9.1	7.6
Continue breastfeeding	74.6	59.0	63.6	65.5
Breastfeed more often	3.6	3.3	7.3	4.7
Give syrups	29.1	29.5	38.2	32.2
Give traditional medicine	21.8	9.8	14.6	15.2
Give treated water	20.0	23.0	9.1	17.5
Give carrot juice or rice water	10.9	6.6	7.3	8.2
What should a mother do AFTER her child has recovered from diarrhea or another illness?				
Feed less than usual	10.9	14.8	9.1	11.7
Feed as much food as usual	36.4	39.3	43.6	39.8
Feed more than usual	45.5	49.2	41.8	45.6
Feed an extra meal every day for 2 weeks	1.8	6.6	1.8	3.5
Give more liquids than usual	40.0	19.8	9.1	22.8
Continue breastfeeding	61.8	57.4	70.9	63.2

TABLE A10. CONDITIONALITIES FOR MEETING EACH OF THE FOUR INSTALLMENTS OF THE ODISHA GOVERNMENT'S CONDITIONAL CASH TRANSFER SCHEME (*MAMATA SCHEME*)

Installment 1: End of the second trimester (Rs. 1,500)	Installment 2: Three months after delivery (Rs. 1,500)
i. Registered pregnancy at the anganwadi center (AWC)/mini AWC. ii. Received at least one antenatal checkup (out of an optimal three). iii. Received IFA tablets. iv. Received at least one anti-tetanus toxoid vaccination (out of an optimal two). v. Received at least one counseling session at the AWC/Village Health and Nutrition Day (VHND).	i. Childbirth is registered. ii. Child has received bacille Calmette-Guerin vaccination for tuberculosis. iii. Child has received Polio 1 and diphtheria (DPT)-1 vaccination. iv. Child has received Polio 2 and DPT-2 vaccination. v. Child has been weighed at least twice after birth (out of an optimal four times, including weighing at birth). vi. After delivery, mother has attended at least two IYCF counseling sessions at the AWC/ VHND/home visit (out of an optimal three sessions), as certified by the anganwadi worker.
Installment 3: After the infant completes 6 months (Rs. 1,000)	**Installment 4: After the infant completes 9 months (Rs. 1,000)**
i. Child has been exclusively breastfed for the first 6 months. ii. Child has been introduced to complementary foods on completion of 6 months. iii. Child has received Polio 3 and DPT-3 vaccination. iv. Child has been weighed at least twice between age 3 and 6 months (out of an optimal three times). v. Mother has attended at least two IYCF counseling sessions between 3 and 6 months of lactation, at the AWC/VHND/home visit (out of optimal 3).	i. Measles vaccine has been given before the child is 1 year old. ii. Vitamin A first dose has been given before the child is 1 year old. iii. Age-appropriate complementary feeding has started and is continuing. iv. Child is weighed at least two times between 6 and 9 months of age.

TABLE A11. MATERNAL AWARENESS OF HEALTH AND NUTRITION MESSAGES (CHILDREN 0–24 MONTHS)

	Jagatsinghpur	Keonjhar	Kalahandi	All
Health and nutrition messages				
Breastfeeding messages (children 0-6 months)	**N=170**	**N=184**	**N=194**	**N=548**
	%	**%**	**%**	**%**
Put baby to breast immediately after birth	98.2	90.2	91.7	93.2
Do not put anything into the child's mouth before breast milk or colostrum (no prelacteals)	98.8	88.0	91.7	92.7
Feed only breast milk up to 6 months	98.8	86.9	91.7	92.3
Do not give the child any water or other liquids up to 6 months	96.4	82.1	86.6	88.1
Complementary feeding messages (children 6–24 months)	**N= 227**	**N=207**	**N=205**	**N=639**
	%	**%**	**%**	**%**
Feed child semi-solid and solid family foods from 6 months	94.3	81.6	88.3	88.3
Feed child at least three times a day	88.9	69.1	80.9	79.9
Feed eggs, meat, other animal source food to children older than 6 months	66.5	47.8	53.2	56.2
Wash hands with water and soap before food preparation or feeding the child	90.3	68.1	84.8	81.4
Feed child during illness	73.1	47.8	50.2	57.6
Learn about Vitamin A doses	64.7	42.0	51.2	53.0
Give IFA tablets to children under 2 years	35.5	26.6	25.3	29.1
Other messages (children 0-24 months)	**N=397**	**N=391**	**N=399**	**N=1187**
	%	**%**	**%**	**%**
Give ORS or ORS and zinc supplements during diarrhea	73.5	51.4	62.6	62.6
Treat severe acute malnutrition	45.8	30.7	27.6	34.7
Learn about treating intestinal parasites and deworming	54.9	39.1	46.6	46.9

TABLE A12. MATERNAL KNOWLEDGE OF INTRODUCTION OF FOODS TO CHILDREN 6–8 MONTHS OLD

Foods	Jagatsinghpur N=397	Keonjhar N=391	Kalahandi N=399	All N=1187
	(% yes)			
Water	79.4	65.5	71.4	72.1
Nonbreast milk liquids (sugar/glucose water, tea, fruit juice, etc.)	95.5	78.8	81.5	85.3
Other milk (cow/goat/buffalo/powder)	93.5	76.0	80.2	83.2
Gruels (wheat/rice)	78.8	77.2	82.0	79.4
Semi-solid foods (soft rice, khichuri, mashed potato, ripe banana, other mashed family foods etc.)	75.1	73.2	75.7	74.6
Solid foods (rice, wheat, puffed/pressed rice, etc.)	65.7	66.0	69.9	67.2
Fish	20.2	21.2	18.1	19.8
Meat (chicken, mutton, beef, etc.)	16.9	18.7	14.3	16.6
Eggs	28.5	39.1	31.3	32.9
Legumes (pulse, peas, etc.)	55.9	54.5	57.1	55.9
Leafy green vegetables	53.4	56.3	58.2	55.9
Snacks (chanachur, chips)	44.1	45.8	42.4	44.1

TABLE A13. MATERNAL SOURCES OF NUTRITION AND HEALTH MESSAGES (CHILDREN 0–24 MONTHS)

Source of information	Jagatisinghpur	Keonjhar	Kalahandi	All
Breastfeeding messages (children 0–6 months)				
Message: Put the baby to breast immediately after birth	**N=164**	**N=163**	**N=172**	**N=499**
	%	**%**	**%**	**%**
Doctor	48.2	21.5	27.3	32.3
Nurse	9.8	15.3	16.3	13.8
ANM	38.4	53.4	50.6	47.5
AWW	60.4	31.3	48.3	46.7
ASHA	67.1	66.3	65.1	66.1
Message: Do not put anything into the child's mouth before breast milk or colostrum (no prelacteals)	**N=161**	**N=152**	**N=172**	**N=485**
	%	**%**	**%**	**%**
Doctor	39.1	19.1	19.8	25.9
Nurse	11.8	11.8	13.4	12.4
ANM	41.6	61.2	52.9	51.7
AWW	55.9	34.8	47.7	46.4
ASHA	68.3	62.5	68.0	66.4
Message: Feed the child only breast milk up to 6 months	**N=162**	**N=155**	**N=173**	**N=490**
	%	**%**	**%**	**%**
Doctor	39.5	14.2	15.03	22.8
Nurse	6.8	10.9	6.9	8.2
ANM	46.3	61.9	57.2	55.10
AWW	60.5	36.1	60.1	52.6
ASHA	69.8	63.2	73.9	69.2
Message: Do not give the child any water or other liquids up to 6 months	**N=155**	**N=145**	**N=160**	**N=460**
	%	**%**	**%**	**%**
Doctor	30.3	13.8	18.7	21.1
Nurse	5.2	8.3	6.8	6.7
ANM	45.2	61.4	55.6	53.9
AWW	67.7	41.4	61.8	57.4
ASHA	71.6	66.2	71.2	69.7
Complementary feeding messages (children 6–24 months)				
Message: Feed the child other semi-solid and solid family foods from 6 months	**N=206**	**N=162**	**N=177**	**N=545**
	%	**%**	**%**	**%**
Doctor	31.1	9.7	11.3	18.2
Nurse	4.7	9.3	4.5	5.9
ANM	43.2	66.0	58.2	54.9
AWW	70.4	49.4	64.4	62.2
ASHA	75.7	63.6	70.6	70.5
Message: Feed eggs, meat, other animal source food to children older than 6 months	**N=134**	**N=92**	**N=102**	**N=328**
	%	**%**	**%**	**%**
Doctor	34.3	7.6	9.8	19.2
Nurse	5.2	5.4	4.9	5.2
ANM	36.6	63.0	62.7	52.1
AWW	62.7	50.0	64.7	59.7

Source of information	Jagatisinghpur	Keonjhar	Kalahandi	All
ASHA	70.1	66.3	66.7	67.9
Message: Feed a child at least three times a day	**N=184**	**N=131**	**N=156**	**N=471**
	%	**%**	**%**	**%**
Doctor	27.7	6.1	9.6	15.7
Nurse	3.2	10.6	3.8	5.5
ANM	45.6	68.7	58.3	56.3
AWW	73.4	50.4	63.5	63.7
ASHA	75.0	64.1	68.6	69.8
Message: Wash hands with water and soap before food preparation or feeding the child	**N=198**	**N=135**	**N=167**	**N=500**
	%	**%**	**%**	**%**
Doctor	33.8	5.9	11.9	19.0
Nurse	7.1	2.2	2.9	4.4
ANM	41.9	68.1	59.3	54.8
AWW	64.1	43.7	47.9	53.2
ASHA	68.7	58.5	61.1	63.4
Message: Learn how to feed your child when he/she is sick	**N=164**	**N=93**	**N=98**	**N=355**
	%	**%**	**%**	**%**
Doctor	34.1	10.7	7.1	20.6
Nurse	8.5	2.1	4.0	5.6
ANM	47.6	68.8	65.3	58.0
AWW	62.8	45.2	51.0	54.9
ASHA	66.5	63.4	60.2	63.9
Message: Give IFA tablets to children under 2 years	**N=89**	**N=59**	**N=53**	**N=201**
	%	**%**	**%**	**%**
Doctor	28.1	6.8	13.2	17.9
Nurse	3.4	1.7	1.8	2.5
ANM	49.4	72.8	67.9	61.2
AWW	58.4	38.9	60.4	53.2
ASHA	64.0	69.5	64.1	65.7
Message: Give the child Vitamin A doses	**N=145**	**N=84**	**N=105**	**N=334**
	%	**%**	**%**	**%**
Doctor	26.2	2.4	6.7	14.1
Nurse	4.1	1.2	1.9	2.7
ANM	42.7	72.6	54.3	53.9
AWW	55.2	46.4	40.9	48.5
ASHA	67.6	57.1	66.7	64.7
		Other messages (children 0-24 months)		
Message: Give the child ORS or ORS and zinc supplements during diarrhea	**N=278**	**N=194**	**N=234**	**N=706**
	%	**%**	**%**	**%**
Doctor	33.4	10.8	17.5	21.9
Nurse	6.8	3.1	3.4	4.7
ANM	48.9	63.4	60.3	56.7
AWW	65.1	38.1	52.9	53.7
ASHA	66.5	69.6	67.1	67.6

Source of information	Jagatisinghpur	Keonjhar	Kalahandi	All
Message: Learn about treating intestinal parasites and deworming	**N=194**	**N=145**	**N=170**	**N=509**
	%	**%**	**%**	**%**
Doctor	29.9	6.2	21.2	20.2
Nurse	9.8	4.1	0.5	5.1
ANM	56.2	58.6	67.6	60.7
AWW	57.2	35.9	45.3	47.1
ASHA	59.8	71.0	68.2	65.8
Message: Treat severe acute malnutrition	**N=178**	**N=120**	**N=109**	**N=407**
	%	**%**	**%**	**%**
Doctor	31.5	10.0	7.3	18.7
Nurse	8.9	3.3	4.6	6.1
ANM	65.7	72.5	76.1	70.5
AWW	57.9	42.5	67.9	56.0
ASHA	54.5	61.7	68.8	60.4

TABLE A14. FRONTLINE WORKERS' REPORT OF SERVICES PROVIDED DURING VILLAGE HEALTH AND NUTRITION DAYS/*MAMATA DIWAS*

	Anganwadi worker				Accredited social health activist				Auxiliary nurse midwife			
	Jagatisinghpur	Keonjhar	Kalahandi	All	Jagatisinghpur	Keonjhar	Kalahandi	All	Jagatisinghpur	Keonjhar	Kalahandi	All
	N = 100	N = 100	N = 99	N = 299	N = 100	N = 100	N = 99	N = 299	N = 55	N = 61	N = 55	N = 171
Services						(%)						
Antenatal care	83.0	76.0	76.8	78.6	90.6	81.4	81.3	84.4	92.7	93.4	83.6	90.1
Pregnancy care	92.0	83.0	80.8	85.3	86.5	74.2	83.3	81.3	87.3	77.1	96.4	86.6
Breastfeeding counseling	76.0	55.0	53.5	61.5	70.8	52.6	56.3	59.9	76.4	57.4	61.8	64.9
Complementary feeding counseling	72.0	45.0	59.6	58.9	60.4	40.2	55.2	51.9	60.0	44.3	54.6	52.6
Counseling on hygienic handling of complementary foods	56.0	41.0	55.6	50.8	43.8	24.7	36.5	35.0	54.6	24.6	38.2	38.6
Immunization/vaccination	15.0	19.0	6.1	13.4	4.2	10.3	9.4	8.0	38.2	29.5	16.4	28.1
Provide iron tablets to children (6 months to 2 years)	3.0	6.0	7.1	5.4	0.0	6.2	4.2	3.5	1.8	9.8	5.5	5.8
Provide take-home ration	9.0	17.0	16.2	14.1	0.0	7.2	4.2	3.8	0.0	8.2	5.5	4.7
Provide vitamin A doses	2.0	8.0	7.1	5.7	2.1	4.1	5.2	3.8	7.3	19.7	7.3	11.7
Growth monitoring	66.0	61.0	63.6	63.6	63.5	49.5	61.5	58.1	56.4	55.7	61.8	57.9
Provide ORS	1.0	10.0	8.1	6.4	8.3	4.1	9.4	7.3	1.8	14.8	14.6	10.5
Counseling on severe acute malnutrition management	11.0	22.0	29.3	20.7	13.5	14.4	25.0	17.7	32.7	34.4	38.2	35.1
Provide deworming tablets	4.0	8.0	12.1	8.0	2.1	4.1	12.5	6.2	10.9	18.0	10.9	13.5
Educate about malaria management and prevention	54.0	33.0	50.5	45.8	63.5	21.7	47.9	44.3	58.2	37.7	47.3	47.4
Referral to *pushtikor diwas*	29.0	23.0	41.4	31.1	27.1	18.6	31.3	25.6	32.7	31.2	43.6	35.7
Provide iron tablets to adolescent girls	20.0	26.0	24.2	23.4	9.4	16.5	20.8	15.6	14.6	19.7	21.8	18.7
Family planning counseling and contraceptives	36.0	28.0	40.4	34.8	40.6	35.1	38.5	38.1	60.0	24.6	34.6	39.2
Advice about sending children to school/*anganwadi center*	7.0	11.0	6.1	8.0	1.0	2.1	2.1	1.7	3.6	11.5	1.8	5.8

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