

Delivering Essential Nutrition Interventions for Women in Tribal Pockets of Eastern India

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In India, despite provisions for tribal development, 32% of tribal women are chronically undernourished, as opposed to 23% among those not belonging to tribal households. Large-scale surveys and routine monitoring are currently deficient in measuring the nutrition status of women, especially tribal women. This study was undertaken to analyse the reach of various health-related schemes for tribal women in Chhattisgarh, Jharkhand, and Odisha. In the light of its findings, it is recommended that all national schemes should be reviewed through a tribal lens, as tribes remain outside the ambit of most nutrition safety nets. Proven measures like strengthening tribal development nodal agencies, motivational incentives to fieldworkers and organised community involvement, need to be scaled up.

Adequacy of women's nutrition before conception, during pregnancy and post-pregnancy is critical for reducing child stunting. Among chronically undernourished or stunted children, as high as 50% of impairment occurs before birth, in womb (Victora et al 2010; Sachdev 2012). In India, 42% of adolescent girls aged 15–19 years, who are or will soon be mothers, and 25% of women aged 20–29 years, who are most likely to be multiparous, are thin or have a body mass index (BMI) below 18.5 (IIPS 2016). Prevalence of thinness among tribal women at 32%, is 9% points higher than among non-tribal Indian women in 2015–16. The gap has just reduced by 2% points in a decade, that is, between 2005–06 and 2015–16 (IIPS and Macro International 2007; IIPS 2016).

There is global and national consensus on five essential nutrition interventions before, during and between pregnancies. These include interventions that address the immediate causes of undernutrition, pertaining to increasing nutrient intake and disease prevention (or nutrition-specific interventions), as well as the underlying and basic causes of undernutrition, such as household food insecurity and literacy (or nutrition-sensitive interventions). These interventions include: (i) improving the quantity of household food consumed and its nutrient quality, (ii) preventing and managing micronutrient deficiencies and anaemia, (iii) increasing women's access to health services and special care for the “most vulnerable,” (iv) increasing women's access to water and sanitation education and commodities, and (v) preventing extremely early, too many and very close pregnancies (Bhutta et al 2013; Nutrition Coalition 2010; Ruel et al 2013; Gillespie 1997).

There are 18 sub-interventions under these five interventions. The programmes, platforms and guidelines to deliver these essential nutrition interventions exist but their implementation is interrupted due to a lack of coordination across four to five vertical departments that are accountable for delivery of these interventions (Table 1, p 44). In addition to coordination issues, strategies to prevent childhood undernutrition focus on pregnancy and the first two years of children's lives, or the “1,000 days” period, and it needs to be recognised that substantial impact requires preventive action even before the first 1,000 days of life (Victora et al 2010).

Methods

This study was conducted from December 2013 to August 2014 and covered the three states of Chhattisgarh, Jharkhand and Odisha. The study had two components—(i) a secondary

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review to understand the status of women’s nutrition, coverage of essential nutrition interventions and relevant programmes, and (ii) a descriptive qualitative study to understand the reasons for variable performance on women’s nutrition across the study states, specifically the socially marginalised tribal women, and the enablers and barriers towards improving the coverage of essential nutrition interventions. As the National Family Health Survey-4 (NFHS-4) 2015–16 reports became available, the secondary review was updated to include data from the same.

Sampling: The sampling methodology for the descriptive qualitative study varied across states. In Chhattisgarh and Jharkhand, five districts with relatively better infrastructure and health systems were purposively selected, to understand the best-case scenario. In order to have representation of different social groups across the study districts, the study sample comprised tribal dominant blocks and comparator non-tribal dominant blocks in Jharkhand, while in Chhattisgarh only tribal dominant blocks were selected. Village selection was

based on its distance from block headquarters, as those being nearest, midway and farthest. In the case of multiple choices with respect to distance, the village with tribal dominant population was given preference in tribal blocks (Table 2).

In Odisha, six districts, three tribal dominant and three non-tribal dominant, were purposively selected. As social classification had already been applied at the district level, two blocks were randomly selected from each of the selected districts. Three villages were selected randomly from each block in Odisha.

Data collection: All recent data sources on demography, health and nutrition status, services and behaviours were

Table 2: Details of Study Sample across Chhattisgarh, Jharkhand and Odisha

	Chhattisgarh	Jharkhand	Odisha
Districts	5 (Bilaspur, Durg, Jagdalpur, Raipur, Surguja)	5 (Godda, Hazaribagh, Palamu, Ranchi, West Singhbhum)	6 (Angul, Ganjam, Jharsuguda, Koraput, Mayurbhanj, Nayagarh)
Blocks	10	10	12
Villages	30	30	36

Source: By authors, based on desk review.

Table 1: Five Essential Women’s Nutrition Interventions, Sub-interventions, Their Delivery Platforms and Availability of Guidelines

Intervention	Preconception	Pregnancy	Lactation	Primary Ministry (Programmes and Platforms)	Guidelines
Essential intervention 1: Improved food and nutrient intake (both in quantity and quality)					
1 Access to generalised household food ration (PDS)	√	√	√	Civil supplies (PDS–fair price shops)	√
2 Access to fortified supplementary foods – (ICDS)	√	√	√	MoWCD (ICDS–anganwadi centres)	√
3 Access to knowledge on local diet diversity and production, preventing food adulteration	√	√	√	MRD, MoWCD (ICDS–anganwadi centres)	√
4 Access to income security and work	√	√	√	MRD (JEEVIKA, MGNREGA–self-help groups)	√
Essential intervention 2: Prevent micronutrient deficiencies and anaemia					
5 Iron folic acid supplementation, as per protocol	√	√	√		√
6 Universal use of iodised salt	√	√	√		√
7 Deworming, as per protocol		√	√	MoHFW (NHM, NIDDCP, VAS, WIFS–sub-centre, anganwadi centre, VHSND, schools)	√
8 Access to information for prevention and treatment of malaria and fluorosis	√	√	√		√
9 Access to knowledge to stop using alcohol and tobacco products during pregnancy	NA*	√	NA		√
Essential intervention 3: Improving access to basic health services and special care for most vulnerable					
10 Early registration for inclusion in outreach health services	X	√	√		√
11 Recording and monitoring of nutritional status (pre-pregnancy weight, pregnancy weight gain monitoring)	NA	√	NA		√
12 Quality and full reproductive health, antenatal and postnatal checkup incl. Screening and special care of “most vulnerable” (anaemic, low BMI/MUAC, low pre-pregnancy weight, low maternal stature, low pregnancy weight gain, malaria, fluorosis)	√	√	√	MoHFW, MoWCD (NHM, JSY, IGMSY–sub-centre, anganwadi centre, VHSND)	√
13 Promotion of institutional delivery	√	√	√		√
Essential intervention 4: Improving hygiene and sanitation practices and access to safe drinking water					
14 Sanitation and hygiene education (including menstrual hygiene)	√	√	√	MoWCD (Sabla–anganwadi centre)	√
15 Access to low-cost/contextualised safe drinking water and improved sanitation facilities	√	√	√	MDWS (Swachh Bharat Abhiyan–panchayats, self-help groups, anganwadi centres)	√
Essential intervention 5: Preventing pregnancies too early, too many and too soon					
16 Delaying age at first pregnancy beyond 19 years through counselling, access to family planning methods	√	NA	NA	MoHFW (NHM sub-centre, anganwadi centre, VHSND)	√
17 Delaying repeated pregnancies through counselling and access to family planning methods	√	√	√		√
18 Improving women’s decision-making capacity through community support system by ensuring male and family participation	√	√	√	MRD (JEEVIKA, MGNREGA)	√

*Not applicable.

Indira Gandhi Matritva Sahyog Yojana (IGMSY), Integrated Child Development Services (ICDS), Janani Suraksha Yojana (JSY), Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA), Ministry of Drinking Water and Sanitation (MDWS), Ministry of Health and Family Welfare (MoHFW), Ministry of Rural Development (MRD), Ministry of Women and Child Development (MoWCD), National Health Mission (NHM), National Iodine Deficiency Diseases Control Programmes (NIDDCP), public distribution system (PDS), village health, sanitation and nutrition day (VHSND), vitamin A supplementation (VAS), weekly iron folic acid supplementation (WIFS).

Source: By authors, based on desk review. Evidence from *Lancet*, 2013 series and respective government websites.

identified through previous experience, snowballing through published literature and review of websites and latest publications of relevant government departments and development agencies. Estimates have been reported from Census 2011 (Office of the Registrar General and Census Commissioner 2011), Rapid Survey on Children (RSOC) 2013–14 (MoWCD 2014), and NFHS-4, 2015–16 (IIPS 2016). An extensive mapping exercise was undertaken to identify all government departments and non-governmental organisations working on women's nutrition, through websites and local experts in each state. Information on government programmes was extracted through state-specific department websites, annual reports, evaluation reports and journal articles.

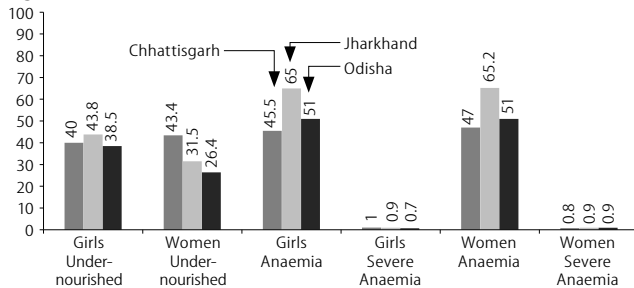
The enablers, barriers and innovations, within existing policy and programme context, were gauged through focused group discussions (FGDs) and interviews. Four sets of tools were developed, field-tested and finalised for administration. The number of FGDs in each village was guided by the concomitant analysis of responses, probing was continued until no new responses were obtained. In Chhattisgarh, 60 FGDs with adolescent girls, pregnant women and lactating mothers, and 263 interviews with field-level functionaries, that is, auxiliary nurse midwives (ANMs), accredited social health activist (ASHAs), *anganwadi* workers, and state and district government officials were undertaken. Corresponding figures for Jharkhand were 60 FGDs and 228 interviews. In Odisha,

Table 3: Indicators for Measuring Coverage of Essential Nutrition Interventions and Availability of Data

SNo	Intervention	State-level Indicators (%)	State-level Estimates Available
1	Access to generalised household food ration	Households covered through PDS	Yes (Ministry of Statistics and Programme Implementation 2013)
2	Access to fortified supplementary foods	Adolescent girls listed at AWC	No
		Adolescent girls receiving supplementary food through ICDS	No
		Pregnant women listed at AWC	Yes (IIPS 2016)
		Pregnant women receiving supplementary food through ICDS	Yes (IIPS 2016)
		Lactating mothers listed at AWC	Yes (IIPS 2016)
3	Access to knowledge on local diet diversity and production, preventing food adulteration	Adolescent girls/pregnant women/nursing mothers aware about local diet diversity and production, preventing food adulteration	No
		Nutrition and health education through AWCs	Yes (IIPS 2016)
4	Access to income security and work	Women beneficiaries under MGNREGA	No
		Rural landlessness	Yes (Census 2011)
5	Iron folic acid supplementation, as per protocol	Adolescent girls receiving and/or consuming IFA tablets	No
		Women receiving and/or consuming folic acid pre-conception	No
		Pregnant women receiving and/or consuming IFA	Yes (IIPS 2016)
6	Universal use of iodised salt	Households consuming adequately iodised salt	Yes (IIPS 2016)
7	Deworming as per protocol	Adolescent girls receiving and/or consuming deworming tablets	No
		Pregnant women receiving and/or consuming deworming tablets	No
8	Access to information for prevention and treatment of malaria and fluorosis	Adolescent girls aware about prevention and treatment of malaria and/or fluorosis	No
		Pregnant women aware about prevention and treatment of malaria and/or fluorosis	No
		Lactating mothers aware about prevention and treatment of malaria and/or fluorosis	No
9	Access to knowledge to stop using alcohol and tobacco products during pregnancy	Pregnant women aware about harmful effects of alcohol and tobacco products	No
		Pregnant women consuming alcohol	No
10	Early registration for inclusion in outreach health services	Pregnant women registered/receiving antenatal check-up in first trimester	Yes (IIPS 2016)
11	Recording and monitoring of nutritional status	Pregnant women receiving at least three antenatal check-ups including weight monitoring	Yes (IIPS 2016)
12	Quality and full reproductive health, antenatal and postnatal checkup incl. Screening and special care of "most vulnerable"	Adolescent girls receiving reproductive health check-ups	No
		Pregnant women receiving at least three antenatal check-ups	Yes (IIPS 2016)
13	Promotion of institutional delivery	Women delivering in health facility	Yes (IIPS 2016)
14	Sanitation and hygiene education (including menstrual hygiene)	Adolescents receiving low priced sanitary napkins	No
		VHSND organised every month	Yes (MoWCD 2014)
15	Access to low-cost/contextualised safe drinking water and improved sanitation facilities	Households with access to drinking water	Yes (MoWCD 2014)
		Households with access to improved sanitation facilities	Yes (MoWCD 2014)
16	Delaying age at first pregnancy beyond 19 years through counselling, access to family planning methods	Women married before the age of 18 years	Yes (IIPS 2016)
17	Delaying repeated pregnancies through counselling and access to family planning methods	Couples using modern contraceptives	Yes (IIPS 2016)
18	Improving women's decision-making capacity through community support system by ensuring male and family participation	Women involved in household decision-making	No

Source: By authors, based on desk review of data from the Census 2011 (Office of Registrar General and Census Commissioner 2011), NFHS-4 (IIPS 2016) and RSOC 2013 (MoWCD 2014).

Figure 1: Nutrition Status of Adolescent Girls and Women



The x-axis denotes indicators, and the y-axis denotes percentages. Source: NFHS-4 (IIPS 2016).

data collection was through interviews and 486 interviews were conducted.

Data analysis: A complete list of indicators for measuring the coverage of the essential nutrition interventions was developed (Table 3, p 45). Descriptive analysis was undertaken for the mapping exercise and responses of key stakeholders generated through interviews and FGDS.

Results

Odisha is the largest and most populous state among the three study states. Jharkhand is the most densely populated, with 414 people per square kilometre. All three states have a sizeable tribal population ranging from 23% (Odisha) to 31% (Chhattisgarh). Sex ratio is higher than the national average of 943 females for 1,000 males in all study states, with Chhattisgarh having the most favourable sex ratio in the country. Adult literacy is highest in Odisha (73%); the state has lower decadal growth rate and smaller family size than the other two states (Table 4).

Women’s nutrition status: Data on the nutritional status of adolescent girls (aged 15–19 years) and women (aged 15–49 years) is limited to the measurement of BMI and prevalence of anaemia. The highest proportion of thin girls were in Jharkhand (43.8%), followed by Chhattisgarh (40%) and Odisha (38.5%). Women in Jharkhand and Odisha were better nourished than adolescent girls, but not so in Chhattisgarh (Figure 1). Prevalence of

Table 4: Demographic Profile of Chhattisgarh, Jharkhand and Odisha

Indicators	Chhattisgarh	Jharkhand	Odisha
Population (total)	2,55,45,198	3,29,83,114	4,19,74,218
Population (male)	1,28,32,895	1,69,30,315	2,12,12,136
Population (female)	1,27,12,303	1,60,57,819	2,07,62,082
Child population (0 to 6 years)	36,61,689	53,89,495	52,73,194
Population density (population per sq km)	189	414	270
Decadal growth rate (%)	23	22	14
Sex ratio at birth	991	948	971
Scheduled Caste population (%)	13	12	17
Scheduled Tribe population (%)	31	26	23
Adult literacy (%)	65	66	73
Households (n)	56,50,724	62,54,781	96,37,820
Household size	4.8	5.4	4.5
Area (sq km)	1,35,192	79,715	1,55,707
Districts	27	24	30
Blocks	146	260	314
Villages	20,180	32,583	51,527

Source: Census of India 2011 (Office of the Registrar General and Census Commissioner 2011).

anaemia was extremely high in Jharkhand, among both adolescent girls and women (65%). In Odisha, over half the girls were anaemic, and Chhattisgarh followed closely. Prevalence of severe forms of anaemia was low across all states.

Disaggregated data for tribal population was available for thinness and anaemia among women. While the prevalence of thinness was comparable among tribal and total population in Jharkhand, it was 10 percentage points higher among tribal women in Odisha at 36%, but 10 percentage points lower in Chhattisgarh at 34%. Prevalence of anaemia was consistently higher among tribal women than the total population across the three states. Proportion of anaemic women in the tribal population was highest in Jharkhand (75%), followed by Odisha (63.3%) and Chhattisgarh (55.9%) (not presented in Figure 1).

Coverage of Essential Nutrition Interventions

Out of the 18 interventions, state-level estimates for all relevant indicators are available for eight interventions (Table 3). Some of the estimates are available for measuring the coverage of seven interventions, while three interventions, namely (i) access to information for prevention and treatment of malaria and fluorosis, (ii) access to knowledge to stop using alcohol and tobacco products during pregnancy, and (iii) improving women’s decision-making capacity through community support system by ensuring male and family participation, remain unmeasured through population-based surveys.

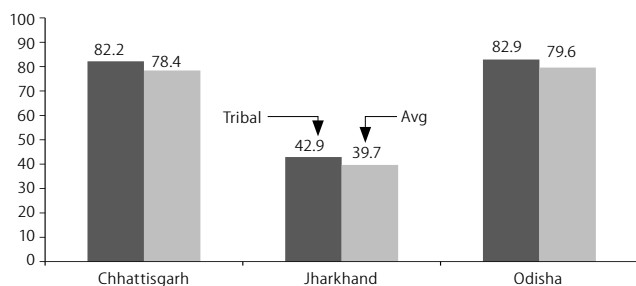
Essential nutrition intervention 1: This intervention is concerned with improved food and nutrient intake. Of every 100 households, the public distribution system (PDS) covers 68 in Odisha, 62 in Chhattisgarh and 35 in Jharkhand (Ministry of Statistics and Programme Implementation 2013). Chhattisgarh and Odisha have improved the reach of foodgrains through PDS while Jharkhand continues to face challenges of low purchases, high diversions and limited improvement over time (Khera 2011; Rahman 2014) (Table 5). Of the 30 villages covered in Jharkhand, all except one had a PDS shop within a 5-kilometre radius of the village. However, in 25 of the 30 villages, foodgrain was reportedly adulterated and of poor quality. Further, there were issues of irregular supply and loss of grains to theft. A PDS dealer from Palamu, Jharkhand, revealed, “If no allotment has come, where I shall give ... from my home?” (personal interview 2014).

Through the Sabla scheme, adolescent girls receive fortified supplementary food, in addition to other services, in nine districts in Odisha: Koraput, Kalahandi, Cuttack, Sundargarh, Bargarh, Puri, Gajapati, Mayurbhanj and Bhadrak. Sabla covers 10 districts in Chhattisgarh (Baloda Bazar, Bastar, Balrampur, Gariaband, Kondagaon, Raigarh, Raipur, Rajnandgaon, Surajpur and Surguja) and six in Jharkhand (Garhwa, Giridih, Gumla, Hazaribagh, Ranchi, West Singhbhum). Adolescent girls who participated in the FGDS were unaware about the scheme.

Table 5: PDS as a Source of Rice Consumption for Households (%)

	2004–05	2009–10	2011–12
Chhattisgarh	21.7	65.5	60.8
Jharkhand	4.4	23.6	33.3
Odisha	21.5	53.8	55.3

Source: Rahman (2014).

Figure 2: Nutrition and Health Education through Anganwadi Centres

The x-axis stands for the states and the y-axis denotes percentages. Source: NFHS-4 (IIPS 2016).

However, they did report receiving supplementary food, nutrition advice and counselling through the anganwadi centres (AWCs). The coverage of supplementary food services varied across states (Table 6).

Pregnant women and lactating mothers are entitled to take home ration, as per the Integrated Child Development Services (ICDS) norms. In Odisha, pregnant women receive two eggs per week, in addition to take-home ration. Coverage of supplementary food services for both pregnant women and lactating mothers was relatively high in Chhattisgarh and Odisha, and marginally higher for women in tribal households. An anganwadi worker in Hazaribagh, Jharkhand, said, “Rates of commodities are rising, how can we give entitled amounts if budgets are not increased?” (personal interview 2014). There are multiple platforms for nutrition and health education (NHED) for adolescent girls, pregnant women and lactating mothers, as all study states implement Kishori Shakti Yojana, Sabla, Village Health Sanitation and Nutrition Days (VHSND) and ICDS. Established platforms like ICDS remain underutilised for NHED for pregnant women in Jharkhand (Figure 2).

Essential nutrition intervention 2: This is with regard to preventing micronutrient deficiencies and anaemia. Under the Anemia Mukht Bharat (AMB) scheme, all age-groups, including preconception women are now under iron and folic acid (IFA) supplementation (MoHFW 2018). IFA receipt among pregnant women was lowest in Jharkhand (69.4%), while both Chhattisgarh and Odisha had over 90% coverage (Table 7). Consumption of at least 100 IFA tablets was just about 15% in Jharkhand, less than 30% in Chhattisgarh and less than 40% in Odisha. An adolescent girl in Bilaspur, Chhattisgarh, remarked, “We used to get a tablet which is red in colour, but do not know the name

Table 6: Coverage of Supplementary Food Services under ICDS (%)

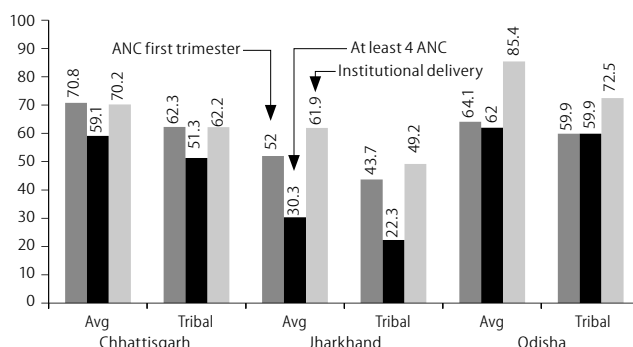
	Chhattisgarh		Jharkhand		Odisha	
	Average	Tribal	Average	Tribal	Average	Tribal
Pregnant women received supplementary food	87.8	91.4	68.4	77.0	87.5	90.5
Lactating mothers received supplementary food	86.8	89.5	63.6	71.1	84.6	87.4

Source: NFHS-4 (IIPS 2016).

Table 7: Receipt and Consumption of at least 100 IFA Tablets (%)

	Chhattisgarh		Jharkhand		Odisha	
	Average	Tribal	Average	Tribal	Average	Tribal
Received IFA	91.3	89.6	69.4	71.7	90.5	91.8
Consumed at least 100 IFA	30.3	26.0	15.3	14.5	36.5	37.9

Source: NFHS-4 (IIPS 2016).

Figure 3: Coverage of Basic Health Services for Pregnant Women

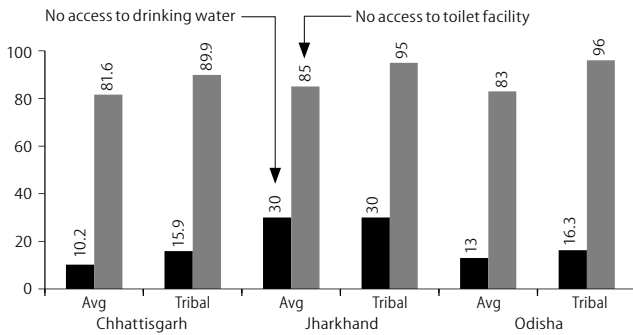
X-axis stands for the states, showing a comparison between the average for the total population (disaggregated) versus the figures for the tribal population. Y-axis denotes percentages. Source: NFHS-4 (IIPS 2016).

of the tablet. And we were given this tablet only twice in the last six months. I have never heard of IFA or deworming tablets” (personal interview, 2014). Consumption of adequately iodised salt was nearly universal in all three states (not covered in Table 7).

In Odisha, pregnant women who participated in the FGDs were informed about malaria prevention, and almost all from tribal villages and over three-fourths from non-tribal villages, reported using mosquito nets. Incidence of malaria was more commonly reported in tribal villages than non-tribal ones. In Jharkhand, only one of the 30 villages in district Godda, had access to insecticide-treated bed nets, through a government scheme. However, about half of the tribal as well as non-tribal respondents reported using insecticide-treated bed nets, which were purchased at costs ranging from ₹70 to ₹400. Alcohol consumption was more commonly reported by pregnant women in tribal areas, than non-tribal areas in Jharkhand and Odisha. They also reported being informed about discontinuing alcohol and tobacco consumption during pregnancy, by anganwadi workers and ASHAs.

Essential nutrition intervention 3: This is related to improving access to basic health services and care of the most vulnerable. Over 50% of pregnant women belonging to tribal households in Jharkhand, and 40% in Chhattisgarh and Odisha could not be reached and provided with essential health services, in the first trimester. In Jharkhand, they continued to remain outside the ambit of health services throughout pregnancy, and several were lost to follow-up, with less than 25% receiving four antenatal check-ups (ANC). Loss to follow-up was also noted in Chhattisgarh, in both the total population, as well as among the women in tribal households. In Odisha, at least 60% women in the first trimester were approached, and an almost equal proportion received four ANC visits (Figure 3).

An adolescent girl from a tribal community in Chhattisgarh claimed as follows, “When ill, we first go for *jhaad-phoonek* (sorcery). If it does not work, we go to the doctor in the village” (personal interview 2014). Despite financial incentive schemes, less than 50% of tribal women opted for institutional delivery in Jharkhand. Women from only six of 36 tribal, and 13 of 36 non-tribal villages, reported receiving financial incentive,

Figure 4: Access to Safe Drinking Water and Improved Sanitation Facilities

The X-axis denotes the comparison between the average for total population versus the tribal population and Y-axis stands for percentages.

Source: RSOC 2013 (MoWCD 2014).

during the PGDs in Odisha. Coverage of institutional deliveries was highest in Odisha (85.4%) but even there, less than 75% women in tribal households opted for institutional delivery.

Essential nutrition intervention 4: This is concerned with improving hygiene and sanitation practices, and access to safe drinking water. The health department implements the menstrual hygiene scheme, which, in addition to hygiene education, provides low-priced sanitary napkins to adolescent girls. The scheme operates in five districts of Chhattisgarh (Bilaspur, Janjgir, Raipur, Mahasamund, and Durg), five districts of Jharkhand (Ranchi, Bokaro, Giridih, Hazaribagh, and Dhanbad) and four districts of Odisha (Dhenkanal, Bhadrak, Kendrapara, and Jagatsinghpur). Adolescent girls in Chhattisgarh were not aware about this scheme, nor had they received sanitary napkins, despite three of the study districts overlapping with the scheme's geographic scope. An adolescent girl in Chhattisgarh said, "We have not heard of provision of sanitary pad by government. We make local pads using old and torn clothes at our home" (personal interview 2014).

More than half of the respondents in Jharkhand and Odisha reported receiving information about menstrual hygiene through anganwadi workers, ANMs, ASHAs and family members, in both tribal and non-tribal areas. Access to sanitation facilities, within or near the household, is a concern across all study states, and more so among tribal communities (Figure 4). A respondent in Bilaspur, Chhattisgarh, remarked, "There is no toilet in the village. We go to the nearby pond or agricultural field for defecation. Those who have toilets hardly use it" (personal interview 2014). Three in 10 tribal and non-tribal households had no access to safe drinking water in Jharkhand, which has the lowest coverage for this service across study states. Some pregnant women in Chhattisgarh said, "There are nine handpumps in our village but more than half of them are out of order. Those working do not have adequate water" (personal interview, 2014).

Essential nutrition intervention 5: This is related to preventing pregnancies too early, too many and too soon. Teenage pregnancies were highest in Jharkhand at 11%. Among tribal households in Odisha, one out of every 10 girls was a mother. Teenage pregnancies were relatively lower in Chhattisgarh at

about 5%. Use of modern contraceptives was less than 50% in all states, and extremely low among couples from tribal households in Jharkhand, at less than 25% (IIPS 2016a, 2016b, 2016c).

Enablers, Barriers and Innovations

Policy level enablers: The policy framework, programmes and guidelines for all essential interventions are available. Calcium supplementation and deworming guidelines are the most recent inclusions in the national programme. There is a dedicated department for tribal development in all study states, with Odisha's being the most advanced in implementing holistic tribal development programmes.

Systemic enablers: The platforms and community linkage for delivery of essential nutrition interventions are available across the study states. ANMs regularly visited 90% of the villages in Chhattisgarh, 85% of the villages in Jharkhand and 95% of the villages in Odisha. VHSNDs, a platform for receiving multi-department services at the same time, were organised regularly in 84% of the AWCs in Odisha, 77% of the AWCs in Chhattisgarh and 62% of the AWCs in Jharkhand (MoWCD 2014). In all tribal dominant villages with an AWC (12 of 15 covered in the study) in Jharkhand, the centre was less than a kilometre or within the same village. Chhattisgarh has the highest access to ASHAs with one ASHA for 297 rural population, followed by Jharkhand, with one for 611, and Odisha, with one for 806 (MoWCD 2014). All states have merged training and supervisory structures for better retention of trainers and regularising trainings. In Chhattisgarh and Jharkhand, training modules are contextualised using local dialects for primitive tribal groups. In Chhattisgarh, ASHAs or *mitanins* (female health volunteers) have life insurance and pension benefits, and have career progression opportunities, such as preferential admissions in ANM training schools.

Policy level barriers: Lack of a nodal coordination agency to network across vertical departments was repeatedly cited as a reason for the limited implementation of existing schemes, across all study states.

Systemic barriers: Under PDS, limited foodgrain storage facility was cited as a major reason for delays, in lifting of foodgrains from godowns and eventual distribution by dealers. Jharkhand has 186 storage facilities for 260 blocks. There are discrepancies in district and state lists of beneficiaries, resulting in inappropriate targeting of foodgrain subsidy. Due to lack of awareness and clarity about the scheme, the most vulnerable are left out from the food subsidy ambit. For instance, in Odisha nearly half (16 of 36) of the tribal villages covered in this study, did not have a PDS shop, as opposed to three out of 36 non-tribal villages. Anganwadi workers reported that under Sabla, adolescent girls, especially those out of school, are difficult to include under social safety nets due to sociocultural factors and established gender roles.

They also reported increased workload, as the nutrition component is delivered entirely through the AWCs. While 79% AWCs in Chhattisgarh had a functional adult weighing scale, only 44% in Jharkhand and 36% in Odisha had one. Over 60% of the anganwadi workers in Odisha and over 30% in Chhattisgarh and Jharkhand had not undergone refresher trainings to hone their service delivery skills (MoWCD 2014). As per government reports, salt testing at critical points, that is, retail, offloading and community levels, was not happening in Jharkhand and Odisha in 2015 (MoHFW 2013).

Both Jharkhand and Odisha have water and sanitation missions, and all nationally supported water and sanitation schemes are implemented in the three study states. Coordination across the public health engineering department, pollution control board, rural development and tribal development authorities is a consistently reported challenge in all three states. Some AWCs in tribal areas remained underutilised, due to lack of water and sanitation facilities. Where constructed, non-maintenance of sanitation facilities was reported as a deterrent for usage of the centres. Some schemes remained underutilised due to complicated implementation mechanisms at the client level. An example is the Mukhyamantri Ladli Laxmi Yojana in Jharkhand, wherein parents of first and/or second born girls from below the poverty line households, receive financial assistance for schooling, and later for marriage of girls who have attained the legal age. The extensive set of prerequisites and documentation for receiving this benefit was reported as the primary reason for the low utilisation of this scheme.

Behavioural barriers: Care during pregnancy such as rest, reduced workload and consumption of nutritious food was more commonly reported in non-tribal communities. Pregnant women from the tribal community in Jharkhand said, “Forget about rest, if we do not carry out the household chores we are beaten and bitten. No one cares to help, even as the pregnancy progressed, I had to fetch water 4 to 5 times a day” (personal interview 2014). Pregnant women and lactating mothers in all states, particularly from tribal villages, reported using informal practitioners as the first point of contact for any ailment. For instance, a pregnant woman from a tribal community in Odisha said, “The doctor in the government hospital prescribes medicines most of which are not there, and have to be purchased at high prices from shops outside” (personal interview 2014). They also reported adverse effects as a reason for discontinuing the consumption of IFA tablets during pregnancy, even when these were available.

This was also noted among adolescent girls. An adolescent girl from Bilaspur, Chhattisgarh, said, “I am in 10th class and I was given a red colour tablet. But I did not eat it” (personal interview 2014). Among the tribal and non-tribal communities, post-partum rituals and special food preparations were noted. In Jharkhand, feast of *nim da mandī* (neem leaves and rice) is organised by some tribes. Among non-tribal communities, the practice of fasting for a day, and eating less food for 12 days post-partum, were reported. Very few respondents from tribal

and non-tribal villages were aware of handwashing at critical times. In the hilly tribal belts of Chhattisgarh, water from a *dhodi* (4–5 feet deep pit, which receives water from nearby water collection points in paddy fields), was considered safe for drinking.

Usage of sanitation facilities is low. A pregnant woman in Bilaspur, Chhattisgarh, revealed, “We have a toilet but we use it only in rainy seasons. Other times we go to the agricultural field” (personal interview, 2014). Across all states, a girl’s security and the financial burden of marriage were cited as reasons for the early marriage of girls. Despite awareness about family planning, most women were not using any contraceptive method in all three states. Family planning was considered as the women’s responsibility by most respondents across study the states, but the decision on using contraception was made by the husband.

Innovations: The automation of PDS has proven effective in Chhattisgarh, a best practice being adopted by Odisha as well. Improved PDS performance in Chhattisgarh has also been attributed to increased public accountability, with the involvement of panchayats, self-help groups (SHGs) and women’s co-operatives in the management of fair price shops (Khera 2011; Rahman 2014). Pulses, iodised and double fortified salt is available through PDS in Chhattisgarh. Pregnant women, Ambikapur, Chhattisgarh reported that, “We get two packets of Amruth Salt from the ration shop and we use it for cooking” (personal interview, 2014). Particularly vulnerable tribal group households are entitled to 35 kilograms of rice free of cost every month, by using tribal sub-plan funds in Jharkhand.

In Odisha, there are two long-term rural and tribal development programmes. Under the Targeted Rural Initiatives for Poverty Termination and Infrastructure, the government has launched the *Mo Badi* and Nutritional Clusters initiatives, which focus on food diversification and availability and enhancing nutrition and hygiene awareness among pregnant women and lactating mothers, through SHGs and local resource persons (Government of Odisha 2018a). The Odisha Tribal Empowerment and Livelihood Programme is a holistic approach to tribal development, including increasing access to land, water and forests, monitoring basic food entitlements, as well as the promotion of local enterprise through SHGs and their federations (Government of Odisha 2018b). Chhattisgarh has been successful in involving community institutions such as Mahtari Committee (Sanghadan), Pani Samiti and others in programme implementation.

Discussion

There is limited data to assess the nutrition status of women before, during and in-between pregnancies. Most large-scale population-based surveys cover adolescent girls and women in the age group of 15–49 years, with further disaggregation by age or physiological state, that is, pregnant or lactating. Growth monitoring data for women is linked to programmes which are centred on pregnancy. Thus, the nutritional status of adolescent girls and women before and after pregnancy

remains unmeasured or unavailable, through routine monitoring. Also, pregnancy weight monitoring is challenging, due to the lack of weighing scales and missed opportunities of measuring pregnant women's weight changes.

Programmes on the all-round development of adolescent girls, like Sabla and Kishori Shakti Yojana, are yet to be scaled-up, and preconception nutrition is not on the radar of most national health and nutrition programmes. Nutrition schemes for adolescents continue to be implemented only in select districts, despite overall poor nutrition status of adolescent girls in the study states. The implementation gaps in micronutrient supplementation schemes like AMB, are related to both supply chain logistics, as well as barriers to changing behaviour, as many adolescent girls reported not consuming IFA tablets, even when these were available. With the launch of the AMB initiative, the preconception target group is under IFA supplementation.

However, the roll-out of the initiative will require states to identify platforms which can be utilised to reach out to newly married women, who are currently not targeted through VHSND or ICDS programmes. Experiences from engaging with SHGs, to identify and engage with newly married couples, are available through the United Nations International Children's Emergency Fund (UNICEF)-supported Swabhimaan project being implemented in Bihar, Chhattisgarh and Odisha. Under this initiative, newly married women are provided with welcome kits containing IFA, contraceptives, sanitary napkins and learning resources, and they are encouraged to participate in monthly health and nutrition meetings (UNICEF 2018).

All centrally-sponsored schemes are implemented in the study states, but there are missed opportunities for utilising existing platforms, for reaching out to women when most needed. The VHSNDs, kishori diwas and AWCS are common

platforms for nutrition, health and sanitation education, which, as presented in the results, are not fully utilised, due to lack of community awareness about these platforms, non-cooperation across various departments required to concomitantly deliver services and lack of skilled human resources. Where these platforms are operational, there is delay in registering pregnant women, losing out on the critical early pregnancy period, when nutrition interventions have the most impact. The case of Jharkhand is noteworthy. Where the proportion of teenage pregnancies was the highest, the use of ANC and institutional deliveries, as well as the use of ICDS was found to be the lowest. Apparently, maternity financial incentives have also not worked for tribal populations in the state.

Despite awareness and access, some essential nutrition interventions remain underutilised. Use of modern contraceptive methods has not improved much in the study states over a period of time and current coverage remains low. Decision-making on family planning does not involve women, despite it being considered their responsibility. As in the case of other nutrition-sensitive interventions, women's empowerment is central to improving coverage of family planning services. A considerable proportion of women received IFA, but less than 50% of those who received, consumed at least 100 IFA tablets. With the current recommendation of continuous IFA supplementation for women after first trimester of pregnancy, till the child is six months old, compliance will be an important factor in benefiting from the improved availability of IFA. Target-group-specific behaviour change resources have been created under AMB (MoHFW 2018).

State-specific lessons from community engagement in service delivery are available for cross-learning. There is evidence demonstrating effectiveness of community involvement in

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health services in specific contexts, as well as experience from various states, where programme implementation and outcomes have improved by involving communities in programme review and/or management (Rifkin 2014; MoHFW 2018a; World Bank 2007). Chhattisgarh has pioneered community representation in the delivery of public health services, with community involvement in the management of PDS, AWCs and positioning mitanins much before the ASHAs were introduced in the health system. While Jharkhand and Odisha too have engaged communities in service delivery, the best practices of Chhattisgarh, like career development and security for mitanins/ASHAs, grading of AWCs, have not been adopted by other states.

Conclusions

The nutrition status of adolescent girls and women is largely worse in tribal regions compared to non-tribal regions in the study states, with the exception of Odisha. The reach of essential nutrition services is lowest in Jharkhand amongst the three study states. Universal schemes like ICDS and Janani Suraksha Yojana have not reached women from all social groups equitably. While many of the schemes have been evaluated or reviewed, and reasons for limited reach in tribal belts are mostly known, a detailed assessment of increasing the reach of nutrition services to tribal population is needed. Most of the innovations for improving the delivery of essential nutrition interventions are ready for scale-up. Automation of PDS has demonstrated improved efficiency of the scheme and

is already being scaled-up. The distribution of iodised salt through PDS has resulted in substantial improvement, in the use of adequately iodised salt in Chhattisgarh and Odisha.

There is potential of expanding the list of commodities available through PDS, once it delivers efficiently. The increased involvement of women in the management of PDS, group savings and entrepreneurship through SHGs, have been successful in Chhattisgarh and Odisha. Through the National Rural Livelihood Mission, the promotion of SHGs and their involvement in public health services is increasing countrywide. Each of the study states has a dedicated department for tribal welfare, which is mandated to coordinate the provision of all services for tribal development, including nutrition, health and aligned services, through the concerned departments.

Lessons from Odisha Tribal Empowerment and Livelihood Programme on entrepreneurship among tribal women are available for replication. The diversification of the ICDS menu, as done in Odisha, to include eggs along with take-home rations for pregnant women, could also be replicated in other states. Non-financial incentives to fieldworkers have proven to be effective, in recruiting and retaining field functionaries in Chhattisgarh, even in tribal regions. There is a need to expand the focus of programmes, to bring the preconception period under the ambit of nutrition safety nets. Finally, the availability of data on women's nutrition status through the life cycle needs to be improved, through routine monitoring and periodic national, state and district level surveys.

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