



DELIVERING ESSENTIAL NUTRITION INTERVENTIONS TO WOMEN IN TRIBAL POCKETS IN INDIA

A study from Odisha, Chhattisgarh and Jharkhand

Delivering Essential Nutrition Interventions to Women in Tribal Pockets in India: A Study from
Odisha, Chhattisgarh and Jharkhand
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EXECUTIVE SUMMARY

INTRODUCTION

The adequacy of women's nutrition in pre-conception, pregnancy and post-pregnancy is central to their children's survival and nutritional status. In India, 47 per cent of adolescent girls aged 15 to 19 years who are or will soon be mothers and 38 per cent of women aged 20 to 29 years have a Body Mass Index (BMI) below 18.5kg/m², indicating undernutrition.

Maternal chronic energy deficiency and anaemia have been linked to morbidity and mortality of both mother and child. India's tribal peoples are the most deprived group – socially and nutritionally. Despite provisions for tribal development, disaggregated analyses show that 47 per cent of tribal women are undernourished compared to 29 per cent of women not belonging to a tribal background.

METHODOLOGY

A nine-month study in three study states – Chhattisgarh, Jharkhand and Odisha – was carried out between December 2013 and August 2014. These states house 80 percent of India's tribal population. Recent population-based surveys were studied to understand the nutritional status of women in these states.

The qualitative investigation on enablers and barriers for improving coverage of nutrition

interventions was based on 977 interviews and 120 focus group discussions with adolescent girls, women in the reproductive age group, field workers and government representatives as well as a review of active government schemes.

RESULTS

Large-scale surveys and routine monitoring are currently deficient in measuring the nutritional status of women. All centrally sponsored government schemes are implemented in the study states but over half of women residing in tribal pockets in these states are not reached at critical times, such as during early pregnancy, through the existing platforms. States with better reach of essential nutrition interventions have government-led fully functional tribal development agencies/ departments and organized involvement of community members and field workers in service delivery.

CONCLUSION

All national schemes should be reviewed with a tribal lens to ensure these populations receive the entitled services. Proven measures, such as strengthening tribal development nodal agencies, motivational incentives to field workers and organized community involvement, need to be scaled up.





REPORT

INTRODUCTION

The adequacy of women's nutrition in pre-conception, pregnancy and post-pregnancy is critical for reducing child stunting. Among chronically undernourished or stunted children, as high as 20 per cent of impairment occurs before birth in the womb [Victora et al., 2010; Sachdev, 2011]. In India, 47 per cent of adolescent girls aged 15 to 19 years who are or will soon be mothers and 38 per cent of women aged 20 to 29 years, who are most likely to be multiparous have a Body Mass Index (BMI) below 18.5kg/m² [IIPS, 2007].

In India, the prevalence of undernutrition is highest among the tribal peoples. The levels of health and nutrition, education and standard of living determine the status of any social group, especially women. Tribal women are more vulnerable to malnutrition compared to their counterparts in the non-tribal population. The nutrition indicators for tribal women are poorer than those for the general population [Bhasin et al., 2007; Kshatriya et al., 2016]. The prevalence of maternal thinness among tribal women in India at 47 per cent is 11 percentage points higher than in non-tribal Indian women [UNICEF, 2014].

Improving maternal nutrition in pre-conception and during pregnancies will help improve the nutritional status of children. The World Health Organization (WHO) highlights the importance of the timing of nutritional interventions in women [WHO, 2013].

It is important that the nutritional needs of girls are holistically addressed right from adolescence and as they progress towards child bearing and caregiver roles. These crucial interventions will help keep mothers and their children healthy.

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 (nutrition-specific interventions) as well as the underlying and basic causes of undernutrition, such as household food insecurity and literacy (nutrition-sensitive interventions).

These five essential nutrition interventions are:

1. Improving the quantity of household food consumed and its nutrient quality.
2. Preventing and managing micronutrient deficiencies and anaemia.
3. Increasing women's access to health services and special care for the 'most vulnerable'.
4. Improving hygiene and sanitation practices and access to safe drinking water.
5. Preventing pregnancies that are too early, too many and too close [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 the lack of coordination across four vertical government departments that are accountable for their delivery (see Table 1).

In addition to the issues in coordination, strategies to prevent childhood undernutrition focus mainly on pregnancy and the first two years of children's lives, or the first '1,000 days' period, and do not recognize that a substantial impact would require preventive action even before the first 1,000 days of life [Victora et al., 2010].

METHODOLOGY

A study was conducted from December 2013 to August 2014, covering three Indian states – Chhattisgarh, Jharkhand and Odisha. These states were selected because they have sizeable tribal population groups and also account for a large share of the country's tribal population.

The study had two components: (i) a secondary review to understand the status of women's nutrition and coverage of essential nutrition interventions and relevant programmes; and (ii) a descriptive qualitative study to understand the reasons for the variable performance on women's nutrition across the study states, specifically the socially marginalized tribal women, and enablers and barriers to improving coverage of essential nutrition interventions.

Sampling

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 social groups across the study districts, the study sample comprised tribal dominant blocks and comparator non-tribal dominant blocks in Jharkhand, while only tribal dominant blocks were selected in Chhattisgarh. Village selection was based on distance from block headquarters, that is, nearest, midway and farthest. In case of multiple choices with respect to distance, the village with a dominant tribal population was given preference in tribal blocks (see 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 district level, two

blocks were randomly selected from each of the selected districts. Three villages were selected randomly from each block.

Data collection

All recent data sources on demography, health and nutrition status, services and behaviours were identified through previous experience, snowballing through published literature and review of websites and latest publications of relevant government departments and development agencies. Estimates have mostly been reported from Census 2011, Rapid Survey on Children (RSOC) 2013-2014, and National Family Health Survey (NFHS) 2005-2006.

An extensive mapping exercise was undertaken to identify all government departments and non-governmental organizations 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 policies and programmes were gauged through focused group discussions (FGDs) and interviews. Four sets of tools were developed, field tested and finalized 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 Activists (ASHAs), anganwadi workers and state and district government officials, were undertaken. Corresponding figures for

Jharkhand were 60 FGDs and 228 interviews. In Odisha, data collection was only through interviews, with 486 interviews conducted.

Data analysis

A complete list of indicators for measuring coverage of the essential nutrition interventions was developed (see Table 3). MS Excel was used for data entry and analysis. 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 most densely populated with 414 people per square km. All three states have a sizeable tribal population ranging from 23 per cent (Odisha) to 31 per cent (Chhattisgarh).

The sex ratio is higher than the national average of 943 females to 1,000 males in all study states, with Chhattisgarh having the most favourable sex ratio in the country at 991 females to 1,000 males.

Adult literacy is highest in Odisha (73 per cent); the state has a lower decadal growth rate and smaller family size than the other two states [Census, 2011] (see Table 4).

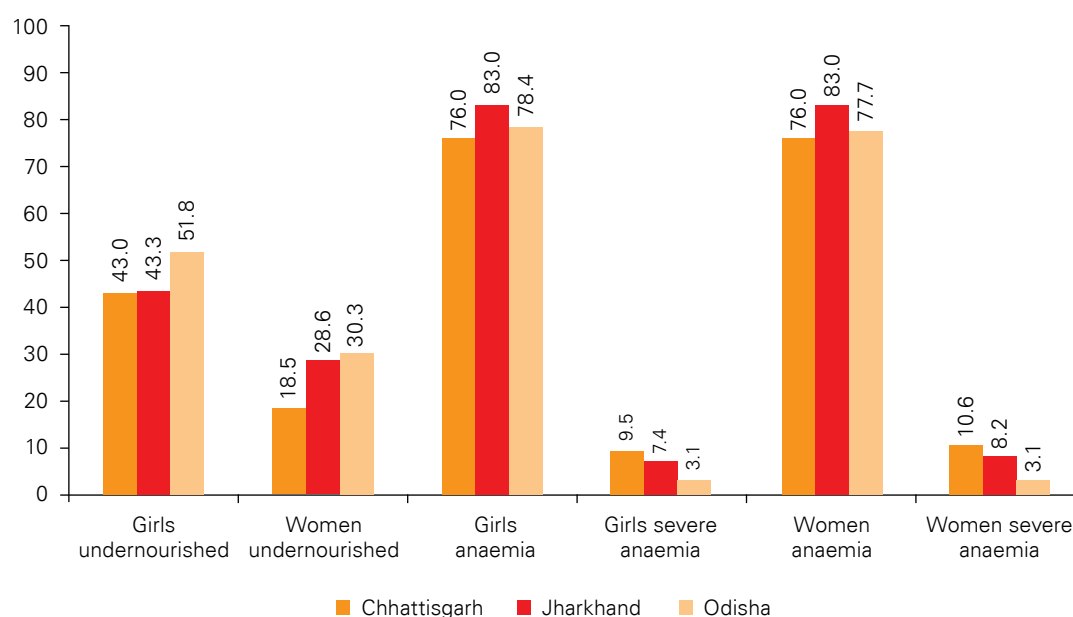
Women's nutritional status

Data on the nutritional status of adolescent girls (10 to 19 years) and women (15 to 49 years) were limited to BMI measurement and prevalence of anaemia. Over half of the adolescent girls were undernourished in Odisha. Odisha also had the highest prevalence of undernutrition among women at 30 per cent. Chhattisgarh and Jharkhand did not perform much better with 43 per cent of adolescent girls chronically undernourished.

Over three quarters of adolescent girls and women suffered from anaemia in all study states. The severe form of anaemia was most common in Chhattisgarh, followed by Jharkhand and Odisha among both adolescent girls and women (see Figure 1).

Disaggregated data for the tribal population were available for chronic undernutrition among adolescent girls. While the prevalence of chronic undernutrition was comparable among tribal and non-tribal adolescent girls in Chhattisgarh and Jharkhand, adolescent tribal girls were better nourished than the average in Odisha. The prevalence of chronic undernutrition is 37 per cent among

Figure 1 Nutritional status of adolescent girls and women in Chhattisgarh, Jharkhand and Odisha (%)



tribal adolescent girls compared to 52 per cent among non-tribal girls in Odisha (not presented in Figure 1).

Coverage of essential nutrition interventions

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

Essential nutrition intervention 1: Improving the quantity of household food consumed and its nutrient quality

The Public Distribution System (PDS) covers 68 households in Odisha, 62 in Chhattisgarh

and 35 in Jharkhand out of every 100 households [MSPI, 2013]. Chhattisgarh and Odisha have improved reach of food grains through the PDS while Jharkhand continues to face the challenges of low purchases, high diversions and limited improvement over time [Khera, 2011; Rahman, 2014] (see Table 5).

Through SABLA,¹ adolescent girls received fortified supplementary food in addition to other services in nine districts in Odisha – Bargarh, Bhadrak, Cuttack, Gajapati, Kalahandi, Koraput, Mayurbhanj, Puri and Sundargarh. SABLA covered 10 districts in Chhattisgarh – Baloda bazaar, Bastra, Balrampur, Gariya band, Kondagaon, Raigarh, Raipur, Rajnandgaon, Surajpur, Surguja – and six districts in Jharkhand – Garhwa, Giridh, Gumla, Hazaribagh, Ranchi, West Singhbhum.

Adolescent girls who participated in the FGDs were unaware of the scheme, although they did report receiving supplementary food, nutrition advice and counselling through the anganwadi centre.

¹ SABLA, the Rajiv Gandhi Scheme for Empowerment of Adolescent Girls, is a programme of the Government of India initiated in 2011 under the Ministry of Women and Child Development.

More women were under the ambit of the food safety net during lactation than pregnancy. Enlisting beneficiaries was better in tribal areas compared to the average coverage in study states.

Pregnant women and lactating mothers are entitled to take-home rations according to the Integrated Child Development Services (ICDS) norms in Chhattisgarh and Odisha. In Odisha, pregnant women received two eggs weekly in addition to take-home rations. However, the distribution of take-home rations was irregular and not all who were enlisted received them as per norms.

There are multiple platforms for nutrition and health education (NHEd) for adolescent girls, pregnant women and lactating mothers as all the study states implement Kishori Shakti Yojana,² SABLA, Village Health Sanitation and Nutrition Days (VHSNDs) and ICDS. The established platforms like ICDS remain underutilized in all the states.

Less than half of the anganwadi workers in Chhattisgarh provided nutrition and health education, while the corresponding figures for

Jharkhand and Odisha were 68 per cent and 66 per cent, respectively. There was limited awareness of this service among pregnant women (see Figure 2).

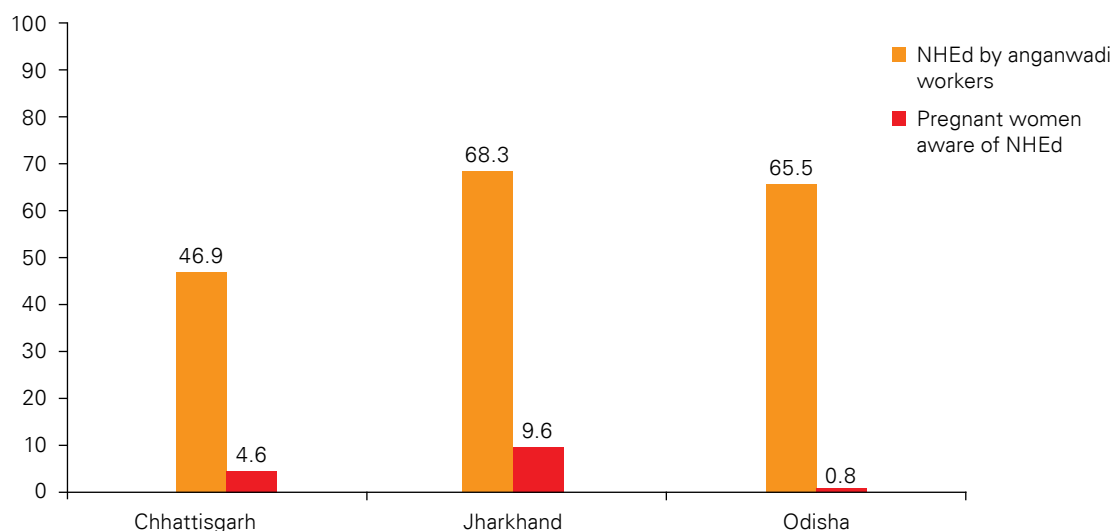
Essential nutrition intervention 2: Preventing and managing micronutrient deficiencies and anaemia

Under the National Iron Plus Initiative (NIPI), all age groups, including pre-conception women, receive iron and folic acid (IFA) supplementation. IFA coverage among pregnant women was lowest in Jharkhand (15 per cent), followed by Chhattisgarh (36 per cent) and Odisha (45 per cent).

Consumption of adequately iodized salt varied from 54 per cent among tribal households in Jharkhand to 86 per cent of households on average in Odisha (see Table 7).

In Odisha, pregnant women who participated in the FGDs were informed about malaria prevention and almost all from the tribal villages and over three quarters from non-tribal villages reported using mosquito nets. Incidence of malaria was more commonly reported in tribal villages than non-tribal. In

Figure 2 Nutrition and health education provided by anganwadi workers and awareness of pregnant women of the service across study states (%)



² Kishori Shakti Yojana is a component of ICDS and seeks to empower adolescent girls to enable them to take charge of their lives. It is viewed as a holistic initiative for the development of adolescent girls.

Jharkhand, about half of tribal respondents as well as non-tribal respondents reported using insecticide-treated bed nets.

Alcohol consumption was more commonly reported by pregnant women in tribal areas than non-tribal 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: Increasing women’s access to health services and special care for the ‘most vulnerable’

Essential health services did not reach over half of pregnant tribal women during their first trimester in Jharkhand and in Odisha. In Jharkhand, they continued to remain outside the ambit of health services throughout their pregnancy with less than half receiving three antenatal check-ups (ANCs).

Receipt of recommended number of IFA tablets ranged from 15 per cent in Jharkhand to 45 per cent in Odisha. In Odisha, 81 per cent of women delivered in a health facility but coverage was 20

percentage points lower among the tribal population (see Figure 3).

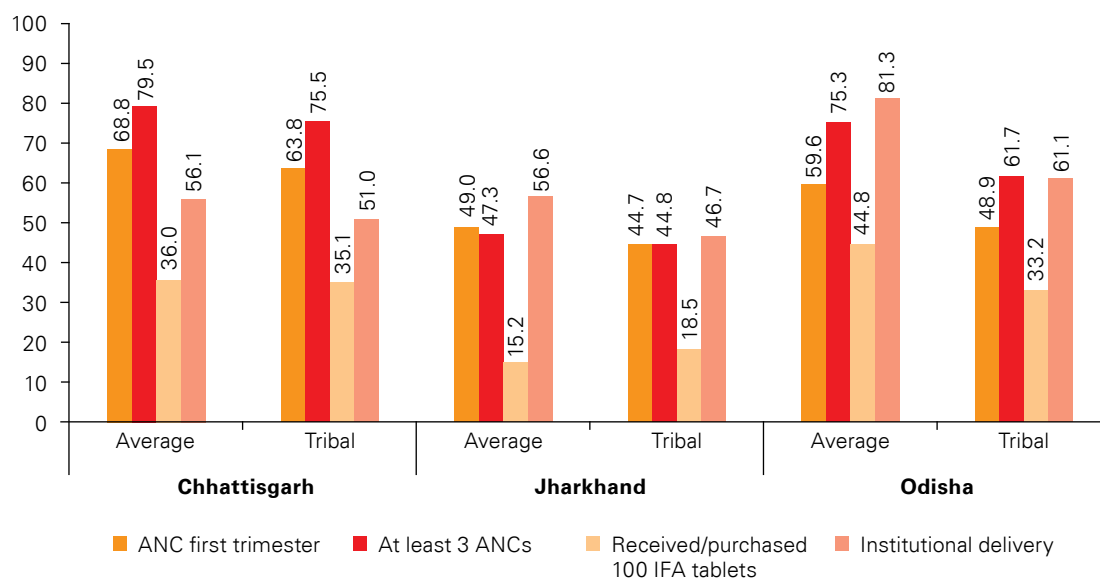
Despite financial incentive schemes, less than 60 per cent of women opted for institutional delivery in Chhattisgarh and Jharkhand with the coverage being lower in the tribal population. Women from 6 out of 36 tribal and 13 out of 36 non-tribal villages reported receiving financial incentives during FGDs in Jharkhand.

Essential nutrition intervention 4: Improving hygiene and sanitation practices and access to safe drinking water

The government health department has implemented a menstrual hygiene scheme, in addition to hygiene education, which provides low priced sanitary napkins to adolescent girls. The scheme operates in five districts in Chhattisgarh (Bilaspur, Durg, Janjgir, Mahasamund, Raipur), five districts in Jharkhand (Bokaro, Dhanbad, Giridih, Hazaribagh, Ranchi) and four districts in Odisha (Bhadrak, Dhenkanal, Jagatsinghapur, Kendrapara) [MHFW, 2015].

Adolescent girls in Chhattisgarh were not aware of this scheme nor had they

Figure 3 Coverage of basic health services for pregnant women in the study states (%)



received sanitary napkins despite three of the study districts overlapping with the scheme’s geographic scope. 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 (see Figure 4). Three in 10 tribal and non-tribal households have no access to safe drinking water in Jharkhand, which has the lowest coverage for this service across study states.

Essential nutrition intervention 5: Preventing pregnancies that are too early, too many and too close

About 45 per cent of tribal women in Odisha, 27 per cent in Chhattisgarh and 26 per cent in Jharkhand were married before attaining the legal age of 18 years. The corresponding figures were consistently lower among non-tribal women. More than half of eligible couples in Jharkhand and Odisha and 40 per cent in Chhattisgarh did not use any modern contraceptive methods [RSOC, 2013-2014].

Enablers, barriers and innovations for improving reach of essential nutrition interventions

Enablers

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.

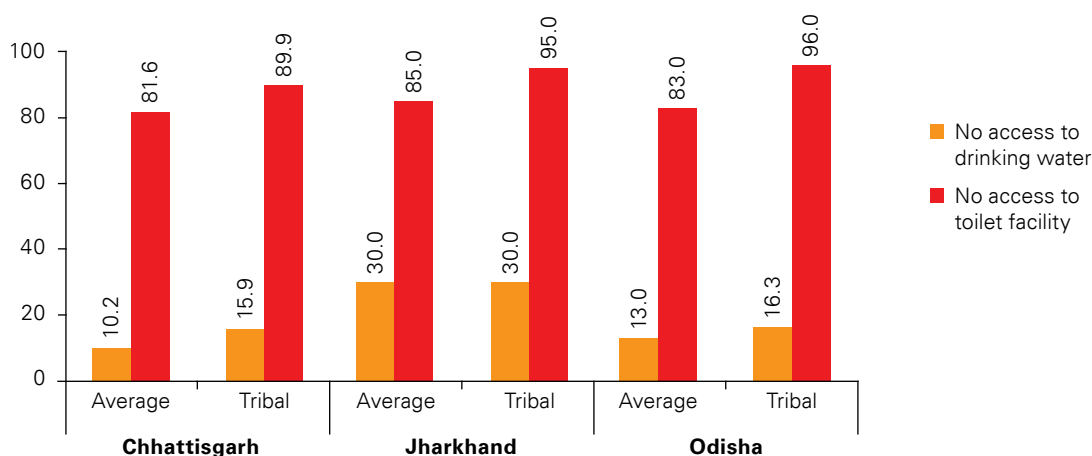
There is a dedicated department for tribal development in all study states, with Odisha’s being most advanced in implementing holistic tribal development programmes.

Systemic enablers

The platforms and community linkage for delivery of the essential nutrition interventions are available across the study states. ANMs regularly visited 90 per cent of the villages in Chhattisgarh, 85 per cent in Jharkhand and 95 per cent in Odisha.

VHSNDs, a platform for receiving multi-department services at the same time, were organized regularly in 84 per cent of angawadi centres in Odisha, 77 per cent in

Figure 4 Household access to safe drinking water and improved sanitation facilities in the study states (%)



Chhattisgarh and 62 per cent in Jharkhand [RSOC, 2013-2014].

Chhattisgarh has the highest access to ASHAs with one ASHA for 297 people in rural areas, followed by Jharkhand with one for 611 and Odisha with one for 806 [MHFW, 2013].

All states have merged training and supervisory structures for better retention of trainers and regularized training for nutrition and health education. In Chhattisgarh and Jharkhand, training modules are contextualized using local dialects for particularly vulnerable tribal groups. In Chhattisgarh, ASHAs or community health workers (*mitanins*) have incentives, like life insurance and pension benefits, and have career progression opportunities, such as preferential admissions in ANM training schools.

Barriers

Policy level barriers

The lack of a nodal coordination agency to network across vertical departments was repeatedly cited as a reason for limited implementation of existing schemes across all study states.

Systemic barriers

Under PDS, limited food grain storage facility was cited as a major reason for delays in moving food grains 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 food grain subsidy.

Due to lack of awareness and clarity about the scheme, the most vulnerable are left out of the food subsidy ambit. For instance, in Odisha nearly half (16 out of 36) of the tribal villages covered in this study did not have a PDS shop, compared to 3 out of 36 non-tribal villages.

Anganwadi workers reported that under SABLA, adolescent girls, especially those

out of school, were difficult to include under social safety nets due to socio-cultural factors and established gender roles.

They also reported an increased workload as the nutrition component is delivered entirely through the anganwadi centres. While 79 per cent of anganwadi centres in Chhattisgarh had a functional adult weighing scale, only 44 per cent in Jharkhand and 36 per cent in Odisha had one.

Over 60 per cent of anganwadi workers in Odisha and over 30 per cent in Chhattisgarh and Jharkhand had not undergone refresher training to hone their service delivery skills [RSOC, 2013-2014].

According to government reports, salt testing at critical points, that is at retail, off-loading and community levels, did not take place in Jharkhand and Odisha in 2015 [MHFW, 2015].

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 among the Public Health Engineering Department, pollution control board, and rural development and tribal development authorities is a consistently reported challenge in all three states.

Some anganwadi centres in tribal areas remain underutilized 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 remain underutilized because of complicated implementation mechanisms at the client level. An example is the Mukya Mantri Lakshmi Ladli Yojana in Jharkhand wherein parents of first and/or second born girls from below poverty line households receive financial assistance for schooling and later for marriage of girls who have attained

legal age of marriage. The extensive set of prerequisites and documentation for receiving this benefit was reported as a primary reason for low utilization of the scheme.

Behavioural barriers

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. They also reported adverse effects as the reason for discontinuing IFA tablets during pregnancy even when they were available.

Very few respondents from tribal and non-tribal villages were aware of the need to wash their hands at critical times. In hilly tribal belts of Chhattisgarh, water from a *dhodi* (4-5 feet deep pit that receives water from nearby water collection points in paddy fields) was considered safe for drinking.

Across all states, a girl's security and the financial burden of marriage were cited as reasons for child marriage. Despite awareness of family planning, most women were not using any contraceptive methods in all three states. Family planning was considered the women's responsibility by most respondents across study states, however, the decision to use 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 involvement of panchayats, self-help groups and women's cooperatives in the management of fair price shops [Khera, 2011; Rahman, 2014].

Pulses and iodized and double fortified salt are available through PDS in Chhattisgarh. Particularly vulnerable tribal group households are entitled to 35 kilograms of free rice 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 state government has launched the Mo Badi and Nutritional Clusters initiative, which focus on food diversification and availability and enhancing nutrition and hygiene awareness among pregnant women and lactating mothers through self-help groups and local resource persons [GoO, 2009].

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 promotion of local enterprise through self-help groups and their federations [www.otelp.org].

DISCUSSION

Limited data to assess women's nutritional status before, during and between pregnancies

Most large-scale population-based surveys cover adolescent girls and women in the age group 18 to 59 years without further disaggregation by age or physiological state, i.e., pregnant or lactating.

Growth monitoring data for women are linked to programmes that are centred on pregnancy. Thus, the nutritional status of women before and after pregnancy remains unmeasured or unavailable through surveys as well as routine monitoring. Also, pregnancy weight monitoring is challenging due to the lack of weighing scales and missed opportunities of measuring weight changes during pregnancy.

Programmes on all round development of adolescent girls are yet to be scaled up

Nutrition schemes for adolescents continue to be implemented in select districts and have not been scaled up despite the overall poor nutritional status of adolescent girls in the study states.

Pre-conception nutrition is not in focus in most national health and nutrition programmes

While NIPI has included the pre-conception target group under the ambit of folic acid supplementation and newly wed couples are the focus in schemes like Adarsh Dampati Yojana,³ platforms for reaching pre-conception women are not well defined in health and nutrition programmes.

Missed opportunities for utilizing existing platforms to reach out to women when most needed

All centrally sponsored government schemes are implemented in the study states. The VHSNDs, Kishori Diwas⁴ and anganwadi centres are common platforms for nutrition, health and sanitation education, which as presented in the results are not fully utilized due to the 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 most impact.

Nutrition-sensitive interventions remain underutilized despite awareness

Access to sanitation facilities and use of modern contraceptive methods have not improved significantly in the study states 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.

State-specific lessons from community engagement in service delivery are available for cross-learning

There is evidence demonstrating effectiveness of community involvement in health services

³ Adarsh Dampati Yojana is a scheme to ensure spacing of pregnancy of at least two years between marriage and first child and at least three years between first and second child.

⁴ Kishori Diwas is a special health day held once every three months dedicated to adolescent girls when they receive a general health check-up.

in specific contexts as well as experiences from various states where programme implementation and outcomes have improved by involving communities in programme review and/or management [Rifkin, 2014; Gol; World Bank, 2007].

Chhattisgarh had pioneered community representation in delivery of public health services with involvement in the

management of PDS and anganwadi centres and positioning *mitanins* long before ASHAs were introduced in the health system. While Jharkhand and Odisha too have engaged communities in service delivery, the best practices of Chhattisgarh, such as career development and security for *mitanins*/ASHAs and grading of anganwadi centres, have, however, not been adopted by the other states.

CONCLUSION

The nutritional status of adolescent girls and women is significantly worse in tribal regions compared to non-tribal ones in the study states with the exception of Odisha. The reach of essential nutrition services is lowest in Jharkhand among the three study states. Universal schemes, such as ICDS and Janani Suraksha Yojana,⁵ have not reached women from all social groups equitably.

To improve the nutritional status of adolescent girls and women in tribal areas, it is recommended that (i) pulses and oil be included in the PDS; (ii) double fortified salt be provided through anganwadis; (iii) malaria prevention be integrated, such as providing long-lasting insecticidal nets to women during pregnancy; and (iv) mid-upper arm circumference measurement be included during antenatal care.

A detailed assessment of increasing reach of nutrition services to the tribal population is needed even as many of the schemes have been evaluated or reviewed and the reasons for limited reach in tribal belts are mostly known.

Most of the innovations for improving 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. Distribution of iodized salt through PDS has resulted in substantial improvement in use of adequately iodized salt in Chhattisgarh and Odisha. There is potential for expanding the list of commodities available through PDS once it delivers efficiently.

Increased involvement of women in the management of PDS, and group savings and entrepreneurship through self-help groups have been successful in Chhattisgarh and Odisha. Through the National Rural Livelihood Mission, the promotion of self-help groups 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 provision of all services for tribal development, including nutrition, health and aligned services, by concerned departments.

Lessons from the Odisha Tribal Empowerment and Livelihood Programme on entrepreneurship among tribal women are available for replication. 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 field workers 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 pre-conception period under the ambit of nutrition safety nets. Finally, 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.

⁵ Janani Suraksha Yojana is a safe motherhood intervention under the National Rural Health Mission, with the objective of reducing maternal and neonatal mortality by promoting institutional delivery among poor pregnant women.

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TABLES

Table 1 Five essential nutrition interventions and sub-interventions, delivery platforms and availability of guidelines

Intervention	Life cycle stage			Primary ministry (Programmes and platforms)	Guidelines
	Pre-conception	Pregnancy	Lactation		
Essential intervention 1: Improving the quantity of household food consumed and its nutrient quality					
1. Access to generalized household food ration (PDS)	√	√	√	Civil Supplies (PDS - Fair Price Shops)	√
2. Access to fortified supplementary foods (ICDS)	√	√	√	MWCD (ICDS – anganwadi centres)	√
3. Access to knowledge on local diet diversity and production, preventing food adulteration	√	√	√	MRD, MWCD (ICDS – anganwadi centres)	√
4. Access to income security and work	√	√	√	MRD (JEEViKA, MNREGA – self-help groups)	√
Essential intervention 2: Preventing and managing micronutrient deficiencies and anaemia					
5. Iron folic acid supplementation as per protocol	√	√	√		√
6. Universal use of iodized salt	√	√	√	MHFW (NHM, NIDDCP, VAS, WIFS – sub-centre, anganwadi centre, VHSND, schools)	√
7. Deworming, as per protocol		√	√		√
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: Increasing women’s access to 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 check-up 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)	√	√	√	MHFW, MWCD (NHM, JSY, IGMSY– sub-centre, anganwadi centre, VHSND)	√
13. Promotion of institutional delivery	√	√	√		√

Table 1 (contd.)

Essential intervention 4: Improving hygiene and sanitation practices and access to safe drinking water						
14. Sanitation and hygiene education (including menstrual hygiene)	√	√	√	MWCD (SABLA – anganwadi centre)		√
15. Access to low-cost/contextualized safe drinking water and improved sanitation facilities	√	√	√	MDWS (Swachh Bharat Abhiyaan – panchayats, self-help groups, anganwadi centres)		√
Essential intervention 5: Preventing pregnancies that are too early, too many and too close						
16. Delaying age at first pregnancy beyond 19 years through counselling, access to family planning methods	√	NA	NA	MHFW (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, MNREGA)		√

NA - Not applicable

ICDS: Integrated Child Development Services; IGMSY: Indira Gandhi Matritva Sahyog Yojana; JSY: Janani Suraksha Yojana; MNREGA: Mahatma Gandhi National Rural Employment Guarantee Act; MDWS: Ministry of Drinking Water and Sanitation; MHFW: Ministry of Health and Family Welfare; MRD: Ministry of Rural Development; MWCD: Ministry of Women and Child Development; NHM: National Health Mission; NIDDPC: National Iodine Deficiency Disorders Control Programme; PDS: Public Distribution System; VAS: vitamin A supplementation; VHSND: Village Health, Sanitation and Nutrition Day; WIFS: Weekly Iron Folic Acid Supplementation

Table 2 Number of units in study sample in Chhattisgarh, Jharkhand and Odisha

	Chhattisgarh	Jharkhand	Odisha
Districts	5*	5*	6*
Blocks	10	10	12
Villages	30	30	36

*Chhattisgarh: Bilaspur, Durg, Jagdalpur, Raipur, Surguja; Jharkhand: Godda, Hazaribagh, Palamu, Ranchi, West Singhbhum; Odisha: Angul, Ganjam, Jharsuguda, Koraput, Mayurbhanj, Nayagarh

Table 3 Indicators for measuring coverage of essential nutrition interventions and availability of data through recent population-based surveys

No.	Intervention	State-level indicator	State-level estimates available
1.	Access to generalized household food ration	Households covered through PDS	Yes (NSS, 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 (RSOC, 2013)
		Pregnant women receiving supplementary food through ICDS	Yes (RSOC, 2013)
		Lactating mothers listed at AWC	Yes (RSOC, 2013)
		Lactating mothers receiving supplementary food through ICDS	Yes (RSOC, 2013)
3.	Access to knowledge on local diet diversity and production, preventing food adulteration	Adolescent girls/pregnant women/nursing mothers aware of local diet diversity and production, preventing food adulteration	No
		Nutrition and health education through AWC	Yes (RSOC, 2013)
4.	Access to income security and work	Women beneficiaries under MNREGA	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 (RSOC, 2013)
6.	Universal use of iodized salt	Households consuming adequately iodized salt	Yes (RSOC, 2013)
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 of prevention and treatment of malaria and/or fluorosis	No
		Pregnant women aware of prevention and treatment of malaria and/or fluorosis	No
		Lactating mothers aware of prevention and treatment of malaria and/or fluorosis	No

Table 3 (contd.)

No.	Intervention	State-level indicator	State-level estimates available
9.	Access to knowledge to stop using alcohol and tobacco products during pregnancy	Pregnant women aware of 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 (RSOC, 2013)
11.	Recording and monitoring of nutritional status	Pregnant women receiving at least three antenatal check-ups including weight monitoring	Yes (RSOC, 2013)
12.	Quality and full reproductive health, antenatal and postnatal check-up 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 (RSOC, 2013)
13.	Promotion of institutional delivery	Women delivering in health facility	Yes (RSOC, 2013)
14.	Sanitation and hygiene education (including menstrual hygiene)	Adolescents receiving low priced sanitary napkins	No
		VHSND organized every month	Yes (RSOC, 2013)
15.	Access to low-cost/ contextualized safe drinking water and improved sanitation facilities	Households with access to drinking water	Yes (RSOC, 2013)
		Households with access to improved sanitation facilities	Yes (RSOC, 2013)
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 (RSOC, 2013)
17.	Delaying repeated pregnancies through counselling and access to family planning methods	Couples using modern contraceptives	Yes (RSOC, 2013)
18.	Improving women's decision-making capacity through community support system by ensuring male and family participation	Women involved in household decision making	No

AWC: anganwadi centre; ICDS: Integrated Child Development Services; IFA: iron and folic acid; MNREGA: Mahatma Gandhi National Rural Employment Guarantee Act; NSS: National Sample Survey; PDS: Public Distribution System; VHSND: Village Health, Sanitation and Nutrition Day; RSOC: Rapid Survey on Children

Table 4 Demographic profile of Chhattisgarh, Jharkhand and Odisha

Indicator	Chhattisgarh	Jharkhand	Odisha
Population (Total)	25,545,198	32,983,114	41,974,218
Population (Male)	12,832,895	16,930,315	21,212,136
Population (Female)	12,712,303	16,057,819	20,762,082
Child population (0 to 6 years)	3,661,689	5,389,495	5,273,194
Population density (population per sq km)	189	414	270
Decadal growth rate (per cent)	23	22	14
Sex ratio at birth	991	948	971
Scheduled caste population (per cent)	13	12	17
Scheduled tribe population (per cent)	31	26	23
Adult literacy (per cent)	65	66	73
Households (n)	5,650,724	6,254,781	9,637,820
Household size	4.8	5.4	4.5
Area (sq km)	135,192	79,715	155,707
Districts	27	24	30
Blocks	146	260	314
Villages	20,180	32,583	51,527

Source: Census of India, 2011

Table 5 Public Distribution System as a source of rice consumption for households (%)

State	2004-2005	2009-2010	2011-2012
Chhattisgarh	21.7	65.5	60.8
Jharkhand	4.4	23.6	33.3
Odisha	21.5	53.8	55.3

Source: Rahman, 2014

Table 6 Coverage of supplementary food services for pregnant and lactating women under ICDS (%)

	Chhattisgarh		Jharkhand		Odisha	
	Average	Tribal	Average	Tribal	Average	Tribal
Pregnant women listed	65.4	65.8	47.0	56.8	60.6	67.7
Lactating mothers listed	81.5	85.6	72.9	82.8	76.5	81.6
Pregnant women received supplementary food for 21 days in month prior to survey	62.0	62.0	21.6	32.5*	24.8	19.0*
Lactating mothers received supplementary food for 21 days in month prior to survey	49.9	56.0	28.5	31.6	0	0

*Based on 25 to 49 unweighted samples

Source: RSOC, 2013-2014

Table 7 Household consumption of adequately iodized salt across the study states (%)

	Chhattisgarh		Jharkhand		Odisha	
	Average	Tribal	Average	Tribal	Average	Tribal
HH using iodized salt	68.7	63.7	54.9	54.4	85.7	77.1

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