

No. 1

Opportunities & Challenges in the Integrated Child Development Services' Take-Home Rations program

Overview

KEY INSIGHTS

Context: India has made important strides towards its nutrition targets, yet the malnutrition burden remains severe. The Supplementary Nutrition Program's (SNP) Take-Home Rations (THR) program provides an unparalleled opportunity to improve nutrition nation-wide, and the launch of the National Nutrition Mission (NNM) provides a catalytic and historical moment to improve the SNP's strategy and effectiveness.

Methods & Findings: Research was conducted via desk review as well as key informant consultations with ICDS staff and stakeholders across five states. Research and consultations highlighted the importance of the THR program as a key strategy to address malnutrition, as well as multiple challenges presently facing the program. These challenges include: ICMR and ICDS guideline revisions; THR recipe optimization; programmatic governance; accountability and performance management; data monitoring and review systems; quality assessment; and production and distribution model optimization. Policy Recommendations are presented to address these challenges (see Chart).

Conclusion: The SNP's THR program provides an important opportunity to improve nutrition across India, with extensive infrastructure and reach in all states. The Policy Recommendations discussed here constitute a foundation to lead further progress towards achieving the National Nutrition Mission's goals and Vision 2022 targets.

Context

The 2015 – 2016 National Family Health Survey (NFHS) demonstrated great strides in nutrition status across India. However, poor nutrition continues to be a national challenge, with 38% of children stunted, 36% underweight, 53% of women and girls anemic, and overall progress towards previously-set targets lagging.¹

The Integrated Child Development Services' (ICDS) Supplementary Nutrition Program (SNP) was established in 1975, and is today one of the world's largest supplementary feeding programs. Supplementary feeding programs aim to narrow the gap between typical dietary intake and recommended daily allowances, in a broad attempt to improve nutrition outcomes. The SNP achieves this through a variety of interventions, including Take-Home Rations (THR), which are fortified blended supplementary food products for home use, as well as regular Hot Cooked Meals provided to young children, and in some states, adolescent girls, and pregnant and lactating women. The SNP provides an unparalleled opportunity to impact nutrition outcomes on a national scale, yet ongoing challenges in implementation present barriers to achieving this impact.

In 2018, the National Nutrition Mission (NNM) was launched to combat the continued challenges with poor nutrition outcomes throughout India and provide a catalytic opportunity to move forward on the path to enhanced nutrition. In light of this important moment, in this series of Policy Briefs we address some of the challenges currently facing the ICDS THR program and potential solutions to pursue, including i) ICMR and ICDS guidelines, and THR recipe optimization (Brief #2); ii) ICDS programmatic governance, accountability and performance management, and quality assessment (Brief #3); and iii) optimizing the various THR production and distribution models, including centralized and decentralized production facilities, and decentralized Self-Help Groups (Brief #4). Each Policy Brief provides further context and makes Policy Recommendations to support the nutrition community and the NNM's work as the country moves towards reaching the Vision 2022 targets.²

In this Brief, we provide an overview of the full series of Policy Briefs, including methodology, observed challenges and best practices through state-specific case studies, and a summary of Policy Recommendations (see chart) to optimize the THR program.

chart

KEY INSIGHTS & POLICY RECOMMENDATIONS

Summary | India has made important progress towards its nutrition targets, yet rates of wasting, stunting, and other nutrition outcomes remain some of the most severe globally. The Supplementary Nutrition Program provides an unparalleled opportunity to improve nutrition nation-wide, and the launch of the National Nutrition Mission provides a catalytic and historical moment to improve the SNP's strategy and effectiveness. This Policy Brief Series provides Policy Recommendations to improve the SNP's THR program in an effort to achieve the Vision 2022 targets and the NNM's goals.

22 POLICY RECOMMENDATIONS TO OPTIMIZE SNP'S THR PROGRAM		IMPACT	FEASIBILITY
ICMR & SNP Guidelines, and THR Recipe Recommendations			
1	ICMR guidelines should be reviewed and revised to incorporate the most updated micronutrient and macronutrient guidance.		
2	At minimum, states should have at least one THR product formulated for children (6 to 36 months old) and a second product for pregnant and lactating women.		
3	Enforce the requirement for appropriate micronutrient composition in THR by ensuring universal access to micronutrient pre-mix in all states and for all producers.		
4	Increase the content of iron, folate, and zinc, and incorporate vitamins B6, B12, and D, into THR formulation.		
5	States should undertake state-specific evaluations of micronutrient deficiencies and work with the National Institute of Nutrition to determine improved recipes.		
6	THR should contain high-quality protein (per PDCAAS), and sugar content should be reduced significantly to improve nutritive value.		
Programmatic Governance, Accountability & Performance Management, and Quality Recommendations			
7	States should ensure effective implementation of the National Nutrition Mission in states to optimize multi-sectoral convergence and coordination to improve functioning of ICDS and THR administration.		
8	Develop and implement a formal ICDS performance management system, clearly defining roles, responsibilities, metrics, and accountability mechanisms for all staff.		
9	Develop and implement a formalized mechanism to regularly monitor and review data generated throughout the ICDS system.		
10	Implement a regular, localized, independent quality assessment system that evaluates quality of THR produced and monitors community-level access and uptake, and feeds data back into the ICDS system to inform programmatic improvement.		

22 POLICY RECOMMENDATIONS TO OPTIMIZE SNP'S THR PROGRAM		IMPACT	FEASIBILITY
Production & Distribution – General Recommendations			
11	Transition all state ICDS payments to e-payment systems.		
12	All steps of the THR production and distribution process should be monitored via an electronic monitoring system.		
13	Contracts for THR production should incorporate, and be contingent upon, attainment of pre-established metrics for both access and quality.		
14	THR access and quality metrics should be publicly reported.		
15	State governments should exclusively procure THR fortified with added micronutrients.		
16	States should ensure strict compliance of quality testing for THR through independent quality testing that examines food safety, micronutrient and macronutrient content and moisture level of THR. These results should be communicated back to the producer to enable quality improvement as necessary.		
Recommendations for Decentralized Self-Help Group Models			
17	Self-Help Group contracts should be awarded at the Block level to optimize production and guarantee financial viability.		
18	All Self-Help Groups should be enabled to utilize consortium purchasing mechanisms.		
19	Self-Help Groups should be graded and certified, and awarding of THR contracts should incorporate SHG grading.		
20	A quality improvement mechanism should be developed to build capacity and further develop skills among Self-Help Groups.		
Recommendations for Decentralized Production Units			
21	Contracts should be awarded based on quality parameters and incorporate advanced-market commitments from ICDS to guarantee demand and improve sustainability.		
22	Centralized producers should be held accountable for down-stream access gaps (including stockouts, late and inconsistent supply), with a portion of overall compensation tied to access.		

Methods

With the support of Tata Trusts, the research team used a combined methodology of primary desk review and key informant consultations across five states. Desk research entailed review of the nutrition literature, with a focus on international standards, Indian nutrition policy, and present challenges in India's ICDS system. Following this review, a three-person team visited five states to conduct key informant interviews between March and May, 2018. Interviews included personnel from ICDS, state and district-level government officials, development partners and major NGOs and INGOs, frontline workers including Anganwadi Workers (AWWs), Accredited Social Health Activists (ASHAs), members of local Self-Help Groups (SHGs), staff from THR production facilities, and SNP beneficiaries.³ States were selected from across India to provide representative insights, including states with different nutrition outcomes, progress towards targets, and various THR production and distribution models. States included Rajasthan, Uttar Pradesh, Odisha, Andhra Pradesh, and Kerala (Figure 1); progress towards nutrition targets, and state-specific production and distribution models can be seen in Figure 2. Throughout the research process, the team worked closely with Tata Trusts to examine, discuss and refine preliminary findings and emergent themes. Initial policy recommendations were assessed for their feasibility and impact and revised to prioritize high-impact recommendations (see chart) which are discussed in depth in this series of Policy Briefs.

Findings

THR composition requires improved regulation and formulation to meet beneficiary needs

ICDS SNP guidelines are based, in part, upon the Indian Council of Medical Research's (ICMR) recommended daily allowance (RDA) standards for India. However, ICMR standards are not fully aligned with current World Health Organization (WHO) guidelines, leading to variation between ICDS recommendations for THR formulation and composition, and global nutrition standards. These differences include, among others described in greater detail in Policy Brief #2, micronutrient RDAs, as well as macronutrient standards including content and quality of protein, and energy sources (including sugar) and caloric density. These national standards should be reviewed

THR Composition and Formulation Challenges

- ICMR guidelines are not fully aligned with WHO global standards.
- ICMR guidelines are not specific to different populations (i.e. 6-12 month-old children, 12-36-month-old children, pregnant and lactating women), and thus THR may not be fully optimized for beneficiary nutrition.
- State-based THR production does not adhere to ICDS guidelines, and THR formulations vary.
- Use of fortified foods and micronutrient pre-mixes in THR production is not widespread.
- Taste and acceptability of product varies widely across states, and limits uptake.

and brought into closer alignment with global standards. Additionally, at the state level, the THR produced does not always adhere to ICDS guidelines for THR production, resulting in additional variation in macronutrient and micronutrient composition in the current THR across many states.

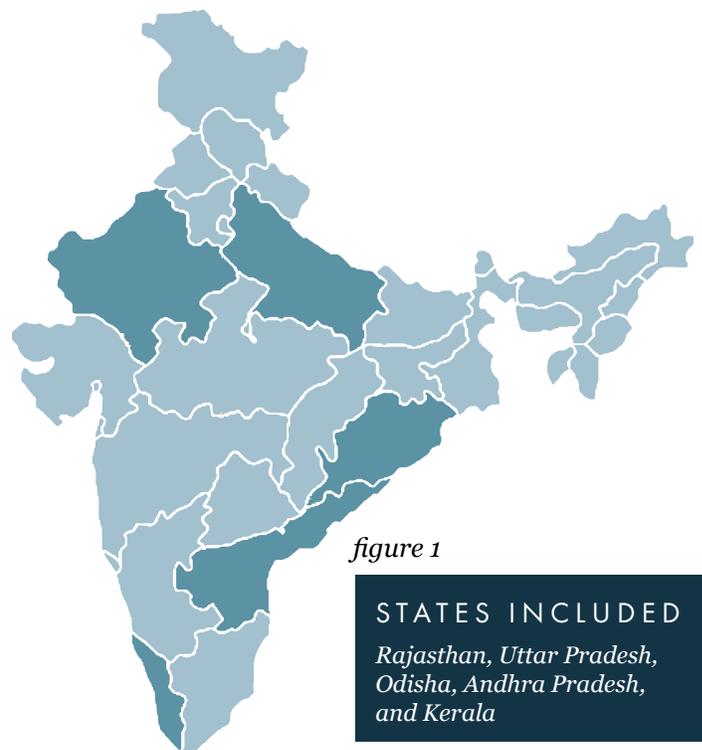


figure 1

STATES INCLUDED

Rajasthan, Uttar Pradesh, Odisha, Andhra Pradesh, and Kerala

Table 1: ICMR RDA and Rajasthan THR Composition ^{4,5}

Table 1 shows THR product composition for children 6 – 36 months of age in Rajasthan. ICDS guidelines stipulate that THR should include 50% of the ICMR RDA for nine essential micronutrients - iron, calcium, folic acid, zinc, and Vitamins A, B1, B2, B3, and C. Percentages highlighted in green show where THR product meets or exceeds this requirement, and percentages highlighted in red demonstrate where THR does not meet the ICDS guidelines. Note: while zinc is recommended in ICDS guidelines, as there is no ICMR-specified RDA for children 6 – 12 months of age it is not highlighted in this table.

NUTRIENT	UNIT	ICMR RDA	RAJASTHAN PANJIRI, ⁶ (6-12 MONTHS)	% OF ICMR RDA	RAJASTHAN DESHI MIHAI, (6-12 MONTHS)	% OF ICMR RDA	RAJASTHAN PANJIRI ⁷ (1-3 YEAR OLDS)	% OF ICMR RDA	RAJASTHAN DESHI MIHAI, COMP[4B] (1-3 YEAR OLDS)	% OF ICMR RDA
				% RDA		% RDA		% RDA		% RDA
Thiamine (Vitamin B1)	mg	0.3	0.36	121.3	0.34	113.4	0.36	72.8	0.34	68.1
Riboflavin (Vitamin B2)	mg	0.4	0.14	33.9	0.12	30.8	0.14	22.6	0.12	20.6
Niacin (Vitamin B3)	mg	5.46	1.88	34.4	1.73	31.6	1.88	23.5	1.73	21.6
Folate, total	mcg	25	59.75	239.0	78.1	312.4	59.75	74.7	78.11	97.6
Vitamin C	mg	25	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0
Vitamin A	mcg	350	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0
Calcium	mg	500	48.89	9.8	50.92	10.2	48.89	8.1	50.92	8.5
Iron	mg	5	2.62	52.5	2.99	59.8	2.62	29.1	2.99	33.2
Zinc	mg	0	2.55	N/A	2.35	N/A	2.55	50.9	2.35	47.0

BOX 1

Optimizing THR formulations in Madhya Pradesh

In Madhya Pradesh, 43% of children under 5 years of age are undernourished and 69% are anemic (NFHS 4). Beginning in 2015, Clinton Health Access Initiative (CHAI) began supporting the Department of Women & Child Development and the National Institute of Nutrition in reviewing existing THR recipes and identifying opportunities to improve the formulations, which were centrally produced by MP Agro.

The areas of review included micronutrient composition and RDA included in THR, portion sizes and caloric density, protein content and quality, fatty acid composition, and analysis of costs to ensure recommendations aligned with ICDS budgetary norms. The review culminated in specific recommendations to revise the recipe and improve the formulations for two THR products, Bal Ahar, and Khichdi. The recommended recipes led to:

- increase in iron, folate, and zinc to 100% RDA;
- addition of vitamins B6, B12, and D, at 50% RDA;
- improved protein quality (PDCAAS);
- decreased sugar content; and
- improved palatability of the products by reducing size of particles and reducing ingredients more likely to increase rancidity.

The revised recipes are included in Tables 2 and 3. These recommendations were accepted by MWCD and adopted as the new Madhya Pradesh THR standards. Currently WCD is working with producers to implement new recipes within the ICDS SNP.

For example, as demonstrated in Table 1, in Rajasthan, THR composition of micronutrients is frequently below the recommended 50% RDA (shown in red) as per ICDS norms.

These challenges, combined with wide-spread practices of THR sharing among beneficiary families and low energy-density of many THR products, results in SNP beneficiaries receiving less-than-adequate nutrient supplementation. Policy Brief #2

further describes these challenges and reviews the composition and formulation of THR product across five states, highlighting differences and opportunities to improve THR products in each.

Some states are moving forward to address these challenges. For example, THR production in Andhra Pradesh at Telangana Foods uses a micronutrient pre-mix, significantly improving composition. Madhya Pradesh has recently revised its THR recipe to improve composition and formulation - see Box 1, and Table 2 and 3.

Table 2: Madhya Pradesh – previous and updated recipes

Table 2 illustrates the revised formulation of the Bal Ahar and Khichdi products. Improvements include higher content soy flour and milk powder, decreased sugar content, and increased dal content.

INGREDIENTS	PRIOR BAL AHAR	UPDATED BAL AHAR	PRIOR KHICHDI	UPDATED KHICHDI
Wheat flour	56%	58%	--	--
Defatted Soy Flour	7%	9%	--	--
Skimmed Milk Powder	2%	8%	--	--
Sugar	25%	15%	--	--
Besan	3%	3%	--	--
Vegetable Oil	7%	7%	10%	8%
Rice	--	--	58%	62%
Soy grits	--	--	20%	10%
Moong dal	--	--	10%	18%
Masala	--	--	2%	2%

Table 3: Madhya Pradesh – nutrients of prior and updated recipes

Table 3 illustrates the revised micronutrient composition of the Bal Ahar and Khichdi products. Improvements include improved iron content, folate, zinc, and vitamins B6, B12, and D.

NUTRIENTS	UNITS	PRIOR BAL AHAR	REVISED BAL AHAR	REVISED KHICHDI MN PREMIX
Iron	mg	4.5	9.0	9.0
Vitamin A	microgram	200.0	200.0	200.0
Calcium	mg	300.0	300.0	300.0
Thiamine	mg	0.3	0.3	0.3
Riboflavin	mg	0.3	0.3	0.3
Niacin	mg	4.0	4.0	4.0
Vitamin C	mg	20.0	20.0	20.0
Free Folate	microgram	40.0	80.0	80.0
Zinc	mg	2.5	5.0	5.0
Vitamin B12	microgram	--	0.3	0.3
Vitamin B6	mg	--	0.3	0.3
Vitamin D	IU	--	100.0	100.0

Both of these examples demonstrate that it is feasible to improve the THR formulation and composition, and within the ICDS budgetary norms.

Our research and the experience in states reviewed suggests multiple opportunities for improved policy to optimize THR composition and formulation, including:

RECOMMENDATION 1

ICMR guidelines should be reviewed and revised, to incorporate the most updated micronutrient and macronutrient guidance.

RECOMMENDATION 2

At minimum, states should have at least one THR product formulated for children (6 to 36 months old) and a second product for pregnant and lactating women.

RECOMMENDATION 3

Enforce the requirement for appropriate micronutrient composition in THR by ensuring universal access to micronutrient pre-mix in all states and for all producers.

RECOMMENDATION 4

Increase the content of iron, folate, and zinc, and incorporate vitamins B6, B12, and D, into THR formulation.

RECOMMENDATION 5

States should undertake state-specific evaluations of micronutrient deficiencies and work with the National Institute of Nutrition to determine improved recipes.

RECOMMENDATION 6

THR should contain high-quality protein (per PDCAAS) and sugar content should be reduced significantly to improve nutritive value.

Programmatic governance, accountability, and quality assurance mechanisms are limited

Challenges with programmatic governance and accountability in the ICDS significantly impact the effectiveness of the SNP including in its i) governance, ii) poor accountability and lack of performance management, iii) limited use of data to improve programmatic effectiveness, and iv) insufficient quality assessment systems.

Across the ICDS, multiple challenges in governance exist including at federal, state, and local levels where programmatic service delivery is overseen. Due to the beneficiaries (women and children) and purpose (improved nutrition) of the THR program, the involvement of multiple sectors is critical to delivering a high-quality and effective program. However, the necessary multi-sectoral convergence of stakeholders and ministries was rarely seen across the five states that were researched.

In 2018, the National Nutrition Mission (NNM) was launched which offers an important opportunity to address some of these governance challenges. The NNM aims to strengthen the ICDS framework, systems, and functions, and enhance convergent nutrition activities at the federal, state, and local levels. The NNM's design includes the State Program Management Unit (SPMU) which will oversee the nutrition agenda and activities. To execute on the nutrition strategy, and to ensure appropriate coordination, Convergent Action Plans (CAPs) will be collaboratively developed across stakeholders. CAPs will be focused at multiple levels, including State, District, Block, and Village Convergence Plans, with inputs provided by stakeholders in different sectors including Health, Sanitation, Drinking Water, Rural Development, and Panchayati Raj Institutions (PRI).⁸ These action plans provide a key opportunity to facilitate multi-sectoral convergence and alignment. In parallel, NNM systems at the district and state levels will include regular review of data and progress on targets, which if utilized effectively can provide the necessary insights to improve nutrition activities and outcomes.

While the NNM has only recently launched, the political will that has catalyzed its formation, and the systems it will put in place throughout each state provide an important foundation to make progress on the nutrition agenda. In this way, it is critical that the opportunity the NNM represents be leveraged to its fullest extent.

Programmatic Governance, Management, Accountability, and Quality Challenges

- ICDS suffers from limited multi-sectoral convergence and state-level coordination.
- Technical nutrition capacity is insufficient within the MWCD.
- There is limited accountability throughout ICDS management to improving outcomes.
- Data collection, review, dissemination, and QI processes are mostly nonexistent or ineffective.
- There is limited or non-existent quality testing of THR product and little feedback from testing to ICDS staff and producers.

Secondly, in addition to challenges with governance and convergence, there remain significant challenges with staff accountability and performance. Staff throughout the ICDS system are passionate and committed to the ICDS mission, however, there remains a lack of clarity over roles and ownership of the nutrition agenda. This has led to limited accountability to programmatic outcomes, and only in rare circumstances are staff held accountable to achieving the national nutrition targets. This lack of accountability manifests in multiple ways across the ICDS, varying across states, including a work culture that is not impact-oriented, persistent tardiness and absenteeism, achievement of only partial work responsibilities, pilferage, and leakage.^{9,10,11,12} Presently, there is only limited implementation of performance management systems which create accountability to programmatic outcomes, which must be addressed immediately to optimize ICDS effectiveness.

A third key challenge is that within the MWCD, where the ICDS program sits, a lack of nutrition-specific capacity further hinders programmatic effectiveness.¹³ Fourth, the significant amount of data that is generated in the ICDS is utilized in only limited ways, and there are few examples of robust mechanisms in place that a) regularly review data, b) use data to provide feedback on performance to frontline workers, or c) capacitate frontline workers to use feedback received from their data to inform programmatic improvement initiatives. Positive examples

BOX 2

Excerpts from Odisha THR Guidelines on Contracting

A contract should be signed between the CDPO and the SHG(s) laying down the terms and conditions of preparation and supply. Normally, the contract should be for a period of one year only.

- ii. Before the end of one year a review of the SHG(s) performance should be made by the Collector after which a decision can be taken to either renew or rescind the contract.
- iii. In case any SHG(s) is found to have deviated from the guidelines and made Chhatua/ Ladoo that has less protein and calorie than prescribed or has sold the Chhatua/ Ladoo in the market by misutilizing government money, strictest possible action should be taken against the SHG(s). This would entail termination of the contract, stoppage of micro credit support by the department to the SHG(s). A fine can also be enforced on the SHG(s). Proper procedure ensuring natural justice should be followed before taking any action.
- iv. A security deposit of 1 % of the total value of production per month should be taken from the SHG(s) and kept with the CDPO and returned on termination of the contract. This should, however, be seized in case of action as mentioned above against the SHG(s).

demonstrate that these challenges can be addressed – for example, in Odisha, SHG performance and THR quality is tied to contracting showing that data can be used to provide feedback to frontline workers and that frontline workers can use this data to improve their performance (See Box 2).¹⁴

Fifth, mandated quality testing would also improve programmatic effectiveness. The quality of THR produced varies significantly across and within states, as does the ability of beneficiaries to access THR regularly. Federal guidelines through the Food Safety and Standards Authority of India (FSSAI) provide broad regulatory guidance on quality management of THR production, and states provide further specific guidelines for their production and distribution model. Some notable examples of state guidelines again include Odisha's THR guidelines¹⁵ which offer an excellent template for decentralized SHG quality testing and improvement; Kerala's Kudumbashree system which shows

how quality testing can be implemented in the decentralized production facility model;¹⁶ and, Telangana Foods which has strong quality standards and internal quality testing in a centralized production model.¹⁷ However, there is variation in the degree to which state government policies are fully implemented at the local level – in Odisha, for example, SHGs do not always receive the results of quality tests, and Jaanch and mothers' committee members do not always ensure beneficiary access or uptake.¹⁸ Further, quality testing is rarely conducted in state food labs – Kerala, for example, sends their samples to an out-of-state laboratory, which increases costs and wait times for results.

Finally, there remain significant limitations in THR access for beneficiaries across both centralized and decentralized models with frequent break-downs in the supply chain resulting in stock-outs of THR at Anganwadi Centers.^{19,20} Many states that do have quality systems in place focus primarily on quality of product; however, such systems fail to identify important barriers to access, including supply chain challenges, and poor acceptability due to taste, texture, or other preferences. Thus, quality systems should also incorporate monitoring of access as well as uptake, and this data should similarly be fed back into the ICDS system to ensure it can lead to programmatic improvement. Odisha's THR guidelines²¹ provide an excellent example of how Jaanch Committee members can play such a role at the community level (Box 3):

BOX 3

Excerpts from Odisha's THR Guidelines on THR Distribution

The THR (Chhatua) should be distributed at the AWC on the 1st and 15th of every month. The village Jaanch Committee and Mothers Committee members should remain present and ensure that the distribution is made as per the entitlement and to the right beneficiaries. The president of Mothers' Committee and Jaanch Committee will certify to this effect in the register to be maintained for this purpose at the AWC. Visiting officers and others should check at the AWC and make random visits to household to ascertain whether they have received the prescribed quantity and are consuming as per instructions.

In the context of these challenges in programmatic governance, accountability, and quality management, we believe the following recommendations could significantly improve the THR portion of the ICDS program. We provide additional detail on these recommendations and potential solutions in Policy Brief 3.

RECOMMENDATION 7

States should ensure effective implementation of the National Nutrition Mission to optimize multi-sectoral convergence and coordination to improve functioning of ICDS and THR administration.

RECOMMENDATION 8

Develop and implement a formal ICDS performance management system, clearly defining roles, responsibilities, metrics, and accountability mechanisms for all staff.

RECOMMENDATION 9

Develop and implement a formalized mechanism to regularly monitor and review data generated throughout the ICDS system.

RECOMMENDATION 10

Implement a regular, localized, independent quality assessment system that evaluates quality of THR produced and monitors community-level access and uptake, and feeds data back into the ICDS system to inform programmatic improvement.

Production and distribution models could be more effective by improving systems and utilizing existing technology

THR production and distribution across states occurs through three primary models – centralized facility production, decentralized production facilities, or decentralized Self-Help Groups (Box 4). Each model has been implemented in various manners across states, and each model provides certain benefits, while also having corresponding risks.^{22,23}

Production and Distribution Challenges

- SHG and production facility payments are frequently delayed, with limited ICDS accountability, leading to liquidity and viability challenges.
- There is leakage and pilferage of materials and THR product throughout the production and distribution process.
- There are limited feedback loops to ensure quality testing data informs and improves production.
- Beneficiary access to THR is a challenge across production and distribution models, but actors along the production and distribution chain are not held accountable for improving it.

Across India, experience suggests that at the broadest level, decentralized models provide more local access to beneficiaries,²⁴ while having greater challenges with product quality.²⁵ Conversely, centralization typically provides a greater guarantee for product quality and composition, however there are challenges with access in rural areas.²⁶ Importantly, these are generalizations, and do not apply to all systems – in Policy Brief #4 we examine each model in greater depth and make Policy Recommendations for how each model can be optimized.

One challenge that most states face, regardless of production and distribution model, is that SHG and production facility payments are frequently delayed,²⁷ leading to liquidity and viability challenges for producers. However, opportunities to improve this system already exist, for example, in Odisha, where all producers are paid via e-payments.^{28,29} Using this automated payment system decreases payment delays³⁰ and allows payments to be tied to the delivery of THR product to Anganwadi Centers. This model, also being experimented with in other states,³¹ provides a practical example for other states to consider as they grapple with payment challenges.

Pilferage and leakage of materials, including both raw materials and THR, throughout the production and distribution process is another challenge common to all production and distribution models with leakage reaching up to 53% of SNP budget in

BOX 4

THR Production & Distribution Models

In the **Centralized Production Facility model**, as seen in Telangana, one production facility is contracted to make and distribute THR for an entire state. These facilities procure the raw ingredients for all orders, often have in-house quality testing, and transport the THR to communities (typically at the block level). Centralized facilities can be run either by state governments (Box 2) or private corporations (Box 3).

In the **Decentralized Production Facility model**, as seen in Kerala, producers are typically contracted to produce THR for AWCs across multiple communities or at the Block level. These production facilities are run by SHGs who are responsible for procuring materials, either in a consortium or individually, producing the THR usually through an automated or semi-automated process, and transporting the THR to AWCs or the CDPO office. In this model SHGs may also form federations or consortia and work together for larger-scale production.[WHERE?]

The **Decentralized Self-Help Group model**, as seen in Rajasthan, is the most decentralized model. These SHGs are contracted to provide THR typically to only one or two AWCs per SHG. SHGs procure ingredients locally and produce THR often with limited or no automation. There is limited to no quality testing done in SHG models.

some states.^{32,33,34} However, there are frequently only limited mechanisms in place to track pilferage or leakage from raw materials to THR product. Additionally, disruptions in access due to pilferage, leakage, or other factors are not typically relayed back to producers, nor are producers held accountable to ensuring access. However, bar-coding provides an example of an existing technology to improve this situation, through which it is possible to track each step in the process of THR production and distribution to decrease pilferage and leakage. Bar code scanning technology is also already compatible with the ICDS-CAS system.³⁵ Some states are already experimenting with this including Gujarat, though experience is still limited.³⁶

An additional challenge is producers' lack of access to micronutrient pre-mix and fortified staples, particularly in rural

areas. For example, during visits to SHGs in Rajasthan, many SHGs were unaware of the benefit of fortified foods or where to procure micronutrient pre-mixes or fortified staples.³⁷ In other states such as Odisha and Kerala, producers were aware of where to purchase fortified staples and micronutrient pre-mix, but the cost of these ingredients limited their ability to use them in THR production.³⁸ The use of micronutrient pre-mix and fortified staples in THR production is critical to ensuring beneficiary nutrition, and therefore current norms requiring the use of micronutrient pre-mixes should be enforced by state government for all producers. This would entail government only procuring fortified THR, and incentivizing producers to use these ingredients. Given the challenges to production and distribution described above, we make the following recommendations:

RECOMMENDATION 11

Transition all state ICDS payments to e-payment systems.

RECOMMENDATION 12

All steps of the THR production and distribution process should be monitored via an electronic monitoring system.

RECOMMENDATION 13

Contracts for THR production should incorporate, and be contingent upon, attainment of pre-established metrics for both access and quality.

RECOMMENDATION 14

THR access and quality metrics should be publicly reported.

RECOMMENDATION 15

State governments should exclusively procure THR fortified with added micronutrients.

RECOMMENDATION 16

States should ensure strict compliance of quality testing for THR through independent quality testing that examines food safety, micronutrient and macronutrient content and moisture level of THR. These results should be communicated back to the producer to enable quality improvement as necessary.

Decentralized SHG THR production has limited regulation, capacity, and financial viability

In addition to lack of availability, micronutrient pre-mixes and fortified food products were not used by SHGs visited due to financial constraints.³⁹ In Rajasthan, SHGs are only allowed to provide THR product to one, or at most two, AWCs,⁴⁰ significantly limiting their profit margins, and making it more difficult to utilize inputs such as micronutrient pre-mixes. Despite this restriction, SHGs interviewed stated that they would be open to providing THR to more AWCs and that this would likely increase their profit margins as they would be able to purchase raw materials in bulk.⁴¹

Profit and bulk purchasing could also be improved through consortium purchasing. Through consortium purchasing, SHGs partner with neighboring SHGs to purchase larger amounts of ingredients simultaneously to receive better prices. SHGs cannot do this on their own when supplying to only one AWC as the ingredients would expire before the SHG would be able to use them to make THR.

States that employ decentralized SHG models also face challenges in improving their SHGs or the quality of product produced by SHGs. Lady Supervisors can submit complaints about SHGs regarding quality of the product, timeliness of delivery, or other concerns, but once a complaint is lodged there is no formal mechanism to help SHGs to improve their practices. Further, because SHGs provide to only one AWC, there is little competition to drive out SHGs that are not meeting expectations or quality standards. A parallel problem exists insofar as there is no clear mechanism by which SHGs are evaluated for skills or their ability to fulfill THR production needs prior to awarding of contracts. However, if a grading system was in place, SHGs could be evaluated to ensure they meet certain standards as a part of the contracting process. In the event that a SHG fails to maintain those prerequisites, and they were unable to improve, contracts could be offered to other local SHGs instead. States developing mechanisms to guarantee and improve quality and skills of SHGs could improve local nutrition outcomes. Programs like the National Nutrition Mission's Incremental Learning platform offer insights into what a mechanism might look like and should be considered for SHG models as well.⁴²

Decentralized SHG Production Challenges

- Fortified food products and micronutrient pre-mixes are not consistently used in SHG THR production.
- Difficult to make a reasonable profit given small SHG contract size and limited margins.
- Few states have mechanisms to improve quality of SHG-produced THR or to improve the performance of SHGs.

In light of these challenges, profit margins, SHG capacity, and regulation could all be improved in decentralized SHG models by implementing the following recommendations:

RECOMMENDATION 17

Self-Help Group contracts should be awarded at the Block level to optimize production and guarantee financial viability.

RECOMMENDATION 18

All Self-Help Groups should be enabled to utilize consortium purchasing mechanisms.

RECOMMENDATION 19

Self-Help Groups should be graded and certified, and awarding of THR contracts should incorporate SHG grading.

RECOMMENDATION 20

A quality improvement mechanism should be developed to build capacity and further develop skills among Self-Help Groups.

Decentralized production facilities require additional support and guaranteed demand

Similar to decentralized SHGs, decentralized production facilities face challenges with revenue and demand, capacity, and quality management.^{43,44} In Rajasthan, with support from GAIN, two decentralized production facilities were built.⁴⁵

Currently only one of these facilities is operating – the facility in Banswara has a contract from ICDS to produce 3 metric tons of THR per month. However, the second production facility has yet to secure a contract with ICDS and therefore has not begun production – without guaranteed demand, it is not viable for SHG consortia to operate a THR production facility.

SHGs also typically have limited management experience⁴⁶ which has led to challenges in implementation of the decentralized production facility model which requires the operation of semi-automated machinery for THR production. Capacity-building and skills-development activities may be provided when an SHG is initially contracted, but continued capacity building on a regular basis is not mandated. Kerala provides an example where continued capacity building and management oversight of production facilities has led to improved production and outcomes (Box 5).

Kerala also demonstrates the viability of external quality testing in the decentralized production facility model (Box 5). However, because of the extended period between THR production and receipt of quality testing results, it is difficult to operationalize changes and improvements to production processes accordingly, or at best, such changes take extended periods of time to occur. In other states with decentralized production facilities, external quality testing is not seen at all.⁴⁷ However, state food labs currently exist in all states in India which could support this quality testing function, and if utilized could significantly decrease the time delay for results feedback to SHGs, thereby enabling more rapid improvements and accountability for THR production.

These challenges in decentralized production facility models could be addressed through implementation of the following recommendation:

RECOMMENDATION 21

Contracts should be awarded based on quality parameters and incorporate advanced-market commitments from ICDS to guarantee demand and improve sustainability.

Decentralized Production Facility Challenges

- Decentralized production facilities do not have consistent demand and/or revenue.
- SHG members require continued support and skills development to manage facility operations .
- Decentralized production facilities do not have consistent mechanisms for external quality testing.

BOX 5

THR production in Kerala

In Kerala, THR is produced through a decentralized production facility model. SHG members receive training and continued capacity building through Kudumbashree, which is a state-run poverty eradication mission that manages a variety of income-generating and poverty-eradication schemes, including THR production. This training includes organizational development training, performance improvement programs, and entrepreneurship development, among other programs.

Production facilities produce THR through a fully-automated process. SHGs purchase raw materials in bulk and produce THR for an entire block. A micronutrient premix is not currently added to the nutrimix product. The THR is delivered to the ICDS office, where it is then distributed to individual AWCs. THR production is reported publicly through Kudumbashree's website.

THR production also undergoes external quality testing. One sample is taken from each batch and sent to a testing facility in Chennai. The product is tested for quality, composition, and moisture content. Results are sent back to the CDPO approximately three months later who communicates results to the SHG. Production facilities are also visited to ensure hygienic production conditions. SHG members must wear masks and uniforms to ensure a high-quality product.

Centralized production models have limited accountability and poor access

Centralized Production Facility Challenges

- With centralized production, THR does not reach all beneficiaries, particularly in rural areas.

In contrast to decentralized models, centralized models have higher profit margins, and more frequent access to micronutrient pre-mix and fortified staples due to their locations in primarily urban areas. However, THR is not reaching all beneficiaries in centralized states – there are frequent stockouts and irregular supply at AWCs, particularly for those beneficiaries in rural areas.⁴⁸ Not only are centralized producers not held accountable for this lack of rural access, but they are often also unaware of any access challenges downstream in the production and distribution chain.⁴⁹ In contrast, Odisha – a decentralized model – has the best coverage of supplementary food among all Indian states, suggesting that elements of the decentralized model may enhance coverage, likely through improved producer accountability in rural regions.^{50,51} Accordingly, to address access challenges in centralized models the following recommendation is proposed:

RECOMMENDATION 22

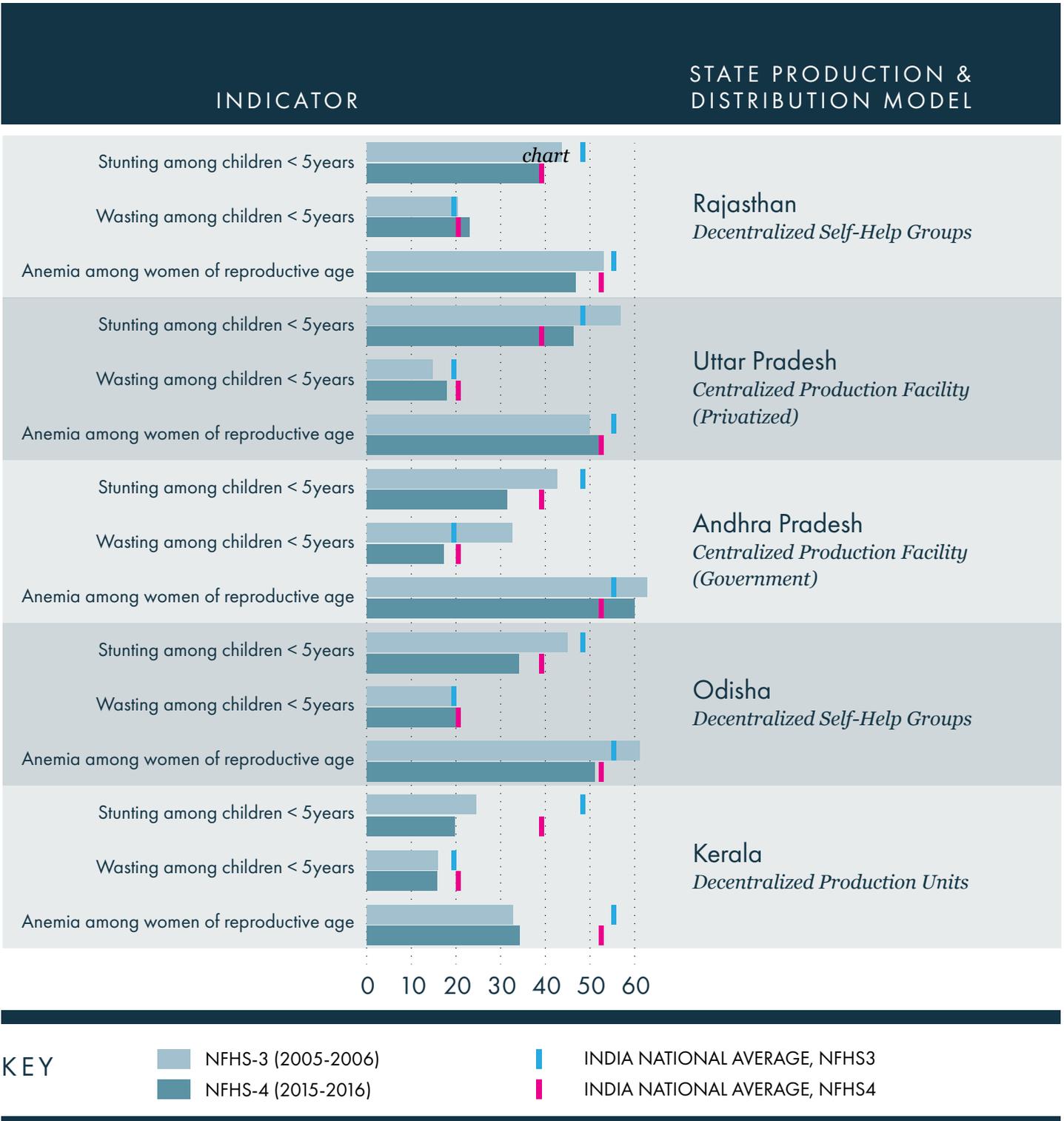
Centralized producers should be held accountable for down-stream access gaps (including stockouts, late and inconsistent supply), with a portion of overall compensation tied to access.

Conclusion

Important progress on nutrition targets across India was made between NFHS 3 and NFHS 4. However there remain significant challenges ahead as India charts a path towards its Vision 2022 goals. The ICDS SNP offers an unparalleled platform – with extensive reach and infrastructure across all states – and an enormous opportunity to address the malnutrition burden. However, to leverage the SNP, the challenges we discuss here must be addressed immediately. Our research and the collective experience of ICDS staff, beneficiaries, and stakeholders across the nutrition community demonstrate the great potential SNP provides, and we believe the Policy Recommendations presented will enable the SNP to reach that potential, leading to great impact and achievement of the NNM's Vision 2022 targets.

Figure 2

Figure 2 lists the five focus states, the main production and distribution model they utilize, and main indicators for state nutrition status.



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ABOUT PHAROS

Pharos Global Health Advisors is a non-profit policy and advisory organization whose mission is to save lives on a large scale by focusing on emerging issues in global health. Using data, analytics, and experience, we help our country and donor partners make sound decisions in the allocation of scarce financial and human resources.

ABOUT POLICY BRIEFS

This brief is a part of a larger series of policy briefs commissioned by Tata Trusts and developed by Pharos Global Health Advisors assessing the challenges and opportunities of the THR portion of India's ICDS. There are four briefs in total focusing on THR Composition and Formulation, Programmatic Governance and Accountability, and Production and Distribution. All briefs can be found at <https://pharosglobalhealth.com/resources/>.

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