Production Models

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Key messages

• There are three types of Take-Home Ration production models – centralized facility, decentralized facility, and decentralized Self-Help Group. States using the decentralized model should consider awarding contracts to Self-Help Groups at the block level to enable consortium purchasing mechanisms, build capacity, and develop skills of group members based on grades and certifications. This will optimize production, guarantee financial viability, and improve quality of Take-Home Rations.

• Centralized production facilities can be held accountable for down-stream access gaps (such as stockouts, late and inconsistent supply), with a portion of overall compensation tied to access.

• States should consider transitioning all Integrated Child Development Services payments to an e-payment system to minimize delays in producer payments.

• Producers should consider monitoring all steps of production and distribution through an electronic monitoring system to improve operational efficiency.

Introduction

Different states in India employ different Take-Home Ration (THR) production models, each of which face challenges with accountability, leakage, and quality. This article presents four actionable recommendations through which distribution systems could be greatly improved, ensuring better access to high-quality THR.

THR production and distribution is the responsibility of the state, and have flexibility in THR production within overarching norms laid out by Integrated Child Development Services (ICDS). The basic process is illustrated in figure 1. Every step of the THR production and distribution value chain is critical to ensuring a high-quality and nutritious THR product that reaches all Supplementary Nutrition Programme (SNP) beneficiaries. This article identifies challenges across the value chain and recommends steps to improve efficiency.

THR Production Models

Today, three models of THR production and distribution exist across India:

1. Centralized Production Facility: In this model, one production facility is contracted to produce 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 (Telangana, Madhya Pradesh) or by a federated cooperative society (Gujarat).

2. Decentralized Production Facility: In this model, producers are typically contracted to produce THR for Anganwadi Centres (AWCs) across multiple communities or at the block level. These production facilities are run by SHGs who are responsible for procurement of raw materials, production and distribution to AWCs or the Child Development Project Officer (CDPO) office. They may also form federations or consortia and work together for larger scale production (Kerala).

3. Decentralized Self-Help Group: These are micro-initiatives where SHGs produce THR to cover typically one or two AWCs (Rajasthan). Ingredients are procured locally; production is usually manual with limited or no automation. There is little to no quality testing done in this model.
While in the past the Supreme Court has encouraged decentralization, there are both opportunities and challenges that each of the three existing models face, as shown in table 1. This article discusses the challenges and opportunities of each individual model in detail while recommending policy initiatives to improve each of the three models.

In addition to challenges that affect each model individually, broader challenges in production and distribution exist that impact all models, as demonstrated in figure 2.

**Challenges and Opportunities**
TABLE 1: Challenges and opportunities in the three production and distribution models

<table>
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<tr>
<th>Opportunities</th>
<th>DECENTRALIZED SELF-HELP GROUPS</th>
<th>DECENTRALIZED PRODUCTION FACILITIES</th>
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<td>• Provides economies of scale</td>
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<td>• Promotes income-generating activities and female empowerment</td>
<td>• Produces THR with high nutrient value through the addition of micronutrient premix</td>
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<td>• Improves THR access in rural areas</td>
<td>• Enhanced community ownership of THR production</td>
<td>• Greater potential to ensure a high-quality product</td>
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<td>• Fortified food products and micronutrient premix are not typically used in THR production</td>
<td>• Lack of guaranteed contracts and demand from ICDS</td>
<td>• THR is not reaching all beneficiaries, particularly those in rural areas</td>
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<td>• Small contracts and margins result in challenges with financial viability</td>
<td>• Limited management experience in SHGs</td>
<td>• Corruption and poor quality are seen in some privatized centralized facilities</td>
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<td>• Few decentralized states have mechanisms to improve quality of THR product or to improve SHGs skills</td>
<td>• Delayed feedback from external quality testing leading to limited impact of results on THR production</td>
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1. **Liquidity and accountability challenges with producer payments:** Delays in payment were common across states with some producers reporting delays of over six months. Such delays can be challenging, particularly for SHGs and decentralized production facilities that have limited liquidity and rely heavily on monthly payments to continue their production process. Producers with e-payment mechanisms, however, experienced better payment regularity.

The e-payment system is distinguished by enhanced transparency and accountability in transactions, which would also benefit the ICDS system and address ongoing challenges with leakage and pilferage. Some states already use e-payment systems. For example in Odisha, e-payments are deposited into a bank account that has been set up specifically for the SHG; the SHG leadership then distributes funds to all members. Liquidity challenges improved under this system.

**Recommendation 1**

*States should consider transitioning all ICDS payments to an e-payment system to minimize delays in producer payments.*

2. **Leakage of materials and product throughout the production and distribution process:** Beneficiaries and Anganwadi Workers (AWW) reported that THR is not being received at the prescribed...
frequency and quantity. Tracking pilferage manually, however, is difficult.

Several examples of electronic tracking mechanisms successfully addressed supply chain issues by monitoring raw materials and THR product using Aadhaar4 and barcoding systems.5 In Gujarat, all materials are tracked through a scannable barcode across the THR supply chain.5 Barcoding is also compatible with the new Common Application Software - Requirement Traceability Matrix system that all AWWs had by the end of 2019. This created a further opportunity to leverage electronic tracking mechanisms to decrease pilferage and leakage.6

3. Existing quality control methods have limited success in improving THR standards: Testing of THR products is rarely standardized, or utilized to inform subsequent production practices. However, certain examples are instructive as to how states could improve practices in this regard. In Kerala, decentralized production facilities have samples of their THR tested by an external laboratory. Results are then communicated to the local CDPO with a mandate to improve quality. Underperforming facilities are required to improve their production within a timeframe or contracts are terminated.7 This feedback loop ensures that production facilities have the necessary information and are held accountable into changing their THR production processes when quality is inadequate.

Recommendation 2
Producers working closely with state levels ICDS officials should consider monitoring all steps of production and distribution via an electronic monitoring system to improve operational efficiency.

The following sections will provide a deeper look into the opportunities and challenges for each of the production models.

Quality Assessment of THR

Opportunities

There is greater community ownership
SHGs are community-based financial intermediary committees that typically consist of ten to twenty women.8,9,10,11 In addition to financial savings and lending activities, SHGs also engage in income-generating activities, and in multiple states are the primary producers of THR.12,13 Frequently, the children of SHG members and their neighbours receive the THR.14 This increases accountability and incentivizes SHG members to produce a high-quality THR product, and theoretically to also minimize leakage and pilferage, in an effort to ultimately improve the nutrition of their families and communities. Another benefit of the decentralized SHG production model is that THR is produced locally and recipes may be adjusted according to local preferences, thereby improving acceptability of the product. Profit made from THR production is retained by SHG members, increasing household income, and ultimately improving the wellbeing of those families. Having such a role in the community also cultivates respect among community members for SHG members.11,12,13,15

Access is improved
Each SHG typically supplies THR to one or two AWCs within their local communities. Therefore, even rural AWCs will have THR that has been produced locally. SHGs are also responsible for delivering the THR directly to the AWC, increasing SHG accountability for SNP beneficiary access. During state visits and key informant interviews, anecdotally, it was reported that there are fewer access challenges in this model than in more centralized models. Limited data exists to substantiate or refute this claim which could be an area for further research.

Challenges

Despite potential opportunities, SHGs also face a number of challenges across the production and distribution value chain, as shown in figure 3.

Fortified food products and micronutrient powders not used in THR production
Fortified raw materials and micronutrient premix are typically not added to THR in states employing an SHG model, leading to a THR product that is frequently insufficient in micronutrient composition.16

Small contracts lead to small margins and challenges with financial sustainability
As most SHG contracts are for only one or two AWCs, there are limited economies of scale in this model.16,17
Additionally, such small contracts do not allow for bulk purchasing as the raw ingredients are not used quickly enough. In certain states, consortium purchasing is permitted, enabling multiple SHGs to purchase ingredients together at bulk rates. However, this model has only been variably implemented. Further, given limited revenue, SHGs typically lack the capital to invest in mechanization for THR production, which impacts both efficiency as well as quality of the THR product.

**Few decentralized models have mechanisms to improve SHG production quality**

Quality and production of THR in the SHG model is monitored by female supervisors. Concerns about quality, supply or access of THR is routed through the supervisors or CDPO. If concerns are identified, SHGs will be compelled to address the inadequacies or have their contracts terminated. However, unfortunately, there are very few formal mechanisms in place to help SHGs improve their own performance if and when such concerns are identified. Secondly, even in the absence of concerns, there are limited opportunities for continued skill-development among SHG members to improve quality, production and distribution processes.16,17

A parallel problem exists insofar as there is no clear mechanism by which SHGs are evaluated for skills or their ability to fulfil THR production needs prior to awarding of contracts. In many communities there are multiple SHGs, yet not all of them are awarded contracts for THR production, given demand requirements. The development of a grading or certification process for SHG capacity for THR production could enable communities to award THR production contracts to the SHGs most well-suited and capacitated to fulfil community needs.

Given the magnitude of the malnutrition burden and the urgency to address it, for states who employ the decentralized SHG model, developing parallel mechanisms to guarantee and improve quality and skills of SHGs could lead to significant improvements in local nutrition outcomes. Programs like the National Nutrition Mission’s (NNM) Incremental Learning platform offer insights into what a mechanism might look like and should be considered for SHG models as well.18 The NNM could also engage multiple sectors in building SHG capacity, such as the Ministry of Rural Development or development partners.
Decentralized Production Facility Models

Opportunities

**Economies of scale made possible**
In decentralized production facilities, a single facility typically supplies THR for an entire block, though this varies across states. This enables decentralized production facilities to purchase the required raw materials in bulk, lowering the unit cost. With large orders and higher margins, decentralized production facilities can also invest in technology and machinery to speed production and increase efficiencies. With this increased automation, many SHGs in Odisha and Kerala reported producing other products for commercial sale to increase the SHGs’ overall revenue.\(^\text{19}\)

**Producing THR with high-nutrient value is more feasible**
The addition of a micronutrient premix to THR is more feasible for a decentralized production facilities due to automation. This practice has been seen in existing facilities, such as in Rajasthan, which is further described in article “The Banswara Model: An Experience from Rajasthan” on page 78.

**Improved beneficiary THR access**
These production facilities typically supply THR to a single block and are run by local SHGs. Production units are responsible for THR distribution typically to the AWC level, ensuring there are limited downstream access gaps and that production facilities are accountable for beneficiary access. According to a study using NFHS-4 data, highest coverage of supplementary food was seen in Odisha, which employs a decentralized facility model.\(^\text{8}\)

**Challenges**
Decentralized production facilities face a number of challenges throughout the production and distribution value chain, as demonstrated in figure 4.

**No guaranteed contracts**
While significant investment and effort may be put into the development of production facilities, contracts for THR production are not guaranteed by ICDS. Given the capital and operational expenses necessary for production facilities, this is not a viable business model without some form of guaranteed demand.\(^\text{16}\) On the other hand, ICDS should have the ability to ensure high-quality production and therefore should not be obligated to purchase from facilities without regulatory control over production quality. Therefore, to ensure financial viability of the decentralized production facility model, some form of guaranteed demand must be ensured by ICDS, and in parallel, the facilities must be held accountable to ICDS standards for quality, access, and adequate and timely supply.

**Limited management experience in SHGs**
SHGs typically have limited management experience, which has led to challenges in implementation of this model. Capacity-building and skills-development activities are often provided when an SHG is initially contracted, but is not mandated on a regular basis. In the Rajasthan GAIN-supported factory, this was found to be a limitation of the model.\(^\text{19}\) In Kerala, Kudumbashree provides management oversight for the SHG production facilities, which promotes the sustainability of SHG production.

**External quality testing results are delayed**
Although decentralized production facilities do not have internal quality testing labs, external quality testing is employed in some states, including in Odisha and Kerala.\(^\text{13,19,20}\) In these states, samples are taken from each batch of THR produced and sent to external laboratories, sometimes in different states.

Results are sent back to the local CDPO and, in some cases, the SHG themselves. However results can usually take over three months. Due to the extended period between THR production and receipt of results, it is difficult to operationalize changes and improvements to production processes in a timely manner. However, state food labs that currently exist in all states could

**Recommendation 3**
States using the decentralized model should consider awarding contracts to SHGs at the block level, enable consortium purchasing mechanisms, develop mechanism to build capacity, and develop skills of group members and award contracts based on grades and certifications. This will optimize production, guarantee financial viability, and improve quality of THR.
also satisfy this quality testing function and, if utilized, could significantly decrease the time involved in testing and results feedback, thereby enabling faster improvements and accountability for THR production.

Centralized Production and Distribution Models

Opportunities

While the Government of India (GoI) has recommended decentralization, centralized production models still remain a prominent mode of THR production.

*Provides economies of scale*

In centralized models, THR for an entire state is typically made at one facility (sometimes more) via large-scale production. This enables centralized production facilities to purchase required raw materials in bulk, lowering production costs. Centralized facilities also have the opportunity to invest in technology and machinery to speed up production and increase efficiencies. Overhead costs, including accounting and administration, may also be reduced through the efficiencies of centralization.

*Producing THR with high nutrient value is more feasible*

Due to the ability to buy in bulk, other cost savings, and the greater availability of products in urban locations, purchasing fortified staples, such as wheat, and micronutrient premix is less challenging for centralized facilities. Further, the addition of a micronutrient premix to THR production is much easier to streamline and purchase in centralized models. In many areas of India, particularly rural settings, access to micronutrient premix is limited.

*Greater potential to ensure a high-quality product*

Standardization of the production process is easier to implement in centralized facilities, thereby increasing the likelihood of a higher quality THR product, enabling improved hygienic conditions, appropriate processing times, and enhanced fidelity to approved formulation and recipes. In addition, some centralized facilities, such as Telangana Foods, have on-site quality control laboratories, which also provide a quality improvement mechanism for the facility and production process.21

Challenges

Centralized facilities also present a number of challenges across the production and distribution value chain, as demonstrated in figure 5.
Community ownership is not a central part of this model
As centralized facilities are either run by government or by a private contractor, there are few opportunities to include local SHGs in the production of THR. GoI’s order for decentralization, among other factors, was premised upon the idea that decentralization would lead to local economic opportunities and empowerment, however, this model does not prioritize this approach, which may also lead to less community ownership of the SNP and THR program.

THR is not reaching all beneficiaries, particularly those in rural areas
As centralized production models consist of one or a few number of facilities, usually based in urban areas, it is challenging to reach remote locations. According to a 2016 study, 28% of caretakers in Telangana reported that their local AWC had no THR in stock, and 39% reported that their AWC did not supply THR. Centralized facilities are not currently held accountable for any downstream challenges, at the transportation and distribution steps of the value chain, which prevent THR from being accessible to all beneficiaries.

If Recommendation 4 were to be implemented in Telangana and Andhra Pradesh, for example, where coverage issues have been reported, it is estimated that over 1 million more beneficiaries could have access to THR.

Recommendation 4
Centralized production facilities should be held accountable for down-stream access gaps (such as stockouts, late and inconsistent supply), with a portion of overall compensation tied to access.

Corruption and poor quality of THR
As centralized production models consist of one or a few number of facilities, usually based in urban areas, it is challenging to reach remote locations. According to a 2016 study, 28% of caretakers in Telangana reported that their local AWC had no THR in stock, and 39% reported that their AWC did not supply THR. Centralized facilities are not currently held accountable for any downstream challenges, at the transportation and distribution steps of the value chain, which prevent THR from being accessible to all beneficiaries.

FIGURE 5: THR production and Distribution Value Chain Centralized Models
**Conclusion**

Deciding on the best model for a state will depend on a number of considerations, and states must understand the trade-off between quality and access that each model represents. Regardless of the model, challenges with accountability, leakage, and quality are inevitable. By implementing the recommendations presented here, production and distribution systems could be greatly improved, ensuring better access to high-quality THR.

**References**


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3. Key informant interviews – Odisha, May 2018


7. Key informant interviews with SHG members in Kerala, May 2018


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16. GAIN. Case study: Empowering women entrepreneurs to produce fortified food for mothers and children in Rajasthan

17. Key Informant Interviews, Rajasthan, March 2018


19. Key Informant Interviews, Kerala and Odisha SHGs, May 2018


21. Further discussion of quality assessment and quality improvement mechanisms within the production and distribution value chain is discussed in Policy Brief 3 of this series


23. Chhabra, I. Community Participation through empowerment in India’s Supplementary Nutrition Programme.


State-wise models for production of Take-Home Ration