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Review of Take-Home Rations under the Integrated Child Development Services in India

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Disclaimer: The analysis presented in the publication was put together based on telephonic interviews with government functionaries including grassroots functionaries in few instances as well as desk research.

The document was developed prior to the Jammu and Kashmir Reorganisation Act, 2019 and therefore the maps used within the document does not take into account the reorganisation of the state.

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Foreword

I am pleased to note that the UN World Food Programme's India Country Office has undertaken a country wide review of the Take Home Rations (THR) distribution through the Angawadi network across the country under the Integrated Child Development Services scheme.

The Government of India and the State Governments invest substantial efforts and resources in the delivery of the THR to children between the age of 6-36 months and to pregnant and lactating women. For many vulnerable households, the THR are an important component in their diets and therefore, could potentially have substantial impact on nutritional outcomes of young children.

It is therefore imperative that the quality of foods and the overall nutritional value of the THR is appropriate and of the highest standard. Further, this programme can be leveraged to improve Infant and Young Child Feeding (IYCF) practices while also preventing malnutrition. However, to be effective in achieving those goals, they must not only be designed to meet special nutritional needs of these vulnerable groups, but must also be complemented with appropriate messaging of their importance besides guidance on their use, for mothers and care-givers.

This review covers the various components of the THR: from production to nutritional composition, quality control and packaging. At the same time, it provides guidance on how each component can be strengthened for improving IYCF practices. I hope the policy makers at the National and State level find this study useful and are able to use the findings to improve the overall quality of the Take Home Rations for the benefit of the vulnerable women and children and to help India reach her targets in reducing all forms of malnutrition.


(Alok Kumar)



Preface



Adequate nutrition during infancy and early childhood is essential to ensure that children are healthy and reach their full growth and development potential. Optimal infant and young child feeding practices are key in helping children reach their potential during infancy and early childhood. According to research, universal practice of optimal breastfeeding could prevent 13 percent of deaths occurring in children younger than 5 years of age globally, while appropriate complementary feeding practices would result in an additional 6 percent reduction in under-five mortality.

By the age of 6 months, an infant's need for energy and nutrients starts to exceed what can be provided by breast milk. Complementary feeding thus becomes necessary to augment the energy and nutrients provided from breastfeeding. Inappropriate and untimely complementary feeding can lead to growth faltering in young children during the weaning period of 6-24 months of age and can also result in micronutrient deficiencies and a higher likelihood of infectious illness.

Complementary foods need to be nutritionally-adequate, safe, and appropriately fed in order to meet the young children's energy and nutrient needs. Both food and feeding practices influence the quality of complementary feeding, and mothers and families also need support to practice good complementary feeding behaviours.

In order to ensure better access to appropriate complementary foods, the Integrated Child Development Services (ICDS) scheme of the Government of India provides supplementary nutrition to children in the age group of 6-36 months in the form of take-home rations (THR). The THRs are the ideal platforms to be leveraged to improve complementary feeding practices in the communities because of their focus on the given age group, vast outreach and provision of THRs. Therefore, this review was undertaken in order to compare and contrast the composition and nutritional content of the various THRs provided across the country and provides recommendations on the way forward, to guide policy and planning.



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Glossary

Working definitions for the purpose of this study:

- 1. Ready-to-Cook Foods (RTC):** These are mixtures or blends of cereal and other ingredients like pulses, oil and sugar, which may only be consumed after cooking.
- 2. Ready-to-Eat Foods (RTE):** These are processed foods made with ingredients like cereals, pulses, oils seeds, oil, skimmed milk powder, sugar etc., which may be consumed readily without any further processing or cooking.
- 3. Dry rations:** Food items like grains, pulses, sugar, jaggery, oil and egg which are given in combination with one another.
- 4. Supplementary feeding:** This may be defined as the provision of meals, drinks or snacks to children, women or families in addition to their normal diets. In this report, we have used the phrase 'supplementary feeding' when we are collectively discussing the supplementary nutrition component of the Integrated Child Development Services Scheme with reference to Take-Home Ration for women and children (aged 6 -36 months).
- 5. Complementary feeding:** Complementary feeding is defined as the process starting when breast milk alone is no longer sufficient to meet the nutritional requirements of infants, and therefore, other foods and liquids are needed, along with breast milk. This transition from exclusive breastfeeding to family foods typically covers the period from 6–24 months of age, even though breastfeeding may continue beyond two years of age. This is a critical period of growth during which nutrient deficiencies and illnesses contribute to higher rates of undernutrition in this age group.
- 6. Minimum acceptable diet:** Proportion of children (6–23 months of age) who receive a minimum acceptable diet (apart from breast milk)¹.
The minimum acceptable diet indicator combines standards of dietary diversity and feeding frequency by breastfeeding status. The numerator includes only those children who have received both the minimum dietary diversity and the minimum meal frequency for the child's breastfeeding status. The indicator thus provides a useful way to track progress at simultaneously improving the key quality and quantity dimensions of children's diets.

¹ Minimum Acceptable Diet

- For Breastfed children: breastfed children 6–23 months of age with at least the minimum dietary diversity and the minimum meal frequency during the previous day
- For Non-Breastfed Infants: non-breastfed children aged 6–23 months of age who received at least 2 milk feedings and had at least the minimum dietary diversity not including milk feeds and the minimum meal frequency during the previous day / non-breastfed children 6–23 months of age

I. Link between Take-Home Rations (THR) and Complementary Feeding

Malnutrition in children is a complex and multi-dimensional issue, caused by several factors, key amongst them being poor Infant and Young Child Feeding (IYCF) and caring practices. In the first 4 - 6 months of life, the growth rate of fully breast-fed infants in developing countries is comparable with infants from developed countries. However, after 6 months of age, or when the weaning period begins, the growth trajectories for infants from developing countries often falter due to poor complementary feeding practices.

According to the most recent National Family Health Survey (NFHS- 4), the percentage of breastfed children aged 6-23 months in India, who received a minimum acceptable diet was only 8.7 percent, compared to 14 percent for non-breast-fed children. Only 20 percent of breastfed children aged 6-23 months received a diet with minimum dietary diversity as

compared to 34 percent of non-breastfed children.

The Government of India has been implementing a number of programmes which are designed to improve the nutritional status of children in the country, including the Integrated Child Development Services (ICDS) scheme. The scheme targets children under 6 years of age and pregnant and lactating women. Through the scheme, Take-Home Ration (THR) of micronutrient fortified blended food and/or energy dense food are distributed to children between 6-36 months of age and to pregnant/lactating women for consumption at home. The principle behind providing THR is to fill in the nutrition gap and improve IYCF practices among infants and young children. The THR in effect is actually a food source for complementary feeding of young children across the country.

II. Rationale for Mapping the THR Across the Country

The table below compares the THR norms for the ICDS rations to the global guidance on infant and young child feeding as well as the recommended dietary allowances for the given age group.

Table 1: Comparison of recommended dietary allowances, complementary feeding norms and ICDS norms

Age	Indian RDA for energy / proteins	Per person per day ICDS energy and protein norms for THR	Energy requirement from complementary foods for breastfed infants	Energy requirement from complementary foods for non-breastfed infants
6 - 8 months	672 kcal/1.69 g per kg	500 kcal/12 - 15 g	200 kcal/day	625 kcal/day
9 - 11 months	672 kcal/1.69 g per kg	500 kcal/12 - 15 g	300 kcal/day	686 kcal/day
12 - 23 months	1060 kcal /16.7 g	500 kcal/12 - 15 g	550 kcal/day	894 kcal/day

- The ICDS norms for THR are constant throughout the complementary feeding age-group (6 -24 months) and beyond, despite variations in requirements of both macro and micro nutrients.
- The caloric and protein norms for THR are more than the requirements for complementary foods to be consumed by breast-fed children till 11 months of age.

Table 2: Recommended dietary allowance nutrient intakes and gaps amongst children 1 to 3 years of age and pregnant/lactating women

	Age Group 1-3 years			Pregnant Women			Lactating Women		
	RDA	Intake	Gap	RDA	Intake	Gap	RDA	Intake	Gap
Energy (Kcal)	1240	687	553	2175	1654	521	2425	1852	573
Protein (g)	22	18.6	3.4	65	45	20	75	46.7	28.3
Iron (mg)	12	4.3	7.7	38	12	26	30	11.8	11.2
Vitamin A (µg)	400	56	344	600	111	489	950	107	843
Calcium (mg)	400	161	239	1000	352	648	1000	320	680
Thiamin (mg)	0.6	0.4	0.2	1.1	1.0	0.1	1.2	1.2	0
Riboflavin (mg)	0.7	0.3	0.4	1.3	0.5	0.8	1.4	0.6	0.8
Niacin (mg)	8.0	4.7	3.3	14.0	12.4	1.6	16	14.4	1.6
Vitamin C (mg)	30	9	21	40	26	14	80	28	52
Free Folic Acid (µg)	30	18	12	400	48	352	150	53	97

- A number of micronutrients such as vitamins B-6, B12 and D, which are recommended by the WHO/FAO RDA levels for children in this age group are missing from the ICDS guidelines on micronutrient fortification. In view of the above, it is understood that a well-designed and quality

THR has the potential to improve IYCF practices as well as improve nutritional outcomes in children.

- For designing the THR and revising its standards, a mapping of the existing foods distributed under THR in the country was considered to be the first step.

IV. Possible Implications of Existing THR Norms

In order to support breastfeeding, ensure dietary diversity and inclusion of good quality local foods in a child's diet as well as to avoid excess energy consumption, the amount of energy provided by RTE or RTC food products should be less than the amounts needed by a breastfed child from complementary foods. This is also important as energy intake among young children is often

limited because of gastric capacity. High caloric value THRs could potentially:

- **Displace children between 6-23 months of age from breast milk**
- **Limit dietary diversity and interfere with consumption of local foods**
- **Promote obesity**

III. About the Study

The study was conducted by the Public Health Foundation of India in partnership with the United Nations World Food Programme, over a period of 3 months. The objectives of the study included:

1. To compare the THRs with global standards for complementary nutrition products for young children and supplementary nutrition products for pregnant/lactating women and their alignment to the principles of

complementary feeding and supplementary nutrition respectively.

2. To conduct a theoretical analysis of the ingredients and nutritional content of THRs to assess their conformity to product composition and nutritional standards laid down by the Ministry of Women and Child Development, Government of India and global standards by WHO.

3. To map the modalities of production of THR adopted by the states and Union Territories and understanding the pros and cons of each modality. To map the modalities of production of THR adopted by the states and Union Territories and understanding the pros and cons of each modality.
4. To map the types, constituents, packaging, serving size and instructions for use (availability of any recipe document or IEC material for the end users), frequency of distribution, processing methods, modality of production, and quality control and assurance procedures for production and distribution of THR in all states and Union Territories of India.
5. To develop recommendations based on the mapping exercise to improve the quality of the THRs in a bid to improve supplementary

feeding in infants, children, pregnant and lactating women.

In order to meet the objectives of the study, standardized check-lists were developed for information collection. Data for the desk review was collected through government websites and telephonic interviews with stakeholders. For interpretation and analysis of nutrient composition, Indian food composition tables and Diet Cal were used.

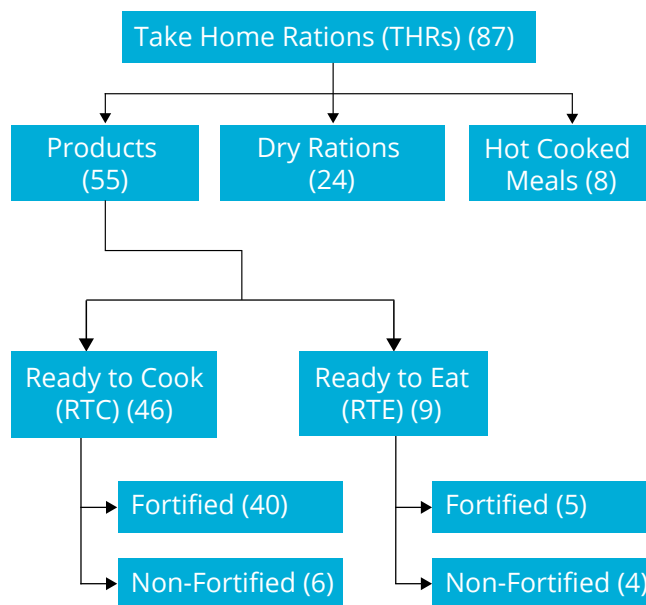
The study was limited, as it relied only on publicly available secondary information and data plus informal communication with field level functionaries. Also, the calculation of the nutritive values of the THR foods were based on only the portion sizes mentioned on the packaging. Lastly, only limited information on Quality Assurance (QA) and Quality Control (QC) were available for inclusion in this review.

V. Type of Products and Product Beneficiaries

Through the study, a total of 87 different THRs were mapped. These rations are distributed either as special products, which are extruded or blended with only some being fortified. Others are hot cooked meals or dry rations consisting of staples, pulses and other food items. As part of the study, the THRs distributed as products were categorized into Ready- to Cook (RTC) and Ready- to- Eat (RTE)- each of them were further divided into fortified or non-fortified rations.

In some states, these THRs may be targeted at specific beneficiaries, whilst in others they may be common across beneficiaries². Many of the states in the country provide THR in the form of products³, while ten states provide THR as dry rations⁴ and two states (Andaman & Nicobar

Figure 1: Categorization of THRs

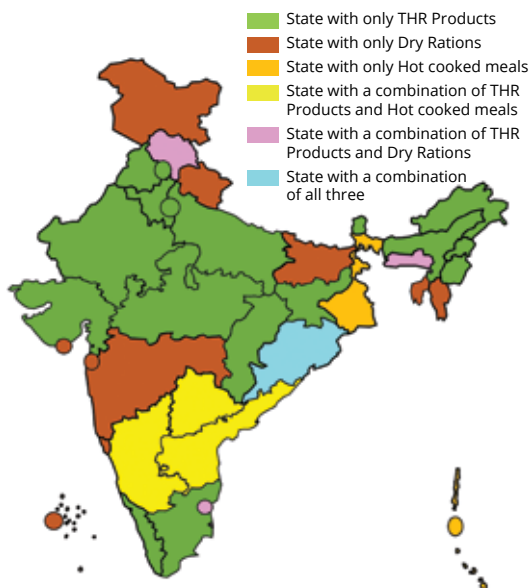


2 **No. of products by type of beneficiary:** i) Children 6 - 36 m: 24, ii) Malnourished: 2, iii) Pregnant and Lactating women: 12, iv) Children 6 - 36 m & Malnourished: 3, v) Children 6 - 36 months & Pregnant and Lactating women: 5, vi) Children 6 - 36 m, Malnourished & Pregnant and Lactating Women: 9;

3 **States which provide THR 'products' (17):** Arunachal Pradesh, Assam, Chandigarh, Chhattisgarh, Delhi, Gujarat, Haryana, Jharkhand, Kerala, Madhya Pradesh, Manipur, Nagaland, Punjab, Rajasthan, Sikkim, Tamil Nadu, Uttar Pradesh

4 **States which provide "dry rations" (10):** Bihar, Dadra And Nagar Haveli, Daman and Diu, Goa, Jammu and Kashmir, Lakshadweep, Maharashtra, Mizoram, Tripura, Uttarakhand

Figure 2: Distribution of THR by states



and West Bengal) provide only hot cooked meals⁵. The remaining seven states were found to provide a mix of either specific products or hot cooked meals⁶ or products and dry rations⁷ or a combination of all three⁸.

Several states, within the category of THR distribution, have introduced diversity and variety in the THRs. Some examples are in Andaman & Nicobar, where it is found in the form of hot cooked meals, while in Goa it is found in the form of dry rations and in Gujarat, Madhya Pradesh, and Manipur it is found as products.

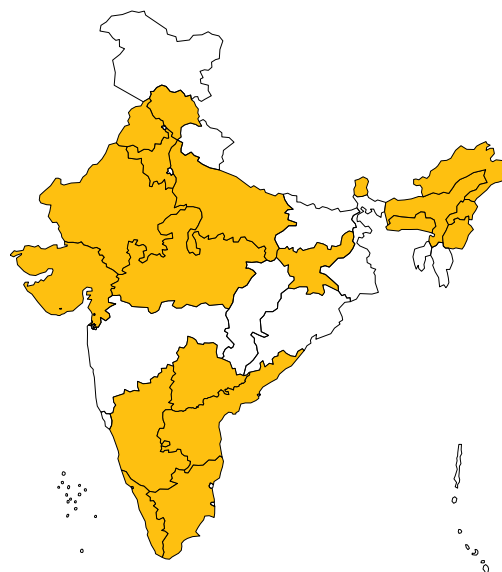
VI. Composition and Nutritional Value of THR

This section focusses on understanding the alignment of all the categories of THRs with the ICDS norms for energy, proteins and micronutrients, followed by composition analysis of the 55 products which are classified as Ready-to-Eat (RTE) or Ready-to-Cook (RTC) amongst the 87 products distributed within the THR. Within these 55 products, a deeper nutritional analysis is done of 41 products that are distributed to young children between 6-36 months of age and its further comparison against global guidelines for such products for young children⁹.

Comparison with ICDS norms for THR

According to the 2009 revised nutritional and feeding norms for supplementary nutrition in ICDS, THRs should provide 500 kcal and 12-15 gm of proteins to children between 6-36 months of age; 800 kcal and 20-25 grams of proteins to severely underweight children in the same age group and 600 kcal and 18-20 grams of proteins to pregnant /lactating women. Regarding fortification, the guidelines recommend that the THRs should provide 50 percent RDA per beneficiary per day for iron, vitamin A, calcium, thiamine, riboflavin, niacin, vitamin C and free folic acid.

Figure 3: States which provide fortified THR products



For the RTC and RTE take-home rations, there is no data available on the exact composition for a few of the products and therefore inference cannot be drawn on alignment to the ICDS guidelines; for the products for which information is available, the protein content are consonant with the ICDS guidelines. With regard to micronutrient fortification, in view of limited information available, alignment was only studied for iron. Out of the 41 products

5 States which provide only 'Hot Cooked meals' (2): Andaman and Nicobar Islands, West Bengal

6 States which provide a combination of THR and Hot-cooked meals (3): Andhra Pradesh, Karnataka, Telangana

7 States which provide a combination of THR and Dry Rations (3): Himachal Pradesh, Meghalaya, Puducherry

8 States which provide a combination of all three (1): Odisha

9 States which provide fortified THR products (19): Andhra Pradesh, Arunachal Pradesh, Assam, Gujarat, Haryana, Himachal Pradesh, Jharkhand, Karnataka, Kerala, Madhya Pradesh, Manipur, Meghalaya, Nagaland, Punjab, Rajasthan, Sikkim, Tamil Nadu, Telangana, Uttar Pradesh

for children, data was not available for three products on iron content, while 18 products had iron content as per the ICDS specifications.

For RTC and RTE products distributed to pregnant and/or lactating women, the alignment to ICDS norms for energy, protein and micronutrients is less than desirable.

Composition of the THRs

The THRs that are distributed as RTC and RTE consist of a cereal-pulse and nuts combination with or without added sugar and oil. The guiding principle for a cereal-pulse combination is the complementary nature of the combination in order to improve the protein quality of the meal.

The figure 4 and 5 show the main types of cereals and sources of protein found in the THRs. Out of 55 THRs, 27 had vegetable oil as the main source of fat while 3 had ghee as the main source of fat. Fifteen rations had no fat while data were not available for 9 of the rations. For sugars, 38 used regular sugar while 4 included jaggery. The others did not have sugar (4) and data were not available for 9 of the rations.

Figure 4: Types of cereals in THR (N = 55)

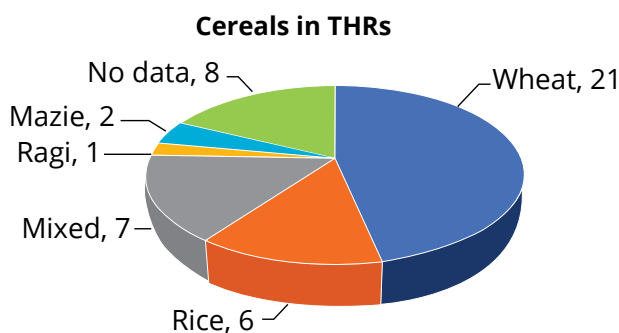
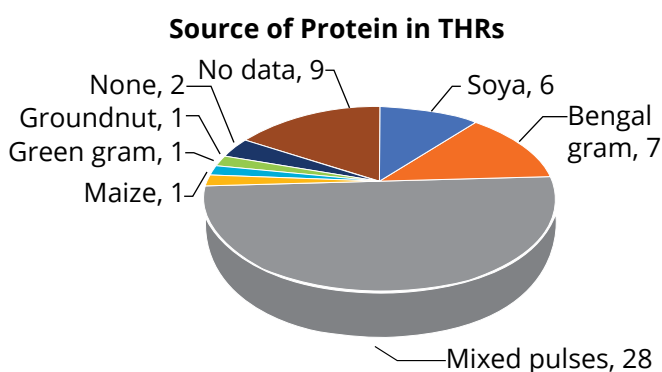


Figure 5: Protein sources in THR (N = 55)



Note: i) Panjiri (Haryana) and Biscuits (Nagaland) are products with no added lentils / pulses as source of proteins, (ii) Khichadi premix (Madhya Pradesh), Multigrain Nutrimix in Karnataka and Fortified Nutro-Upma in Jharkhand do not have any added sugar

Nutritional Analysis of Products Distributed to Children Between 6-36 Months of Age

In total, 41 of the 55 RTC/RTE product categories are distributed as THR across the country to young children. According to the 2017 Codex Alimentarius guidelines on formulated complementary foods and the Nutritional guidelines for complementary foods and complementary food supplements supported by GAIN, such products should ideally adhere to the criteria summarized in Box 1 below.

Box 1: Ideal composition for products which cater to young children

- Kcal/kilojoules (kj) per serving: up to 100-150 kcal / 418-628 kj
- Kcal/g of product as served: At least 0.8 kcal/g (3.3 kj/g) but higher energy density preferable.
- Serving Volume (prepared product or ready to eat): < 175 ml
- Viscosity: Not possible to be fed in a bottle
- Consistency of product or when eaten: semi-solid (not liquid)
- Protein: 10 -15 percent of energy as protein; PDCAAS > 70 percent
- Fat: at least 20 percent of energy as fat and more preferable
- Essential fatty acids: Ratio linoleic to alpha-linolenic acid 5 to 10:1; Alpha-linolenic acid content: Contain at least 130 mg, more preferable
- No hydrogenated fats with trans-fatty acids
- Added sugar: Preferably less than 10 percent of energy
- Milk: Should contain at least 5 g of milk solids non-fat (MSNF); sources of MSNF include dried skim milk, whey, full-fat milk, and semi-skimmed milk solids

A total of 38 of the 41 products in the children's THR provide at least 0.8 kcal/gm of energy while data is not available for the remaining three. The average **energy contribution from carbohydrates is about 64.5 percent.**

With regard to energy contribution from proteins, 31 products are compliant to the

global guidelines, 6 products do not comply to the global guidelines, while data is not available for 4 products. The average **energy contribution from proteins is about 12 percent** while the lowest energy contribution from proteins is noted in the panjiri¹⁰ (7 percent) distributed in Haryana. Nineteen of the 41 RTC/RTE products for children were compliant to the global norms for energy contribution from fats, 11 do not comply, while data was not available for 11 of these products.

The average **energy contribution from fats is about 22.5 percent** with the highest being noted in milk powder (48.5 percent) in the THR in Meghalaya.

VII. Production of THR

The Supreme Court of India issued an order in 2004 to decentralize the production and distribution of THR with the involvement of local Self-Help Groups (SHGs), in an attempt to surmount corruption and leakages in food supply chain through contractors. Despite this directive, majority of the states are still observing the centralized model for production of THR.

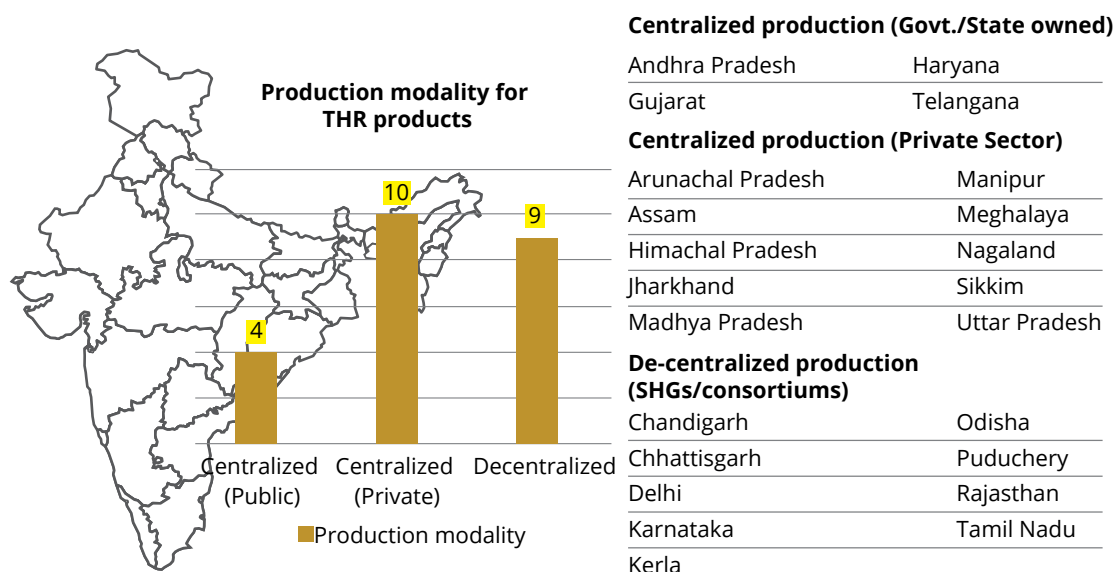
In the centralized production modality, one or more production facilities are contracted by the state to procure raw ingredients, produce and distribute THR for the entire state (often

Further, 24 of the 41 products distributed to young children do not comply to the global guidance on the energy contribution from sugar, 3 products do not contain any sugar and data was not available for 14 products. The average **energy contribution from sugars is about 23 percent** with highest in panjiri (33 percent) distributed in Delhi and the lowest in energy dense daliya distributed in Uttar Pradesh.

A total of 11 of the 41 products also contain milk/milk products as a component and these are distributed in the seven States of Karnataka, Madhya Pradesh, Manipur, Nagaland, Andhra Pradesh, Arunachal Pradesh and Uttar Pradesh.

up to block level). The contracted production facility may be a state-run entity or a private one while in the de-centralized production modality, production facilities are locally contracted to produce and distribute THR for Anganwadi Centres (AWCs) across multiple communities, at block level or for 1 to 2 AWCs. These production facilities are run by SHGs who are responsible for procuring materials, either in a consortium (e.g. Kerala) or individually (e.g. Rajasthan). Both the models, centralized and de-centralized, have their own advantages and drawbacks.

Figure 6: THR Production modality by State



**12 states only provide HCM or Dry Rations, while few states have a mixed model.*

10 Local blended food used in some THR

Table 3: Comparison of opportunities and challenges in THR production modalities

Parameter	Centralized	De-centralized
Opportunity	<ul style="list-style-type: none"> • Lower production costs due to economies of scale and increased efficiency due to automated production facility • High quality product with high nutrient value can be ensured with integration of fortification during the process of production (given an automated process of production) 	<ul style="list-style-type: none"> • Promotes procurement of food from local sources, thus encouraging local agricultural economies, ensuring sustainability • Promotes income-generation activities and women empowerment • Enhanced community ownership of the THR
	<ul style="list-style-type: none"> • Quality assurance / quality control – more access to better lab. testing facilities, given production facilities located in urban areas 	<ul style="list-style-type: none"> • Shelf life vis-à-vis time spent in supply chain • Improved access to THR product in rural areas • Enhanced use of locally available products for THR production, thus producing a locally acceptable menu
Challenges	<ul style="list-style-type: none"> • THR may not actually reach all intended beneficiaries (pilferage, leakage etc.), especially rural areas • Quality testing / lab analysis may be compromised, especially with private contracted manufacturers • Reduced shelf life of the product / need for efficient transport arrangements • Poor quality products are seen in some private centralized production facilities • Product acceptability 	<ul style="list-style-type: none"> • Limited quality control / quality assurance (limited quality testing during production / finished product) • Cost of production may be higher (economies of scale do not apply especially with SHG production for 1-2 AWCs) • Fortification of THR is a challenge (since THR may be produced with limited or no automation) • Possibility of interrupted production – in absence of transparent accountable mechanism for regular payment to contracted vendors • Potential for corruption / malpractices during procurement / contracting of vendors • With the SHG model, guarantee of contracts is a must for their financial sustainability. Further, SHGs require skill and capacity building

VIII. Quality Control and Quality Assurance

Quality control (QC) is a set of activities for ensuring quality in food products by identifying defects in the actual products produced. It is a reactive process and aims to identify (and correct) defects in finished products. Quality Assurance (QA), on the other hand, is a set of activities for ensuring quality in the processes by which products are developed. It's a proactive process and aims to prevent defects by concentrating on the process used to make the product.

As per the operational guidelines for food safety and hygiene in ICDS (notified in MoWCD order F. No 5(25)/2010/ND – tech pt. dated 24th December 2013), the following needs to be taken care of, with regards to ICDS foods and THRs:

- It should be ensured that the ICDS food should be free of any contamination and adulterants.
- Segregation should be provided for the storage of raw, processed, rejected, recalled or returned materials or products.
- Containers made of non-toxic materials should be provided for storage of raw materials, work-in-progress and finished / ready to serve products.
- No raw material or ingredient thereof should be accepted by an establishment if it is known to contain parasites, undesirable micro-organisms, pesticides, veterinary drugs or toxic items, decomposed or extraneous substances, which would not be reduced to

an acceptable level by normal sorting and/or processing.

- FIFO- 'First in First Out' system should be applied to release the raw materials (for processing, packaging and delivery) in order to protect the food from being stored too long and becoming contaminated or spoiled.
- At regular intervals, food should be sent for laboratory testing. The states and UTs may consider engaging CSIR institutes/National Accredited Board for Laboratories and other recognized labs for carrying out sample checking of SNP, to ensure quality food is provided through ICDS.
- Periodic inspection (preferably every week) of all items stored should be carried out.
- The 5 Tier Monitoring and Review Committees setup under ICDS should monitor the different aspects of supplementary nutrition and ensure that food safety measures are adhered to at all levels.
- District level officials such as CDPOs, ICDS supervisors, have the primary responsibility of monitoring of supplementary nutrition. ICDS supervisors should ensure that all Anganwadi centres under their jurisdiction follow proper norms of food handling.
- Analytical parameters that should be tested include:
 - Protein
 - Energy
 - Minerals-iron and calcium
 - Vitamins- A, C, B1, B2, B3, Folic acid
 - Total aflatoxin
 - Shelf life of the product
 - Heavy metals
 - Pesticide residues
 - Microbiological parameters-TPC, yeast and mould, coliform, E. coli, S. aureus, Salmonella, Clostridium Botulinum

For this study, information on the QC and QA mechanism could be found for only some of the states and UTs. Of the states for which information was available (12), only limited details could be retrieved. These states include Andhra

Pradesh, Arunachal Pradesh, Assam, Jharkhand, Kerala, Meghalaya, Manipur, Madhya Pradesh, Odisha, Rajasthan, Sikkim and Uttar Pradesh.

Based on the information from these 12 states, broadly, the following may be stated:

- a. If a THR product is produced centrally by either a private/public enterprise, then the responsibility of quality control and laboratory testing rests with the given entity.
- b. In the decentralized production model, NABL accredited laboratories are contracted by states for THR testing. These labs receive random samples of THR collected from AWCs.
- c. Supervisors regularly visit the production sites (decentralized model) to ensure the quality level.
- d. The frequency of sample collection varies from monthly to quarterly depending on the state.
- e. Quality control parameters that are regularly checked include:
 - Energy and protein content
 - Micronutrient content (fortified as well as non-fortified product)
 - Aflatoxin level
 - Microbiological parameters like yeast and mould count, Total Plate Count etc.
 - Percentage of moisture and ash
 - In certain cases, flour characteristics are also tested.
- f. There is no pre-defined time period for the receipt of the laboratory reports for the THRs. Often the report is received once the THR has been distributed and consumed in the communities.
- g. States do not have any clear protocols on corrective measures to be taken in case a product is found not to conform to the quality standards.
- h. Except for withholding payment (Odisha), or issuing warning/ cancelling contracts (Rajasthan), none of the states have documented protocols for corrective measures in case samples sent for testing are returned with negative results.

IX. Shelf Life and Frequency of Distribution

Shelf life details were collected only for RTE or RTC products. The shelf life for these products varies between 15 days - 6 months¹¹. Typically, the products which are produced centrally by private firms have a longer shelf life whereas, those products produced by Self-Help Groups or Women's Cooperatives have a lower shelf life.

The frequency of distribution of the products also varies across different states and UTs from

daily, weekly, fortnightly to monthly.

The possible reasons for the variability in the frequency of distribution could be (i) to accommodate the shelf-life of the product; and (ii) dependence on the modality of procurement and production (centralized vs. decentralized) as the former model may limit frequent distribution of products.

X. Packaging and Labelling of THRs

The packaging and proper labelling of the THR is crucial in maintaining its quality. According to the Operational Guidelines for food safety and hygiene in ICDS, (notified in MoWCD order F. No 5(25)/2010/ND – tech pt. dated 24th December 2013), THRs should comply with the following for packaging and labelling:

- Packaging material should be those which are permitted as laid down under the Food Safety and Standards Act, 2006 and the Regulations there under.
- Processed food should be packed on the day of production to prevent any possible infestation or adulteration.
- Packets should carry proper labelling and information such as:
 - Name of the Product
 - Nutritive value

- Ingredients used
- Instructions for use /process of consumption
- Best before
- Batch no
- Date of packing
- Weight of the product
- Name of the producer
- Address of the producer
- All packets should carry the Label: **FOOD FOR ICDS SUPPLEMENTARY NUTRITION – FOOD NOT FOR SALE.**

Global guidelines for such products recommend that their labelling and marketing must comply with International Code of Marketing of Breast-Milk Substitutes and subsequent World Health Assembly Resolutions.



In the picture: THR products.: From (L-R), THR products distributed in Nagaland (Soya based energy biscuits, Biscuits, Cornflakes), Rajasthan (Babymix), Andhra Pradesh (Balamrutham) and Uttar Pradesh (Meetha Daliya)

¹¹ Babymix, THR product of Rajasthan has the shortest shelf-life of 15 days whereas the products distributed in Arunachal Pradesh, Manipur, Meghalaya have a longer shelf-life of 6 months

Of the 55 RTE/RTC products distributed as THRs, information could be found for only 39 products which are distributed in 17 states¹².

- Most of the packages comply with the National guidelines and some packages even display additional information on fortification, FSSAI license number and the ICDS logo.
- Given the range of products available in a few states (such as Odisha), the products are packaged in colour coded bags specific to the target beneficiary.
- Almost all the centrally produced products from different states and UTs have images of mother and a happy child on the package.
- Labels are always in the regional language. In the case of products from North-Eastern states, labels are in English.

Though required, the labelling lacks information on instruction for use, reconstitution, optimal utilization of the product and daily serve size. The state of Jharkhand provides fortified panjiri food in packets which contain the exact prescribed amount of THR to be consumed by the beneficiaries in a day.

Though the majority of these products are meant for infants and young children, most do not meet the required prescription of global labelling norm that mandates the compliance to International code of marketing of Breast

Milk (BM) substitutes and WHA resolution (WHO 1981).

As per The Infant Milk Substitutes, Feeding Bottles and Infant Foods (Regulation of Production, Supply and Distribution) IMS Act, no person is authorized to produce, supply or distribute any infant milk substitute or infant food unless every container or any label affixed thereto indicates in a clear, and in an easily readable and understandable manner, the words “important notice” in capital letters and indicate there under the following particulars in the same language, namely:

- A statement “mother’s milk is best for your baby” in capital letters;
- A statement that infant milk substitute or infant food should be used only on the advice of a health worker as to the need for its use and the proper method of its use;
- A warning that infant milk substitute or infant food is not the sole source of nourishment of an infant;

Furthermore, as per the IMS Act, no container or label relating to infant milk substitute or infant food should have pictures of an infant or a woman or both; or have pictures or other graphic material or phrases designed to increase the salability of infant milk substitutes or infant food; or use on it the word “humanized” or “maternalized” or any other similar word.

XI. Leveraging THR for Information, Education and Communication

Distribution of THR provides an opportunity to deliver one on one messages on infant and young child feeding practices while the packages of THR can be used to further strengthen the same. This is equally relevant for women who need to understand the importance of THR for supplementing their daily diets.

In the States of Arunachal Pradesh, Gujarat and Madhya Pradesh, the packages carry information on product preparation while in Odisha the package carries information on the importance of breastfeeding. In States such as Kerala, Jharkhand and Sikkim- specially designed IEC material linking THR to the daily diet of the child are distributed.

¹² States with information on packaging and labelling: Andhra Pradesh, Madhya Pradesh, Sikkim, Arunachal Pradesh, Manipur, Telangana, Chandigarh, Meghalaya, Uttar Pradesh, Delhi, Mizoram, Gujarat, Nagaland, Jharkhand, Odisha, Kerala, Rajasthan

XII. Recommendations

Based on the findings of the study, the following recommendations are proposed:

Product composition:

- Government guidelines should be issued which include the following:
 - Specify the nutritional value of THR beyond kcal and protein content
 - Mention the broad THR composition while allowing scope for contextualization
 - Updated micronutrient fortification guidelines aligned with RDA ICMR 2010 while including other type 2 micronutrients for fortification
 - Guidance to limit sugar content to less than 10% of overall energy
 - Enhance fat content-at least 20% or more energy in the products should come from fat
 - Encourage addition of milk powders to improve protein content And quality

Production of THR

- For both centralized and decentralized modalities:
 - Timely payment to producers by switching to e-payment mode
 - Reduce pilferages and leakages in the system by switching to electronic tracking mechanisms
 - Contracts for THR should be negotiated to ensure timely delivery of a quality THR product to the community
 - Contract termination with facilities whose results consistently demonstrate poor THR quality despite warnings
- For decentralized modalities only:
 - SHGs should be permitted to utilize consortium purchasing mechanisms
 - SHG contracts should be awarded at block level to optimize production and guarantee financial viability

- Grading of SHGs to help contract award
- Development of a quality improvement mechanism to build capacities of the SHGs
- Advance market commitments from public sector to create demand and improve sustainability Capacity building of women SHG members engaged in THR production on entrepreneurship and business management
- Link these group with other potential commercial markets for sale of products (social marketing of THR/ use of equipment to make other products), so as to provide a model for financial sustainability

Quality control and assurance

- Mandatory testing of pre-identified parameters of quality should be a criterion for award of contract
- Institutionalization of independent QA/ QC mechanisms within ICDS systems from production to distribution point
- Timely reporting of quality checks to the producer for action

Packaging, labelling and IEC

- Expanding the scope of the existing ICDS guidelines for packaging and labelling that is aligned to the International code of marketing of breastmilk substitutes
- Opportunity for IEC:
 - The THR packages can be utilized to convey appropriate messaging on infant and young child feeding practices (IYCF).
 - The THRs should be well integrated in the messaging and Social and Behaviour Change Communication on IYCF in the field
- Use of per day ration packets or distribution of graded utensils to ensure requisite consumption of THR



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