Report of the Fact-Finding Visit to Chhattisgarh, on Rice Fortification in Government Food Schemes

June 13-15, 2022

Alliance for Sustainable & Holistic Agriculture (ASHA-Kisan Swaraj)

Right To Food Campaign

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1. BACKGROUND

Prime Minister Mr Narendra Modi revealed the ambitious plans of Government of India in his Independence Day Speech of 2021, to supply fortified rice in all food schemes of India by 2024. Earlier in 2019, GoI initiated a Pilot Scheme for "Fortification of Rice and its Distribution under Public Distribution System" for 3 years, with an outlay of Rs.174.64 Cr. and this scheme was expected to unfold in 15 districts of 15 states uptil March 2022. One of the stated objectives of this Pilot Scheme is *"to evaluate the provision, coverage and Utilization of Fortified Rice by the target population as well as the efficiency/effectiveness of the consumption of fortified rice in reducing the targeted micronutrient deficiencies in different age and gender groups"*. Even as the Pilot Scheme is underway, without really taking off as per plan, fortified rice distribution has been scaled up to 257 districts of India in fifteen states by April 2022, covering more than 1.1 crore beneficiaries (in May 2022, the official portal shows only 11 states and 248 districts, however). It is reported that Food Corporation of India (FCI) and other state agencies have already procured around 88.65 Lakh Metric Tonnes of Fortified Rice for supply and distribution (this had touched 1.23 crore metric tonnes of total FR procured by end of May 2022). Within this, approximately 4.3 Lakh Metric Tonnes have been distributed through PDS in the Pilot Districts. More than 150 FRK suppliers have been made part of this program of Government of India where a new market has been created for these entities; additionally, more than 5700 rice millers had to upgrade their facilities to enable blending of fortified rice into natural rice, on the insistence of the Government.

Distribution of fortified rice thus appears to be the primary strategy of the Government to tackle malnutrition in the form of Anaemia in the country.

1a. ISSUES/CONCERNS WITH IRON FORTIFIED RICE AND ITS DISTRIBUTION IN GOVERNMENT FOOD SCHEMES

Synthetic fortification is not proven to be effective, and can even be dangerous to many Indians: There is no consensus that fortification works. Evidence published in the Cochrane Review in 2019 shows that iron-fortified rice is not effective in addressing anaemia. In its reply to an RTI application, ICMR-NIN (Indian Council of Medical Research – National Institute of Nutrition) (under the Department of Health Research, Ministry of Health and Family Welfare, Government of India), stated that while ICMR-NIN has not conducted studies on the impact of chemically fortified food in pregnant women, feeding mothers and under-five children, it has conducted a double blind randomized controlled study in government primary school children (5-11 year age group) on chemically fortified rice served as part of their mid-day meal. In this study, it was found that iron fortified rice had similar effect as mid-day meal on improvement in anemia. The mean hemoglobin concentrations increased to a similar extent and decreased the prevalence of anemia in children who consumed either iron fortified rice or unfortified rice, as per this study.

While there are unanswered questions on efficacy of this approach, there are also concerns about safety of iron-fortified food, especially to people with certain medical conditions. Excess iron is known to create oxidative stress and even small amounts of Iron are contra-indicated in the case of diseases like Thalassemia, Sickle Cell Anaemia, and during certain stages of acute infections such as Malaria or Tuberculosis. It is contra-indicated in the cases of Severe Acute Malnourishment also. The number of Indians with such diseases is significant and most are not even aware that they have such conditions. In this one-size-fits-all solution, fortified rice is being pushed onto unsuspecting citizens who have not given their prior informed consent to such food.

Real community-controlled solutions neglected and eroded: When the Government aggressively promotes a singular reductionist corporate-controlled silver bullet solution like fortified rice, a myriad diverse local and natural solutions get neglected and even eroded. These diverse local and natural solutions primarily revolve around enhancement of dietary diversity and providing adequate calories for the affected. Nutrition cannot be approached through a micro-nutrient by micro-nutrient formula; it needs a holistic approach. For instance, for haemoglobin synthesis to take place, all available evidence shows that adding more iron into diets without a host of supportive enzymes, quality proteins, and other vitamins does not lead to iron absorption but only to higher ferritin levels, which is associated with biological risks pertaining to increased stores of iron in this form. The government's rice fortification policy promotes polished white rice as the staple that Indians must rely on for the nutrients. Polished white rice, born out of a narrow genetic base of modern breeding, begins to be viewed as a one-size-fits-all solution, just because it is fortified. The excessive consumption of cereals like rice, referred to as the 'cerealization of Indian diets' is actually a potential public health problem, increasing the risk of large-scale diabetes and hypertension, both a result of heightened triglycerides and of insulin resistance from too much carbohydrate consumption. Moreover, large scale fortification will lead to irreversible market shifts, with concomitant infrastructure changes in the supply chain.

On the other hand, protein-rich diets, millets, healthy fats, traditional rices that are nutritionally superior, staple grains that are traditionally processed to preserve their nutrients, local (uncultivated) greens, diverse forest foods, and other material that can come from millions of kitchen gardens and other locally led efforts, will all be neglected by such a policy.

Food fortification is a multi-million-dollar corporate controlled industry: In the government-promoted reductionist approach which is potentially risky, monies will be gained by market players of various kinds. The global supply of several micronutrients for food fortification is an industry controlled by a few mega-corporations. India will end up importing several synthetic vitamins as they are not produced in the country.

Threat to local livelihoods: The majority of our food is produced, processed and sold in the unorganized sector and is led by small and medium players. Even as rice fortification will create assured markets for foreign and Indian micronutrient mega companies, any push towards mandatory fortification will threaten local livelihoods including of those social enterprises that promote ethical, environmental and healthy food supply chains through better production and processing technologies and practices. In fact, the threat to livelihoods is also to small rice millers because of the new infrastructure required to fortify rice.

Policy Decisions are ridden with Conflict of Interest: In the Government's rice fortification push, the presence of foreign and Indian corporate lobbies is clear. Entities that will benefit from the rice fortification push are even housed in regulatory bodies like Food Safety and Standards Authority of India (FSSAI). These vested interests are wielding disproportionately enormous influence on policy decision-making even as the primary stakeholders like poor communities have not been informed or consulted.

A leaflet on this hyperlink explains the above issues in adequate detail.

1b. REASON FOR THIS FACT-FINDING VISIT

There were reports of adverse effects on some people in Khunti district of Jharkhand, which prompted a fact-finding visit in Jharkhand from teams of ASHA (Alliance for Sustainable & Holistic Agriculture) and Right to Food Campaign (RTFC) in the month of May 2022. The fact-finding report from Jharkhand is available here. Literature search for that effort led us to media reports of complaints from certain places in Chhattisgarh also, with regard to "plastic rice".

After having understood in Jharkhand field visits that local communities have been referring to fortified rice as plastic rice, and after understanding that Chhattisgarh government is moving forward more rapidly than most other states on rice fortification, a fact-finding visit was planned to Chhattisgarh by ASHA and RTFC.

Prior to this, for about an year now, national groups like Alliance for Sustainable & Holistic Agriculture (ASHA-Kisan Swaraj) and Bharat Krishak Samaj have also engaged with the issue of near-mandatory fortification of rice in India, along with many public health experts and nutrition experts. Letters have been sent to concerned authorities in the Government of India and also personal meetings held. Meanwhile, as part of its Food For Future work, Greenpeace India also released a report called "Adding Diversity to Plate" (February 2022) which also highlighted various concerns with regard to rice fortification and made public responses to RTI queries to government agencies.

1c. COMPLAINTS AND SIMILAR INCIDENTS REPORTED FROM OTHER PARTS OF INDIA

While ASHA-Kisan Swaraj and Right to Food Campaign organised this fact-finding in four districts of Chhattisgarh state (Bastar, Kondagaon, Korba and Surguja) based on ground-level reports and by including the pilot district for rice fortification in the state, the reports are not isolated. In Chhattisgarh itself, there have been complaints from other places like Kawardha, Dhamtari, Kanker etc.

Further, a cursory online search of news articles shows numerous adverse reports emerging from different parts of the country. These reports are from Jharkhand and Chhattisgarh as well as Uttar Pradesh, Bihar, Assam, Maharashtra, Madhya Pradesh, Himachal Pradesh and West Bengal as of now. There could be many other reports in local languages that our search in english and hindi may not have brought out.

These reports mainly centre around (a) communities rejecting fortified rice on numerous grounds, including on the assumption that "plastic rice" has been supplied in the monthly rations that they purchase from PDS dealers – it is clear that the fortificant is not unnoticed, and not preferred by many; (b) children/other community members falling sick after consuming fortified rice (from Bokaro in Jharkhand, West Medinipur in West Bengal, Patna in Bihar and Korba and Baloda in Chhattisgarh); (c) complaints/protests, special visits and meetings or statements by officials and others to look into the complaints and to educate communities about the benefits of fortified rice. Where communities have been reported to reject the fortified/plastic rice supplied in the PDS shops, it has also been reported that they have begun feeding the rice to livestock, or throwing them in garbage and that they have also threatened to stop to buy their entitlement from the ration shop, or that they are buying their supplies from other shops by paying more money. *What is important to note is that the seemingly uneducated observations and protests against "plastic rice" are also clearly laced with preference and quality issues that community members are articulating from several parts of the country, about the taste, appearance, flavour/smell, and cooking quality of fortified rice.* This is not therefore just a matter of educating PDS beneficiaries or frontline workers in various departments. As per WHO guidelines, fortificants must not cause unacceptable sensory problems (for example, of colour, flavour, odour or texture) at the level of intended fortification, or segregate out from the food matrix[1]. However, the fortified rice is being identified by the community as 'plastic rice' because it looks, feels, tastes, cooks and smells differently from the rice they are used to consuming. This violates a basic principle of fortification. Additionally, people are having to go to great lengths to remove this fortified rice kernels before cooking the rice, leading to unnecessary wastage of women's time and labour, as well as public funds since the entire exercise (valid or not) is made infructuous.

2. THIS FACT-FINDING VISIT

2a. TEAM MEMBERS

1. Ananthoo, ASHA-Kisan Swaraj and Safe Food Alliance;
2. Dr Ashwini Mahajan, Public Health Practitioner;
3. Kavitha Kuruganti, ASHA-Kisan Swaraj;
4. Raj Shekhar Singh, Right to Food Campaign National Secretariat;
5. Dr Randall Sequeira, MBBS MD Internal Medicine, Independent Public Health Practitioner;
6. Sangeeta Sahu, Right to Food Campaign Chhattisgarh;
7. Soumik Banerjee, ASHA-Kisan Swaraj and Independent Researcher

2b. SCHEDULE ADOPTED FOR THE FACT-FINDING

This fact-finding in Chhattisgarh took place between 13th June 2022 and 15th June 2022. Findings of the visit were put out on 20th June 2022. Online efforts to gather more information and speak to some concerned people were put in as preparatory work prior to the field visits.

DATE	WHERE	WHAT DID THE VISIT COVER
13th June 2022	Visit to Bastar district and Surguja district by two different teams <u>IN BASTAR DISTRICT</u> (Bastar Block): 1. Pharsaguda village, Bhanpuri Panchayat – visit also included Nirgundipara anganwadi 2. Mouliguda village 3. Bhanpuri CHC 4. Pooja Agrotech Rice Mill, village Devda 5. District Headquarters meetings in Jagdalpur with District Collector Shri Rajat Bansal, DSW Shri AK Biswal, staff members in District Food Controller Office and District Civil Supplies Corporation 6. Visit to Maharani District Hospital, Jagdalpur 7. Visit to PDS shop in Karandola Gram Panchayat (on 14th June morning) <u>IN SURGUJA DISTRICT</u>: 1. Chalgali Village, Lundra block 2. Meeting with the Food Minister of Chhattisgarh Government Shri Amarjeet Bhagat in Ambikapur	To meet and speak (1) to PDS beneficiaries consuming fortified rice; (2) to PDS Dealers, (3) to CHC personnel, (4) to Anganwadi and ASHA worker, (5) to cooks in Anganwadis; (6) to Sickle Cell Disease patients and families, Sickle Cell Trait persons and families; (7) to suspected (undiagnosed) thalassemia patient and her family; (8) to Rice Mill owner; (9) to District level officials including District Collector, Bastar and DSW, Bastar

DATE	WHERE	WHAT DID THE VISIT COVER
14th June 2022	Visit to Kondagaon district (Pilot district for rice fortification) and Korba district, by two different teams <u>IN KONDAGAON DISTRICT</u> (Kondagaon Block): - Visit to District Hospital - Visit to Kumharpara Gram Panchayat to meet 3 Sickle Cell Disease patients and their families and other PDS beneficiaries - Visit to Golawand Panchayat to meet PDS dealer and beneficiaries, to meet Sickle Cell Disease patients and their families - Visit to Bamhani village to interact with PDS dealer and women beneficiaries - Visit to Mardapal village to meet Thalassemia patient and family <u>IN KORBA DISTRICT</u> (Podi Block & Korba Urban) - Visit to Rampur Langa village and Banpipar village - Visit to Atal Nagar, Laata, Korba Urban	Conversations with (1) PDS Beneficiaries in the villages and in the urban centre, to collect views and experiences; (2) PDS Dealers; (3) ANM in SHC; (4) District level hospital official; (5) Thalassemia/SCA patients and their families; (6) Anganwadi worker
15th June 2022 17th June 2022	<u>MEETINGS IN RAIPUR</u> 1. Senior Officials in Department of Health (Dr CR Prasanna and Ms Shahla Nigar); 2. Senior Officials in Department of Food, Public Distribution and Consumer Protection (Shri Topeshwar Verma and Shri Manoj Kumar Soni); 3. Medical Director of Sickle Cell Institute Chhattisgarh (SCIC) (Dr Ashish Sinha) Telephonic conversation with General Secretary (Shri Pramod Puri) of Thalassemia Welfare Society, Bhilai	To present our key observations. To understand Chhattisgarh Government's perspectives and experience. To collect more information and data.

3. CONTEXT

3A. ANAEMIA IN INDIA, CHHATTISGARH AND GOVERNMENT INTERVENTIONS

Anaemia is a condition where the body does not have enough healthy red blood cells to carry oxygen to different parts of the body, for the body to carry on its regular physiological functions. Here, Haemoglobin (Hb), the iron-containing oxygen-transport metalloprotein is important. When Hb levels are low, a person is supposed to be anaemic. This can be caused by low iron levels, mainly because of deficiency of iron in diets. Apart from low dietary intake, low iron levels could also be because of low absorption of iron in the body, which in turn is correlated with other nutritional deficiencies including folate, Vitamin B12, and Vitamin A. Acute and chronic inflammation, parasitic infections, as well as inherited or acquired disorders that affect hemoglobin synthesis, red blood cell production or red blood cell survival can all cause anaemia as per the World Health Organisation[2]. Especially relevant to the context are haemoglobinopathies such as Sickle Cell Anaemia and Thalassemia which cause anaemia that resembles iron deficiency Anaemia but is not amenable to treatment by Iron and can be exacerbated by it. Further, blood loss can also be a cause for iron deficiencies. Haemoblobin concentration is measured usually for assessing prevalence of anaemia, even though not all anaemia is caused by iron deficiency. Anaemia data in India is presented by the Government of India through its periodic National Family Health Surveys (NFHS), with the latest round being NFHS-5 from 2019-21 (September 2021). While NFHS-5 is a large survey of more than 6.37 lakh households in the country, there are also many micro-studies that present such data. It is worth noting here that while there are some health experts who are contesting India's standards for anaemia prevalence assessment, methods of assessment and therefore official data on prevalence levels, most experts consider anaemia as a public health problem worthy of long term and appropriate holistic solutions.

ALL-INDIA - ANAEMIA LEVELS	NFHS-5 (2019-21)			NFHS-4 (2015-16)
	Urban	Rural	Total	Total
Children aged 6-59 months who are anaemic (<11.0g/dl) %	64.2	68.3	67.1	58.6
Non Pregnant women aged 15-49 years who are anaemic (<12.0 g/dl) %	54.1	58.7	57.2	53.2
Pregnant women aged 15-49 years who are anaemic (<11.0 g/dl) %	45.7	54.3	52.2	50.4
All women aged 15-49 years who are anaemic %	53.8	58.5	57.0	53.1
All women aged 15-19 years who are anaemic %	56.5	60.2	59.1	54.1
Men aged 15-49 years who are anemic (<13.0 g/dl) %	20.4	27.4	25.0	22.7
Men aged 15-19 years who are anaemic (<13.0 g/dl) %	25.0	33.9	31.1	29.2

Source: India Fact Sheet, NFHS-5 2019-21, September 2021 (http://rchiips.org/nfhs/NFHS-5_FCTS/Final%20Compendium%20of%20fact%20sheets_India%20and%2014%20States_UTs%20(Phase-II).pdf)

Compared to the national figures, Chhattisgarh fares the same or marginally worse in some parameters. What is important to note is that compared to NFHS-4, NFHS-5 indicates a worsened situation with regard to Anaemia in Chhattisgarh.

CHHATTISGARH - ANAEMIA LEVELS	NFHS-5 (2019-21)			NFHS-4 (2015-16)
	Urban	Rural	Total	Total
Children aged 6-59 months who are anaemic (<11.0g/dl) %	71.1	66.2	67.2	41.6
Non Pregnant women aged 15-49 years who are anaemic (<12.0 g/dl) %	57.1	62.5	61.2	47.3
Pregnant women aged 15-49 years who are anaemic (<11.0 g/dl) %	38.8	54.7	51.8	41.5
All women aged 15-49 years who are anaemic %	56.5	62.2	60.8	47.0
All women aged 15-19 years who are anaemic %	62.2	61.2	61.4	45.5
Men aged 15-49 years who are anemic (<13.0 g/dl) %	20.8	28.9	27.0	22.1
Men aged 15-19 years who are anaemic (<13.0 g/dl) %	22.5	34.4	31.5	27.4

Source: Compendium of Fact Sheets, Key Indicators - India and 14 States/UTs (Phase II), National Family Health Survey (NFHS-5) 2019-21, Ministry of Health & Family Welfare, Government of India, September 2021 (the Chhattisgarh survey covered around 24.55 thousand households in the state)

At the national level too, there has been an increase in the prevalence of anaemia amongst women and children, compared to NFHS-4 data. However, Chhattisgarh has steeper increases in anaemia levels compared to the national level picture, between NFHS-4 and NFHS-5.

Micro-Nutrient Supplementation:

Earlier, the approach of the Government of India was more holistic and comprehensive than the easy and reductionist rice fortification approach being emphasised currently. The National Iron+ Initiative guidelines clearly say the following, for instance: *"Prevention of both iron deficiency and anaemia require approaches that address all the potential causative factors. Interventions to prevent and correct iron deficiency and IDA, therefore, must include measures to increase iron intake through food-based approaches, namely dietary diversification and food fortification with iron; iron supplementation and improved health services and sanitation"*.

While this was on paper, actual interventions even in the past have been narrow and typically have not increased dietary adequacy and diversity. The Comprehensive National Nutrition Survey (CNNS 2016-18) highlights that only 6 per cent and 9 per cent of children between 6-23 months consume the minimum acceptable diet and iron rich food, respectively. There is a gap of nutritious dietary intakes when compared to Recommended Dietary Allowance (RDA). For instance, 75 per cent and 50 per cent lower iron amongst rural population and adolescents; 50 per cent lower vitamin A; and 50-75 per cent lower folate and riboflavin.

On the other hand, Government of India has an iron supplementation program running for many years now, from the Ministry of Health & Family Welfare. NFHS data shows that levels of IFA intake remain very low however. After realising that not all age groups have been targeted in the earlier phases of iron supplementation initiatives, the Government has

launched a National Iron+ Initiative in 2013. The National Iron+ Initiative is an attempt to look at Iron Deficiency Anaemia comprehensively across all life stages including adolescents and women in reproductive age group who are not pregnant or lactating[3]. Here, ASHA worker is sought to be suitably incentivised for provision of IFA supplements. The ASHA worker is reportedly educated to withhold IFA in case of acute infections, severe acute malnutrition and in cases of hemoglobinopathy. This is a targeted approach and not a one-size-fits-all approach. However, Iron Supplementation intervention has notoriously suffered from supply side issues, especially with regard to iron syrups for children under the age of six years.

Ignoring such micronutrient supplementation, the Union Government is now eyeing mandatory rice fortification in all social safety net schemes by 2024 as a quick and cost-efficient way of addressing malnutrition[4]. The government is looking at the additional budgetary requirement for rice fortification at only 1% of the 2018-19 food subsidy bill or an additional cost of Rs.0.73 per kilo of rice as an attractive option, ignoring various other concerns from this approach. Meanwhile, an IFPRI report (2020) shows that around 1000 crore rupees were needed for micronutrient supplements to be distributed along with de-worming tablets for various target groups in 2019-20, the same year that the rice fortification pilots were started. Such micronutrient supplementation programs were hitherto administered by the Health Ministry/Departments of the country, and this has suddenly shifted in the Fortified Rice program to civil supplies departments all over! The IFPRI report authors estimate that Chhattisgarh's costs for micronutrient supplementation are only 20 crore rupees (ibid, pp14), whereas reports indicate that the cost of rice fortification would be about 50 crores for the state government[5].

It should also be noted that Chhattisgarh is already supplying fortified THR in its ICDS program, and the iron fortification guidelines for such THR require 50% of the RDA to be met by the product.

3b. ADIVASI POPULATION IN INDIA & IN CHHATTISGARH

Before we move into presenting some relevant health-related parameters, it is important to get a picture of Adivasi population in India and in Chhattisgarh, because Adivasi communities are disproportionately affected by some of these adverse health conditions, which need a discussion in the context of large-scale rice fortification programs.

Census 2011 enumerated 10.45 crore scheduled tribe persons in India (about 8.6% of total population of India with the decadal growth rate being higher in urban areas incidentally), with a vast majority of them in rural areas. Adivasis belonging to 550 tribes constitute **11.3%** of total population of rural areas (2011).

Chattisgarh, as per Census 2011 had 78.23 lakh ST population at the time of enumeration. Chhattisgarh's adivasis constituted 7.5% of the total adivasi population in India. In terms of proportion within Chhattisgarh, adivasi population constituted **30.6%** of the total population in the state, as per Census 2011. While districts have been re-organised after the Census survey in 2011, the highest proportion of tribal population has been recorded in Bijapur district (80.0%). An annexure to this report provides a district-wise picture as per Census 2011 for 18 districts. *At least 9 of those 18 districts of the state of Chhattisgarh have more than 40% of the population as adivasis*.

3c. DISEASE BURDEN OF SICKLE CELL DISORDERS, THALASSEMIA, TB, MALARIA ETC. IN INDIA AND IN CHHATTISGARH

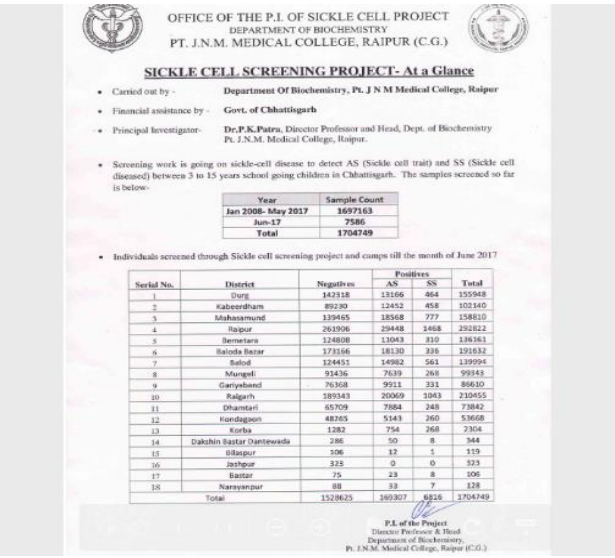
In the context of iron-fortified rice, it is important to look at existing disease burden in India and Chhattisgarh of sickle cell disorders (SCDs), Thalassemia, Tuberculosis (TB), Malaria etc.

INDIA: India has the second highest SCD burden in the world, and within India, it impacts, socially, politically and economically marginalized groups. SCD disproportionately impacts vulnerable tribal communities in India[6]. There are certain studies undertaken by ICMR showing that the prevalence of Sickle Cell Anaemia across the country amongst tribal population is 5-34% (Parliament Question No.3433, dated 9/8/2011). The Government of India however does not maintain any database, nor are there any systematic screenings to identify all the affected. A screening amongst tribal students found that 8.75% tested positive.

Thalassemia is another inherited disorder of red blood cells. As per ICMR, Thalassemia is the commonest genetic disorder in India. The prevalence of ß-Thalassemia carrier varies from 1 to 17% in different population groups with an overall prevalence of 3-4%. As per a Parliament Reply in 2021, it is estimated that almost 8,000 to 10,000 children are born with Thalassemia every year in India[7]. As per another reply in March 2020, an estimated 10,000 to 12,000 children with ß-thalassemia are born every year and there are about 65,000-67,000 ß-thalassemia patients in our country.

Meanwhile, at the national level, 2021 witnessed a 19% increase from the previous year in Tuberculosis (TB) patients' notification. The total number of incident TB patients (new and relapse) notified during 2021 were 19.33 lakhs, as opposed to that of 16.28 lakhs in 2020[8].

It is also reported that close to 1.3 billion people are at high risk of being infected with malaria in India. India carries 2% of the global malaria case burden and 2% of global malaria deaths. 80% of malaria reported in the country is confined to areas consisting of 20% of India's population residing in tribal, hilly, difficult and inaccessible areas[9]. In 2020, there were 1.9 lakh malaria cases in India, with 93 deaths recorded due to malaria.



OFFICE OF THE P.I. OF SICKLE CELL PROJECT
DEPARTMENT OF BIOCHEMISTRY
PT. J.N.M. MEDICAL COLLEGE, RAIPUR (C.G.)

SICKLE CELL SCREENING PROJECT- At a Glance

- Carried out by - Department Of Biochemistry, Pt. J N M Medical College, Raipur
- Financial assistance by - Govt. of Chhattisgarh
- Principal Investigator- Dr.P.K.Patra, Director Professor and Head, Dept. of Biochemistry Pt. J.N.M. Medical College, Raipur.
- Screening work is going on sickle-cell disease to detect AS (Sickle cell trait) and SS (Sickle cell diseased) between 3 to 15 years school going children in Chhattisgarh. The samples screened so far is below-

Year	Sample Count
Jan 2008- May 2017	1697163
Jun-17	7586
Total	1704749

- Individuals screened through Sickle cell screening project and camps till the month of June 2017

Serial No.	District	Negatives	Positives		Total
			AS	SS	
1	Durg	142318	13166	464	155948
2	Kabeerdham	89230	12452	458	102140
3	Mahasamund	139465	18568	777	158810
4	Raipur	261906	29448	1468	292822
5	Bemetara	124808	13043	310	138161
6	Baloda Bazar	173166	18130	336	191632
7	Balod	124451	14982	561	139994
8	Mungeli	91436	7639	268	99343
9	Gariyaband	76368	9911	331	86610
10	Raigarh	189343	20069	1043	210455
11	Dhamtari	65709	7884	248	73842
12	Kondagaon	48265	5143	260	53668
13	Korba	1282	754	268	2304
14	Dakshin Bastar Dantewada	286	50	8	344
15	Bilaspur	106	12	1	119
16	Jashpur	323	0	0	323
17	Bastar	75	23	8	106
18	Narayanpur	88	33	7	128
	Total	1528625	160307	6816	1704749

P.I. of the Project
Director Professor & Head
Department of Biochemistry,
Pt. J.N.M. Medical College, Raipur (C.G.)

IN CHHATTISGARH:

In Chhattisgarh, the Sickle Cell Institute Chhattisgarh (SCIC) in Raipur is a dedicated centre for treatment, research, counseling and training related to sickle cell disease. This Institute has also run screening projects for school children. It appears that around 10.3% of the screened children between 3 to 15 years tested positive, and *within that*, 3.87% tested positive for Sickle Cell Disease (0.4% of the total screened sample)[10].

Another published paper reports that while the frequency of sickle cell trait in India is 4.3%, frequency of sickle cell trait in Chhattisgarh is approximately 9.30% with SS phenotype being 0.21%[11].

A study done in Raigarh, Kanker and Dantewada districts of Chhattisgarh between March 2009 and July 2011 showed 10.6% of screened persons as having sickle cell trait (AS) and 0.6% cases having sickle cell disease and other associated bands[12]. In this study, visibly high prevalence of sickle cell anaemia cases was found in Gond sub-caste of ST community (20.63%), followed by Halbi (10.4%), Khadiya (5%), Sanwra (3.78%) and Uranmi (3.27%).

A newspaper report (2018) claimed a higher number - that an estimated 15% of Chhattisgarh's population is afflicted with sickle cell anaemia. Citing an expert, this report says that Chhattisgarh has the highest prevalence of SCD in the entire country[13]. Earlier in 2017, another international media house reported that at least 10000 children die every year in Chhattisgarh due to the inherited disease[14]. Further, amongst the Gonds, 20% are estimated to suffer from the disease. However, another study points to other ethnic groups more severely affected than even the Gonds. This study included 918 sickle cell anemia patients from 10 ethnic populations of Chhattisgarh. Researchers found Hb S-β-thal in all the analyzed populations. Interestingly, high frequencies of Hb S-β-thal have been observed in Satnami (53.8%), Rawat (47.1%), Gond (35.1%) and Panika (30.6%) populations[15].

In 2012, Thalassemia carrier was found 10.61% in screened population and in 2013, it increased to 14.65% and in 2014, it turned into 17.95% (Source: Thalassemia Welfare Society, Bhilai, Chhatisgarh). The data for this study came from parts of Chhattisgarh such as Raipur, Durg, Rajnandgaon, Mungeli, Raigarh, Tilda Bhatapara, Chakarbhata[16]. The Thalassemia Welfare Society in Bhilai is only able to confirm a database of 250 patients that the organization has, and is pointing out that the facilities for screening, diagnosing and treating thalassemia are very poor in the state. They are unable to estimate any prevalence number for the state.

In 2021, there were over 24.2 thousand cases of malaria cases across Chhattisgarh. This was a decrease compared to the previous year, when the state saw almost 36.7 thousand cases of the disease. Overall, Chhattisgarh has historically been a high-risk region for malaria in India. It contributed 18% of malaria positive cases at the national level in 2019. Within Chhattisgarh, the contribution of Bastar Division was 76% of the total cases of malaria in the state in 2019. In absolute numbers, this is 334685 malaria positive cases in India in 2019, 60458 cases from Chhattisgarh and within that, 45903 cases from Bastar Division[17].

Tuberculosis (TB): Chhattisgarh had 29331 new TB cases notified in the latest year, as per India TB Report 2022. 10810 were tribal TB patients out of 32500-odd cases notified in the state. 31246 cases were of TB patients with known HIV status. In 2020, there were 1142 deaths of TB patients notified in public sector facilities and 238 in private sector[18].

3d. EFFECT OF IRON FORTIFIED RICE ON SCDs & THALASSEMIA

In the case of SCD patients, the Sickle shaped cells within red blood cells breakdown easily, releasing Iron in circulation; regular destruction of Red Blood Corpuscles (RBCs) results in the buildup of body stores of iron and may lead to liver damage. Fortified Rice adds on to the iron

stores which cannot be used for Hemoglobin formation, thus potentially leading to iron overload and organ (liver, endocrine system, heart) damage.

In Thalassemia, frequent blood transfusion adds to Iron overload causing cardiac damage, liver fibrosis, reproductive problems, and growth retardation.[19]

Individuals suffering from SCD, or Thalassemia are advised to refrain from taking standard iron supplementation or iron rich diet. Iron fortified rice is also contra-indicated for them, as mentioned in the Government of India's Department of Food & Public Distribution guidelines too - "*Not recommended for people with Thalassemia and people on low iron diet*". The FSSAI's Food Safety and Standards (Fortification of Foods) Regulations 2018 require that fortified products' pack mandatorily display the fortification logo (+F) along with "Fortified with Iron, Folic Acid and Vitamin B12), and that every package of food fortified with Iron shall carry a (warning) statement – *"People with Thalassemia may take under medical supervision and persons with Sickle Cell Anaemia are advised not to consume iron fortified food products"* (Regulation 7(4) on Packaging and Labeling Requirements).

In Malaria endemic zones, increased amount of iron in the gastro-intestinal tract affects the structural integrity and gut microflora and immune systems.[20] Iron supplements are also known to increase risk of malaria in resource poor locations[21] as well as bacterial and viral infections. Red Blood Cells (RBCs) use Ferroportin to remove excess iron, which malaria parasites consume as a food source; the absence of Ferroportin causes iron to accumulate to toxic levels inside RBCs. This stresses the cells and shortens their life span.[22]

Iron overload also has the potential of TB flare-up when given before the anti-TB drugs regime. Elevated levels of iron impair immune defence mechanisms and enhances *Mycobacterium tuberculosis* infection, replication, progression to clinical disease and death.[23].

Chhattisgarh being the endemic zone for SCDs, Thalassemia and Malaria as well as prevalence of TB, there is a higher risk on affected communities by consumption of Iron Fortified Rice.

3e. IRON FORTIFIED RICE DISTRIBUTION IN CHHATTISGARH SO FAR

Chhattisgarh state government has been very enthusiastic about fortified rice distribution in the state, compared to several other states in India. In the month of May 2022, for instance, out of 1.5 lakh metric tons of fortified rice distributed in India, 38720 MTs were distributed in Chhattisgarh which is more than 25%/one quarter of the entire distribution. In April 2022, out of 78463 MTs distributed all over the country, 35560 MTs (45%) were distributed in Chhattisgarh alone.

What is also surprising to note is that Chhattisgarh government is allocating state budgets for rice fortification while in other states, it appears that the budgetary allocations are coming from the Centre. In 2021-22, 5.8 crore rupees were set aside by the state government in Chhattisgarh for rice fortification program[24], [25]. About 39.59 crore rupees seem to have been set aside in 2022-23 for the scaling up to 12 districts[26],[27].

Chhattisgarh joined the Rice Fortification Pilot program of Government of India in October 2020 itself. This was initiated in Kondagaon district where the entire PDS sales in the district has been converted to only fortified rice for 18 months now. However, no evaluation of this pilot has been done, though some baseline data has been collected for limited parameters.

Starting from January 2022, FR is being distributed in other districts of Chhattisgarh. While the offtake against the allocated FR in January 2022 was only 24.8%, by May 2022, it has reached 93.13%. The Government, after a Cabinet meeting, announced that scaling up of fortified rice distribution would take place in 10 aspirational districts and 2 high-disease-burden districts. Media reports indicate that the state government decided to bear the expenditure related to the program[28]. In January 2022, Bastar, Kanker and Narayanpur were added to Kondagaon, for FR distribution. In February, Bijapur, Dantewada, Rajnandgaon and Sukma were added. By this month, Kondagaon, Narayanpur and Bastar were shifted completely into fortified rice. In March 2022, Korba, Mahasamund and Raigarh were also added; in April 2022, it was Kawardha. In May 2022, it was the same set of 12 districts – Bastar, Bijapur, Dantewada, Kanker, Kawardha, Kondagaon, Korba, Mahasamund, Narayanpur, Raigarh, Rajnandgaon and Sukma, with all these districts supplying only fortified rice to PDS beneficiaries. Like in the case of Jharkhand, it is seen that fortified rice, identified by communities most often as 'plastic rice', is getting distributed in other districts too, like Surguja. Media reports indicate complaints from the ground from these other places also. In Jharkhand, it has been discovered by the fact-finding visit to the state that the civil supplies department really does not seem to have full control over the supply chains of fortified rice, and the story seems to find a repetition in Chhattisgarh too. As stated earlier, it is unclear when and why fortified rice started getting distributed beyond the pilot district of Kondagaon, whether the so-called Piloting has been completed, and what the results of the same were. Meanwhile, the State Health Resource Centre (SHRC) has begun baseline data collection in new districts also. It is also noteworthy that Chhattisgarh state government is making fortified rice distribution as a flagship program with special advertisements appearing in local newspapers with the Chief Minister's photo appearing in them. It appears that Chhattisgarh government has also created a state level Steering Committee for taking forward the fortified rice program, headed by the Chief Secretary of the state government, for better inter-departmental coordination. Media reports indicate a recent meeting of this Committee, in the month of May 2022.

4. KEY OBSERVATIONS OF THE FACT-FINDING TEAMS

a. **RAPID SCALING UP BASELESS**: It is unclear why Chhattisgarh government is scaling up production and distribution of fortified rice so rapidly, and on what basis. As seen by this fact-finding effort, Chhattisgarh government is leading the efforts in the country and is distributing nearly 25-45% of all fortified rice being distributed in the country, even as some states did not even initiate their pilots on FR. The fact-finding team gathered that it is Government of India's coercion that is pushing Chhattisgarh's scaling up of the initiative. The Government of India has set up timelines for scaling up FR distribution to aspirational and high-burden districts, and Chhattisgarh is attempting to meet these timelines, under a constant push from GoI.

   It was also seen that Chhattisgarh government saw an opportunity for greater procurement and production of blended fortified rice which could even be supplied to other states, and seized the opportunity that was facilitated by rapid changes in rice processing infrastructure in the state, while other states have not yet been able to catch up on this front. ***However, this fact-finding team argues strongly that this is no reason to scale up an unproven and potentially risky approach to addressing anaemia.***

b. **RESULTS OF PILOT IN KONDAGAON UNKNOWN**: Chhattisgarh began fortified rice distribution in Kondagaon district in October 2020, as per official data portals. The 3-year pilot could not have been completed in the past 19 months. Further, it appears that there is no evaluation of the Kondagaon pilot. The fact-finding team got to know that the State Health Resource Centre is going to take up an endline evaluation soon (in another 4-5 months' time). However, the surveys being undertaken appear to be on acceptability of fortified rice by the beneficiaries and of efficacy, and not about safety. Meanwhile, strangely enough, fortified rice is being distributed in 12 districts, despite the state having a large disease burden related to (unscreened) thalassemia, sickle cell anaemia, malaria, TB etc.

   It is unclear what the piloting is about, if scaling up is happening at this scale and pace without any evaluations and lessons learnt from the pilot. Such evaluations should cover not just feasibility-related evaluations (which the Government of India seems to be primarily focused on, whereas anaemia is not a matter of logistics or feasibility of fortified rice distribution!) but about safety, livelihood impacts and people's preference for the fortificant.

   Moreover, the evaluation cannot be just of this intervention, since iron is being supplied and supplemented in numerous ways – the IFA supplementation program is also underway, even as more comprehensive nutrition programs and rations of jaggery and channa are also being provided by the government.

c. **IRON-FORTIFIED RICE BEING DISTRIBUTED BY GOVERNMENT TO CONTRA-INDICATED PATIENTS ALSO INDISCRIMINATELY**: Iron-fortified foods are not recommended for sickle cell anaemia patients and are expected to be consumed under medical supervision by thalassemia patients. This is part of statutory regulations (2018) issued by the Food Safety and Standards Authority of India (FSSAI) under the Food Safety and Standards Act 2006. However, iron fortified rice is being distributed to such patients also.

As per the Sickle Cell Institute Chattisgarh's findings, about 0.5%-0.6% of the screened children in their screening projects have tested positive for sickle cell disease (SS). A simplistic extrapolation to the entire population (beyond the age group for which the Institute took up screening projects) could take the prevalence levels slightly higher, as per the Institute's Medical Director. A conservative estimate (keeping in mind that sickle cell patients may not live for long and therefore, may not be present in larger numbers in higher age groups) means that around 1 to 1.5 lakh SCD persons might be present in Chhattisgarh. Numbers for Thalassemia are not known apart from a small database of 250 persons maintained by the Thalassemia Welfare Society (Bhilai) and even an estimated number based on simplistic extrapolation is not possible to arrive at, while it is estimated that the prevalence could be lower than that of Sickle Cell Disease. There are other contra-indicated conditions too, even if not statutorily required. This includes malaria and TB and other acute infections.

While this is about an estimate of the magnitude of the problem, the reality remains that for the unscreened and undiagnosed persons, there is a lack of knowledge about their medical condition.

The two fact-finding teams that went into four districts of Chhattisgarh met with several such patients, especially confirmed sickle cell disease patients. In the case of an 11-year-old thalassemia patient in Kondagaon district's Mardapal village, the family reported that he is getting blood transfusions done nearly every month now, whereas it used to be once in 4-5 months or even longer, earlier. We found that iron overload in the child is such that iron-chelating medication has been administered to him in the recent past, as per the medical reports perused by the team. Even for such patients, iron-fortified rice is being given through the PDS.

While the team advised patient families to find out more about fortified rice being given to sickle cell disease children and seek medical advisory on the same, and then avoid giving iron-fortified rice to such children if possible, two realities came to the fore – that in several families, their dependence on PDS rice is high and they cannot avoid giving the patients in the family such fortified rice; secondly, even if a family gets fortified and non-fortified rice sources (for example, non-fortified rice from their own farm-grown paddy and fortified rice from PDS), they are not always going to be able to cook two different kinds of rices on a daily basis for different individuals within the household; thirdly, even if a family manages to provide non-fortified rice to such patients, these children are having to eat iron-fortified rice in the school and anganwadi meals! Further, not all unscreened and undiagnosed people may present themselves with symptoms, for the family to know who to be given fortified rice and who not to.

It is to be recognized and acknowledged that patients and their families of several illnesses already have several hardships to deal with, when accessing diagnosis and treatment facilities. We came across patients who have got confirmatory tests done in neighboring states like Andhra Pradesh, because Chhattisgarh's facilities for diagnostics are not adequate and accessible. Iron-fortified rice need not add to the existing complications and hardships of these patients and their families.

Our fact-finding team brought to the fore the strong reality that in the government, functionaries across departments and even senior officials like District Collectors are not aware of contra-indications for iron-fortified rice for several medical conditions. Ground-level functionaries like mitanins/ASHA workers, AWWs, ANMs, RHOs, CHOs etc., are also unaware and uninformed about the distribution of fortified rice and contra-indicated patients in their jurisdictions.

This is clearly a case of a government program contravening statutory food safety regulations on the matter, and operating in a clear vacuum of information and knowledge about iron-fortified foods being contra-indicated for several medical conditions.

d. **CHHATTISGARH GOVERNMENT EXPENDITURE ON RICE FORTIFICATION UNJUSTIFIED:** The state government is spending its budgets for rice fortification at this point of time, even though the pilot scheme for rice fortification is centrally-sponsored. So far, 45.39 crores have been set aside by the state government for this program as per the state government budget statements. In a conversation with a fact finding team, the State Food Minister actually mentioned a higher number of Rs. 130 crore rupees, and we assume this to be the total cost, with the state government spending 25% and the Union Government spending 75%.

   Such a cost is significantly higher than the micro-nutrient supplementation budget of around 20 crore rupees annually. The supplementation schemes are more targeted, and rightly so, and run on the expenditure already being made on frontline healthcare cadre like mitanins. The state government's spending of public funds on rice fortification is therefore unjustified, and a distraction from other needed investments.

e. **CHATTISGARH PROVIDES MORE FORTIFIED RICE AND FORTIFIED TAKE-HOME-RATIONS, COMPARED TO OTHER STATES – SAFETY IMPLICATIONS NOT EVALUATED**: Chhattisgarh has six different kinds of ration cards with different quantities of rations distributed per ration card – on all cards, the entitlements are higher than in other states.

   While the average entitlement appears to be 7 kgs a person per month, every person gets about 10 kilos in the case of grey colored card (Nirashrit) or black colored card (Nisshakt). The same could be said of red colored (prathamikta) or blue colored cards (Annapurna), if the number of members in the family is 2 (for Annapurna, even if there are 3 members in the family, it is more than 10 kgs per person/month). In fact, Antyodaya yellow cards with 35 kgs entitlement per card could very well be going to three persons in a family too, including ones with some chronic disease burden (which is one of the criteria for being selected for this category of ration card) which means more than 10kgs per person every month.

   Even though this fact-finding team has been told by some staff members of State Civil Supplies Corporation in Bastar district as well as state level officials from Food & Public Distribution department that fortified rice is being given only in the regular entitlements, and not in Chhattisgarh's additional/bonus quota or PMGKAY, this fact-finding team has found in Kondagaon that only fortified rice is being supplied from all three sources (the original NFSA 2013 entitlement, plus Chhattisgarh state additional rations, plus PMGKAY).

   This team does not know accurately how the FSSAI Standards for fortified rice have been created, and whether the national level monthly entitlement per person for PDS were taken into consideration. However, in Chhattisgarh, it is clear that what beneficiaries consume is much more than 5 kgs of fortified rice in PDS every month. It could be 3 times the quantity compared to other states. There are also the supplies of fortified rice through cooked meals in schools and anganwadis. Chhattisgarh also provides jaggery in the PDS in aspirational districts and *channa* (chickpea) in tribal districts.

There has been no evaluation of safety issues with this kind of over-dosing of micro-nutrients through multiple schemes with additional quotas of fortified rice being given. This is in addition to micro-nutrient supplementation programs and fortified Take Home Rations for particular beneficiaries in the communities. In the ICDS guidelines related to Take Home Rations, the THR food should provide 50% of the Recommended Daily Allowance (RDA) per beneficiary per day for iron, in addition to several other micro-nutrients[29].

It is also apparent that the risk of such over-dosing is mostly to poor consumers and Adivasi communities, who are not having the capacities to access other non-fortified sources of food and are also covered under multiple schemes by different departments.

Without a comprehensive safety evaluation about the risk of iron over-dosing, the fortified rice distribution program is unscientific as well as risky in its approach.

f. **LABELING RELATED ISSUES**: The fact-finding visits showed a multiplicity of situations prevailing with regard to statutory labeling regulations with regard to iron-fortified foods. To begin with, at the Government of India level itself, the guidelines for the rice fortification program do not adhere to the statutory regulations notified by the FSSAI. The lack of compliance filters down to all levels from there on. The teams found in PDS dealer shops and in anganwadi kitchens, rice gunny bags that have not been stenciled with F+ logo, and that even if labels are stitched on in some cases, the gunny sacks do not have any warning statements to consumers.

On the labels, the fact-finding team did not find any statements about sickle cell anaemia in any of the 5 PDS dealer shops visited or the rice mill visited, or on any gunny sacks in anganwadis.

In three places (not in all shops), we found labels with a warning statement about thalassemia patients and that too in hindi. However, even here, no one has paid any attention to the small-fonted illegible lines that have been printed on the labels, and in fact, no one has heard of Thalassemia while some information exists of sickle cell disorders (referred to as “siklin” locally). It is only after the fact-finding teams drew the attention of the dealers and beneficiaries, did they come to know about this contra-indication for the very first time. This was the case with senior officials too, unfortunately.

It is also noteworthy that even if all labeling requirements are met as they ought to be, at the PDS dealer shop, fortified rice is not distributed in a packaged and labelled manner to the beneficiaries – it is sold loose, with beneficiaries bringing their own bags to take home their entitlements. So, what exactly is the purpose of labeling with the end consumer kept in the dark, and the last point of interface with the end consumers (the dealer) being kept in the dark?

There is really no way by which many community members can see (labels being absent or incomplete, or the end consumer not being able to see the full label) or read (status of literacy in the community or labels being in an alien language) or understand (no knowledge of the disease about which warning statements are being printed) or act (due to poverty and over-dependence on PDS supplies, or due to the fact that many patients have not been diagnosed as such for their medical condition, or other practical issues inside the household, or the children being fed with fortified rice meals in schools and anganwadis etc.) on such labeled warning statements ultimately.

What is important to note is that in Chhattisgarh, there is a requirement that anganwadis, schools and PDS shops return the gunny sacks in which rice supplies have been provided. As a DCP state when it comes to paddy procurement, it appears that the state government is trying to economise on costs related to gunny sacks etc. It is seen that dealers and anganwadis workers transfer the rice received from the State Civil Supplies Corporation into other gunny sacks, where the labels might be indicating other information and not information about fortified rice! There is clearly a violation of the statutory regulations related to labeling happening right now.

The fact-finding team further points out that while publicity in the form of wall writings, quarter page advertisements, banners and posters are being invested upon to glorify the virtues of fortified rice, and to banish the myths and misinformation about plastic rice, *not a single message has been put out about health warnings for contra-indicated cases so far at the dealer shops. We found that all PDS shops have promotional messages put out outside the shop about fortified rice but do not have any warning statements in a single place.*

g. **COMPLAINTS AFTER CONSUMPTION OF FORTIFIED RICE**: During the visits, while most people did not report any health-related complications or experiences of that sort, in Korba district, in both Banpipar village and Korba Urban, this was reported. It is not sure if fortified rice was the reason, but stomach ache is the common complaint heard.

   In Kondagaon, in Golavand village, a Sickle Cell Disease person does not prefer eating this rice since his digestion is affected more adversely and his wife cooks other market-purchased non-fortified rice for him.

h. **BLENDING RELATED ISSUES**: It was reported from multiple villages (confirmed by some PDS dealers also) that blending proportions are being changed when it comes to fortified rice production and supply and it is not clear if the quality assurance mechanisms are fully in place to check whether standards laid down are being adhered to, or not. The FRK proportion has been brought down drastically, as per villagers, who are able to compare it with kernels that used to exist in the supplies of initial months. This is so much so that, in some focused group discussions with community members in Bastar, they reported that no fortified rice is being supplied to them for the past 2-3 months. But this was not true. Fortified rice is indeed being supplied to these villages too, while the villagers are not able to find many FRKs mixed with their normal rice.

   This could have happened due to two reasons – one, that FRK proportion to the normal rice has indeed been brought down for some reason; two, that blending has moved away from manual blending that was happening initially (where proportions being mixed were not probably standardized) to mechanical blending units.

i. **COMMUNITY REJECTION OF FORTIFIED RICE**: It is seen that in several places, there was at least an initial rejection of fortified rice by the communities. While some of this is linked to fears around “plastic rice”, some of it was lack of preference. In Kondagaon, the fact-finding team found that PDS beneficiaries refused to buy the fortified rice for one month. However, these reservations were overcome by an aggressive promotion campaign adopted by the state government. In one location of the fact-finding visits, it was seen that fortified rice continues to be rejected firmly by the community members, who purchase for their own consumption rice from the open market with some difficulty (in terms of affordability).

Visits of this team showed that in PDS shops, there are special banners and posters put up, and wall paintings done to extoll the benefits of fortified rice. Even in social media, in dealers' whatsapp groups, posters from the government are being disseminated.

What the field visits show however is that while many beneficiaries are now cooking and consuming the fortified rice kernels also, there is a substantial number of people removing FRK and consuming the rice. This view of the community, of being able to distinguish fortified rice with normal rice and not preferring it for different reasons is clearly a violation of the WHO guidelines on this matter.

j. **EFFICACY RELATED ISSUES**: In rice fortification as an approach to anaemia, there are serious efficacy-related questions, as can be found in published literature. In India, an RTI reply from ICMR-NIN shows that fortified rice is no different from non-fortified rice in an experiment taken up with school children in mid-day meal program. In the field, several issues noticed put a question mark on the efficacy of this approach, other than medical reasons of iron not being absorbed.

It is seen that there are at least three ways by which fortified rice kernels get discarded by people cleaning and cooking the rice. One, since the Fortified Rice Kernels look different in color, size and texture, women cooking FR look out for FRK in the cleaning stage, identify them and remove them. Two, at the time of washing the rice a few times before cooking, since the FRK float to the top, they are once again identified as being different and removed. Third, since cooking of rice involves usage of extra water and then draining it out later on, the FRK chemicals get expelled in the draining out of extra water.

Further, in one location of the field visits, it was seen that beneficiaries are not eating fortified rice at present. They take from PDS dealer but do not consume it themselves. This is because after initially consuming it, they experienced stomach ache. Because of this, most PDS beneficiaries here actually depend on open-market purchase of rice for their own consumption.

Admittedly, the above issues are not present every where, though there are a substantial number of persons that the fact-finding teams met with, who do select and remove FRK; this is the situation in anganwadi kitchens also.

k. **NO PRIOR INFORMED CONSENT ANYWHERE**: It is seen that there is a serious dearth of information being shared, other than a one-sided promotion in the recent past about the potential benefits of fortified rice. Apart from this, it is seen that PDS dealers were not told about fortified rice supplies; the same is true of anganwadi functionaries and health department functionaries. No prior informed consent was obtained from beneficiaries before such large-scale distribution began even though Right to Know Your Food and Right to Informed Choices are basic rights when it comes to something as critical as food. Labeling regulations are not known or informed, nor is any information about contra-indicated conditions being shared with any functionaries or with the public in general.

l. **HEALTH DEPARTMENT AND AGENCIES NOT IN THE PICTURE**: In a reflection of what is happening at the Government of India level, where the Ministry of Food, Public Distribution and Consumer Affairs is taking a lead in the fortified rice program without involving the Health Ministry, it is seen that the health department has been sidelined in Chhattisgarh too. The Department is part of the state level steering committee chaired by the Chief Secretary but from all appearances as well as inputs obtained,

that is only namesake participation at the state level. The State Health Resource Centre has been drawn in to take up baseline and endline surveys, which have not been done even in the pilot district Kondagaon so far (the pilot is a 3-year pilot as per GoI scheme and it started only in October 2020).

At the district level, it is very apparent that the health department functionaries have not been consulted or included in the program, nor is their expertise and advice being sought in planning the programme.

m. **BLENDING INFRASTRUCTURE NOT BEING UTILIZED**: It was noted during the rice mill visit that the blending infrastructure that was installed by the rice miller on his own cost (no bank financing scheme has been linked up in this case) was utilized for just one month, after which the rice mill was told that fortified rice supply is not needed since there was an over-supply already. Meanwhile, the Government of India appears to be busy trying to dispose off old stocks of non-fortified rice and is insisting that all states should give PMGKAY supplies in a non-fortified form! The government should stop forcing more rice mills to upgrade their facilities in such a situation.

n. **FORTIFIED RICE REACHING HOUSEHOLDS IN DISTRICTS OTHER THAN THE CHOSEN DISTRICTS TOO**: While Surguja does not feature in the list of districts where fortified rice is supposed to be distributed, the fact-finding team found that people were indeed getting supplies and PDS dealer confirmed the same. In the anganwadi and school kitchens, it is fortified rice that is getting distributed in all districts including Surguja. The fact that fortified rice distribution cannot be targeted even if the government thinks it can plan for it, is now established from ASHA/RTFC fact-finding visits; this has been highlighted in the fact that FR is reaching non-targeted areas and people. This is a reflection on the lack of capacity within the institutional and procedural frameworks of the state government to have a tight control over the supply chain of fortified rice. This is a further issue to ponder upon, when it comes to contra-indicated cases who should not be consuming fortified rice, or for even monitoring by government for predicted and unpredicted outcomes.

o. **CHATTISGARH IGNORING HOLISTIC INNOVATIVE APPROACHES TO NUTRITION**: Chhattisgarh has holistic innovative interventions undertaken by the government and district administrations which are exemplary in some ways. For instance, this is the state that can potentially connect the dots between soil health, plant health and human health through its NGGB and Godhan Nyay Yojana schemes. The Millets Mission is about to take off in the state. This is also the state which used to have rich diversity of nutritionally-superior paddy varieties as well as local paddy processing technologies, which can be invested upon for their revival in nutrition-sensitive agricultural pathways for nutrition security in Chhattisgarh. Moreover, the ongoing Mukhya Mantri Suposhan Yojana is holistic, with the intervention having unit cost norms that are appropriate. In fact, some of these are unique interventions that have not been attempted in other states. It is unclear why the government should opt for rice fortification when so many options exist.

All in all, the fact-finding teams find that Chhattisgarh, despite its self-dependency when it comes to paddy/rice and despite its decentralized procurement mechanisms, is falling victim to Government of India's coercion and pressure related to fortified rice distribution.

Health being a state subject as per India's Constitution, the state government ought to be asserting itself and taking appropriate policy decisions on the matter of malnutrition and anaemia suitable for Chhattisgarh's prevailing conditions, rather than adopt a one-size-fits-all approach.

Anaemia or other malnutrition in the communities is not a question of logistics and feasibility of execution of some program, but of the need to adopt holistic approaches, led by the Health Department.

It is seen in detailed interactions of this fact-finding effort, with government representatives and functionaries at all levels, that a large number of stakeholders including senior officials are not convinced about the large-scale rice fortification approach for tackling anaemia, and are readily agreeing to the emerging problems and risks.

Given the above situation, it is important that Chhattisgarh government immediately suspends its rice fortification program, and stops buckling under the coercion of Government of India and corporate lobbies that advocate for food fortification as a solution to anaemia and other malnutrition problems.

5. HOLISTIC NUTRITION INTERVENTIONS, IN CHHATTISGARH & ELSEWHERE

Chhattisgarh, more than many other states, seems to be a frontrunner with innovative, holistic, natural and community-controlled solutions with regard to nutrition. We give a brief compilation of such unique interventions from this state as well as elsewhere in India, which need to be adopted, and which can easily be adopted, to address malnutrition.

1. **Chhattisgarh Mukhya Mantri Suposhan Yojana:** Chhattisgarh had initiated a Mukhya Mantri Suposhan Yojana from 2nd October 2019, to address malnutrition and specifically anaemia for children of 0-6 years age group and women aged 15 to 49 years[30]. The scheme is implemented by the Department of Women and Child Development. Here, the beneficiaries are put on a wholesome nutrient-rich diet and the meals include sprouted grains, soy and peanuts for protein, eggs, jaggery, green vegetables, fruits etc. For 3 days a week, hot cooked meals made by women's SHGs will be provided to intended beneficiaries, including lactating mothers (with laddu) and another 3 days of hot cooked meals (egg-based) in this scheme. Per day, the average spending per woman is Rs.20/-. Here, soy chunks, drumstick leaves, local greens, raw papaya etc. are supposed to be provided to the women beneficiaries. The laddu is made of channa, peanut and jaggery. Dal is also provided along with rice and wheat roti. Similarly, for 1-3 year old children, hot cooked meals along with laddus are provided with around Rs.11.56/- spent per child covered in the scheme. 3 to 6 year old children are given eggs and laddus on alternate days, with a cost of Rs. 5.90 per child every day. For pregnant women also, eggs and laddus have been included in the scheme with a cost of Rs. 5.90/- per woman per day. The costs for feeding these beneficiaries nutritious food on Poshan Diwas days has also been included. In Dantewada district, this scheme has reached out to 24983 children and 6126 women. It is reported from data obtained by the fact-finding team that 8115 children have been identified as malnourished at the beginning of the scheme, and out of them, 4268 children are now in normal category as per ICDS data. Additional interfaces at village markets have also been created in this program[31].

2. **Acceptance and Impact of Millet-Based Mid-Day Meal on the Nutritional Status of Adolescent School Going Children in a Peri Urban Region of Karnataka State in India**[32]: In this study where millet based mid-day meals were fed to adolescrent children for a 3-month period, there was statistically significant improvement found in stunting and the body mass index in the intervention group, compared to the control group. The study demonstrated three important pieces of evidence: (1) that the introduction of millet-based meals in school feeding programs can significantly improve the nutritional outcome of school going children compared to fortified rice-based meals; (2) that these meals can be enjoyed by the children; (3) that it can be cost effective if millets are given government pricing support as equally as rice.

3. **Large study shows regular millet consumption can combat anaemia[33]:** Based on a meta-analysis of 22 studies on humans and 8 laboratory studies on millets consumption and anaemia, the study concluded that millets can provide all or most of the daily dietary iron requirements of an average person and that millets can have a major impact on improving iron status, haemoglobin level and in reducing iron-deficiency anaemia. The results indicated that iron levels in the millets used to study iron bio-availability (both in vivo and in vitro) and efficacy varied with the type and variety, from 2 mg/100g to 8mg/100g. The results of 19 studies reviewed, conducted on anaemic individuals showed that there was a significant increase in haemoglobin levels by 13.2% following regular consumption of

millets either as a meal or drink compared with regular diets where there only 2.7% increase.

4. **PRIDE project in 12 blocks of 11 districts and 6 states[34]:** In a comprehensive intervention taken up by PRADAN and its partners in Jharkhand, it is seen that dietary diversity as well as Food Consumption Scores increased significantly – households consuming four or more different food groups increased from 28 per cent to 94 percent for the project areas at the endline. It is also seen that with an increase in income from the interventions, households have invested in their food consumption, which improved the FCS scores. The PRIDE project sought to demonstrate the virtuous interplay between empowered citizens, responsive state and engaged markets.

5. **Conventionally-bred iron- and zinc-rich pearl-millet based complementary feeding in children aged 12 to 18 months living in urban slums**[35]: This intervention significantly improved hemoglobin concentrations among male children and among individuals who were iron-deficient or iron-depleted at baseline.

6. **Correlation of Organic Nutrition Kitchen Garden, Awareness of Consumption of Vegetables and Nutritional Deficiency Anemia**[36]: Results of this study showed that Chichewada group, where participants received deworming with Albendazole 1 tablet at the start of study as well as motivation for developing Organic Kitchen Garden and awareness about diet and anemia, showed maximum elevation of Hb within three months and this was maintained when the 1 year second follow up was done. The Hb levels of this group were higher than the group that took iron folic acid supplementation.

7. **Participatory Learning & Action-Linking Agriculture & Natural Resources to Nutrition**[37]: An impact evaluation of a PLA-LANN approach to nutrition, with the emphasis being on nutrition gardens mainly, showed positive impact on dietary diversity. Both maternal dietary diversity and child dietary diversity showed statistically significant impact, (+8 percentage points and +11 percentage points over change in controls, respectively).

8. **Guava with an institutional supplementary meal improves iron status of pre-schoolers: a cluster-randomized controlled trial[38]:** Results and Conclusion: Diversifying a cereal/pulse–based meal with guava increased meal vitamin C content, thereby reducing iron deficiency (ID) and acute respiratory infection related morbidity. This approach represents a valid and scalable strategy to address iron deficiency among young children.

9. **Cooking In Iron Kadhais - A Movement Of Women's Collectives In Jharkhand To Combat Anaemia[39]:** There are several published papers that show that cooking in iron pots or ingots can be a simple and cost-effective strategy for addressing iron-deficiency anaemia. A few studies indicate significant blood haemoglobin levels while several other papers show a minor increase. It was also seen that iron content in food has significant improvement in this approach, while iron bioavailability was also observed when food was cooked using iron pot or ingot[40]. Another international review also concurs that there is some evidence from reviewed studies that eating food prepared in iron pots increases the haemoglobin concentration of anaemic/iron deficient individuals – this effect seems to be modified by compliance, users age and the presence of malaria and hookworm, however[41]. There are also published papers that show that there are no safety concerns in this treatment approach[42].

10. **There exist at least 67 indigenous varieties of rice with very high (20 - 300 ppm) iron content[43]:** There is published literature that showcases the nutritionally superior composition of several traditional paddy landraces. Such folk rice varieties are already

considered in folk medicinal traditions for their high nutritive and therapeutic value. Some of these varieties are known to cure anaemia in women during and after pregnancy, for instance. These include Kalabhat, Navara, Norungan etc. At least 67 folk landraces in the sample of a study contained more than 20 mg/kg of iron and clearly, these folk rice varieties have high potential of remedying dietary iron deficiency.

11. **Assessment of Weekly Iron-Folic Acid Supplementation with and without Health Education on Anemia in Adolescent Girls: A Comparative Study[44]:** After intervention, there was a significant decline in prevalence of anemia in both the intervention (54.7 percentage points decline) and the control (26 percentage points decline) groups ($P <$ 0.001). WIFS with once-a-month health education can be effective in reducing the prevalence of anemia in adolescent school girls.

12. **Improving bioavailability of iron in Indian diets through food-based approaches for the control of iron deficiency anaemia[45]:** An FAO paper presents a comprehensive review highlighting how food-based approaches could improve bio-availability of iron in Indian diets. The review includes food and nutrient intake, especially haematinic nutrients (iron, folic acid, vitamin A, protein) by the Indian population; factors influencing the bioavailability of food iron; and cooking and processing methods that are particularly relevant to the Indian context.

13. **Delivering sprinkles Plus through the Integrated Child Development Services (ICDS) to reduce anemia in pre-school children in India[46]:** *Results and conclusion*: A significant reduction in anemia (50 % to 33 % in boys; p-value <.000; 47.4 % to 34.2 % in girls) was seen following MNP supplementation. Integration of a flexibly administered MNP supplementation into the ICDS is effective in reducing and treating anaemia in children 6 months to 6 years of age.

SOME SCIENTIFIC INFORMATION ON AVAILABLE GREEN LEAFY VEGETABLES AND PADDY LANDRACES OF CHHATTISGARH



<<<<< Sarla Sag (Vangueria *spinosa*) collected from Forests in Surguja region of Chhattisgarh has 22.9 mg Fe & 2.6 mg Zn per 100 g.



Barhasal (L) & Karhani (R) -traditional rice varieties from Chhattisgarh given to pregnant & lactating mothers as well as convalescent patients for strength & recovery >>>>>

LAICHA - NATIVE CULTIVAR FROM Chhattisgarh HAS 9.3 MG FE PER 100 G SERVING; GIVEN TO PREGNANT & LACTATING WOMEN (right)





MAHARAJI- NATIVE CULTIVAR FROM Chhattisgarh WHICH IS GIVEN TO WOMEN AFTER DELIVERY (left)

Chirota Bhaji growing wild (Bastar region) – Contains 13 mg iron per 100 gm (right)





Perennial Tree Spinach – Chaya *Cnidoscolus aconitifolius* – Leaves are eaten as food and drink. Rich in Fe (around 10mg), Ca (around 250mg), Vit A (1357 IU) and C (235 mg) per 100 gm (left)

Rural landscape of Chhattisgarh villages visited by this fact finding team was dotted with Mahua and Tamarind trees - Mahua flowers have 14.1 mg of iron per 100 gm while Tamarind is reported to have 17 mg per 100 gm



IRON CONTENT OF SOME FOODS FROM Chhattisgarh (MG PER 100 G)

MADIA-6.4	TAMARIND SEEDS-17	CHIRPOTI PATAL-20.5	CHIROTA BHAJI-12.4
KANG-12.9	TIL-10.5	URIDA BHAJI-23.3	TIVRA BHAJI-7.3
SAWA-5	RAMTIL-56.6	BARBATTI BHAJI-20.1	POI-10
BAJRA-8	ARBI-24	CHAULAI KANTEDAR-22.3	KUSUMB-5.7
JOWAR-5.8	SITAPHAL4.3	CHAULAI SAFED-25.3	PALAK-10.9
KODO-5.2	KATHAL-4.3	DHANIA PATTI-18.5	PUDINA-15.8
KUTKI-5.2	GAWARPHALI-4.5	PHULGOBI Stalks-40	SARSON-16.3
RAJGIRA-17.6	MUNGA-5.3	MUNGA BHAJI-7	BATHUA-4.2
BAMBOO SEEDS-6.4	SPRING ONION-7.5	METHI BHAJI-16.5	NEEM PATTI -17-25
			CHIRONJI-8.5

Source: Chhattisgarh ke Bhojan Sampada, Jan Swasthya Sahyog, Ganiyari, 2010

Iron content in mg per 100 g in some local foods

(Source – National Institute of Nutrition)

Jangal khutni: Amaranthus *spinosus*- 22.9
Kachar ka patta: Colocasia *antiquorum*- 10
Chota Kaveya: Solanum *nigrum*- 20.5
Nuniha: Portulaca *olearacea*- 17.9
Dholri: Solanum *torvum*- 22.2
Imli: Tamarindus *indica*- 17
Kachnar: Bauhinia *variegeta*-12.1

CONCLUSION

HOLISTIC ALTERNATIVES DO EXIST, AND CHHATTISGARH GOVERNMENT SHOULD ABANDON POLICY INCONSISTENCIES:

As illustrated above, several local foods, including millets and uncultivated foods, are rich in various micro-nutrients, including Iron. Many of these could be seasonal and local, and might be available free of cost. Consumption of such foods will however require intense re-popularisation through large campaigns. For foods like Millets and Traditional Iron-rich Landraces, the government would have to set up incentive and support systems that address livelihoods, nutrition and resource regeneration in one go. Some Millet crops are also rich in Iron and other micro-nutrients, and promotion of millets would require a seed to plate approach, including investments on appropriate small scale processing infrastructure. Finger Millet has 4.62 mg of Fe per 100 g serving (Indian Food Composition Tables, NIN/ICMR, 2017) as compared to 2.5 mg/100 g in FRK.

The Government's approach to iron-deficiency Anaemia needs to be replaced by dietary diversity, combined with a far better iron supplementation programme using better formulations and an individualised case-management approach handled by the health department. A process of nutrition awareness using participatory learning, combined with strategies enabling access to dietary diversity - such as promotion of kitchen gardens/nutri-gardens and nutrition sensitive agriculture that incorporates extensive livestock systems - needs to be established in the community. Long-standing recommendations arising from the National Food Security Act 2013 for addition of millets to the PDS, as well as recommendations from the on-ground campaigns for adding pulses and oil to PDS and eggs to MDMs and Angawadi hot-cooked meals and THR (Take Home Ration) need to be adopted.

Anaemia can be well-tackled through this approach without putting cultural practices, food systems and human health to such jeopardy.

ANNEXURE 1: VIEWS & RECOMMENDATIONS OF A PUBLIC HEALTH PRACTITIONER

- Dr Randall Sequeira

Our Key Informants were Jaya Dhruw and Shivnath Yadav. This brief note is in 2 parts based on learnings from the field. One part dwells on the cultural experience of people who have been made to be obligatory beneficiaries of the entitlements distributed through the PDS, ICDS and MDMP (from Department of Food & Public Distribution, Department of Women & Child Development and Department of School Education), while the other part dwells on the experience of citizens who deal with diseases like Sickle Cell Anaemia and Thalassemia who are also uninformed involuntary beneficiaries of the above mentioned entitlements.

1) The fortification process and information: The experience of anganwadi helpers, as well as women and men who cook the rice provided as part of the PDS was collected in Bastar and Kondagaon districts. The first term/impression used by people to refer to fortified rice, without prompting, was "plastic chawal" or "milawat chawal". Almost all of the people interviewed were able to identify that there was a change in the rice provided over the previous months (Feb 2022 for PDS and Nov 2021 for Anganwadis in Bastar; several months earlier to that for Kondagaon). The quality of the change was described as follows:
   - Name: Plastic chawal / milawat chawal
   - Appearance: rice grains are described as fatter than usual; the fortified rice kernels stand out distinctly while cleaning the rice before cooking; these are also of varying shape/misshapen grains. The colour too was different or whiter than usual rice grains
   - Feel: Feels harder than normal, natural rice grains
   - Smell: Smells the same as usual rice grains
   - Texture in the mouth: Sticky or Chewy
   - Cleaning Process: One way to separate the fortified rice kernels was to soak in water where they float. This was then separated and discarded. There was no change in the colour of the rice water
   - Cooking Process: While cooking, the fortified rice was claimed by most people to have cooked faster while other rice grains were still uncooked
   - Taste: Most people claimed the rice tasted like normal rice

The initial experience of most people and women in particular who were able to identify that there was a change in the rice grains, was to separate and discard the unusual rice grains by cleaning while destoning or soaking in water. Talk about plastic rice being distributed in the PDS and ICDS was there in the initial period, and there were also complaints. There was no information given by PDS rice dealers, Panchayat offices, health authorities or anyone from the civil supplies department when the scheme was initiated. In order to counter the rumours of 'Plastic rice', notices were put up and information provided to rice dealers about the rice being fortified rice or "Paushtik chaval". This happened 2-3 months after the distribution was started in individual districts, which has led to some of the people consuming the fortified rice while some people continue to discard FRK. There was no information given to ANMs, AWWs, school and anganwadi cooks, ASHA workers (*mitanins*), RHOs (MPWs) or the local Hospital doctors about the distribution of fortified rice or to the general public either. ***The distribution of a fortified food that does not appear like the original was claimed/reported everywhere. This violates the norms of fortification, further disturbing the cultural uptake, voluntarily or involuntarily, of a new entitlement.***

2) Medical experience: An attempt was made to meet patients of sickle cell anemia and thalassemia by the fact-finding team, in the 2 districts. This was done mainly because they are at a risk of iron overloading in case of being severely transfusion-dependent for their survival. Another aspect was the

malaria endemicity of the districts which further increases the prevalence of hemoglobinopathies evolutionarily in the districts of Kondagaon and Bastar.

- Sickle Cell anemia: The provision for a screening test for sickle cell disease is available at CHC or secondary health center level and based on CHC records at Bastar's Bhanpuri, the incidence of new cases with "sickling" detected at the CHC was 5-6 cases per month. However, based on a follow-up in the field, the confirmatory tests (HPLC/Electrophoresis) were all done in private labs in Jagdalpur or in Visakhapatnam. This was the situation, despite there being a facility for HPLC at both the district hospital (Kondagaon) and Medical College (Jagdalpur) level. There was no screening exercise done in the last 6 months in anganwadis or schools in Bastar or in the last 1.5 years in Kondagaon for sickle cell disease. Patients of confirmed Sickle Cell Disease, children in particular ranging between ages 6 to 14, were found to be consuming the fortified rice provided in both districts, despite the food advisory mandated by the FSSAI. Dealers at PDS shops in both Kondagaon and Bastar were not aware of the advisory or the type of label with the advisory to be put on the rice sacks or advice to be given to patients of sickle cell anemia to avoid eating the F+ rice. Further, anganwadi cooks were also unaware of this information. The risk of iron overload in uninformed transfusion-dependent sickle cell anemia patients will be high in the future as distribution duration in PDS, ICDS and MDMP increases to more than 2 years.
- Thalassemia: Although there is awareness around "sickling" or sickle cell anemia, there is no awareness about thalassemia as a disease or its features among mitanins, RHOs, Anganwadi workers or ANMs working in the field. There have been no trainings on either of the two diseases in the last 1.5 years. A patient of thalassemia was identified in Kondagaon district, an eleven-year-old boy who has been transfusion-dependent since 2015. He is seen requiring transfusions once every month and a half over the last 1.5 years. He has also been treated with Desferroxime for iron overload over the last year and a half (Ferritin levels of 1510). His mother has been feeding him with F+ rice being made available in the PDS over the last one year. The patient was diagnosed as Beta thalassemia Major at a Private hospital in Visakhapatnam and has been receiving regular treatment at the District Hospital and Jagdalpur after getting his disability card made. The awareness around thalassemia among medical professionals at sub-primary, primary, secondary and tertiary care levels is low and further, the complete advisory mandated by the FSSAI is also not printed by rice mill owners and distributors, nor is the information being forwarded to local health functionaries or the general public.

Further continued consumption of the iron-fortified rice by patients of Sickle Cell Anaemia and Thalassemia over years will lead to symptoms of iron overload, affecting the cardiovascular (heart), gastro-intestinal (liver) and the endocrine systems of patients, further adversely affecting their immunity and ability to fight common infections. The cost of treatment for families of such patients without the iron overload (transport to facilities offering diagnosis, transfusions, cost of regular daily medications, wages lost due to healthcare involvement, emotional and psychological burden of disease, DALYs) itself is high. Further addition of iron chelation therapy which is complex and has to be titrated against complex parameters that require regular testing and travel to tertiary health centers, will further push such families into catastrophic health spending and adverse outcomes.

Conclusion: There are a few reasons to stop, reflect and reconsider the blanket provision of F+ rice in pilot districts as well as now to 12 districts of Chhattisgarh state. These include the arbitrary manner of piloting distribution without information given to respective departments like those under the MoHFW, MoE, MWCD and most importantly, the ground functionaries of said departments; the fractured information and manner of execution the distribution of private intermediaries without mandated complete advisories (PDS local distributors, rice mill owners); and the uncaring attitude for beneficiaries suffering from certain diseases especially for forest dwelling communities who have an evolutionary genetic predilection for hemoglobinopathies.

ANNEXURE 2: SOME PICTURES FROM THE FACT-FINDING VISIT









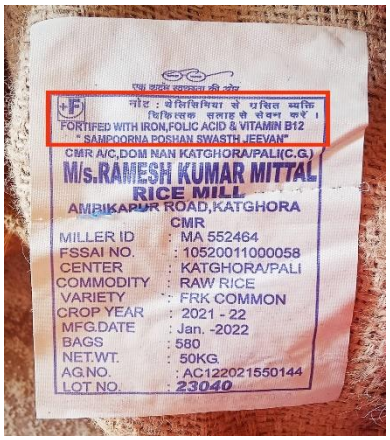






















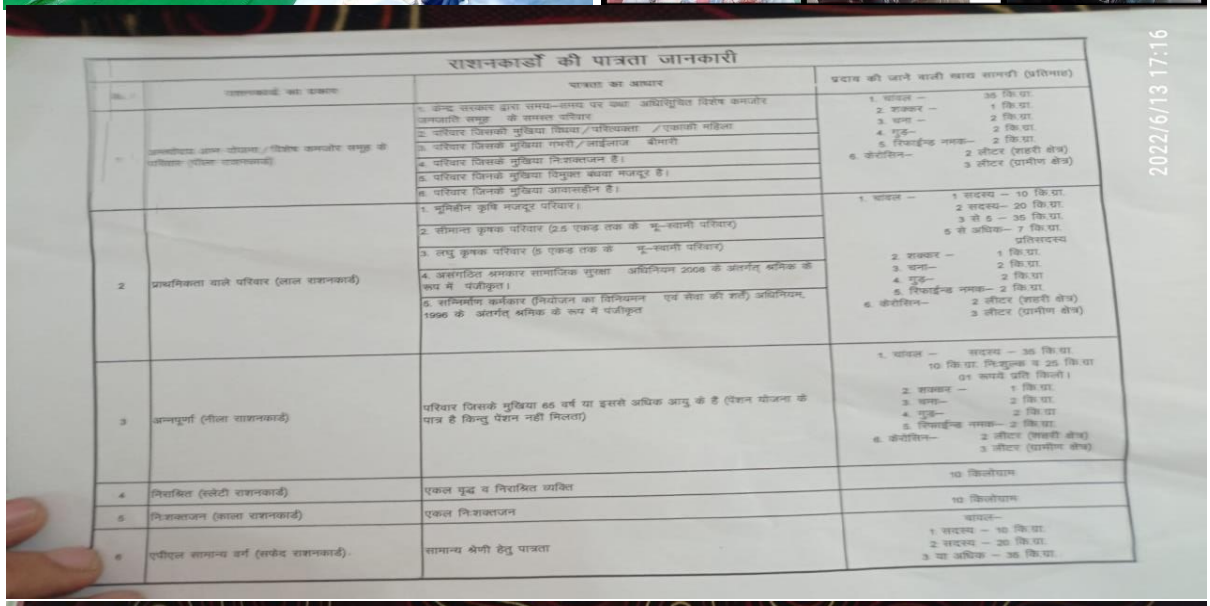





POOJA AGROTECH
(Rice Mill)


22/6/13 10:27


2022/6/14 11


राशनकार्डों की पात्रता जानकारी
पात्रता का आधार
प्रदाय की जाने वाली खाद्य सामग्री (प्रतिमाह)
2022/6/13 17:16


छत्तीसगढ़ शासन

ANNEXURE 3: CHHATTISGARH – DISTRIBUTION OF FORTIFIED RICE

Month & Year	No. of Districts	No. of Beneficiaries	Allocation of FR in MT	Automated Distribution of FR in MT	Distribution of FR in MT
October 2020	1	465,656	24.25	24.25	48.49
November 2020	1	465,656	181.83	181.83	363.66
December 2020	1	462,855	695.04	695.04	1,390.08
January 2021	1	463,556	636.23	636.23	1,272.45
February 2021	1	461,521	2,265.03	2,265.03	4,530.05
March 2021	1	461,726	2,608.61	2,608.61	5,217.21
April 2021	1	461,866	2,656.87	2608.60	5,217.19
May 2021	1	461,914	-	2608.98	5,217.95
June 2021	1	461,914	2,657.24	2625.60	5,251.19
July 2021	1	461,989	2,647.73	2621.47	5,242.93
August 2021	1	462,054	2,658.28	2625.65	5,251.29
September 2021	1	462,054	2,660.01	2629.57	5,259.13
October 2021	1	462,054	2,660.61	2628.05	5,256.09
November 2021	1	463,537	2,665.39	2618.86	5,129.78
December 2021	1	463,903	2,667.38	2623.09	2,623.09
January 2022	**1**	**18,11,508**	**10,609.56**	**2631.63**	**2,631.63**
February 2022	**4**	**35,18,070**	**20,771.59**	**10032.31**	**10,032.31**
March 2022	**8**	**64,27,035**	**37,521.63**	**19,598.05**	**19,598.05**
April 2022	**11**	**71,21,968**	**41,580.40**	**18,667.08**	**18,667.08**

Out of India-wide distribution of 70,588.81 of MT in April 2022 across 15 states and 257 districts, Chhattisgarh alone has a share of 26.4%.
Source: http://annavitran.nic.in/FR/avFortifiedRice, accessed on 25th May 2022

ANNEXURE 4: CHHATTISGARH – ADIVASI POPULATION AS PER CENSUS 2011

Name	AREA	No_HH	TOT_P	P_ST	ST%
Koriya	6604.00	153274	658917	304280	46
Surguja	15732.00	526049	2359886	1300628	55
Jashpur	5838.00	192570	851669	530378	62
Raigarh	7086.00	367962	1493984	505609	34
Korba	6598.00	280073	1206640	493559	41
Janjgir – Champa	3853.00	364532	1619707	187196	12
Bilaspur	8272.00	600822	2663629	498469	19
Kabeerdham	4235.00	178446	822526	167043	20
Rajnandgaon	8070.00	318488	1537133	405194	26
Durg	8535.00	701707	3343872	397416	12
Raipur	12383.00	871225	4063872	476446	12
Mahasamund	4790.00	248561	1032754	279896	27
Dhamtari	4084.00	170951	799781	207633	26
Uttar Bastar Kanker	7161.00	160937	748941	414770	55
Bastar	10470.00	311538	1413199	931780	66
Narayanpur	4653.00	27982	139820	108161	77
Dakshin Bastar Dantewada	8298.00	120850	533638	410255	77
Bijapur	8530.00	54757	255230	204189	80
CHHATTISGARH	**135192.00**	**5650724**	**25545198**	**7822902**	**31**

Source: Census 2011

ANNEXURE 6: COMPILATION OF MEDIA STORIES ABOUT FORTIFIED RICE IN CHHATTISGARH

1. https://navbharattimes.indiatimes.com/state/chhattisgarh/raipur/fortified-rice-distribution-scheme-will-start-from-november-1/articleshow/78688594.cms - 15th October 2020 story – that FR distribution will commence from 1st November 2020 - अधिकारियों ने बताया कि कोण्डागांव जिले में राष्ट्रीय खाद्य सुरक्षा अधिनियम के तहत एक लाख 11 हजार 217 राशनकार्ड एवं राज्य योजना के तहत 23 हजार 204 राशनकार्ड तथा इस तरह कुल एक लाख 34 हजार 421 राशनकार्ड प्रचलित हैं। इस जिले में चावल का कुल वार्षिक आबंटन 60 हजार 188 टन है जिसमें पीडीएस चावल का 55 हजार 68 टन है और कल्याणकारी योजना, मध्यान्ह भोजन, पूरक पोषण आहार आदि योजनाओं का वार्षिक आबंटन पांच हजार 120 टन है। (https://www.bhaskar.com/local/chhattisgarh/raipur/kondagaon/news/chief-minister-inaugurates-the-scheme-for-distribution-of-fortified-rice-127871182.html)

2. https://www.naidunia.com/chhattisgarh/raipur-after-kondagaon-fortified-rice-will-be-available-in-the-entire-chhattisgarh-state-6724176 - 21st February 2021 story – Fortified Rice to be taken to other districts beyond Kondagaon.

3. https://www.naidunia.com/chhattisgarh/raipur-cg-budget-2021-five-crore-80-lakhs-for-distribution-of-fortified-rice-in-the-budget-of-the-food-department-6741497 - 6th March 2021. State Government Budget of 5.8 crore rupees for fortified rice in 2021-22.

4. https://www.etvbharat.com/hindi/chhattisgarh/state/sarguja/confusion-among-people-about-fortified-rice-in-surguja-rumors-of-plastic-rice-created-confusion-in-people/ct20220223215134103 - Surguja district, confusion about plastic rice

5. https://www.haribhoomi.com/local/chhattisgarh/fortified-rice-distributed-from-pds-people-understood-plastic-grains-bijapur-villagers-doubt-about-rice-399217 - 22nd October 2021 – Bijapur district – plastic rice fear.

6. https://www.naidunia.com/chhattisgarh/dantewada-dantewada-towards-elimination-of-malnutrition-from-fortified-rice-7262197 dated 30th January 2022 - From 1st November 2021 onwards, distribution in Dantewada

7. https://www.livehindustan.com/chhattisgarh/story-cm-bhupesh-baghel-cabinet-meeting-budget-discussion-chhattisgarh-council-of-ministers-5845460.html - 18th February 2022 - ● वित्तीय वर्ष 2022-23 में राज्य के 10 आकांक्षी जिलों (कोरबा, राजनांदगांव, महासमुंद, कांकेर, नारायणपुर, दंतेवाड़ा, बीजापुर, बस्तर, कोंडागांव, सुकमा) एवं 02 हाई बर्डन जिले (कबीरधाम एवं रायगढ़) में मार्च 2022 से राज्य योजना के राशनकार्डधारियों को फोर्टिफाइड चावल वितरित करने व राइस फोर्टिफिकेशन की शत-प्रतिशत राशि (39.59 करोड़) राज्य शासन द्वारा वहन की जाएगी ।

8. https://www.abplive.com/states/chhattisgarh/chhattisgarh-state-government-will-distribute-fortified-rice-in-10-aspirational-and-2-high-burden-districts-ann-2065205 - 19th Feb. 2022 - दरअसल छत्तीसगढ़ के 12 जिलों में लोग कुपोषण और एनीमिया से प्रभावित हैं.

इससे समस्या से प्रभावित लोगों को राहत पहुंचाने के लिए, राज्य सरकार विशेष पहल करते हुए यह फैसला लिया है. इसी के तहत 18 फरवरी को सीएम भूपेश बघेल की अध्यक्षता में आयोजित कैबिनेट बैठक में इस प्रस्ताव पर मुहर लग गई है. खाद्य विभाग से मिली जानकारी के मुताबिक, सार्वजनिक वितरण प्रणाली में राज्य योजना के राशन कार्डों में चावल का वार्षिक आवंटन लगभग 3 लाख 89 हजार 486 टन है. इस चावल के फोर्टिफिकेशन के लिए लगभग 28.43 करोड़ और राष्ट्रीय खाद्य सुरक्षा अधिनियम के तहत आम लोगों को फायेदा पहुंचाने के लिए फोर्टिफाइड चावल के वितरण के लिए राज्य सरकार के जरिये 11.16 करोड़ रूपये खर्च करने का प्रावधान किया गया. इस तरह इस काम के लिए कुल मिला कर 39.59 करोड़ रूपए की राशि खर्च की जाएगी. फोर्टिफाइड चावल का वितरण राज्य के 10 आकांक्षी जिले कोरबा, राजनांदगांव, महासमुंद, कांकेर, नारायणपुर, दंतेवाड़ा, बीजापुर, बस्तर, कोण्डागांव, सुकमा और 2 हाईबर्डन जिले कबीरधाम और रायगढ़ में किया जाएगा.

9. https://timesofindia.indiatimes.com/city/raipur/cg-to-start-distribution-of-fortified-rice-in-ten-aspirational-districts/articleshow/89759600.cms - February 23, 2022 – 28.43 crore rupees to be spent on fortification; 11.16 crores to be spent on distribution of FR.

10. https://www.naidunia.com/chhattisgarh/raipur-fortified-rice-will-be-distributed-in-the-aspirational-districts-of-chhattisgarh-7345251 - 5th March 2022 – First Steering Committee meeting at the state level chaired by Chief Secretary Amitabh Jain – from April onwards in 10 aspirational districts, 2 High Burden districts and all ICDS/MDMS meals.

11. https://www.naidunia.com/chhattisgarh/bijapur-continuous-treatment-of-destitute-dogs-7504904 - 7th May 2022 - News from Dhamtari (throwing the rice away) and Kanker – Plastic Rice reports

12. http://samaynewslive.com/59461/ - from Korba district - इस चावल को खाने से पेट मे दर्द व स्वास्थ्य पर सीधा असर हो रहा है।

13. https://dailybalodnews.com/?p=27731 – from Balod district - कई घरों में इस चावल का उपयोग भी किया जा रहा है। जिससे कुछ लोगों को पेट दर्द की शिकायत भी है।

14. https://www.abplive.com/states/chhattisgarh/chhattisgarh-news-confusion-spread-in-bastar-regarding-fortified-rice-know-the-whole-matter-ann-2139826 6th June 2022, Bastar - फोर्टिफाइड चावल को लेकर बस्तर में फैला भ्रम, प्लास्टिक का चावल समझ फेंक रहे लोग, जानें पूरा मामला

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