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CHAPTER THREE

The impact of food security disruption due to the Covid-19 pandemic on tribal people in India

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1. Introduction

1.1 Covid-19 epidemic in India

The impact of lockdown and complete closure due to Covid-19 has tremendously disturbed the life of aboriginal people, deteriorating their health and livelihood. It has had a negative impact on the economy of the country as well as agriculture and the healthcare system in general. For the last 2 years, Covid-19 has been a global crisis which has badly affected people's lives. The socio-economic position along with the healthcare system has broken in many countries.

This study discusses the effect of Covid-19 on the life of indigenous people in India. It considers the disruption of food supply during the lockdown period. A comparison is drawn between the situation of the Covid-19 pandemic and after the pandemic. The dependence of tribal people for food is further illustrated, pointing to the immense poverty and marginalization of these people in the country.

1.2 Disruption of food supplies in India during lockdown

Since the Covid-19 pandemic began, low- and middle-income countries of Asia and Africa have been hugely affected in terms of food and nutrition. Those countries have been struggling for many years to maintain the food chain and improve the nutrition level by reaching to each class of the society (Saxena et al., 2020). However, the uneven distribution has been a matter of concern since before the pandemic, and over the last 2 years the situation has worsened. In March 2020, India announced a lockdown and complete closure without any planning for food security, as the situation was difficult to predict. According to a report by Workie et al. (2020), the wholesale market lost 62% within just 3 weeks, and especially in urban areas, due to the unavailability of transport, food was not supplied. As a result, prices rose by 3% in the first 20 days after the lockdown (Cariappa et al. 2020). Due to high prices and low supply, people in villages suffered a great deal during that period.

1.3 Malnutrition among tribal people of India before Covid-19 pandemic

Also known as the depressed class of India, both the scheduled caste (SC) and scheduled tribe (ST) are the designated people groups of India. The SC and ST people are facing heavy marginalization, weak infrastructure, and a very
low-quality healthcare system. According to Liévanos (2019), the poverty scale among the ST people of the country is 45.3% in rural areas and near urban areas it comprises of 24.1%.

More than 90% of the livelihoods of the aboriginal tribal people of India relate to forest and seasonal cultivation. Animal rearing, segment agriculture (shifting cultivation, jhumming), hunting, and resources from the forest are the main sources of food among the tribal people. After the ban on jhumming and restrictions on the forest area, the situation got worse. Jhumming is a traditional method of farming where forests are cut and burned for cultivation purposes. The tribal people consider this as a ritual that has been practiced for centuries. However, it is also considered to be a major reason for environmental degradation and has thus been banned.

Since independence, several government schemes and policies have been implemented to improve tribal welfare. These programs were focused on the livelihoods, literacy levels, and health of tribal communities. Unfortunately, the situation has remained unchanged throughout the years since independence. According to a report by UNICEF, nearly 4.7% of tribal children suffer from chronic malnutrition in the country, causing their growth and development to be affected tremendously (De and Chattopadhyay, 2019).

1.4 Halting of employment in the semimarginalized sector during the Covid-19 epidemic

The international as well as the national crisis has highlighted the real picture of a less organized system. The unemployment rate of India dropped 5.8% in 2018–19; an increase on the previous year (Singh, 2018a,b). The marginalized and semimarginalized sectors have higher unemployment rates than the others in India. During and after the Covid-19 pandemic, the rate of unemployment fell by 1.84%. According to Vyas (2020), the unemployment rate came down 10.18% during June 2020, having reached its peak in April, at 23%. The nationwide unemployment rate rose so high because of the Covid-19 epidemic; thus it was challenging to recover the situation within a short span of time. The national government must implement some initiatives soon to deal with the high unemployment rates.

1.5 Prevalent food insecurity in tribal areas of Southern Rajasthan

The Covid-19 epidemic has severely affected more than 476 million aboriginal and tribal people globally (Mohan et al. 2020). India has approximately 104.2 million tribal people which comprise 8.6% of the total population of
the country (Saxena et al., 2020). According to data from Tribal.nic.in (2021), aboriginal people of India are spread over 15% of the total geographical area of the country. They are isolated from mainstream society, and hence are marginalized people who still practice the traditional culture.

When considering the impact of Covid-19 epidemic on the food security of the tribal people of India, states like Rajasthan, Madhya Pradesh and especially Chhattisgarh (that are the habitat of the most vulnerable tribal groups) are the most affected areas. The inaccessible areas of Udaipur, Banswara, Rajsamand, and Dungarpur are the dominant areas for tribal population in Southern Rajasthan, India. From a report in 2014, it can be seen that the malnutrition level is immensely high in this particular area of southern Rajasthan (Mangal and Sivaraman, 2020). Resources are very limited and in almost every tribal household there is a lack of food. Mothers suffer from lack of sufficient nutrition, causing suffering to their offspring in turn.

1.6 PDS in villages during lockdown

The Public Distribution System (PDS) has been evolving to mitigate the food scarcity in India. It consists of distributing food grain at low and affordable prices among poor people under the rationing system, and the government of India started this welfare program in 1960 (Pathak et al. 2020). The system was changed from “welfare-based” to “right-based” under the National Food Security Act, 2013. It is supplemental and not intended to make availability of the total requirement of those commodities which are distributed under this program (Drèze et al., 2019).

The PDS is operated with the joint responsibility of the central government and the union territories or state governments. The Food Corporation of India (FCI) has placed the responsibilities for the collection, storage, transportation, procurement, and proper allocation of those food grains among the states. The responsibilities also include identifying families who are eligible to access the system, providing them with ration cards, and supervision to ensure the PDS is conducted appropriately. Commodities and goods like food grains (rice, wheat), sugar, edible oil, and fuel (kerosene) are distributed to underprivileged people in the country.

There are several categories like Above Poverty Line (APL) and Below Poverty Line (BPL), identifying the rates of poverty among families. Since its establishment, the PDS has proven to be a great success by the government to reduce food scarcity among the poor. During the Covid-19 epidemic, the
benefits have become more clear (Tomayko et al. 2017). While 99% of respondents possessed a ration card, only 82% received wheat and pulses through the scheme (Pathak et al. 2020).

During the crisis, the technology-driven PDS has helped to scale up the food distribution in the country significantly, but it also has its drawbacks. However, in the view of George and McKay (2019), more than 80 million Indian people benefited between April and December 2020 throughout India.

2. Methodology

For the vast majority of Rajasthan and the tribal sections, their food consumption cycle is described in the methodology. Statistical reports have explained a great deal about food consumption patterns and the PDS among the tribal people of that particular zone.

2.1 Study setting

The study presented here was conducted in three blocks of the Udaipur and Dungarpur district in Southern Rajasthan. According to the 2011 Census, the district has a total population of 3 million (63% rural and 37% urban). It has a literacy rate of 52% (NFHS 4) and the economy is dependent on agriculture and migrant working in the construction sector.

2.2 Study design and sample

The cross-section designed was used to collect data between May 12, and June 10, 2020. This survey was designed to assess the food security situation of households during the lockdown period due to Covid-19 in tribal areas. The sample included patients visiting Amrit Clinics and a government Primary Health Center (PHC), and community members who possessed a cell phone. Amrit Clinics are primary healthcare facilities operating in rural Southern Rajasthan, and are managed by Basic Healthcare Services (BHS), a nonprofit organization. BHS also manages PHC Nithawa, in partnership with the state government.

Patients included those suffering from tuberculosis (TB), parents of children with severe acute malnutrition (SAM), and pregnant women seeking treatment at Amrit Clinics/PHC Nithawa. As mobility for community members from Amrit Clinic Advisory Committees and community volunteers was severely restricted, the interviews were conducted by telephone.
2.3 Study tool

A structured questionnaire was used to collect data through the interviews. The information collected includes demographic characteristics and details of household food security. The questionnaire was developed in English and was translated into the local Hindi language by the principal investigator and team. It was then field tested and revised accordingly.

Food availability was measured using a long list of foods items categorized under food groups. These food groups were divided into 10 categories (cereal, pulses, vegetables, fruits, sugars, fats, milk products, packaged foods, meat, and egg).

We asked nine questions related to households’ experience of food insecurity in the last month preceding the survey.

2.4 Data collection

The data collection team included four field investigators (FIs). The primary statistical data helped to examine the current scenario of the tribal people in that particular area.

FIs were graduated with earlier experience in data collection. The FI’s were trained by the principal investigator on usage of study tool/structured questionnaire.

2.5 Data analysis

The raw data was cleaned, coded, and analyzed (adjusted for cluster sampling) using SPSS (Statistical Package for Social Science) software. We used univariate analysis to examine the distributions of variables. This was used to understand the study population characteristics. The results are presented as percentages for categorical variables. The primary statistical data and the qualitative data have made the study more accurate and specific.

The raw data has measured the percentage of people who consume food every day and who are totally deprived of food. The secondary qualitative data has examined the reasons for low food conservation, starvation, and low frequency of food consumption. The efficacy and accuracy of the Public Distribution System is also measured here through the statistical data. The number of people who obtain sufficient food and how frequently, and what types of food are distributed through the PDS by the government of India, are further examined through these data. Through analysis of consumption and distribution patterns, it will be easy to identify a method to mitigate the malnutrition problem in these places.
3. Results

We reached out to 269 respondents, and conducted interviews with 211 of them. We were unable to connect to 68 respondents as either the connection was very poor or the phone number was wrong and the interview could not be conducted. All the respondents provided informed consent. The respondents included community volunteers (72), family members of TB patients and severely malnourished children (38), pregnant women (53), and influential members in the villages (48). Of all respondents, 97% were tribal people. There were 67 men, and 144 women. All but three reported having a ration card; 41% had cards meant for those Below Poverty Line (BPL), and 9% had an Antyodaya card, meant for the destitute and vulnerable. The mean family size was five. The findings from the study are shared below.

3.1 Functioning of the Public Distribution System in tribal villages

While 99% of respondents possessed a ration card, only 82% received wheat and pulses through the scheme. Families were denied food grains for not possessing an Aadhar card (the 12-digit number on an Aadhar card is issued by the government of India and provides proof of identity and address that is valid throughout India), or if their name did not appear in the online list despite their holding an Aadhar card, or if their fingerprints did not match those in the database—this last point was particularly common among the elderly. Many families who did have a ration card, including several of our own health workers, reported being given smaller amounts than they should have received.

3.2 Availability of food items in households

Cereals were available in almost all households: 97% reported availability of wheat, 49% had maize, and 48% had both wheat and maize (Fig. 1). Only 21% of households had other cereals like rice, bajra (pearl millet), and semolina. The cereals came from both their own yield and that provided through the PDS. Pulses were present in 65% of households, and 43% reported having only one pulse. Seventy-eight percent of respondents reported having one or more vegetables. However, when onions, potatoes, green chilies, and garlic (vegetables with relatively lower nutritional value) were removed from the list, only 34% of respondents still had one or more...
vegetables. Fruits were reported to be present by 45% of respondents. About half (49%) reported availability of any milk, and another 15% reported some milk product, most commonly buttermilk.

Most of the vegetables and fruits came from respondents’ own kitchen gardens or locally grown trees. Travel to the nearest markets was difficult as these were still far (15–20 km or more), public transport was not available, and police restricted the movements of villagers. People also stopped buying from vendors coming to the villages, due to fear that they could spread Covid-19. Nonperishable items such as pulses, oil, and spices were sourced from small grocery shops in the villages, which were fast running out of supplies due to disruption of the supply chain. These shops started raising their prices, which went up by 30–50%. At the same time, people had little cash, and started bartering wheat from the recent harvest to buy these items. Wheat was sold at a price around Rs. 15 per kg, the lowest for several years. Many families who were not able to trade their wheat survived on a mainly cereal-based diet together with small amounts of spices, most often chilies, or garlic.

3.3 Respondents’ experience on satiety and hunger

We shared four scenarios with the respondents regarding their perceptions on the adequacy of food in their households, and asked them to choose which of these described their situation best. These included: food in the household is sufficient for the amount they want to eat; food is sometimes not adequate; food is mostly not adequate; or they do not know. Only a third of respondents reported that they had sufficient food for the amount they
want to eat, while nearly two-thirds reported that sometimes food was not adequate for how much they want to eat (Fig. 2). Almost all of the respondents (97%) reported not having sufficient money for buying food as the reason for not having as much food as they would want.

Nearly half of the respondents (47%) reported cutting down on a meal or skipping a meal altogether in the last month as they did not have sufficient money. Half of them reported that this happened once or twice in the month, while the others shared that this happened more frequently. Two individuals (1%) reported not having food for the entire day, on account of not having enough money.

3.4 How long the food supplies will last

We could ascertain detailed information on actual amounts of nonperishable items (cereals, pulses, oil and ghee, and sugars) available in the households for 155 respondents. While families had a fair amount of cereals (median amount approximately 240 kg), the amounts of other items were very sparse, with pulses, oil/ghee, and sugar being 1 kg each (median). We also estimated how long the available supplies would last (Fig. 3), using the following assumptions: that each household had two adults (as families in the region are predominantly nuclear) and the remaining were children, and that the adults indulged in moderately strenuous activity. We calculated the amount of food items required per day in each household, and the expected duration for which supplies would last, also for each household. We finally calculated the median duration for which supplies would suffice, across the respondents. While the amounts of cereals available in the households seemed sufficient for a period of 5 months, pulses and sugar were enough for just over 1 week, and oil/ghee for 2 weeks.
4. Discussion

4.1 Functioning of the Public food Distribution System in India

The rationing system in the states has not completely proven its effectiveness to each of the citizens of the country. The PDS reached the vast majority of the population. A significant minority of ration-card holders, however, had not received any food grain rations during the reference period. For instance, research conducted by Dalberg in 15 states including Rajasthan reported that 93% of STs received rations through the PDS in May 2020 (Totapally et al., 2020). A PRADAN+ survey covering informal-sector workers in rural areas of 11 states found that 84% of households with ration cards received rations in June 2020. (Pradan.net, 2020) Data compiled by CSE-APU in 12 states indicated that 85% of rural areas received rations between September and November 2020 (CSE-APU, 2020).

Furthermore, PDS utilization does not mean that the households have received their full entitlements. Aside from their normal NFSA (National Food Security Act) entitlements (5 kg per person per month for priority households and 35 kg per month for Antyodaya households, the poorest of the poor), NFSA cardholders were supposed to get additional monthly rations of 5 kg per person, for free, from April to November 2020. About 30 million tonnes of wheat and rice were distributed in 2020 as additional PDS rations in this manner, under the Pradhan Mantri Garib Kalyan Anna

![Fig. 3 Median number of days each food ingredient will last](image-url)
Yojana (PMGKAY). As is well-known, India’s PDS is vulnerable to significant “leakages.” The leakages, it appears, have declined in recent years, partly due to sustained post-NFSA reforms, but they remain substantial in some states (Drèze et al., 2019, 2020). It is possible that the leakages declined further in 2020, thanks to tighter monitoring, or that they increased, because of a lack of public awareness of the PMGKAY provisions.

4.2 Food insecurity among tribal people

Food insecurities may be categorized into three divisions, being caused by food unavailability, improper food access, and lack of absorption. Food availability relies on the production and flow of food. The availability of food is very low for the low production scale among the tribal communities. According to Chyne et al. (2017), the dependence on traditional technology in subsistence agriculture of tribal people is one reason for improper flow.

The unemployment rate is very high; as a result, tribal communities suffer from limited economical access. Poor physical access likely causes poor consumption as well as poor nutrition. The distribution of food in the areas of Rajasthan is largely uneven.

The economy is identified with a very low growth rate; the gap in per capita income (PCI) is huge in terms of the national level. Additionally, natural calamities like drought or famine, poor infrastructure, and hostile environment have caused very low productivity there. Two-thirds of the total cropped area of Rajasthan is under food grain cultivation. Furthermore, the cultivation of the major crop like cereals and millets is absent among tribal people.

We believe that drastic employment and income declines in 2020 led to a surge in food insecurity. The situation was predictably worse among disadvantaged groups. For instance, ActionAid reported that 35% of nearly 10,000 informal workers (mainly migrants) were eating less than two meals a day in May (ActionAID, 2020). Similarly, the PRADAN+ survey found that half of these informal workers were eating fewer meals than before (Pradan.net, 2020). In Bihar, a survey of 20,000 returning migrant workers found that close to 60% were unable to ensure two square meals a day for all members of the family in June 2020, with a similar proportion in July (Pradan.net, 2020).

The Covid-19 epidemic and lockdown have totally disrupted the supply of food, and malnutrition has increased at a concerning rate in the tribal groups. More than half of the respondents have reported that the maximum
time of the year they lack the pulses and sufficient food to eat. Food unavailability and lack of money are reported as reasons for not accessing food among tribal people (Mastiholi et al., 2018).

Besides Rajasthan, an example can be given of those who are suffering due to food scarcity during the pandemic. Bhils are considered to be the largest tribal group of India (Tribal.nic.in, 2021). Observing the change in the livelihood of the Bhil in Madhya Pradesh, the situation of the tribe is clear. The livelihood system denotes the entire set of daily activities for productivity and also for profitability as it consists of the interrelated matrix of agriculture, food production, literacy, and education (Tribal.nic.in, 2021). Scarcity is intense in Southern Rajasthan, which depends heavily on outward migration for sustenance, and is thus now significantly affected by the pandemic. Tribals are mainly dependent on subsistence agriculture, migratory laborers, and other animal husbandry.

Usually, the tribal communities are less connected with the major source from previous time and Covid-19 has cut the thread in the last 2 years. The usual picture of malnutrition and food scarcity has become worse. The national government of India has initiated many policies in past years to benefit India’s tribal groups, but these groups are not very familiar with the welfare programs of the government. Except in the northern part of the country (Naga tribal group), the situation of the tribal communities is getting worse day by day where Covid-19 has spread fast.

4.3 Covid-19 lockdown resulted in widespread hunger

The “right to food” denotes freedom from hunger which signifies having at least two proper meals a day, while the broader sense expresses proper nutrition for everybody. The National Human Rights Commission of India in 2003, after the incident of deaths from starvation in Kalahandi and Koraput district, had considered the “right to food” under article number 21 in the Indian constitution as a part of fundamental rights (Sethi et al., 2017). Unfortunately, although the Indian constitution clearly mentions fundamental rights, aboriginal and tribal people of the country are not so aware of this (Bayod et al., 2020). Hence, these tribal communities do not enjoy their fundamental rights properly. The government of India has created several welfare programs for aboriginal people, but they were out of mainstream society for a long time. As a result, these people are now less motivated to come out of their comfort zone, which is the land and forest part of the country. Restrictions on forest and land use to save
the natural resources from jhumming and shifting cultivation of the tribal people have come to an end. As a result, the situation has become worse than before.

In the current study, only a third of respondents reported that they had sufficient food for the amount they wanted to eat, while nearly two-thirds reported that sometimes food was not adequate for them. The CSE-APU survey, for instance, found that 77% of respondents during the lockdown in rural areas were eating less (60% in October–December 2020) than before (CSE-APU, 2020). A nationwide survey was conducted by Gaon Connection, which interviewed 23,000 people in 179 districts spread across 20 states and three union territories; it reported that nine in every 10 households faced some level of difficulty in accessing food during the lockdown (Gaon Connection and Lokniti-CSDS, 2021).

The current study shows nearly half of respondents (47%) reported cutting down on a meal or skipping a meal altogether in the reference period as they did not have sufficient money. Two individuals (1%) reported not having food for the entire day, on account of not having enough money. In the study conducted by Gaon Connection, around 35% of households went without eating the whole day either many times or sometimes, and 38% skipped an entire meal in a day several times or sometimes (Gaon Connection and Lokniti-CSDS, 2021).

4.4 Absence of cash in hand to buy food

India faced many problems in lockdown periods due to Covid-19. According to Bayod et al. (2020), the most prominent issue is the food security problems all over the nation, but tribal areas faced the most difficult food security problems in the pandemic periods. The secondary survey of India shows that India, mostly 12 states and the 200 districts, faced the most critical problems in the pandemic periods for food security (Alam et al., 2020). In the current study, almost all the respondents (97%) reported not having sufficient money for buying the food as the reason for not having as much food as they would want. A survey by Gaon Connection stated that the majority of households reported having spent less money on food items during the lockdown compared to prelockdown. Forty-nine percent spent less on wheat-pulse-rice and 63% reduced spending on biscuits, snacks, and sweets (Gaon Connection and Lokniti-CSDS, 2021). Another survey conducted on low-income households shows that half of the primary earners lost their jobs, and 20% had jobs but were not getting paid or were
being paid less during lockdown in May 2020, which indirectly affected the food security of many of these households (Totapally et al., 2020). Mishra and Rampal (2020) observe that several surveys show that the drastic declines in employment and income in 2020 led to a surge in absence of cash which affected overall food security, especially for the most vulnerable (Mishra and Rampal, 2020).

In India, 8.6% are tribal people of the total population are tribal people. They mostly engage in agriculture, fishing, mining, stone carving, planting, and other skilled and semiskilled jobs (Jaacks et al., 2021). Those who depended on agriculture for their living were also hit badly due to lockdown. In this situation, the 26% of farmers were not able to farm food crops in their fields due to bad weather and the pandemic. In the pandemic, tribal people also faced challenges to buy seeds and other necessary resources for farming food crops for the following year because both public and private transport were at a halt, and the markets were closed.

4.5 Impact of lockdown and halting of public transport on accessing food and healthcare services

In India the tribal people are the most segregated people from main society. They are more related to nature and feel more comfortable living in forested areas and places far from cities. For this reason, the tribal areas are the most marginalized parts of the nation, and the public communications system is very poor in these areas (Saxena et al., 2020). In the tribal areas, the markets are far away from households, as are healthcare facilities. In the pandemic, public transport was halted due to the Covid-19 lockdown and it became difficult for people to access the market to buy essential food items or access health services. Local shops had limited food items and could not access the wholesale market to restock food items (Ijsrp, 2020).

In the Covid situation, medical facilities are the most significant need for communities, but government health facilities are either very far away from households or are not functional in the remote villages. For this reason, traditional healers and illegal practitioners were the only sort of relief available to tribal people in the current study.

4.6 Factors affecting the food supply chain

In India the food supply system plays a significant role, and it is dependent on India’s agricultural productivity. For this reason, the food supply is dependent on several factors in this segment. In India, different types of weather
conditions are present throughout the country. These different weather varieties can help to improve agricultural production. In eastern India, Rajasthan is an important cereal-producing state. It depends mostly on the agricultural occupational system. In Rajasthan, 13.48% people are tribal people and they are mostly engaged in agricultural work (Singh, 2018a,b). In the pandemic, the entire country’s economic system collapsed and the food structure also broke for several reasons, with transport being one of them (Aajeevika 2019). On the other hand, lack of supervision and checks on food supply system also failed to distribute the food properly to the tribal people of Rajasthan. In most cases, tribal people did not get food due to corruption problems, but currently Rajasthan is implementing many initiatives to provide food to tribal people and mitigate food security issues for tribal people (Mahajan and Tomar, 2021).

In the present scenario, the Rajasthan government is working to increase the production of food grains in agricultural lands and taking corrective measures to improve the supply of food to people in villages through the PDS (Swati and Kavita, 2021). For this reason, some new strategies are being implemented to increase the production of food grains.

5. Conclusions: Measures to promote food security

The findings of our study highlight several actions which need to be taken up across Southern Rajasthan and similar migration-dependent populations to strengthen food security.

• **Strengthen the PDS and add more nutritious foods**: While a universal provisioning of food grains to all round the year has been announced, it also needs to be ensured that the same happens on the ground. There is also an urgent need to add more nutritious foods, such as pulses and oil, within the PDS. This is already being done in some parts of India and needs to be expanded urgently to cover more of the vulnerable populations.

• **Expand the network of fair price shops**: Most cities have a network of fair price shops which ensure availability, and some degree of stability of prices, of nonperishable food items. Kendriya Bhandar in Delhi and Upbhokta Kendra in Rajasthan are good examples. Smaller towns, however, do not have such stores, which makes the populations vulnerable to stock outs of such items as well as to large variations in the prices. Such stores need to grow and reach more and more of the small towns as well as large villages.
Renewing the focus on agriculture and livestock: In our study, local generation of food contributed to most of the cereals, and to vegetables and fruits, as well as milk or milk products. Given the distances, limited travel options, and scarcity of cash, local production of nutritious foods will continue to play an important role in promoting food security. Over the years, attention has gradually moved away from agriculture and livestock, and this needs to be brought back urgently.

Extra attention to special groups: While the above measures will help improve food security, the task at hand is huge. Extra vulnerable groups, such as young children, pregnant women, and tuberculosis patients will need extra attention. Re-energizing the anganwadis (day care centers in rural areas started by the government of India in 1957 to address child malnutrition) and nutrition supplementation of TB patients are important measures which need to go hand in hand to ensure food security for these groups.

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