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Assessment of food security by using the core food security model (CFSM) in beedi workers: A case study in Murshidabad district of West Bengal

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Abstract

This study explores the food security status of beedi workers in two villages in the Suti-II block of the Murshidabad district, West Bengal. The beedi industry is a significant source of employment, particularly for women, in the unorganized sector, and this research focuses on assessing food insecurity among these workers. A sample of 50 households was randomly selected for analysis using the Core Food Security Model (CFSM), which evaluates household experiences related to food access. The findings indicate that while most of the households are food secure, a small percentage, particularly those with children, experience food insecurity without hunger. Income levels are slightly higher in Village II (Mahesail) than Village I (Khidirpur), with households with children earning more in both villages. These results suggest that while food security is generally adequate, targeted interventions are needed to address the food insecurity experienced by some households. The study highlights the economic and social vulnerabilities of beedi workers, emphasizing the need for policy attention to improve their living conditions.

Keywords: Unorganized sector, beedi worker, CFSM model, food security

Introduction

The 1996 World Food Summit developed a much more complex definition of food security: "Food security, at the individual, household, national, regional and global levels is achieved when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life" (Food and Agriculture Organisation [FAO], 1996) ^[5].

This definition is further defined in The State of Food Insecurity 2001: "Food security is a situation that exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life" (FAO, 2002) ^[4].

Food security remains a significant issue in India. In 2022, India ranked 68th out of 113 countries in the Global Food Security Index, while the 2023 Global Hunger Index placed it 111th out of 125 nations. According to the United Nations, India is home to nearly 195 million undernourished individuals, accounting for a quarter of the global undernourished population (Kaur, 2024) ^[7]. In India, severe malnutrition leads to 43% underweight and 48% stunted children under the age of 5 (International Food Policy Research Institute [IFPRI], 2016) ^[6].

The beedi industry in India is an unorganized manufacturing sector, mainly operated from homes and known for its

labour-intensive nature. Beedi rolling is a completely manual technique. Workers carefully place tobacco into small tendu leaves, roll them tightly and bind them with a thread. The majority of those involved in bidi production are women and children, and they make beedi at home (Campaign for Tobacco-Free Kids, 2008) ^[3].

The production of beedis is extremely labor-intensive, including three groups: (i) the tendu leaf plucker, (ii) the beedi tobacco grower, and (iii) the beedi manufacturer. Making beedis has four steps: Raw material purchase, beedi rolling, sorting and roasting, and packaging (Sunley, 2008) ^[11]. This industry is widespread across the country. Beedis are mostly produced in Madhya Pradesh, Maharashtra, Tamil Nadu, Karnataka, Andhra Pradesh, Uttar Pradesh, and West Bengal, but also in Gujarat, Kerala, Orissa, Bihar, Rajasthan, and Assam. According to government estimates, 49.82 lakh people are employed in the beedi rolling industry across 16 states in India, with a significant portion of these workers being women who work from their homes. (Ministry of Labour & Employment, 2024) ^[8]. As per the Ministry of Micro, Small and Medium Enterprises (MSME) 2023, The total number of registered beedi manufacturing industries in India is 2,782.

Bengal hosts a substantial number of beedi enterprises that employ a significant workforce, particularly among the most vulnerable groups within the informal labor sector. The estimated count of beedi workers, encompassing both

industrial and home-based workers, is roughly around 18.29 lakh (Ministry of Labour & Employment, 2024). A majority of these beedi labourers operate from their residences, with over 91 per cent of them being female workers. The beedi production industry constitutes a vital component of our state's rural economy. While some districts concentrate on this industry, it is more dispersed in others. The labour force in this sector is largely unorganized. In West Bengal, there are around 593 registered manufacturers of major beedi brands involved in large-scale production (MSME, 2023).

Objective

The objective of the research work:
To assess food insecurity in the study area.

Materials and Method

Study Area

The study area for this research is the Murshidabad District of West Bengal. The entire area is mostly populated by the Minorities, many of whom live in poverty, have little access to education, and rely on physical work for a living. For this research, the Jangipur sub-division was chosen purposively.

Selection of block and village

The Suti-II block has been chosen purposively block for this study because a significant portion of its population works in the beedi sector. Approximately 5.23 lakh of the workers. Individuals work as beedi rollers in Murshidabad (Singh, 2023) [10]. Most of the female beedi laborers are from Minority communities. For this study, a cluster of two

villages from Block Suti-II is purposefully selected.

Sample design and size

A complete list of women beedi workers' households for the two villages is prepared separately.
For each village, 25 sample households are randomly selected with the help of the Simple Random Sampling without Replacement Method (SRSWOR).
This way, 50 sample respondents have been randomly selected for the research study.

Data collection: First, a questionnaire schedule is prepared by the pilot survey. The primary data has been collected using a pretested schedule in the study area.

The Core Food Security Model (CFSM)

There are 18 questions in the Core Food Security Model (Bickel *et al.*, 2000) [2] that give in-depth information regarding household members' experiences with a household's failure to satisfy basic food demands because of financial restrictions. The responses to these questions determine whether households are (a) food secure, (b) food insecure without hunger and (c) food insecure with hunger. A value of 1 shows the existence of food deprivation in the household. (i.e., an affirmative response), while a value of 0 indicates that food deprivation does not exist in the household (i.e., a negative response). Households with children received 18 affirmative responses, while those without children received 10. The questions are arranged in ascending order of food sufficiency.

The list of 18 Questions of the Core Food Security Model (CFSM)

Core Food Security Model Questions	Households with children	Households without children
	Sequential order of the questions	Sequential order of the questions
Worried food would run out	1	1
Food bought did not last	2	2
Respondents did not eat balanced food	3	3
Child fed few, low-cost foods	4	--
Adult cut/skipped meals	5	4
Child not fed balanced meals	6	--
Respondents ate less than should	7	5
Adults skipped meals for 3 or more months	8	6
Child not eating enough	9	--
Respondent hungry but did not eat	10	7
Respondent lost weight	11	8
Child's meal size cut	12	--
Adults did not eat for whole day	13	9
Child was hungry	14	--
Adults did not eat for whole day for 3 or more months	15	10
Child skipped meal	16	--
Child skipped meal for 3 or more months	17	--
Child did not eat for whole day	18	--

Scale of scores in the Core Food Security Model (CFSM)

In the Core Food Security Model, when answering questions in the "affirmative" response, a value of 1 (one) is recorded for each question; when answering questions in the "negative" response, a value of 0 (zero) is recorded for each question. In this manner, 18 questions were asked to each sample household with children, and 10 questions were asked to each sample household without children, with

answers recorded as 1 (one) or 0 (zero). In the case of sample households with children, eighteen questions were ranked in ascending order of food inadequacy, whereas ten questions were ranked in the case of sample households without children. As a result, if any answer becomes negative (i.e., zero), all subsequent answers will automatically be zero.

Scale of Scores in Core Food Security Model (CFSM)

Level of food insecurity	Without children		With children	
	Grade	Total score	Grade	Total score
Food secure	a	0-2	A	0-2
Food insecure without hunger	b	3-5	B	3-7
Food insecure with hunger	c	6-10	C	8-18

The total scores for each sample household are calculated by summing all of the responses that were either 1 (one) or 0 (zero). The scoring system is based on total scores acquired for each sample household separately from 18 questions for sample households with children and 10 questions for sample households without children.

In the case of "food secure," the scale of scores provided to households without children is 0-2, "food insecure without hunger" is 3-5, and "food insecure with hunger" is 6-10. In the case of children, the total score for "food secure" is 0-2; "food insecure without hunger" is 3-7; and "food insecure with hunger" is 8-18.

Results and Discussion

Monthly Income patterns of sample households of Beedi workers

The Table.1 shows the average monthly income patterns of beedi workers in Village I (Khidirpur). In Village I, households without children earn an average monthly income of ₹10,500 for food-secure households and ₹8,000 for food-insecure without hunger. Households with children in Village I report a higher income of ₹12,500 for food-

secure families and ₹9,800 for food-insecure without hunger. The overall average monthly income for Village I is ₹11,500 for food-secure households and ₹8,900 for food-insecure without hunger.

The Table. 2 presents the average monthly income patterns of beedi workers in Village II (Mahesail). In Village II, households without children earn slightly higher at ₹11,060 for food-secure families. Households with children in Village II report an average income of ₹12,900 for food-secure families and ₹10,000 for food-insecure without hunger. The overall average monthly income for Village II is ₹11,980 for food-secure households and ₹10,000 for food-insecure without hunger.

Table 1: Average Monthly Income patterns of sample households of Beedi workers of Village- I (Rs. / Month)

Household classification	Village-I (Khidirpur)		
	a (0-2)	b (3-5)	c (6-10)
Without children	10500	8000	-
	A (0-2)	B (3-7)	C (8-18)
With children	12500	9800	-
Overall	11500	8900	-

Table 2: Average Monthly Income patterns of sample households of Beedi workers of Village- II (Rs. / Month)

Household classification	Village-II (Mahesail)		
	a (0-2)	b (3-5)	c (6-10)
Without children	11060	-	-
	A (0-2)	B (3-7)	C (8-18)
With children	12900	10000	-
Overall	11980	10000	-

The extent of Food Security among the Sample Households for Beedi workers based on Core Food Security Model.

We calculated the amount of food security in our sample households using the Core Food Security Model (i.e., based on its eighteen questions). The Table 3 shows the distribution of sample households in Murshidabad District according to their assessed level of food security. According to the table, 16 households without children are food secure, 29 households with children are food secure, and 5 households are food insecure but not hungry.

The following table (Table 3) depicts that in village-I (Khidirpur), 6 households without children are food secure and 15 households with children are food secure. 1 household without children is food insecure without hunger and 3 household with children is food insecure without hunger.

In village-II (Mahesail), 10 households without children are food secure, 14 households with children are food secure, and 1 household with children is food insecure without hunger.

Table 3: Extent of Food Security among the Sample Households

Household classification	Village-I (Khidirpur)				Village-II (Mahesail)				Overall
	a (0-2)	b (3-5)	c (6-10)	Sub-total	a (0-2)	b (3-5)	c (6-10)	Sub-total	
Without children	6	1	0	7	10	0	0	10	17
	A (0-2)	B (3-7)	C (8-18)		A (0-2)	B (3-7)	C (8-18)		
With children	15	3	0	18	14	1		15	33
Overall	21	4	0	25	24	1	0	25	50

Conclusion

This study examines the average monthly income in Village I (Khidirpur), food-secure households without children earn ₹10,500 monthly, while those with children earn ₹12,500.

Food-insecure households without hunger earn ₹8,000 and ₹9,800, respectively, for households without and with children. In Village II (Mahesail), food-secure households without children earn ₹11,060, and those with children earn

₹12,900, with food-insecure households earning ₹10,000 regardless of children. Overall, Village I average ₹11,500 for food-secure households and ₹8,900 for food-insecure households, while Village II averages ₹11,980 and ₹10,000, respectively. Food security, assessed using the Core Food Security Model shows that most households in both villages are food secure. However, a few especially those with household children experience food insecure without hunger. Overall, income and food security are somewhat better in Village-II compared to Village-I.

In conclusion, while income levels are relatively higher in Village II, these variations reflect the economic differences between the two villages and the impact of household size on income levels. Households with children in both villages tend to have higher incomes, which might reflect the necessity for additional financial resources to support their families. Food security is generally adequate in both villages, with most households being food secure. However, a few households, particularly those with children, experience some level of food insecurity without hunger, highlighting the need for targeted interventions to ensure complete food security in these communities. This study indicates that the income of all households of beedi workers is insufficient to improve their living standards significantly. Their earnings are low, and a large portion of their income goes towards feeding their families. Although their overall living conditions are poor, they do not face starvation issues because they can afford enough food, allowing them to eat three meals a day. Therefore, most of these households are food secure.

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