CONTRASTING NUTRITIONAL LANDSCAPES: AN ANALYSIS OF DIVERGENT MALNUTRITION METRICS BETWEEN NFHS DATA AND LOCALIZED STUDIES IN DHANBAD, JHARKHAND, INDIA

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BACKGROUND

The elevated incidence of malnutrition within tribal communities in Jharkhand. These communities have grappled with enduring obstacles concerning food security and nutrition, and these challenges have been further compounded by the emergence of the COVID-19 pandemic.

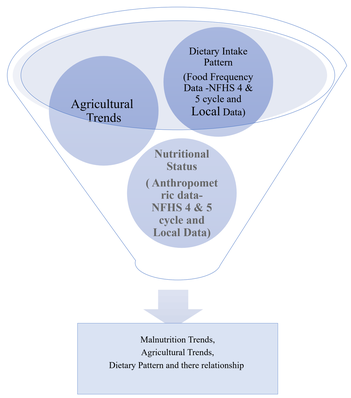
OBJETIVE

This study seeks to conduct a comprehensive examination of the prevalent malnutrition issues within tribal communities in Dhanbad, Jharkhand. By combining primary anthropometric and dietary data with secondary information from NFHS cycles 4 & 5 and agricultural statistics, our objective is to uncover systemic disparities, with particular attention to those exacerbated by the COVID-19 pandemic, and to pinpoint opportunities for specific and equitable interventions

METHODS

The study employed a robust dual-methodological approach, combining secondary data analysis from ICRISAT's agricultural databases and DHS's National Family and Health Surveys (NFHS cycles 4 & 5) [Fig 1]. This was complemented by targeted fieldwork in Dhanbad's Tundi block, where anthropometric data was collected from 1,835 tribal children under five years (973 boys, 862 girls), and household dietary profiles were obtained using Food Frequency Questionnaires. To assess the statistical significance of the variables studied, multiple logistic regression and chi-square tests were applied. This methodological fusion facilitated precise triangulation, revealing intricate nutritional disparities further exacerbated by the unique impact of the COVID-19 pandemic.

Fig 1 Study Framework



RESULT

[Fig 2]Highlighted that there have been improvements in nutritional status among children in the most recent data (NFHS 5, 2019-2021) compared to the previous NFHS 4 data (2015-2016). Specifically, there is a notable decrease in stunting, underweight, and wasting rates, while the overweight percentage has slightly increased. Significant disparities in malnutrition exist among local Scheduled Tribe (ST) children with compared to NFHS 5 data

Fig 2 Comparison of different malnutrition consequence among Under Five Years Children: NFHS 5 (2019-2021), NFHS 4 (2015-2016), and Local ST Data [3]

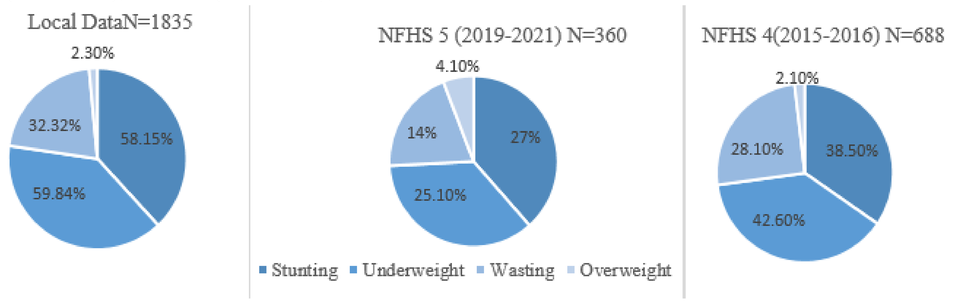
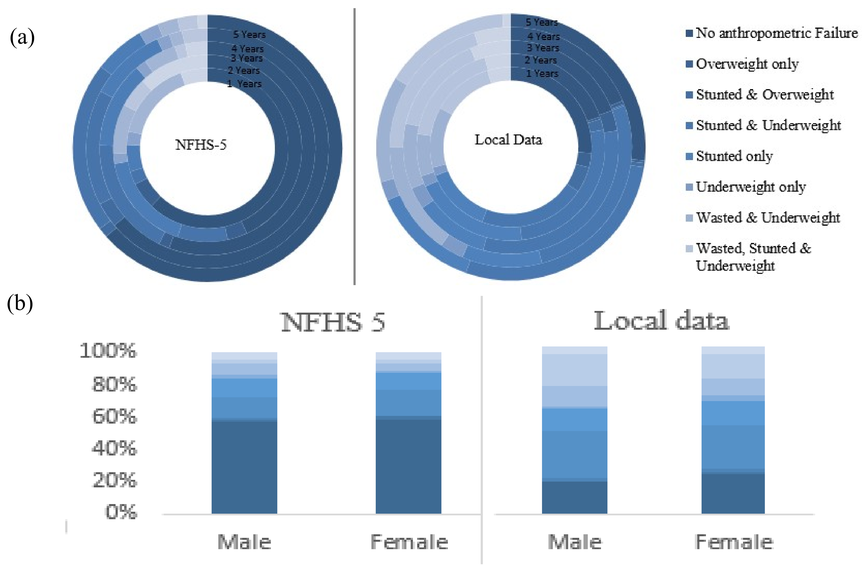


Fig 3 Representation of different Anthropometric Metrics (%) across Age Groups (a) and Gender (b): NFHS 5 (2019-2021) and Local ST Data[1]



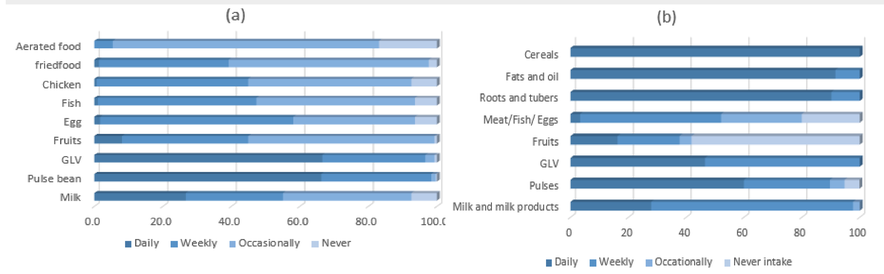
The data extracted from both NFHS 5 and the local ST dataset collectively emphasize that children aged two years display a notably higher prevalence of chronic undernutrition, specifically stunting, in contrast to other age groups (P<0.05) [Fig 3 (a)]. Additionally, in terms of gender-related disparities, girls generally exhibit a higher prevalence of undernutrition in comparison to boys (P<0.05). However, it is important to note that specific metrics within the data also identify instances of higher prevalence in boys (P<0.05) [Fig 3 (b)].

Table 1 Agricultural Crop Production Trends (1998-2017)

Year	Cereals and Millet			Pulses			Nuts and Oilseeds			Roots and Tubers	Fruits	Vegetables
	Production (1000 tons)	Yield (Kg per ha)	Area (1000 ha)	Production (1000 tons)	Yield (Kg per ha)	Area (1000 ha)	Production (1000 tons)	Yield (Kg per ha)	Area (1000 ha)	Area (1000 ha)	Area (1000 ha)	Area (1000 ha)
1998-1999	0.88	459.1	0.94	1.02	172.14	0.99	0.34	168.83	0.51	0.23	0.12	3.12
2005-2006	9.69	1065.77	5.58	0.01	451.39	0.01	0.01	380.95	0.02	0.14	0	0
2015-2016	6.28	1039	4.74	0.02	1805.01	0.01	0	231.25	0	0.24	0	2.84
2017	31.29	1285.52	14.63	5.17	810.83	4.14	4.685	420.75	5.57	0	0	0

Table 1 provides agricultural information for different crop categories over multiple years. In 1998-1999, Cereals and millet, Pulses, and Nuts and oilseeds had comparatively low production, yields, and cultivation areas. However, by 2017, there was a significant surge in production, yields, and cultivation areas for these crops. Notably, the cultivation area for roots and tubers witnessed a substantial increase over the studied year. In contrast, the cultivation areas for fruits and vegetables displayed varying trends over the years, with no available data for the year 2005-2006 and 2017.

Fig 4 Analysing Dietary Intake Patterns: Insights from NFHS 5 (2019-2021) and Local ST Data



Comparing the two datasets, revealed that the local dataset, there is a higher percentage of daily consumers for high energy reached food compared to others food groups. On the other hand, NFHS data shows a higher percentage of people who r consume pulses and GLV compared to the local data[Fig 4(a)&(b). Critical analysis of these data set highlights that Agricultural food items form a significant part of their daily diet, aligning with local agricultural trends that have contributed to reduced malnutrition rates (as seen from NFHS 4 to NFHS 5) [2]

IMPLICATIONS

The study's implication underscores the urgent requirement for tailored interventions in Dhanbad's tribal communities to address disparities between national data and local anthropometric findings. It highlights that generic agricultural and socioeconomic changes are insufficient to tackle deep-seated malnutrition in these communities. The research emphasizes the need for community-specific strategies and increased resources, particularly in the context of the ongoing COVID-19 pandemic, to ensure equitable access to nutrition and healthcare resources and improve the well-being of local populations.

STUDY LIMITATIONS

It is primarily a cross-sectional and descriptive study, limiting its ability to establish causal relationships between food production, food consumption, and malnutrition status. Moreover, the study's focus on anthropometric and dietary diversity data leaves unexplored aspects such as household demography, economic status, and parental education as potential causative factors. Lastly, the study's reliance on food frequency data for analyzing nutritional consumption patterns does not provide accurate indicators of the quality and quantity of nutritional value in the consumed food

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