



Micro-Level Analysis of Caloric Deficit and Nutritional Intake in Sample Villages of Kolhapur District

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Abstract:

Assessing the precise nutritional requirements of diverse population groups is a complex physiological challenge, heavily influenced by climate, agricultural practices, and socio-economic lifestyles. This micro-level study investigates the daily caloric consumption of households across 12 selected sample villages in the Kolhapur district, utilizing primary fieldwork data from 2015. The research measures per capita daily nutritional intake against a standard baseline of 2100 Kcal. The findings reveal a severe nutritional deficit across the study area, with an overwhelming majority of the surveyed population consuming below the 2100 Kcal threshold. Villages such as Rukadi (94.74%), Chikali (93.79%), and Shirol (94.06%) exhibit critical levels of undernourishment, while only Shirol demonstrates a relatively moderate nutritional balance (45.4% above 2100 Kcal). The study underscores the urgent need for targeted nutritional interventions and localized food security policies to address the stark dietary disparities in rural Kolhapur.

Keywords: *Caloric Intake, Nutritional Deficit, Dietary Consumption, Food Security.*

Introduction:

Establishing precise nutritional standards and determining the exact quantitative requirements of various food ingredients for different population groups is a highly complex scientific undertaking. Human physiological needs are not static; they fluctuate based on age, activity levels, special conditions (such as infancy or maternity), and regional disparities. Furthermore, dietary habits are deeply intertwined with agricultural diversity, climatic conditions, and localized socio-cultural lifestyles.

Despite these complexities, measuring caloric intake against standardized benchmarks remains the most effective way to gauge the nutritional well-being of a population. This study assesses the nutritional status of rural households by tracking their daily caloric consumption per person. By utilizing a baseline requirement of 2100 Kcal per person per day, this research evaluates the extent of nutritional adequacy and dietary deprivation within marginalized and rural communities. Through a micro-level sample survey, the study highlights critical

gaps in food security and provides a spatial analysis of undernourishment in the region.

Study Area:

The geographical focus of this study is the **Kolhapur District** in Maharashtra, India. To capture a localized and representative picture of nutritional health, the research relies on primary fieldwork conducted in 2015 across **12 purposively selected sample villages**:

Shirol, Abdul Lat, Rukadi, Mangaon, Shirol, Kuditre, Kale, Kotoli, Sangaon, Chikali, Sarawade, and Walawe. These villages serve as spatial units to analyze variations in daily diet and caloric consumption. The selected settlements range from those showing severe caloric deficits (e.g., Rukadi and Shirol) to those with relatively better nutritional indicators (e.g., Shirol), providing a comprehensive overview of the district's rural nutritional landscape.

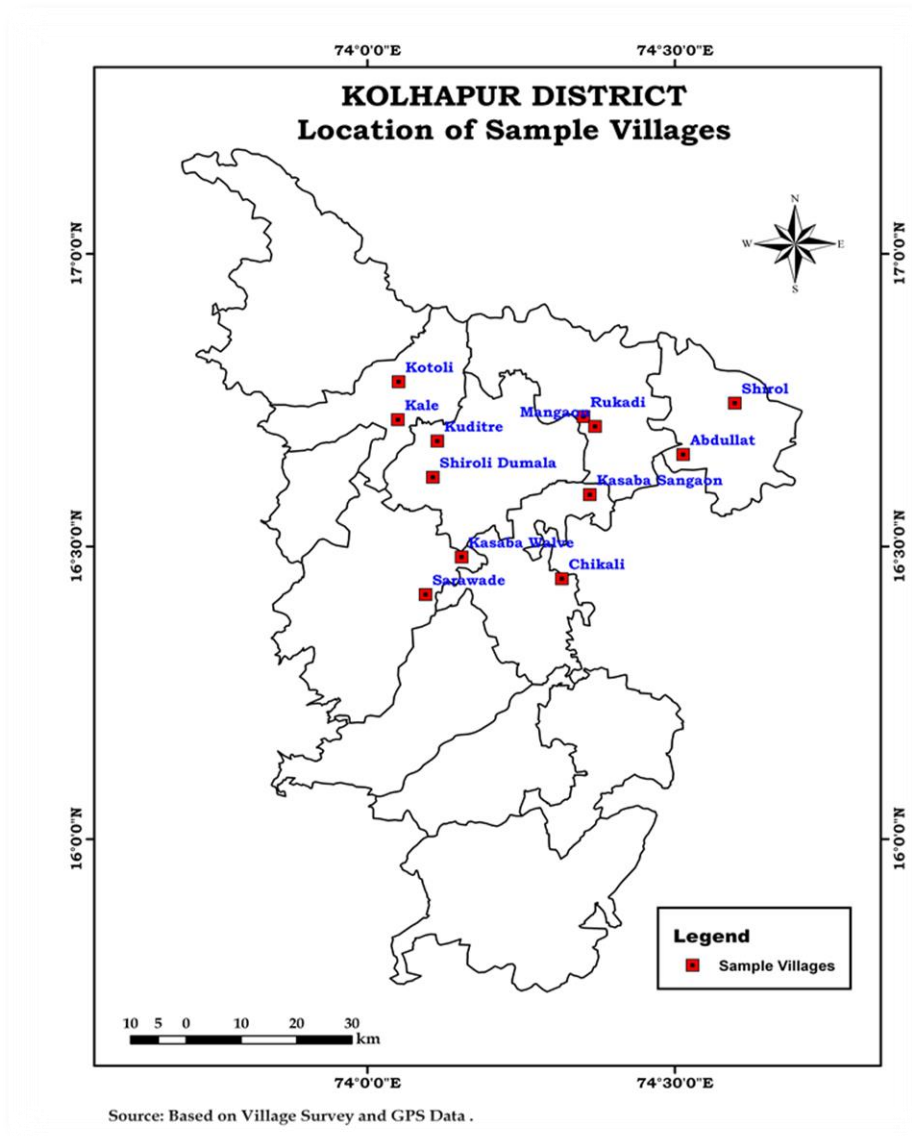


Fig. No.1

Objectives:

1. To assess the daily per capita caloric intake of surveyed households.
2. To measure the extent of nutritional deficit by categorizing the population.
3. To identify spatial disparities in food consumption, categorizing villages.

Database:

The core data is derived directly from a primary field survey conducted in 2023-24. Data was collected from households across 12 selected sample villages in the Kolhapur District. The dataset records the daily per capita calorie intake, capturing both the absolute number of individuals and their percentage distribution.

Research Methodology:

A household-level sample survey was utilized to gather empirical data on local dietary habits and nutritional intake. The methodology employs a standardized physiological threshold of 2100 Kcal per person per day to evaluate dietary adequacy and separate the population into nourished and undernourished categories. Quantitative analysis is performed by converting raw household figures into percentage distributions, allowing for standardized comparisons across villages of varying sizes. The analytical framework categorizes the 12 sample villages into "High," "Moderate," and "Low" groups

based on their percentage of caloric deficit (below 2100 Kcal) and caloric adequacy (above 2100 Kcal), highlighting regional nutritional disparities.

Consumption of Calories:

It is not easy for expert groups to precise set up of nutrient requirements and quantities of different ingredients separately for various population and activity groups. The requirements of special categories like infants, mothers etc. have to be looked into. In this situation, the standard setting of a nutrient value for any human activity is really a very complex undertaking. Because of diversity in agricultural, climate, food habits, lifestyles spiritual inclination affect the nutritional intake. The expert has to determine the average measurable physiological needs of the human body to depend on a sample survey.

Among the mentioned 12 villages with a high percentage of persons consuming calories below 2100 Kcal found at Rukadi (94.74%), followed by Shirol (94.06%), Chikali (94.79%) and Kuditre (91.18%). Surveyed households persons consuming calorie below 2100 Kcal found moderately at Abdul lat (87.79%), Walave (85.71%), Kotoli (83.15%), Kale (80.57%). At Sangaon (78.95%) persons consuming below 2100 Kcal followed by Mangaon(76.24%), Saravade (73.08%) and Shirol (54.64%) village, which come under the category of very low consumption of calories.

Table 1:
Consumption of Calorie in Selected Household in Kolhapur District

Sr. No.	Name of the Village	Calorie intake /person/day			Calorie intake /person/day in %		
		Below 2100	Above 2100	Total	Below 2100	Above 2100	Total
1	Shirol	89	74	163	54.6	45.4	100
2	Abdul Lat	151	21	172	87.79	12.21	100
3	Rukadi	234	13	247	94.74	5.26	100
4	Mangaon	77	24	101	76.24	23.76	100
5	Shiroli	95	6	101	94.06	5.94	100
6	Kuditre	93	9	102	91.18	8.82	100
7	Kale	170	41	211	80.57	19.43	100
8	Kotoli	74	15	89	83.15	16.85	100
9	Sangaon	75	20	95	78.95	21.05	100
10	Chikali	151	10	161	93.79	6.21	100
11	Sarwade	76	28	104	73.08	26.92	100
12	Walawe	84	14	98	85.71	14.29	100

Source: On the Basis of Field Work 2023-24

From 17.18 per cent of persons who consume an adequate amount of calories, we can categories the above village in high, moderate and low groups. From the above point of view high consumption of calories above 2100 Kcal at Shirol (45.4%), followed by Sarawade (26.92%), Mangaon (23.76%) and Sangaon (21.05%). A moderate percentage

of persons consuming calories above 2100kcal recorded at kale (19.43%), followed by Kotoli (16.85%), Walve (14.29%) and Abdul lat (12.21%). The consumption of calorie in Kuditre village (8.82%) is indicating the low percentage of persons who are consuming calorie above 2100 Kcal, followed by Chikali (6.21%), Shirol (5.94%) and Rukadi (5.26%).

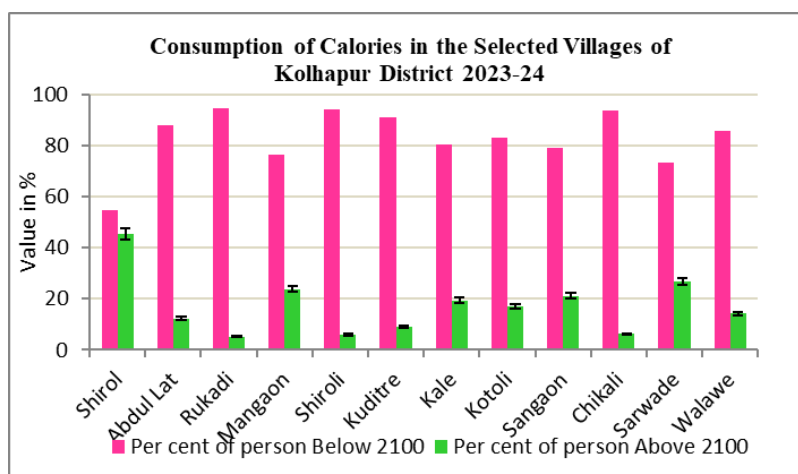


Fig. 2

Conclusion:

The micro-level analysis of caloric intake across the 12 sample villages in the Kolhapur District exposes a critical nutritional crisis within the rural demographic. The empirical data undeniably demonstrates a severe dietary deficit, with a vast majority of the surveyed households failing to meet the basic physiological benchmark of 2100 Kcal per person per day. Villages such as Rukadi, Shirol, and Chikali represent the epicenter of this undernourishment, recording staggering deficiency rates above 93%. Even in comparatively better-performing villages like Shirol, more than half of the population remains undernourished, indicating that food insecurity is a pervasive, systemic issue rather than an isolated anomaly. These stark spatial disparities in caloric consumption highlight the profound impact of socio-economic constraints and agricultural limitations on daily dietary habits. Consequently, there is an urgent need for policymakers to pivot from generalized poverty alleviation to targeted, localized nutritional interventions. Strengthening localized public distribution systems, promoting dietary diversity, and fortifying rural food security frameworks are imperative steps to safeguard the health and physiological well-being of these vulnerable communities.

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