IJFANS INTERNATIONAL JOURNAL OF FOOD AND NUTRITIONAL SCIENCES
ISSN PRINT 2319 1775 Online 2320 7876
 UGC CARE Listed (Group -I) Journal Volume 10, Iss 04, Dec 2021

Geospatial Dynamics of Agriculture, Dietary Preferences, and Nutritional Wellness in the Panchganga Basin

Dr. M. N. Survase
Hon. Shri Annasaheb Dange ACS College, Hatkanangale

Abstract:

This research delves into the intricate interplay between geospatial dynamics of agriculture, dietary preferences, and nutritional wellness in the Panchganga Basin. Recognizing the vital implications for public health and regional development, the study aims to unravel the connections between land use patterns, crop distribution, and the nutritional habits of the population. Focusing on the time span from 1971-75 to 2001-05, the study leverages extensive data from sources such as the Socio-Economic Review and District Statistical Abstracts of Kolhapur District. Employing a geospatial analysis methodology, the research scrutinizes the distribution of key crops and their evolution over time, linking these patterns to culinary choices and nutritional health indicators. The study's significance lies in its potential to inform sustainable agricultural practices and public health interventions tailored to the unique geospatial characteristics of the Panchganga Basin.

Keywords: Geospatial dynamics, Agriculture, Dietary preferences, Nutritional wellness, Panchganga Basin, Land use patterns, Crop distribution

Introduction:

In the context of contemporary challenges in the domain of agriculture, dietary preferences, and nutritional wellness, the Panchganga Basin emerges as a pivotal study region, offering a microcosm to explore the intricate interplay between geographical dynamics and these vital aspects of human life. The research problem centres on understanding the spatial patterns of agricultural practices, dietary choices, and their consequent impact on nutritional health within the basin. The pressing need for this study arises from the critical importance of addressing food security and public health concerns, especially in regions where geography significantly influences lifestyle and resource distribution. The significance of this research lies in its potential to uncover nuanced relationships between land use patterns, crop distribution, and the dietary habits of the population, ultimately impacting their nutritional well-being. By selecting the Panchganga Basin, characterized by diverse geographical features, the study aims to provide insights applicable to varied landscapes, making it relevant and insightful for broader regional planning and policy formulation. (Dr. D. C. Kamble 2018) The adoption of geospatial analysis as the primary methodology facilitates a comprehensive examination of the spatial dimensions of agriculture and dietary behaviours, allowing for a nuanced understanding of the complexities involved. The study's main objective is to unravel the intricate connections between geographical factors, agricultural practices, dietary preferences, and nutritional outcomes, offering valuable information for informed decision-making. The outcomes of this research are expected to be instrumental in formulating strategies for sustainable agriculture, promoting healthy dietary habits, and enhancing overall nutritional wellness in geographical contexts similar to the Panchganga Basin.

Objective:

To examine the geographical interplay of agriculture, dietary preferences, and nutritional wellness in the Panchganga Basin to understand their combined influence on public health.

Database and Methodology:

The study relies on comprehensive datasets sourced from authoritative socio-economic reviews and district statistical abstracts of Kolhapur District for the years 1971-75, 2001-05, and subsequent updates till 2003-08. These datasets encompass diverse aspects such as land use patterns, cropping dynamics, and nutritional health indicators. Additionally, spatio-temporal data from relevant sources provide a robust foundation for the geospatial analysis, contributing to a nuanced understanding of the agriculture, dietary preferences, and nutritional wellness dynamics in the Panchganga Basin.

The study utilizes a geospatial approach, incorporating statistical analyses and temporal data examination. It focuses on land use changes, cropping patterns, and nutritional health indicators during the periods 1971-75, 2001-05, and subsequent updates till 2003-08. Spatial overlays aid in understanding geographical dynamics, while statistical tools identify trends. The research provides a

ISSN PRINT 2319 1775 Online 2320 7876
Research paper UGC CARE Listed (Group -I) Journal Volume 10, Iss 04, Dec 2021

comprehensive exploration of the interplay between agriculture, dietary preferences, and nutritional wellness in the Panchganga Basin.

Study Region:

The study area for our research is the Panchganga Basin in southern Maharashtra, encompassing seven tahsils including Shahuwadi, Panhala, Gagan-Bawada, Karvir, Hatkanangale, and Shirol in Kolhapur district. Spanning approximately 45752.2 sq.km between 160 13" and 170 11" north latitude, and 730 41" and 740 42" east longitudes, it accommodates a population of 26,11,547 (2.6% of the state). The Panchganga River, a vital water source, plays a pivotal role in the region's agricultural success. The topography is diverse, featuring river valley floodplains to the east and hill ranges to the west. In the rain shadow of the Western Ghats, the region experiences decreasing rainfall from west (6000mm) to east (500mm), resulting in a temperate climate. The soils, mainly derived from the Deccan trap, include laterite, brownish, and black soils based on pedological characteristics (Shinde, 1973; Deshpande, 1971).

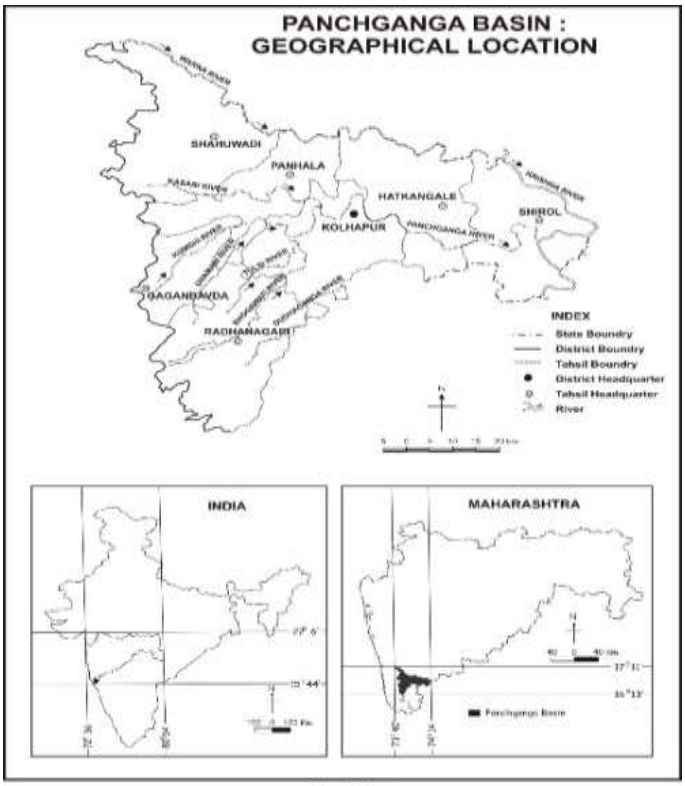

Fig. 2.1

Analysis:

Land Use Pattern and Crop Distribution:

The analysis of land use patterns in the Panchganga Basin reveals notable changes in agricultural practices over the decades, particularly from 1971-75 to 2001-05. The total geographical area has witnessed a decrease from 499,160 hectares to 457,501.8 hectares during this period. Forested areas have marginally decreased by 0.15%, and fallow lands have seen a reduction of 1.07%. Notably, net area sown has experienced a significant increase of 5.96%, indicating shifts in land utilization for cultivation.

Panchganga Basin: Land Use Pattern and Changes (1971-75 to 2001-05)

Sr. No.	Land Use Categories	1971-75		2001-05		Volume of Change
		Area in Hectare	% to Geographical Area	Area in Hectare	% to Geographical Area	
1	Area under forest	81562.74	16.34	74051.43	16.19	-0.15
2	Area not available for cultivation	52861.04	10.59	53564.31	11.71	1.12
3	Other cultivated land excluding fallow	97785.44	19.59	62857.54	13.74	-5.85
4	Fallow land	34092.63	6.83	26350.62	5.76	-1.07
5	Net area sown	232858.1	46.65	240677.9	52.67	5.96
6	Total Geographical Area	499160	100.00	457501.8	100.00	+- 7.08

Source: *Socio-Economic Review & District Statistical Abstracts of Kolhapur District 1973- 78 & 2003-08.*

Moving on to the distribution of different crops, rice, being a prominent staple, occupies about 32.48% of the total cropped area in 2001-05. The geographical prevalence of rice cultivation is influenced by factors such as rainfall and topography. The southwestern hilly tract, particularly Radhanagri, shows high proportions (above 40%), while eastern tahsils like Hatkangale and Shirol exhibit lower percentages (below 30%). This distribution aligns with the region's climatic and topographic variations.

Panchganga Basin: Area under Different Crops (1971-75 to 2001-05)

Sr. No.	Crops	1971-75		2001-05		Volume of Change in %
		Area in Hectare	% of G. C. Area	Area in Hectare	% of G. C. Area	
A	Total Sereals	135492.4	57.36	139178.2	45.1	-12.26
	Total Pulses	8007.65	3.39	14565.87	4.72	1.33
	Total Foodgrains	143500	60.75	153744	49.82	-10.93
	Total food crops	179782.5	76.11	238948.2	77.43	1.32
B	Total fibers	0		92.58	0.03	0.03
	Total oil seeds	32692.02	13.84	61164.32	19.82	5.98
	Total drugs & Narcotics	3968.4	1.68	1203.54	0.39	-1.29
	Non food crops	56431.52	23.89	69650.79	22.57	-1.32
	Gross Cropped Area	236214	100	308599	100	-1.32

Source: *Socio-Economic Review & District Statistical Abstracts of Kolhapur District 1973- 78 & 2003-08.*

Exploring the influence of geographical features on crop selection, the data supports a correlation between topography and cultivation choices. For instance, jowar, a crop with drought-resistant properties, thrives in areas with deep black and black soils and relatively dry climates. The central and eastern tahsils with plain topography have a high percentage (over 45%) of cultivable areas, showcasing the impact of physiographic conditions on crop distribution. This spatio-temporal analysis provides insights into the intricate relationship between geography and agriculture in the Panchganga Basin.

Culinary Habits and Nutritional Health:

Examining culinary habits and nutritional health in the Panchganga Basin involves a detailed analysis of food choices prevalent in the region. The data indicates that foodgrains, particularly rice, jowar, and pulses, constitute a major share of the agricultural produce, comprising approximately 77.43% of the total food crops during the period 2001-05. Additionally, sugarcane, fruits, vegetables, condiments, and spices contribute to the diverse food profile in the area. The geographical distribution of food crops reveals variations, with Radhanagri, Gagan Bawada, and Shahuwadi tahsils exhibiting higher percentages (above 40%) of gross cropped area under foodgrains. In contrast, eastern tahsils like Hatkangale and Shirol have below 30% area under foodgrains, showcasing disparities in staple consumption.

An investigation into nutritional trends reveals a correlation between dietary habits and health indicators. The decrease in the area under jowar cultivation is noteworthy, potentially influenced by factors such as increased irrigation facilities and a shift towards cash crops like sugarcane. This shift in dietary preferences may contribute to nutritional changes, impacting health indicators in the region. Data on health parameters, deficiencies, or improvements could further substantiate the link between dietary habits and nutritional wellness.

Mapping geographical disparities in nutritional health is crucial for understanding the impact of access to diverse food sources and dietary preferences. The uneven distribution of irrigated crops, particularly sugarcane, highlights potential nutritional gaps in areas with lower cultivation. Examining health indicators in correlation with food choices and agricultural practices allows for a comprehensive spatial analysis of nutritional wellness in the Panchganga Basin.

Conclusions:

The study on the geospatial dynamics of agriculture, dietary preferences, and nutritional wellness in the Panchganga Basin yields crucial insights into the region's intricate socio-economic and ecological dynamics. Analyzing land use patterns from 1971-75 to 2001-05 reveals significant shifts, with rice maintaining dominance while jowar cultivation declines, reflecting evolving preferences influenced by increased irrigation and the rise of cash crops like sugarcane. Geographical disparities in food choices emerge, with higher percentages of gross cropped area under foodgrains in Radhanagri, Gagan Bawada, and Shahuwadi tahsils compared to eastern tahsils like Hatkangale and Shirol. Exploring culinary habits and nutritional health unveils the complex interplay between dietary choices and well-being, emphasizing the need for a nuanced understanding of geographical disparities

in nutritional health. The observed increase in sugarcane cultivation raises sustainability concerns and potential implications for nutritional wellness. The study relies on robust data sources, including Socio-Economic Review, District Statistical Abstracts of Kolhapur District, and fieldwork observations, employing spatio-temporal analysis techniques to enhance reliability. The findings underscore the importance of addressing evolving agricultural landscapes and dietary preferences for holistic health policies, suggesting potential avenues for future research into socio-economic factors influencing dietary choices and their long-term implications in the Panchganga Basin.

References:

1. *Deshpande C.D. (1971): "Geography of Maharashtra", N.B.T. of India. New Delhi, p. 14.*
2. *Kataki, P. K. (2008). Shifts in Cropping System and Its Effect on Human Nutrition: Case Study from India. Journal of Crop Improvement, 6(1), 119-144. https://doi.org/10.1300/J144v06n01_08*
3. *Law, C., Fraser, I., & Piracha, M. (2019). Nutrition Transition and Changing Food Preferences in India. Journal of Agricultural Economics. https://doi.org/10.1111/1477-9552.12322*
4. *Pawar C.T. and Pujari A.A. (2000): "Soil Degradation in Sugarcane Farming: A Micro level Analysis", Transction, Institute of Indian Geographical Journal, Vol.22, No. 1, pp. 25-34.*
5. *Rao, N. D., Min, J., DeFries, R., Ghosh-Jerath, S., Valin, H., & Fanzo, J. (2018). Healthy, affordable and climate-friendly diets in India. Global Environmental Change, 49, 154-165. https://doi.org/10.1016/j.gloenvcha.2018.02.013*
6. *Shinde, S. D. (1973): "Panchganga Basin- An Appraisal of Some Aspects of its Agricultural Geography", Geographical Review of India, vol. xxxv, 3, pp. 263-76.*
7. *Tak, M., Shankar, B., & Kadiyala, S. (2019). Dietary Transition in India: Temporal and Regional Trends, 1993 to 2012. Food and Nutrition Bulletin, 40(2), 254-270. https://doi.org/10.1177/0379572119833851*
8. *Verma, M. R., Datta, K. K., Mandal, S., & Tripathi, A. K. (2008). Diversification of Food Production and Consumption Patterns in India. Journal of Hunger & Environmental Nutrition, 3(8), 87-100. https://doi.org/10.1300/J108v08n03_08*