



## Comparative Statistical Analysis of Fish Consumption Patterns in Urban and Rural Households of Kabirdham District, Chhattisgarh

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Fish play an important role in human nutrition and rural livelihoods. This article explains the fish consumption patterns, species preference, and factors affecting fish consumption in the Kabirdham District of Chhattisgarh. This article is based on already published research conducted in the Kabirdham district. Simple descriptive statistics and correlation analysis were help of MS Excel to explain how factors such as income affect fish consumption. The results revealed that 84% of rural households and 80 % of urban households consume fish. Rohu emerged as the most preferred fish species in both regions. Income level and occupational lifestyle were positively associated with fish consumption patterns. The findings show that most rural and urban households consume fish regularly, with rohu being the most preferred species. Income, price, taste, and availability are important factors that influence fish consumption. This study helps us understand how fish contributes to nutrition and rural development.

**Keywords:** Fish consumption, Nutritional importance of fish, Rural and urban households, Species preference, Rohu, Income level, Occupational lifestyle.

### Introduction

Fish is one of the most significant animal-based foods that contribute to a healthy human diet. It provides high-quality protein, essential minerals, vitamins, and omega-3 fatty acids and is easily digestible because of the absence of dietary fibre. Several studies have indicated that regular fish consumption reduces the risk of cardiovascular diseases, hypertension, high cholesterol levels, and certain types of cancer. Hence, fish play a crucial role in maintaining overall human health. Globally, total fish production was estimated at approximately 185.4 million tonnes, of which nearly 164.6 million tonnes were utilized for human consumption (FAO, 2022). India is one of the leading fish-producing nations, contributing approximately 8% to the global fish production. The country ranks second worldwide in aquaculture production, after China. Fish production in India has shown an average annual growth rate of approximately 8% between 2014 and 15 and 2024–25, reaching a record level of 16.248 million metric tonnes (Handbook on Fisheries Statistics, Department of Fisheries, Government of India, 2021–22). During 2021–22, Chhattisgarh recorded fish production of 5.91 lakh tonnes and ranked fifth nationally in fish seed production with 12,326 million standard fry, while securing the sixth position in total fish production in the country (Department of Fisheries, Government of Chhattisgarh, 2021–22). Major fish species cultivated in the state include *Labeo rohita*, *Catla catla*, *Cirrhinus mrigala*, *Cyprinus carpio*, *Ctenopharyngodon idella*, *Hypophthalmichthys molitrix*, *Pangasius pangasius*, *Oreochromis niloticus*, and catfish species such as *Clarias batrachus* and *Heteropneustes fossilis*. Global

per capita fish consumption is expected to reach 21 kg per year in 2024 (FAO, 2020), whereas India's per capita fish consumption is currently 6.31 kg (Handbook on Fisheries Statistics, 2021–22). In comparison, the per capita fish consumption in Chhattisgarh is significantly higher at 19.7 kg per year (Handbook on Fisheries Statistics, 2020–21). In the Kabirdham district of Chhattisgarh, consumers generally prefer freshwater fish, such as rohu, catla, and common carp. Fish consumption patterns, frequency, and preferences are influenced by geographical location, as well as social, cultural, and religious factors. Therefore, the study was undertaken to collect secondary data on fish consumption patterns and frequency from various published research articles related to the Kawardha District.

## Objective

1. To study fish consumption patterns in rural and urban areas.
2. To analyse frequency of fish consumption.
3. To compare fish consumption with monthly income.

## Materials and Methods

### (a) Data Source and Study Area

The data used in this study were obtained from a published research study conducted in the Kawardha block of the Kabirdham District, Chhattisgarh, India. The Kabirdham district has good water resources and contributes significantly to inland fish production in India. The Kawardha (Kabirdham) District is situated in the central part of the Chhattisgarh state. It lies between 21°32' and 22°28' North latitude and 80°48' and 81°48' East longitude. The district includes rural villages and urban areas and has many tanks and reservoirs that support the fisheries. The original study surveyed 100 households, comprising 50 rural and 50 urban households, and provided detailed numerical tables related to fish consumption frequency, species preference, income groups, monthly expenditure, occupational lifestyle, and other influencing factors.

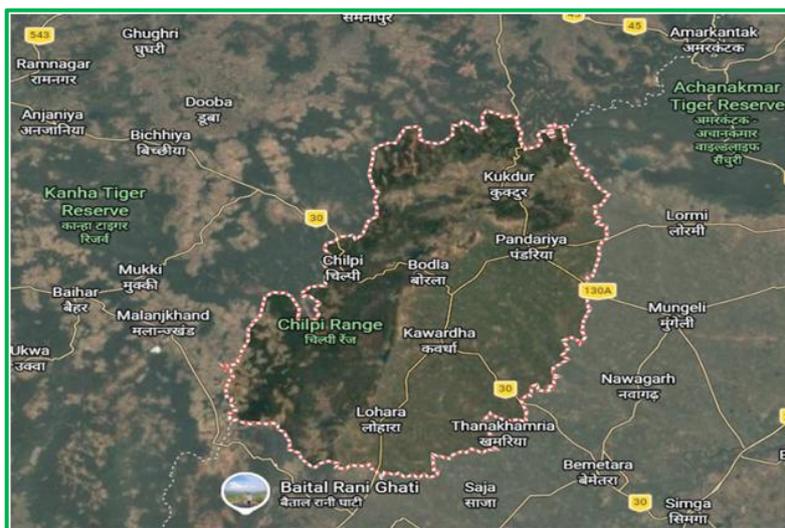


Fig.1. Map of Kawardha District in Chhattisgarh

### (b) Sampling Method

This study used a random sampling method. Households were randomly selected from both rural and urban areas to avoid bias.

### (c) Data Collection

The original study collected primary data through face-to-face interviews using structured questionnaires. For this article, we used secondary data, meaning data already published in the research paper.

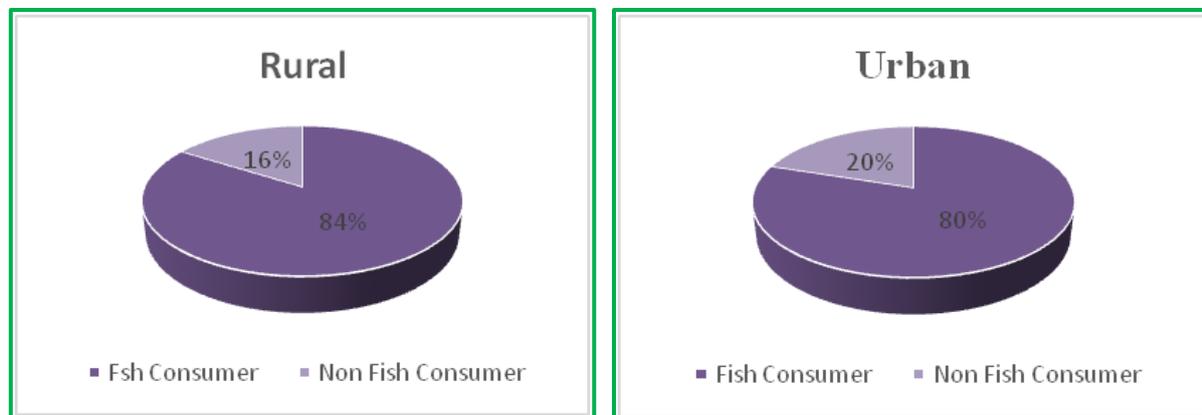
### (d) Data Processing and Analysis

This study used simple descriptive statistical methods, such as percentage analysis, frequency distribution, and comparison, to understand fish consumption patterns. The Rank Based Quotient (RBQ) method was used to identify and rank the major constraints faced by consumers. Correlation interpretation is explained in simple terms by comparing income and fish consumption behaviour.

## Result and Discussion

### (a) Fish Consumption Pattern

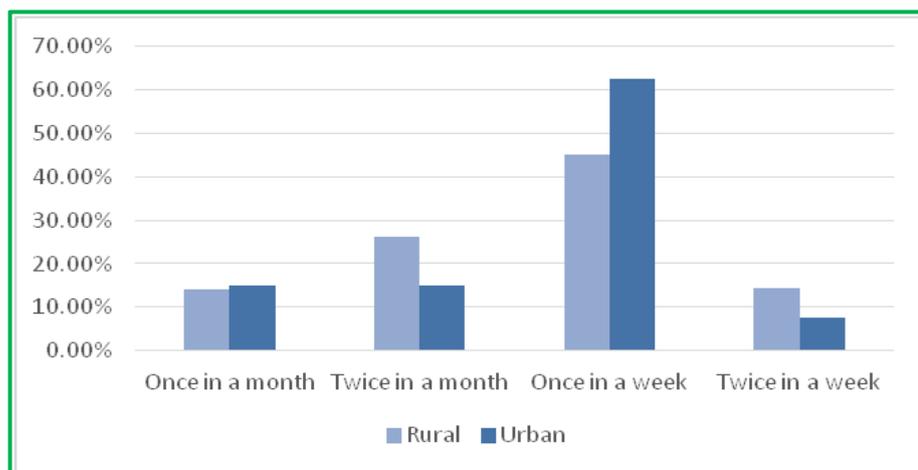
The study shows that fish is an important part of the diet in both rural and urban areas of the Kabirdham District. Of the 50 rural households, 42 (84%) consumed fish, while eight (16%) did not. In urban areas, 40 out of 50 households (80%) consumed fish, and 20% did not. Fish consumption is slightly higher in rural areas, possibly because of better availability and traditional dietary habits.



**Fig.2. Pie chart of fish consumption pattern in rural and urban area**

### (b) Frequency of Fish Consumption

This study shows that in urban areas, 15% of households consume fish once a month, another 15% do so twice a month, 7.5% consume fish twice a week, and the majority, 62.5%, eat fish weekly. Conversely, in rural areas, 14.2% of households eat fish once a month, 26.1% eat it twice a month, 14.3% eat it twice a week, and the largest segment, 45.25%, consume fish weekly. This shows that weekly fish consumption was the most common in both areas. These results imply that fish consumption frequency differs across regions and may be shaped by cultural habits, fish availability, and the dietary choices of the population.



**Fig.3. Graphical Representation of Frequency of Fish Consumption in Different time Periods by rural and urban area**

### (c) Fish Species Preference

Species preference analysis indicates that Rohu, is the most preferred fish species in both rural and urban areas. In rural areas, people mostly eat Rohu (32.78%), followed by Pangasius (18%) and Catla (9.8%). Other fishes like Tilapia, Common carp, Silver carp, and Puntius are eaten in moderate amounts, while Eel, Magur, and Singhi are consumed less. In urban areas, Rohu (35.38%) is also the most preferred fish. After that, people prefer Catla (23%) and Silver carp (9.23%). Other fishes such as Pangasius, Common carp, Mrigal, Grass carp, Tilapia, and Prawn are consumed in smaller quantities. Overall, fish preference differs between rural and urban areas due to availability, taste, and cultural habits.

**Table 1. Comparison of fish species preference in a rural and urban area**

S. No.	Fish species	Percent of consumption	
		Rural (%)	Urban(%)
1.	Rohu	32.78	35.38
2.	Catla	9.8	23
3.	Mrigal	-	4.62
4.	Silver Grass	8.2	9.23
5.	carp Grass	-	03
6.	Common carp	8.2	4.62
7.	Prawn	-	03
8.	Pangasius	18	7.6
9.	Magur	1.64	1.53
10.	Singhi	1.64	-
11.	Tilapia	8.2	03
12.	Puntius	8.2	1.53
13.	Eel	3.27	03

**(d) Fish Consumption Compared with Monthly Income**

Income-wise analysis revealed distinct consumption behaviour across regions. In urban households, the highest proportion of fish consumers belonged to the high-income group (HIG), with 82.75 % reporting fish consumption. The Middle-Income Group (MIG) and Low-Income Group (LIG) showed consumption rates of 75 % and 76.9%, respectively. In contrast, rural households displayed a different pattern, where the Low-Income Group recorded the highest fish consumption rate at 88.23 %, followed by the Middle-Income Group at 76.9 % and the High-Income Group at 66.6 %. This shows a positive relationship between income and fish consumption in urban areas. However, in rural areas, even low-income households consume fish regularly, possibly because of local availability. Therefore, income has some influence, but availability and habit also play important roles.

**Table 2. Fish consumption compared with monthly income of rural and urban consumers**

Monthly income	Urban			Rural		
	Total HH	Fish consumer	Non fish consumer	Total HH	Fish consumer	Non fish consumer
LIG	13 (26%)	10 (76.9%)	3 (23.1%)	34 (68%)	30 (88.23%)	4 (11.76%)
MIG	8 (16%)	6 (75%)	2 (25%)	13 (26%)	10 (76.9%)	3 (23.1%)
HIG	29 (58%)	24 (82.75%)	5 (17.25%)	3 (6%)	2 (66.6%)	1 (33.3%)

**(e) Constraints Faced by Consumers**

The study found that fish consumers face several problems in both rural and urban areas of the Kabirdham District. In rural areas, the main issues were limited fish variety (23.80%), lack of desired fish size (18.36%), and poor hygiene. In urban areas, poor hygiene (21.95%), price fluctuations (17.14%), and inadequate sanitation were the major problems faced. These findings show that variety, size, hygiene, and price are important challenges that affect fish consumption, and improving these factors can increase consumer satisfaction.

**Table 3. Constraints faced by fish consumers in rural area and urban area**

Constraints	Rural		Urban	
	RBQ score	Rank	RBQ score	Rank
Inadequate sanitation facilities	8.16	IV	12.5	III
Lack of hygiene (cleanliness)	13.60	III	25.0	I
Less number of fish variety	23.80	I	4.28	V
Higher price fluctuation	0.34	VII	17.14	II
Lack of freshness of fish	2.0	VI	2.14	VI
Distantly located market	5.10	V	0.7	VII
Unavailability of the desired size	18.36	II	8.57	IV

### Conclusion

This popular article explains fish consumption behaviour in the Kabirdham District using simple statistical methods. The study showed that fish is widely consumed in both rural and urban areas. Rohu is the most preferred fish species. Income, price, taste, and availability influence the consumption patterns. The results suggest that improving hygiene, availability, and awareness of fish nutrition can further increase fish consumption. Fisheries development programs can use this information to promote healthy eating and strengthen the inland fisheries of Chhattisgarh.

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