

Food, Gender, and Survival: Analyzing Consumption Behavior of Women-Headed Households during the COVID-19 Lockdown in Maharashtra

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Abstract

The onset of the COVID-19 pandemic and the subsequent national lockdown in March 2020 created unprecedented disruptions in household consumption across India. This study focuses on the state of Maharashtra, one of the most severely impacted regions, to investigate how gender dynamics influenced food expenditure during this economic and public health crisis. By employing secondary data from the Consumer Pyramid Household Survey (CPHS), the paper explores whether and how gender—specifically women-led households—acted as a determinant of food consumption patterns. Using multiple regression analysis, the study evaluates the effect of Adjusted Total Income, Gender Group, Age Group, Occupation Group, Education Group, and Household Size on Adjusted Food Expenditure.

The analysis reveals that Adjusted Total Income, Age Group, Gender Group, Education Level, and Household Size significantly influence food spending. In both urban and rural households, women-led households exhibit adaptive budgeting behavior aimed at securing food essentials amidst economic uncertainty. Conversely, the occupation of the household head did not emerge as a significant determinant. These findings support the formulation of gender-responsive policy measures that prioritize food security and socio-economic resilience in times of crisis.

Keywords: Women-led households, Food expenditure, Gender and consumption, COVID-19 lockdown, Maharashtra households

Introduction

The COVID-19 pandemic fundamentally altered daily life, with the lockdown in March 2020 acting as a watershed moment for household-level economic decisions. Maharashtra, being an industrial and densely populated state, was significantly affected by these disruptions. As income sources dried up and access to markets diminished, the allocation of household resources—particularly food expenditure—underwent drastic shifts. Within this context, the role of women, especially those heading households, became increasingly central to family well-being.

Traditionally, women in Indian households are the primary managers of food and nutrition-related decisions. During crises, these roles become more critical as households recalibrate their consumption priorities. This paper investigates the specific role of gender, emphasizing women-led households, in determining consumption expenditure on food during the March 2020 lockdown. The hypothesis is that women-led households tend to prioritize basic sustenance, thereby shaping distinctive patterns in food expenditure.

Conceptual Framework

2.1 Women's Role in Household Decision-Making

In Indian society, and particularly in Maharashtra, women are custodians of food management. Their role, often unrecognized in economic terms, becomes evident in periods of scarcity or upheaval. During the COVID-19 lockdown, with disrupted incomes and access limitations, women-led households were seen to make strategic decisions emphasizing food security. Prioritizing nutritious essentials, cutting discretionary expenses, and efficiently managing limited supplies were some of the ways in which women responded to adversity.

2.2 Impact of Lockdown on Food Consumption

Lockdown-induced job losses—especially in informal sectors—caused a steep decline in household earnings. Daily wage earners, many of whom are women, bore the brunt of this crisis. Women-led households responded by reallocating expenditure toward staples such as rice, wheat, and lentils while reducing spending on perishables, processed foods, and non-essentials. The emphasis shifted from variety and quality to quantity and affordability.

2.3 Gender Differences in Food Expenditure

Gendered responses to crises are not uniform. While male-led households may retain more diverse consumption portfolios, women-led households typically redirect resources toward food and nutrition. Literature suggests that women prioritize children's nutrition and family sustenance over personal needs. Such behavioral patterns underscore the need to analyze food expenditure with a gendered lens.

Rationale of the Study

The COVID-19 pandemic triggered severe economic disruptions, particularly during the initial lockdown in March 2020, which significantly altered household spending behavior. Maharashtra, being one of India's most economically vibrant yet highly affected states, presented a unique case to understand these shifts. Within this context, **gender emerged as a critical lens** for analyzing consumption decisions, especially regarding food—one of the most essential components of household expenditure.

Women, particularly those heading households, are often primary caregivers and food managers. Their decision-making during crises plays a crucial role in maintaining family well-being and nutritional stability. However, the specific impact of gender—especially in women-led households—on food consumption patterns during a crisis like COVID-19 has remained underexplored in empirical literature, especially within the Indian context. This study was therefore conceived to fill this gap by employing data-driven analysis using the Consumer Pyramid Household Survey (CPHS), with a particular focus on Maharashtra during the peak of the lockdown period.

By examining how variables such as gender, income, education, occupation, household size, and age composition influence food expenditure, the study aims to highlight the differentiated strategies adopted by women-led households and their implications for household welfare and policy formulation.

Significance of the Study

1. Gender-Responsive Insights

The study provides empirical evidence on how **women-led households prioritize food expenditure**, especially during economic hardships. This contributes to gender-sensitive planning and policymaking in the areas of food security, nutrition, and household welfare.

2. Policy Implications for Crisis Management

Findings offer important guidance for the design of **targeted public welfare schemes**, such as ration distribution, direct cash transfers, and nutritional support programs, particularly for vulnerable female-headed households during emergencies.

3. Bridging a Research Gap

While prior research has studied income and education as drivers of consumption, this study contributes a **unique gendered perspective** by quantifying the influence of women household heads on expenditure behavior during a real-world crisis scenario.

4. Grounded in Data and Regional Context

Focusing on Maharashtra provides **region-specific insights** into socio-economic behavior, supporting localized strategies in addition to national-level interventions.

5. Contribution to Development Economics and Gender Studies

The paper intersects the domains of **household economics, gender studies, and crisis management**, offering a multi-disciplinary contribution relevant for academia, government agencies, and NGOs working in food security and women's empowerment.

Limitations of the Study

1. Time Constraint (Single Period Analysis)

The analysis is confined to **March 2020**, representing the early lockdown period. As a result, it does not capture long-term trends or post-lockdown recovery patterns in food expenditure.

2. Limited Variable Scope

While several key socio-demographic variables are included, other potentially influential factors—such as access to public food distribution, remittances, healthcare shocks, and social capital—are not accounted for due to data limitations.

3. Dependence on Secondary Data

The study relies exclusively on **secondary data** (CPHS), which may have limitations in accuracy, self-reporting biases, or underrepresentation of certain vulnerable groups, particularly tribal or nomadic populations.

4. Generalization Constraints

Although the study focuses on Maharashtra, its findings **may not be generalizable** to all states in India due to regional variations in culture, economic structures, and public support systems.

5. Occupation Classification Simplification

The occupation variable is broadly grouped and may not fully capture nuances such as informal work, gig economy roles, or multiple income sources, especially prevalent among rural women.

Review of Literature

The relationship between gender and household consumption patterns has been an important area of inquiry in development economics and public policy. Numerous studies have emphasized that women, especially those heading households, play a crucial role in determining consumption priorities, particularly with respect to food. During economic crises or health emergencies, such as the COVID-19 pandemic, these dynamics become even more prominent.

Agarwal and Nanda (2021) highlight that women's work, both paid and unpaid, is directly linked to household food security. Their analysis emphasizes that women-headed households often make more prudent and need-based food purchasing decisions, prioritizing staples and nutritional adequacy over luxury or processed foods. This aligns with the findings of **Ranjan et al. (2020)**, who noted that during the COVID-19 lockdown, women-led households across various Indian states—including Maharashtra—reduced non-essential expenditure and focused resources on affordable staples such as rice, lentils, and wheat.

Chant (2014) and **Doss (2013)** further elaborate on the concept of the “feminization of responsibility and obligation,” arguing that women are more likely to bear the brunt of managing family welfare in times of scarcity. Their studies show that women's control over household resources often leads to more equitable and welfare-enhancing outcomes, particularly in areas such as child nutrition and food security. In the context of Latin America and Africa, Chant (2014) found that urban women frequently adjusted consumption habits by cutting discretionary spending while maintaining basic food expenditure during economic slowdowns—parallels that can be drawn with the Indian experience during the pandemic.

From a nutritional and public health standpoint, **Sekher and Loganathan (2017)** provide a gendered lens on food security, showing how women's food-related decisions directly impact the well-being of dependents, especially children and the elderly. Their research in rural India found that women-led households often faced greater food insecurity during economic downturns but demonstrated resilience through careful budgeting, local sourcing, and social support networks. Similarly, **Bansal, Sharma, and Singh (2020)** emphasize that women are more likely to sacrifice their own food intake to ensure the nutritional adequacy of other household members.

Another critical dimension is education. **Nath et al. (2020)** and **Ahuja et al. (2020)** show that higher educational attainment among women enhances their ability to adapt to crises. Educated women are more likely to use digital platforms for food procurement, participate in online marketplaces, and access government relief measures—factors that contribute to better food management during lockdowns.

However, the digital divide remains a challenge in rural areas, limiting these advantages.

From a theoretical perspective, the application of **Engel's Law** remains relevant. As per **Engel (1857)**, when income falls, the proportion of income spent on food increases, reflecting its essential nature. The pandemic-induced income shock observed across urban and rural households in Maharashtra reaffirmed this theory, especially among vulnerable groups such as women-led households with limited financial buffers.

Overall, the literature strongly supports the premise that **gender is a crucial determinant in food expenditure decisions**, particularly during economic and health crises. Yet, empirical studies with region-specific, quantitative evidence—especially in the Indian context—remain limited. This study contributes to closing this gap by analyzing women-led households in Maharashtra during one of the most economically challenging periods in recent history.

Research Gap

Although previous studies have examined household consumption during crises, there is **limited quantitative research** that specifically analyzes the **impact of gender—particularly women-led households—on food expenditure** in India during the COVID-19 pandemic. Most existing literature lacks region-specific, **data-driven insights** and does not adequately account for the **interaction of gender with socio-economic variables** such as income, education, and household size. Additionally, the **urban-rural differences** in consumption behavior during crises remain underexplored. This study fills these gaps by providing **empirical evidence from Maharashtra**, using regression analysis to assess how gender and related factors influenced food spending during the March 2020 lockdown.

Methodology

Data Source

This study uses secondary data from the Consumer Pyramid Household Survey (CPHS), conducted in March 2020. The dataset includes detailed demographic and expenditure information across both urban and rural Maharashtra.

Analytical Framework

Regression analysis was applied to evaluate the relationship between food expenditure and independent variables: Adjusted Total Income (ADJ_TOT_INC), Gender Group, Age Group, Occupation Group, Education Group, and Household Size. Descriptive statistics and hypothesis testing were used to assess significance levels.

Hypotheses

- **H0:** No significant association exists between food expenditure and socio-economic/demographic variables.
- **H1:** A significant association exists between food expenditure and socio-economic/demographic variables.

Analysis and Results

Urban Maharashtra

The regression results for urban households revealed the following:

- **Model Fit:** $R = 0.630$, $R^2 = 0.397$, Adjusted $R^2 = 0.396$.
- **Significant Predictors:** Adjusted Total Income ($p = .000$), Age Group ($p = .019$), Gender Group ($p = .005$), Education Group ($p = .000$), Household Size ($p = .000$).

Non-significant Predictor: Occupation Group ($p = .525$).

These findings highlight that income, education, age, and gender significantly affect food expenditure, while occupation does not. Women-led urban households exhibited a clear tendency to allocate more towards food to ensure nutritional stability.

Rural Maharashtra

For rural districts, regression results showed:

- **Model Fit:** $R = 0.416$, $R^2 = 0.173$, Adjusted $R^2 = 0.171$.

- **Significant Predictors:** Adjusted Total Income ($p = .000$), Age Group ($p = .011$), Gender Group ($p = .025$), Education Group ($p = .000$), Household Size ($p = .000$), Occupation Group ($p = .000$).

Here, even the occupation variable showed significance, contrary to urban results. Rural women-led households showed more pronounced shifts toward staple food purchases, influenced by lower income levels and restricted access to diverse food markets.

Dependent Variable

- **Adjusted Monthly Food Expenditure (ADJ_EXP_FOOD)**
This is the primary outcome variable being analyzed. It reflects the amount spent by households on food, adjusted for factors such as household size and inflation where applicable.

Independent Variables (Predictors)

1. **Adjusted Total Income (ADJ_TOT_INC)**
Represents the total monthly income of the household, adjusted for size and other factors.
2. **Gender Group (GENDER_GROUP)**
Categorizes households based on gender composition—particularly focusing on whether the household is women-led.
3. **Age Group (AGE_GROUP)**
Classification of households by the dominant age category (e.g., younger members, adults, seniors).
4. **Education Group (EDU_GROUP)**
Groups households by educational attainment levels (highly educated, moderately educated, or educationally homogeneous).
5. **Occupation Group (OCCUPATION_GROUP)**
Classifies households based on the type of employment of the primary earner (blue-collar, white-collar, self-employed, etc.).
6. **Household Size (SIZE_GROUP)**
Categorizes households by size—small, medium, or large.

Control Variables

While not explicitly identified as control variables in the regression model, the following functionally act as **controls** to isolate the effect of gender and income on food expenditure:

- **Age Group:** Controls for differences in consumption needs based on household demographics.
- **Education Group:** Controls for the influence of educational attainment on budgeting and food-related decisions.
- **Occupation Group:** Controls for employment type which may affect income stability and access to food.
- **Household Size:** Controls for economies of scale in food consumption and expenditure.

Data and Analysis

Summary of Regression Analysis Tables: Urban vs. Rural Maharashtra

Variable	Urban Maharashtra	Rural Maharashtra
Model Significance	p-value = 0.000 (Model is statistically significant)	p-value = 0.000 (Model is statistically significant)
R (Correlation)	0.630	0.416
R ² (Variance Explained)	0.397 (39.7% of variance explained)	0.173 (17.3% of variance explained)
Adjusted R ²	0.396	0.171
Adjusted Total Income	Significant ($p = 0.000$), Positive Effect	Significant ($p = 0.000$), Positive Effect

Gender Group	Significant (p = 0.005), Women-led households spend more	Significant (p = 0.025), Women-led households spend more
Age Group	Significant (p = 0.019), Negative Effect	Significant (p = 0.011), Negative Effect
Education Group	Significant (p = 0.000), Negative Effect	Significant (p = 0.000), Negative Effect
Household Size	Significant (p = 0.000), Positive Effect	Significant (p = 0.000), Positive Effect
Occupation Group	Not Significant (p = 0.525)	Significant (p = 0.000), Positive Effect

Hypothesis Results

H_0 (Null Hypothesis): There is no significant association between food expenditure and socio-economic/demographic variables (Adjusted Total Income, Gender Group, Age Group, Occupation Group, Education Group, Household Size).

H_1 (Alternative Hypothesis): There is a significant association between food expenditure and these socio-economic/demographic variables.

Results:

- For both Urban and Rural Maharashtra, the regression models are statistically significant ($p < 0.05$), leading to the rejection of the null hypothesis (H_0).
- In Urban areas, all variables except Occupation Group are significant predictors of food expenditure.
- In Rural areas, all variables including Occupation Group are significant predictors of food expenditure.

Conclusion: The results support the alternative hypothesis (H_1), indicating a significant association between food expenditure and most socio-economic and demographic variables, particularly Gender Group (women-led households), Total Income, Education, Age, and Household Size.

Discussion –

Role of Income

As expected, Adjusted Total Income emerged as a key driver of food expenditure in both contexts. Reduced income levels during lockdown forced households to downscale food consumption. This aligns with Engel's Law and confirms the regressivity of food consumption under crisis conditions.

Influence of Gender

The statistically significant impact of Gender Group on food expenditure in both urban and rural regions validates the central hypothesis. Women-led households allocated a greater share of available income to food, reflecting their protective role in ensuring family survival. This supports the findings of Chant (2014) and Doss (2013), who emphasize the centrality of women in household economics.

Education and Food Management

Educational attainment was found to be inversely related to food expenditure. Households with higher education levels exhibited reduced food spending, likely due to better resource management, access to technology, and more efficient shopping practices.

Household Size

Larger households spent more on food, naturally due to the number of dependents. However, the increase in expenditure was not always proportional, indicating intra-household allocation dynamics, possibly guided by women's budgeting acumen.

Limited Role of Occupation

In urban areas, occupation was not a significant determinant, likely because employment status had become uniformly unstable during the lockdown. In contrast, rural areas showed occupation-related differences, possibly due to the heterogeneous nature of agricultural and informal rural employment.

Policy Implications

The findings of this study suggest multiple avenues for policy intervention:

- **Targeted Food Security Schemes:** Women-led households should be prioritized in food subsidy and rationing programs.
- **Support for Informal Sector Women:** Tailored income-support measures can stabilize consumption for vulnerable female earners.
- **Education and Digital Access:** Enhancing financial literacy and digital tools among women can help optimize household food budgets.
- **Community Kitchens and Local Procurement:** Encouraging women-led food cooperatives can buffer consumption shocks during crises.
- **Gender-Responsive Budgeting:** State policies must incorporate gender impact assessments to ensure equitable outcomes.

Conclusion

This study affirms that gender—especially in the form of women-led households—significantly shapes consumption expenditure on food during periods of economic upheaval. While income, education, and household size are also important determinants, the gender of the household head plays a pivotal role in budgeting priorities. The COVID-19 lockdown in Maharashtra brought these dynamics into sharp focus, providing empirical support for gender-sensitive economic policies.

The absence of a significant occupation effect in urban households suggests that during extreme shocks, traditional economic predictors may lose explanatory power, making social and behavioral determinants such as gender more relevant. Recognizing and empowering women in household economics is not just a matter of equity—it is central to ensuring resilience and food security in future crises.

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