"Socio-Demographic Determinants of Idly Consumption Patterns in Kanchipuram and Chengalpattu Districts of Tamil Nadu: A Cross-Tabulation Analysis"

Dr.V. Giri Babu[1], Mr. Mudit Pandey[2],
[1]*Principal, Chennais Amirta International Institute of Hotel Management, Chengalpattu, Tamil Nadu-603101*
[2]*Faculty (Food & Beverage Service Department) Chennais Amirta International Institute of Hotel Management, Chengalpattu, Tamil Nadu-603101*

***Abstract*—The present study investigates the consumption behavior of idly among individuals across different demographic segments, with a particular emphasis on age, gender, & marital status, using primary data collected from 451 respondents, the study examines the frequency of idly consumption, idly preparation habits at home, and outside purchase behavior. Crosstabulation and Chi-Square tests were employed to determine the association between demographic variables and consumption patterns.**

The results reveal no substantial correlation between age and the frequency of idly consumption.

consumption (p = 0.071), indicating that idly is uniformly consumed across age groups. Similarly, gender does not significantly influence idly preparation at home (p = 0.843). However, a significant association is observed between marital status and outside purchase of idly (p = 0.040), suggesting that married individuals have distinct purchasing patterns compared to singles and others. These findings highlight the influence of social structure (marital status) on food purchasing decisions, while age and gender show comparatively uniform consumption behavior. The study provides insights for food service providers, restaurants, and ready-to-eat product developers in targeting consumer groups more effectively.

***Index Terms*—Idly Consumption Patterns; Tamil Nadu Cuisine; Cultural Significance; Socio-Cultural Practices; Traditional Foods; Fermented Foods; Demographic Factors; Food Habits; Cultural Identity; Ready-Made Batter; Household Food Practices; Chi-Square Analysis; Consumer Behavior; Street Food Culture; Culinary Heritage**.

I. INTRODUCTION

Food consumption behavior plays an essential role in understanding the dietary preferences and lifestyle patterns of individuals. Idly, being one of the most common South Indian breakfast items, is widely consumed across age groups and socio-economic categories due to its nutritional value, convenience, and cultural acceptance. Studying idly consumption helps identify changes in eating habits, home preparation trends, and preferences for outside purchase. Such insights are beneficial for restaurants, hotels, food manufacturers, and policymakers interested in nutritional promotion.

Demographic variables such as age, gender, and marital status often influence food choices, frequency of intake, and preference for home-cooked versus restaurant food. Younger consumers may prefer convenience-based eating, while older groups may stick to traditional food habits. Marital status can influence household food decisions due to family responsibilities, time constraints, and economic factors. However, gender-based differences in food preparation are gradually diminishing due to lifestyle changes and evolving roles within the household. In this study, descriptive and inferential statistics are applied to understand whether demographic variables play a significant role in idly consumption patterns. Chi-Square tests help determine whether the differences observed in cross tabulated categories are statistically meaningful.

II. LITERATURE REVIEW

Santa, D. (2025) in his study on "Health benefits of ethnic fermented foods conducted systematic review of human and mechanistic studies on ethnic. The review collates evidence that fermented cereal/legume products (including idly/dosa) contain diverse lactic acid bacteria and yeasts that contribute to improved digestibility, enhanced bioavailability of minerals (reduced phytic acid), and possible beneficial effects on gut markers and some clinical outcomes. The paper notes there are a small number of human studies specifically on idli/dosa but growing mechanistic data from microbiome and metabolite studies. The author recommends higher-quality randomized or controlled human trials focused on traditional fermented staples (idly, dosa) to quantify health benefits and to standardize reporting of fermentation parameters and microbial communities. "Karunanithi, S., Guha, P., & Srivastav, P. P. (2024)"in their study "Innovation in Idly batter preservation through betel leaf essential oil-based nano emulsion: evaluating fermentation kinetics and physicochemical analysis" suggested further pilot-scale production trials, regulatory evaluation for food-grade essential oil use, and exploration of other natural nano emulsions to balance microbial safety and traditional sensory qualities. They also recommend consumer-acceptance studies across regions. Mishra, S. (2022). In his study on "Traditional rice-based fermented products: insight into their microbiology and nutritional benefits"studied on rice-based fermented foods (including idly, dosa, appam), with emphasis on microbial ecology (LAB/yeast), nutrient changes during fermentation, and implications for nutrition.The review advises standardized characterization of microbial communities, adoption of starter cultures where appropriate for product consistency, and incorporation of value-addition research (fortification, millet/rice substitutions) to improve nutrition without losing cultural identity. Ghosh, D. (2010) in his study on "Preparation of Idly batter, its properties and nutritional aspects" analyzed based on laboratory characterization with proximate analysis, fermentation studies, and literature synthesis on traditional idly preparation methods and nutritive qualities. The paper documents the classical rice: black-gram batter formulations and shows how fermentation improves protein digestibility and sensory texture. Authors emphasized preserving traditional knowledge while investigating methods for shelf-stability and quality control; they proposed more applied research into scaled production and hygiene standards for commercial batter.

III. OBJECTIVES OF THE STUDY

1. To examine whether demographic variables significantly influence idly consumption patterns.
2. To analyze idly consumption practices and household preparation patterns among different groups.

IV. METHODOLOGY

Research Design:

The present study follows a descriptive research design aimed at understanding the pattern of idly consumption among different demographic groups. This design is suitable because it helps in describing the existing behavior of respondents without manipulating any variables and allows the researcher to examine associations between demographic factors and consumption habits.

Data Collection:

The research mostly relies on primary data gathered using a standardized questionnaire.The questionnaire consisted of items related to demographic details such as age, gender, and marital status, along with behavioral questions on frequency of idly consumption, preparation of idly at home, and outside purchase behavior. All respondents participated voluntarily, and their answers were recorded for academic purposes only.

Sampling Method and Sample Size:

Convenience sampling was used to select the respondents, as it enabled the researcher to reach participants who were easily available and willing to respond. A total of 451 respondents formed the sample for the study. This sample size was considered adequate for applying statistical tests such as the Chi-Square test to study associations between variables.

Tools and Techniques Used:

The collected data were coded and entered into SPSS software for analysis. Cross tabulation was used to present the distribution of respondents across various categories of consumption behavior. The Chi-Square

test of independence was applied to identify whether demographic variables such as age, gender, and marital status were significantly associated with idly consumption frequency, preparation habits, and outside purchase behavior. A 5% significance level ($p < 0.05$) was adopted to interpret the results. If the significance value exceeded this level, the variables were considered independent of each other.

Statistical Findings Embedded in the Method:
The statistical analysis showed that age did not have a significant association with the frequency of idly consumption because the "Pearson Chi-Square value was 24.936 with a significance of 0.071". Gender also did not show a significant relationship with idly preparation at home, as indicated by the Chi-Square value of 1.408 and a significance of 0.843. However, marital status displayed a significant association with outside purchase behavior, with a Chi-Square value of 16.180 and a significance of 0.040, suggesting that married individuals purchase idly outside more frequently compared to single respondents.

Limitations of the Study:
The study is limited by the use of convenience sampling, which may not completely reflect the entire population. The focus on a single food item, idly, also restricts the generalization of results to broader food consumption behaviors. Despite these limitations, the study provides meaningful insights into how demographic characteristics influence specific food choices.

Ethical Considerations:
All respondents were informed about the purpose of the study, and confidentiality of their responses was assured. No personal identifying information was collected, and participation remained voluntary throughout the data collection process.
Test: Cross Table
A cross table, also known as a contingency table or crosstab, is a statistical tool used to summarize the relationship between two variables. It displays the frequency or counts of observations that fall into various categories of both variables.
Cross Table-Age and Frequency of Idly Consumption
Testing the "Hypothesis"
"Null Hypothesis: There is no association between age and Frequency of Idly Consumption."

Table-1.1

Age * Frequency of idly consumption Crosstabulation

Count

		Frequency of idly consumption					
		Never	Monthly	Weekly	2-3 times weekly	Daily	Total
Age	Between 18-25 Years	2	4	5	13	6	30
	Between 26-35 Years	40	22	70	108	53	293
	Between 36-45 Years	9	5	24	49	22	109
	Between 46-55 Years	2	0	5	5	0	12
	above 55 Years	3	2	1	1	0	7
Total		56	33	105	176	81	451

Source: Primary data – Analysis - Output SPSS

Table-1.1.1

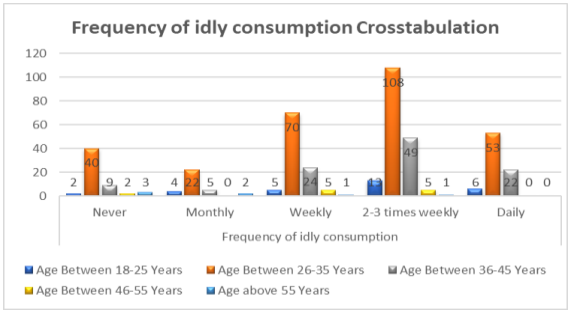
Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	24.936[a]	16	.071
Likelihood Ratio	25.609	16	.060
Linear-by-Linear Association	1.123	1	.289
N of Valid Cases	451		

a. 12 cells (48.0%) have expected count less than 5. The minimum expected count is .51.

Source: Primary data – Analysis - Output SPSS

Figure 1.1



The cross-tabulation shows that idly consumption varies across age groups. The 26–35 years and 36–45 years groups have the highest weekly to daily consumption, while the youngest (18–25) and oldest (above 55) groups show lower consumption levels.
The chi-square test result ($\chi^2 = 24.936$, df = 16, $p = 0.071$) indicates that there is no statistically significant association between age and frequency of idly consumption at the 5% significance level, because p >

0.05. This means that although consumption patterns differ across age groups, these differences are not strong enough statistically to confirm a meaningful relationship. Also, 48% of cells have expected counts less than 5, which suggest the test may be less reliable due to small sample sizes in some age categories. Consumption varies by age descriptively, but the statistical test shows the relationship is not significant.

Cross Table-Gender and Idly preparation at home

Testing the "Hypothesis"

"Null Hypothesis: There is no association between Gender and Idly preparation at home."

Table-1.2

Gender group and Idly preparation at home

Gender * Idly Preparation at home Crosstabulation

Count

		Idly Preparation at home					
		Never	Monthly	Weekly	2-3 times weekly	Daily	Total
Gender	Male	38	38	64	48	60	248
	Female	32	26	61	36	48	203
Total		70	64	125	84	108	451

Source: Primary data – Analysis - Output SPSS

Table-1.2.1

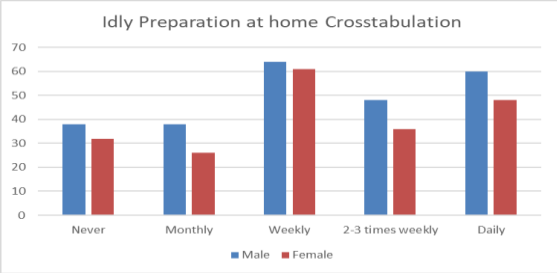
Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1.408[a]	4	.843
Likelihood Ratio	1.409	4	.843
Linear-by-Linear Association	.007	1	.933
N of Valid Cases	451		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 28.81.

Source: Primary data – Analysis - Output SPSS

Figure-1.2



The cross-tabulation shows that both men and women participate in idly preparation at home at similar levels. Although women show slightly higher weekly preparation, and men show slightly higher daily preparation, the differences are small.

"The chi-square test (χ^2 = 1.408, df = 4, p = 0.843) indicates that there is no statistically significant association between gender and frequency of idly preparation at home because the p-value is much greater than 0.05". Since all expected counts are adequate, the test is reliable. The overall findings are that Idly preparation at home does not differ significantly between men and women, meaning gender is not a determining factor in how often idly is prepared in this sample.

Cross Table-Martial Status and Outside Purchase of Idly

Testing the Hypothesis

Null Hypothesis: There is no association between Martial Statusand Outside Purchase of Idly.

Table-1.3

Marital Status and Outside Purchase of Idly

Martial Status * Outside purchase of idly Crosstabulation

Count

		Outside purchase of idly					
		Never	Monthly	Weekly	2-3 times weekly	Daily	Total
Martial Status	Single	23	20	22	20	21	106
	Married	33	41	54	41	52	221
	Others	7	20	38	32	27	124
Total		63	81	114	93	100	451

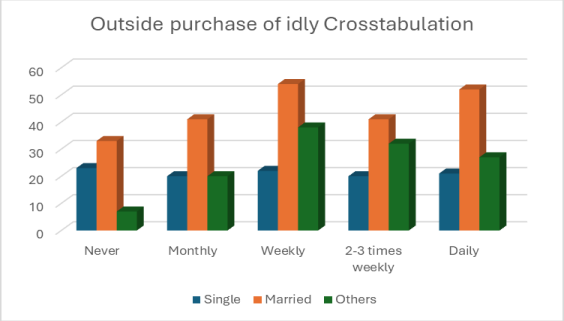
Table-1.3.1

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	16.180[a]	8	.040
Likelihood Ratio	17.203	8	.028
Linear-by-Linear Association	6.699	1	.010
N of Valid Cases	451		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 14.81.

Figure-1.3



The cross-tabulation shows that married respondents buy idly from outside more frequently than single respondents. The "others" category also shows high weekly and daily outside purchase. Singles have the lowest outside purchase across most categories.

"The chi-square test result ($\chi^2 = 16.180$, df = 8, $p = 0.040$) indicates that there is a statistically significant association between marital status and the frequency of outside purchase of idly because $p < 0.05$".

Since all expected counts are adequate, the test result is reliable.

Overall:

Marital status significantly influences outside purchase behavior. Married people and those in the "others" category tend to buy idly from vendors/restaurants more often, while single respondents purchase it less frequently.

V. RESULTS AND DISCUSSION

The findings of the research provide an understanding of how demographic variables such as age, gender, and marital status influence the consumption, preparation, and outside purchase of idly. The analysis of age and frequency of idly consumption through cross tabulation showed that respondents between 26–35 years and 36–45 years were the most frequent consumers, especially in the "2–3 times weekly" and "daily" categories. However, the Chi-Square test indicated that this relationship was not statistically significant ($p = 0.071$), suggesting that although certain age groups consume idly more often, age does not have a significant influence on consumption frequency at the population level.

The results for gender and idly preparation at home revealed that both men and women prepare idly at home in similar proportions. Men slightly dominated the daily preparation category, while women were slightly more represented in the weekly category. The Chi-Square value ($p = 0.843$) confirmed that "there is no significant association between gender and home preparation of idly". This indicates that preparing idly at home is a shared practice across genders, and gender differences are not a determining factor.

A contrasting result was observed in the analysis of marital status and outside purchase of idly. Married respondents and individuals in the "others" category showed a higher tendency to purchase idly from outside sources compared to single respondents. The Chi-Square value ($p = 0.040$) revealed a statistically significant association, implying that marital status influences outside purchase behavior. Married individuals may depend more on outside food due to factors such as time constraints, household size, or work schedules. Overall, the discussion indicates that while age and gender do not significantly determine idly consumption or preparation behavior, marital status plays an important role in outside purchase patterns.

VI. FINDINGS

1. Age does not significantly influence the frequency of idly consumption, although the 26–45 age groups consume idly more regularly.
2. Gender has no significant association with idly preparation at home; both men and women prepare idly in similar proportions.
3. Marital status has a significant influence on outside purchase of idly; married respondents buy idly outside more frequently.
4. Daily consumption of idly is most common among respondents aged 26–35 years.
5. Weekly and 2–3 times weekly consumption patterns dominate across all age groups.
6. A considerable proportion of respondents prefer home-prepared idly, regardless of gender.
7. Outside purchase behavior is higher among married individuals, possibly due to lifestyle factors.

VII. CONCLUSION

The study concludes that idly consumption and preparation habits vary across demographic groups,

but only marital status shows a statistically significant influence on outside purchase behavior. Age and gender, although showing visible trends, do not significantly affect consumption or home preparation patterns. This indicates that idly remains a widely preferred food item across all demographic categories, with preparation and consumption habits being largely uniform. However, outside purchase behavior is shaped by marital status, suggesting that family responsibilities, work patterns, or household demands influence the decision to rely on external food sources. Overall, idly consumption is a common practice across the population, but specific behavioral variations exist depending on marital status.

VIII. SUGGESTIONS

1. Food service providers may focus more on married households as they show higher outside purchase behavior.
2. Ready-to-cook or instant idly mix brands can target working couples who require convenience-based food options.
3. Restaurants and idly vendors can introduce combo offers or subscription-based breakfast plans for families with busy schedules.
4. Awareness campaigns can be created to promote healthy home-prepared idly among all age groups.
5. Future studies may include additional variables such as occupation, income, and lifestyle to better understand food consumption patterns.
6. Researchers may also expand the sample to different regions to generalize findings more widely.

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