



TREND ANALYSIS OF MILLET CONSUMPTION IN SOUTH INDIA

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ABSTRACT

Context: The United Nations has designated 2023 as the International Year of Millets, through the advocacy of Government of India, emphasizing their significance as a sustainable and nutritious food source. This designation brings heightened attention to millets on a global scale and underscores their potential to address pressing challenges such as food security, nutrition, and sustainable agricultural practices.

Aim: To analyse behavior and patterns related to millet consumption

Methods and Material: A survey was conducted, framed with questions distributed through Google Forms. The survey collected data on demographic distribution, respondents' awareness of the declaration of 2023 as the International Year of Millets, frequency of millet intake, reasons for consumption, and varietal preferences.

Results: A total of 75 respondents participated. The survey revealed that 75% of respondents were aware of the declaration of 2023 as the International Year of Millets. The survey reveals that a significant number of respondents were habituated to consuming millets due to their family's traditional dietary practices, indicating the strong influence of cultural factors in millet adoption. It presents valuable insights into the inclusion of different millets in different place.

Conclusions: The trend analysis of millet consumption patterns provided valuable insights into the evolving preferences and behaviors of individuals towards millets.

KEYWORDS: Millets, International Year of Millets, Trend analysis

INTRODUCTION

In recent times, millets have experienced a resurgence in global demand, driven by increasing consumer awareness about their nutritional value and sustainability benefits. As people become more health-conscious and seek out wholesome, nutrient-dense foods, millets have gained recognition for their impressive nutritional profile.^[1] They are rich in dietary fiber, protein, essential minerals, and antioxidants,^[2] making them an excellent choice for those looking to improve their overall well-being and people with dietary restrictions. Millets, being naturally gluten-free, have emerged as an attractive option for people seeking gluten-free diets, leading to an increased demand for millet-based products.^[1] While millets are an excellent option for individuals with gluten-related dietary restrictions, they are equally beneficial for weight management, dietary regimen for cardiac health,^[3] dietary management of diabetes,^[4] vegan-diet etc.

By analyzing the trends and harnessing the momentum of the International Year of Millets, we aim to provide valuable insights for businesses, food manufacturers, policymakers, and consumers interested in millets. Understanding the current market dynamics, emerging trends, and the reasons behind their adoption can help stakeholders navigate the evolving landscape of millets and harness the opportunities presented by this versatile grain.

MATERIALS AND METHODS

To ensure the relevance and clarity of the questions, careful consideration was given to their formulation, and a pilot test was conducted with a small group of individuals using Google forms before finalizing the questionnaire. The following were the questions:

1. Demographic details such as Gender, Age, Occupation and City with State
2. Are you aware that 2023 is declared as "International Year of Millets"? - Yes/No
3. When did you start consuming millets like Ragi, Bajra etc.?
 - 30-40 years/20-30 years/10-20 years/1-10 years/Less 1 year/Never
4. Reason for taking millets (More than 1 option can be selected)
 - Habituated in the family/ Recommended by the Physician/Dietician/ Recommended by Relatives/Friends/ Sales offers (Discounts etc.) in supermarkets and shops/ Others
5. How often do you take millets in your diet?
 - Daily/Frequently (10-15 times a month)/Occasionally (2-4 times a month)/Rarely (1-2 times in 4 months) / Others
6. What millets do you take? (Please select 1 option for each row)

**Table 1: Options for Question Number 6**

	I don't know about it	I know about it but never consumed	Have consumed it
Mundua/Ragi/Finger millet/Kezhvaragu/Moothari			
Bajra/Pearl millet/Kambu/Sajje/Saujalu/Cumbu			
Jowar/Sorghum/Jola/Jonnalu/Cholam			
Kutki/Little millet/Saame/Samai/Samalu/Chama			
Kodon/Kodo millet/Harka/Varagu/Arikelu			
Kangni/Foxtail millet/Navane/Tenai/Korra/Thina			
Jhangora/Barnyard millet/Odal/Kudiraivali/Kavadapullu			
Barri/Proso millet/Baragu/Varigulu/Panivaragu			

7.How do you add millets into your diet? (More than 1 can be selected)

I use millet grains to make upma etc.(Whole grains)/ I use Flour, Dosa mix, Pancake mix, Noodles, Semiya etc. to cook (Ready to cook)/ I eat millet Cookies, Laddu, Puffed millets, Chips etc. as snacks (Ready to eat)

8.Mention any food items made with millets in your region. (Eg. Upma, Puttu, Ragi Mudde etc.)

9.Would you recommend millets to others? - Yes/No/Maybe

The Google Forms platform was selected for its ease of use and efficient data management capabilities. English was the medium of language while the regional names of the millets in Hindi, English, Telugu, Tamil and Malayalam were tabulated in the table.^{[5][6]} The Google Forms link was shared via various channels to reach a diverse and representative sample of participants who had access to internet and mobile phone. After the data collection phase, the responses were exported into a spreadsheet for further analysis. Data cleaning and processing were performed to eliminate any incomplete or duplicate entries and ensure the accuracy of the dataset. Finally, data was analyzed to provide valuable insights into the research questions posed in this study.

RESULTS

The responses were carefully reviewed to ensure their quality and validity. Any ambiguous or inconsistent answers were cross-referenced and, if necessary, clarified with the participants to maintain the accuracy of the data.

The survey gathered 75 responses (47 females and 28 males) from participants residing in various states with the highest number of respondents coming from Karnataka (24) and Kerala (26). Other states such as Andhra Pradesh & Telangana (9) and Tamil Nadu (10) also contributed to the dataset, along with 6 respondents from different regions, among which 39% of the participants resided in urban areas, 21% in towns, and 15% in rural regions. The majority of participants fell into the 20-29 age group, representing 53% of the respondents. The 30-39 age group accounted for 20%, followed by 50-59 years (13%), 40-49 years (7%), 60 and above (4%), and the lowest percentage in the 10-19 age group (3%). The survey also explored the participants' occupations, and the responses varied among different professions. The medical field had the highest representation, comprising 35% of the respondents, followed by students (20%), individuals in the

teaching field (15%), homemakers (11%), IT professionals (4%), retired persons (5%), and while 7% were of other occupations. Among them, 75% of the respondents demonstrated awareness regarding the declaration of 2023 as the International Year of Millets.

The survey investigated the timeline of millet consumption among the participants. The responses indicated that millets were adopted at various stages of their lives. Approximately, 23% of individuals began consuming millets 1-10 years ago, another 23% started 10-20 years ago, and an additional 23% started within the last 20-30 years. Similarly, 21% respondents reported adopting millets for less than 1 year. On the other hand, a smaller number of participants, 8% respondents mentioned that they were consuming millets 30-40 years ago. Only 3% of them stated that they have never consumed millets.

Reasons for taking millets varied among the survey participants. The majority of respondents (55%) indicated that they were habituated to consuming millets due to their family's dietary practices. Participants cited healthcare professionals and nutritionists as their source of guidance for starting to consume millets (13%), with an equal number mentioning that recommendations from relatives or friends influenced their decision. Social media platforms like youtube, facebook etc. have played a role in the decision of 18% respondents to include millets in their diets, potentially due to increased awareness campaigns and information shared through these channels. Only 1% mentioned that sales offers or discounts in supermarkets or shops influenced their decision to try millets.

The frequency of millet consumption was also surveyed. Twenty-five respondents reported frequent millet consumption, including them in their meals approximately 10-15 times a month. Meanwhile, twenty-two participants indicated that they consume millets on an occasional basis, typically adding them to their diet around 2-4 times a month. It was reported that 12 individuals consume millets on a daily basis, making them a regular part of their everyday meals. Another 12 respondents stated that they consume millets only 1-2 times within a span of 4 months. Remaining respondents had responded that they no longer consume millets, etc. The data of consumption of different variety of millets are condensed in the figure 1.

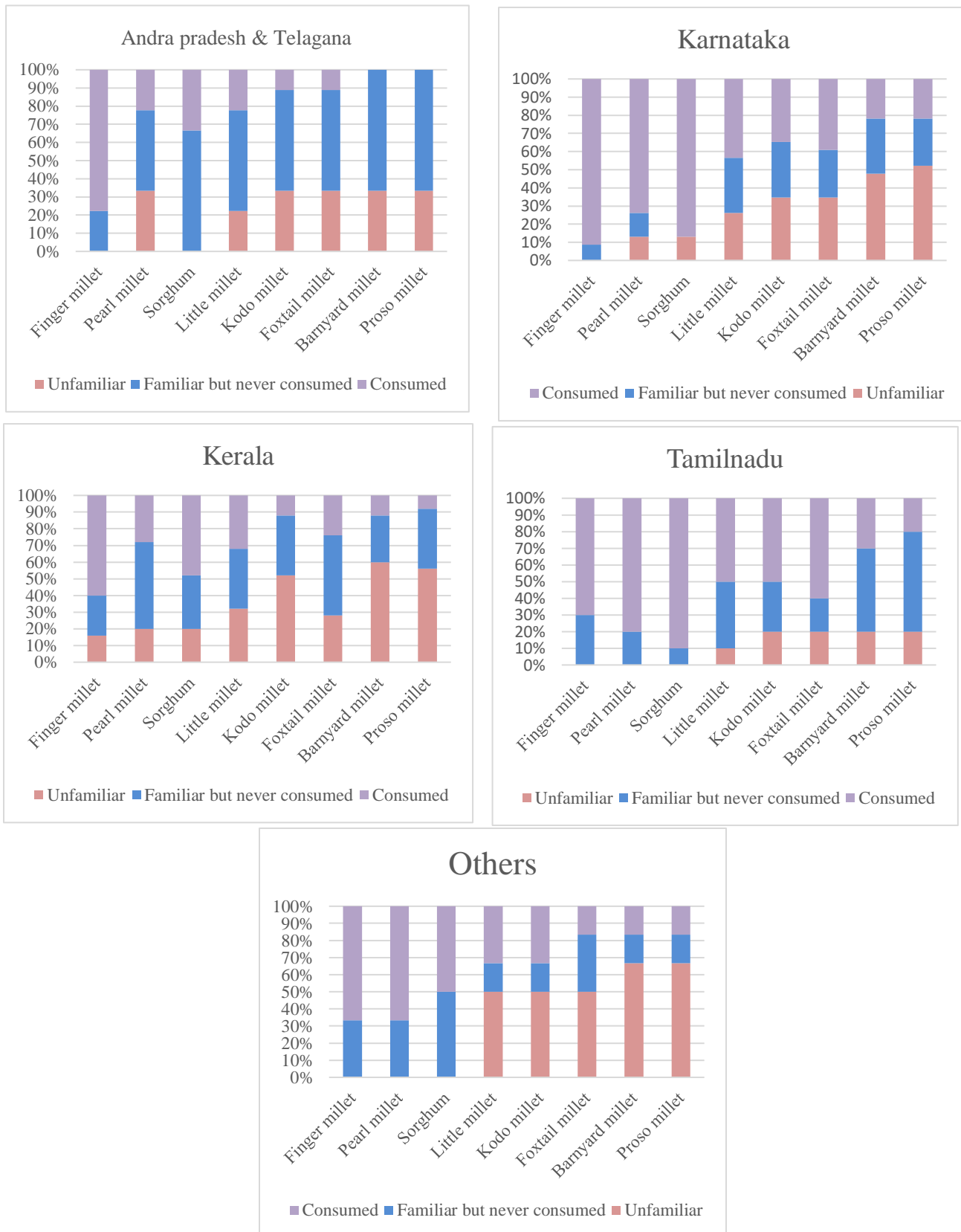


Figure 1: Consumption pattern in different location with respect to different type of millets



The survey indicated that "Ready to Cook" millet products were preferred by 41% of the participants, while 34% opted for whole grains. Additionally, 25% of the respondents favored "Ready to Eat" millet products. When inquired about dishes commonly consumed using millets, some of the items such as *Dosa*, *Roti*, *Upma*, *Mudde*, *Puttu*, String hoppers, Porridge, *Halwa*, *Kheer*, *Khichadi* and Malted health drinks were mentioned. Overall, about 90% people agreed that they would recommend millets to others.

DISCUSSION

Trend analysis is used to identify and examine patterns, behaviors or tendencies over a period of time. This helps us to understand the past and predict the future changes. This survey is a small attempt to predict the trend and align ourselves for it.

- **Increasing Awareness:** The data shows that 75% of respondents were aware of the declaration of 2023 as the International Year of Millets. This indicates a growing level of awareness about millets' significance and their potential as a sustainable and nutritious food source. The increasing awareness is likely due to various awareness campaigns, media coverage, and efforts to promote millets' benefits.
- **Traditional and Social Influences:** The habituated millet consumption in the family and recommendations from healthcare professionals, relatives, and friends suggests that both traditional practices and social influence play significant roles in promoting millet consumption. This can contribute to the normalization of millet consumption within communities and social circles.
- **Growing Acceptance and Consumption:** The survey indicates that a substantial number of respondents consume millets frequently or occasionally. This trend suggests a positive shift in millet consumption behaviors, with a significant proportion of individuals actively incorporating millets into their diets. This rising acceptance is a positive indication of the increasing popularity of millets as a dietary choice.
- **Influence of Social Media:** The social media influence on millet consumption is evident in the data, with 18% respondents stating that they were introduced to millets through social media channels. This trend highlights the role of digital platforms in disseminating information and creating awareness about millets. The influence of social media is likely to continue to impact millet adoption in the future.
- **Millet consumption pattern:** Among the various millet types, the data indicates that Finger millet is the most commonly used millet among the participants. On the other hand, the survey data shows that Barnyard and proso millets are relatively rare in terms of consumption among the respondents. This trend may be attributed to several factors, including limited awareness and availability of these millet types in the market, as well as preferences for other millet varieties that have been more extensively promoted and integrated into diets. This observation highlights the significant role that the local food environment can play in

shaping dietary preferences and habits. It suggests that efforts to promote millet consumption and improve overall dietary diversity should consider not only the nutritional benefits of millets but also their accessibility and affordability within the region.

- **Food processing:** The preference for whole grains (34%) indicates a substantial segment of the population opting for the traditional and unprocessed form of millets. Whole grains offer culinary possibilities, giving consumers the flexibility to incorporate millets into their meals as per their preferences. Yet, food processing transforms raw millet grains into more convenient and accessible forms for consumers, such as ready to cook mixes and ready to eat snacks. These products simplify the cooking process and enable consumers to prepare millet-based dishes quickly and effortlessly. They cater to the demands of health-conscious consumers who value convenience without compromising on their dietary choices. Simple processing methods like soaking, germination/malting, and fermentation can improve protein digestibility and mineral bioavailability whereas excessive dehulling can lead to lower fiber content and the loss of nutrient-rich bran and germ portions. Hence, the focus should be on finding processing methods that preserve or enhance nutritional properties.^[7] Few of the traditional dishes like *khichadi*, porridge etc. can be attempted as ready to cook mixes.
- **High recommendation rates:** While the consumption of millets have been staple since a long time, their versatility in cooking might also make them suitable for a wide range of diets and meal preferences in the form of porridge, in salads, as a side dish, or even in baking. Some individuals may simply enjoy the taste and texture of millets in their meals, leading them to recommend them to others.

LIMITATIONS

While the trend analysis has provided valuable insights, the sample size limit the generalization of the findings. Additionally, the survey's focus couldn't capture regional variations in millet consumption across the country. Furthermore, the survey did not delve into the specific reasons behind participants' preferences for certain millet varieties, which could provide deeper insights into their choices.

FURTHER SCOPE OF THE STUDY

To build on the findings of this survey, future research could expand the sample size to increase the study's robustness and explore regional variations in millet consumption patterns. By addressing the limitations and capitalizing on the opportunities revealed by trend analysis, policymakers, agricultural agencies, and food industries can collaboratively drive the growth of millet consumption.

CONCLUSION

The trend analysis of millet consumption patterns provided valuable insights into the evolving preferences and behaviors of individuals towards millets. This research contributes to our



knowledge of millet consumption and sets the stage for further exploration and initiatives aimed at harnessing the full potential of millets in enhancing global nutrition.

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Conceptualizing, Designing, Collection of data and writing of Manuscript was done by the author.