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A STUDY ON CONSUMER CHOICES TOWARD MILLETS AND MILLET-DERIVED VALUE-ADDED FOODS

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ABSTRACT

To understand consumer inclinations toward millets and millet-derived value-added products, a survey was conducted in Hyderabad with a sample of 200 respondents. The research examines consumer choices and usage patterns of millets, indicating that 50 percent of participants consider health advantages as the primary motivation for consuming millets. These health benefits include managing blood pressure, lowering diabetes risk, enhancing digestion, and supporting skin and eye health. The gluten-free property of millets emerges as the second most important reason, followed by their high fiber content, nutrient richness, and role in weight management. A majority of respondents (78%) consume millets during breakfast and dinner, mainly due to the wide variety of millet-based morning meal options. Elevated prices and insufficient knowledge of millet cooking techniques were identified as major obstacles to their consumption. To encourage greater millet intake, the study recommends expanding awareness programs, addressing cost-related issues, highlighting nutritional benefits, and increasing the range of millet-based food products. Furthermore, integrating millets into public distribution systems and ensuring their presence in local markets can improve familiarity and accessibility.

Keywords: Millets, Nutrition, Consumer Choice, Consumption Patterns, Health Advantages.

INTRODUCTION

Micronutrient deficiency remains a major global public health issue, with nearly 2 billion people experiencing inadequate intake of essential vitamins and minerals (Azman et al., 2019). Millets, known for their exceptional nutritional profile—often exceeding that of several grains and pulses in specific nutrients (Mohanraj et al., 2023)—are regarded as reservoirs of nutrients due to their considerably higher fiber content compared to other cereals (De Groote et al., 2018).

As one of the earliest domesticated cereal crops used in households, millets hold considerable historical value in traditional food systems (Durgad et al., 2021). India stands as the leading producer of millets, contributing 42% of global output, followed by Niger with 10% and China with 9%. Although millets once played a crucial role in Indian diets, their prominence has declined owing to production constraints and government policies that favored rice and wheat cultivation. Additionally, studies have identified an association between the consumption of refined grains—particularly polished white rice—and the onset of type II diabetes and obesity (Kane-Potaka et al., 2019). Such transitions in food habits have contributed to rising health concerns, including malnutrition and non-communicable diseases like diabetes (Eski et al., 2020).

Millets, being naturally gluten-free and abundant in dietary fiber, support digestion, enhance bowel regularity, and create a sense of satiety (Mohan et al., 2022). Their substantial fiber levels assist in weight regulation and reduce the likelihood of chronic illnesses such as cardiovascular diseases and type II diabetes (Harshitha and Jayaram, 2019). Being free of gluten, millets are particularly beneficial for individuals with diabetes, cancer, oxidative stress, obesity, celiac disease, and various gastrointestinal disorders (Sangappa et al., 2023). They serve as important sources of micronutrients such as B-complex vitamins, calcium, iron, folic acid, and sulfur (Rizwana et al., 2023).

Despite their proven nutritional advantages, a noticeable gap persists between millet production and actual consumption (Kumar et al., 2022). Although India ranks 12th globally in high-yielding millet production, there remains a significant disparity in incorporating millets into daily diets, influencing the overall nutritional status of the population (Kumar et al., 2022). Bridging this gap necessitates a deeper understanding of consumer attitudes, choices, and usage patterns concerning millets and millet-based value-added foods. Thus, the present study seeks to assess the level of awareness, preferences, and consumption practices related to millet intake.

METHODOLOGY

The current research was carried out in Hyderabad, Telangana, with the aim of assessing and understanding consumer preferences related to millets and millet-based value-added products. Customers who visited and purchased millets and millet-derived items from the “**Eat Right Products**” outlet of **ICAR–IIMR, Hyderabad** were randomly selected for participation in the study.

A total sample of **200 millet consumers** was included, representing diverse groups such as employees from public and private sectors, homemakers, entrepreneurs, and students. Primary information was gathered using a well-structured and pretested interview schedule. The objectives of the study were clearly explained to the respondents to encourage accurate and genuine responses. Additional verification steps were taken to minimize inaccuracies. The study was conducted during the **2022–23** period.

The collected information was examined using cumulative frequencies, percentages, arithmetic mean, and other descriptive statistical tools. To gain deeper insights into consumer preferences for millets and millet value-added products, the **Relative Importance Index (RII)** and **Garrett Ranking Techniques** were employed.

The Relative Importance Index (RII) was calculated using the formula:

$$RII = \frac{\text{Sum of weights}}{\text{Sum of weights} (W_1 + W_2 + \dots + W_n)} \times N$$

Where: **W** = weight assigned to each factor by respondents

A = highest possible weight

N = total number of respondents

The Garrett ranking score was computed using the percent position formula: $\text{Percent Position} = \frac{100(R_{ij} - 0.5)}{N_j}$ where R_{ij} is the rank assigned for the i -th item by the j -th respondent and N_j is the number of items ranked by the j -th respondent.

Where: **R_{ij}** = rank assigned for the i -th item by the j -th respondent

N_j = number of items ranked by the j -th respondent

RESULTS AND DISCUSSION

The collected data was classified into broad thematic categories such as demographic attributes of consumers, awareness levels regarding millet products, determinants influencing consumer preference for millets and millet-based foods, and constraints encountered by consumers in using value-added millet items.

Socio-Economic Characteristics of Consumers

A socio-economic profile forms a crucial foundation for any consumer-oriented research. The demographic attributes assessed in this study (Table 1) include family type, occupation, gender, age grouping, and monthly income. The gender composition of consumers showed **68% males** and **32% females**. A large segment of participants (40%) fell within the **46–50 years age group**, representing the older category. Most respondents belonged to **nuclear families**, with an average monthly income between **Rs. 15,000 and Rs. 30,000**. The participants possessed varied educational qualifications and represented multiple occupational categories: public and private sector employees (32%), business owners (29%), homemakers (23%), and students (16%).

Table1: Socio economic characteristics of consumers.

1.	Gender		
	a) Male	136	68
	b) Female	64	32
2.	Age		
	a) <30 years	54	27
	b) 31-45years	66	33
	c) 46-50years	80	40
3.	Family type		
	a) Nuclear	184	92
	b) Joint	16	08
4.	Monthly Income		
	a) Rs.15,000-30,000	106	53
	b) Rs.30,000-50,000	70	35
	c) Rs.50,000 above	24	12
5.	Education type		
	a) PUC	58	29
	b) Degree/PG/Ph.D.	142	71

6.	Occupation		
a)	Public/Private sector employees	64	32
b)	Business	58	29
c)	Home maker	46	23
d)			
d)	Student	32	16

Awareness Level of Millets Among the Selected Consumers The study revealed that all respondents surveyed were familiar with millets and millet-based value-added products (Table 2). A substantial proportion of the participants, accounting for 54%, displayed a moderate level of awareness, reflecting a fairly adequate understanding of millets. Meanwhile, 24% of the respondents showed a low level of awareness, indicating that a significant segment possessed only minimal knowledge about millets. Around 18% of the participants demonstrated a high level of awareness, representing a more detailed understanding of millet-related information. Furthermore, 4% of the respondents exhibited complete awareness, denoting an extensive and in-depth grasp of millets and their value-added derivatives.

Table 2: Awareness level and source of information on millets among respondents.

Sr.No.	Particulars	Frequency	Percentage
Awareness			
1.	Low level of awareness	48	24
2.	Medium level of awareness	108	54
3.	High level of awareness	36	18
4.	Complete awareness	8	4
Source of Information			
1.	ICAR-IIMR, Hyderabad	178	89.00
2.	TV	53	26.50
3.	Newspaper	20	10.00
4.	Social Media	75	37.50
5.	Family and friends	40	20.00

Consumer Preferences in the Consumption of Millets

The respondents surveyed provided various reasons for consuming millets, as shown in Table 3. The information is grouped into five major categories. The most frequently cited reason for millet consumption is its **“health benefits,”** reported by **100 participants**, representing **50 percent** of the total sample. This reflects a strong acknowledgment of the positive impact of millets on overall health. According to Reddy and Patel (2023), attitudinal factors—particularly health-related benefits such as high nutritional value, improved diabetes management, and reduced gut inflammation—play a major role in influencing millet consumption.

The second most commonly mentioned reason, reported by **19 percent** of the respondents, is that millets are **“gluten-free.”** This suggests growing awareness and preference for gluten-free dietary alternatives among consumers. Another notable factor is their nutritional richness, with **28 respondents (14%)** selecting **“high in fiber and nutrients.”**

Additionally, **13 percent** of the participants indicated that millets help in **weight reduction and weight maintenance**, highlighting their role in supporting healthy body weight. Only **4 percent** of the respondents consumed millets for miscellaneous reasons such as childhood eating habits, personal liking for millet products, easy availability, prior knowledge, or recommendations from healthcare professionals (Pandey and Bolia, 2023).

Table3: Reasons for consumption of millets.

S.NO	Reasonfor Consumption	Frequency	Percentage
1.	Richinfibreandnutrients	28	14
2.	Healthbenefits	100	50
3.	Helpsinweightloss(control)	26	13
4.	Gluten free	38	19
5.	Other reasons	8	4

The preferred mealtimes for millet consumption among the respondents are summarized in Table 4. The most common choice was **breakfast**, with a significant **62.5 percent** of participants indicating a strong preference for including millets in their morning diet. The higher intake during breakfast is attributed to the wide availability of millet-based breakfast options such as **millet rusk, millet khichdi mix, millet idli, millet dosa, millet roti**, and other similar preparations. This reflects a clear tendency to incorporate millets into the first meal of the day.

The second most preferred mealtime was **dinner**, with **34 percent** of respondents consuming millets in the evening. Several diabetic respondents mentioned that their doctors advised them to include millets in their night meals. A notable **27 percent** of participants reported consuming millets during **both breakfast and dinner**, indicating a balanced inclusion across meals. Millet consumption during **lunch** was comparatively low, with only **4 respondents (2%)** selecting it as their preferred time. Additionally, **4 percent** of participants stated that they consumed millets **three times a day**, reflecting a consistent and regular integration of millets across all meals.

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Table4:Mal time preferences for consumption of millets.

S.No	Consumption	Frequency	Percentage
1	During breakfast	127	63.5
2	During lunch	4	2
3	During Dinner	58	29
4	During break fast and lunch	6	4
5	During break fast and dinner	54	27
6	During lunch and dinner	6	3
7	3 times per day	8	4

Constraints in the Consumption of Millets

The primary challenges encountered by consumers in incorporating millets into their diets are outlined in Table 5. The Garrett ranking technique was employed to prioritize these constraints based on their respective Garrett scores. The high cost of millets emerged as the most significant limitation reported by the respondents. Factors such as restricted cultivation, lower productivity, and processing difficulties contribute substantially to the elevated prices of millet products.

The second major constraint, with a Garrett score of 72, was the limited knowledge of millet-based cooking methods. Educational initiatives, awareness programs, and the inclusion of millets in mainstream culinary platforms can play a crucial role in addressing this knowledge gap. According to Prashanthi et al. (2022), future research should emphasize increasing public awareness of millet nutrition through diverse media channels, improving understanding of their importance, and promoting positive behavioral change toward millet consumption. Providing simple, accessible recipes, cooking demonstrations, and emphasizing the nutritional advantages of millets can help enhance their use in everyday cooking.

Another frequently mentioned issue was the longer preparation time required for millet dishes compared to rice or wheat-based foods. This was identified as a major factor discouraging regular consumption. Lack of palatability was also ranked as an important constraint. Millets possess a distinctive taste that may seem unfamiliar or less appealing to individuals accustomed to mainstream cereals like rice or wheat. Expanding consumer awareness of the wide range of culinary applications of millets and sharing easy-to-follow recipes could help counter the perception that millets are less flavorful.

Table5: Constraints in consumption of millets.

Sr. No.	Constraints	Garret Score	Rank
1.	High Price	83	I
2.	Limited knowledge Regarding millet culinary preparation	72	II
3.	Require more time to prepare millet dishes	65	III
4.	Not palatable	59	IV
5.	Lack of availability	55	V
6.	Habituated oother cereals	50	VI
7.	Difficulty indigestion	45	VII

CONCLUSIONS

All participants possessed awareness of millets as well as millet-based value-added food products. A significant proportion of respondents received information about millets through ICAR-IIMR, Hyderabad outreach activities such as roadshows, walkathons, awareness programmes, along with social media platforms and television. The results indicate that most consumers prioritize health advantages as the main motivation for including millets in their diet. Moreover, factors such as their gluten-free nature and rich dietary fibre content also played an important role in influencing millet consumption. The determinants shaping consumer preference for millets and millet-derived products include their perceived superior nutritional profile, pleasant taste, and overall product quality. Nevertheless, the study highlights high market prices and insufficient familiarity with millet culinary preparation as critical barriers encountered by consumers.

To encourage wider millet consumption, the foremost focus should be on enhancing public awareness, addressing cost-related issues, and continuously emphasizing the health and nutritional merits of millets. Offering easy-to-follow recipes, culinary demonstrations, and effectively promoting their nutritional value may help improve household-level utilization. Additionally, incorporating millets into public distribution systems can broaden their accessibility and boost awareness in both rural and urban communities. Expanding the range and availability of millet-based products in local markets and retail outlets, along with encouraging culinary innovation, may further help consumers overcome existing challenges.

FUTURE SCOPE

The primary aim of the present study was to evaluate the awareness levels, familiarity with value-added millet products, and consumption preferences among urban consumers. The insights obtained from this research are expected to be useful in formulating nutrition education programmes or awareness campaigns designed to improve understanding of millet nutrition among the public. Furthermore, these findings may assist policymakers, institutional planners, and researchers in developing innovative millet-based nutrition initiatives and strategic interventions aimed at promoting long-term and sustainable millet consumption.

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