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Exploring knowledge about millets among college students in Kerala and Maharashtra

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Abstract

This study investigates the awareness, attitudes, and consumption patterns of millets among college students in Kerala and Maharashtra, two states with distinct agricultural practices and dietary habits. Millets, known for their high nutritional value, are gaining attention as sustainable food sources. The research involved 240 participants aged 18 to 25, equally selected from Latur and Thiruvananthapuram. Findings reveal that awareness of various millet types is significantly higher in Maharashtra (55.83%) compared to Kerala (44.17%). Cooking method familiarity also differs, with 72.5% of students in Maharashtra knowledgeable about cooking millets versus only 22.5% in Kerala. Awareness of millet-based products varies, with Kerala showing higher recognition for bread and cakes, while Maharashtra leads in biscuits and sweets. Notably, young adults in Maharashtra are more informed about the health benefits of millets, particularly regarding protein content and gluten-free status. Sources of knowledge also differ; parents play a crucial role in Maharashtra (81.67%) compared to Kerala (51.67%). The study highlights the need for targeted educational initiatives to enhance millet awareness and consumption, particularly in Kerala, where traditional knowledge appears to be diminishing. Overall, increasing public knowledge about millets can contribute to healthier dietary choices and improved food security in India.

Keywords: Millets, awareness, knowledge, benefits

Introduction

Millets, often termed as "nutri-cereals," have emerged as a focal point in discussions surrounding sustainable agriculture and nutrition. These small-seeded grains are recognized for their high nutritional value, including essential proteins, vitamins, and minerals, which are crucial for human health (Bhatta *et al.*, 2020) ^[1]. The United Nations has also highlighted millets as a key crop for promoting food security and sustainable development, particularly in the context of climate change (FAO, 2018) ^[2]. Despite their numerous benefits, the awareness and consumption of millets remain alarmingly low, especially among younger populations (Kumar *et al.*, 2021) ^[3].

In India, the states of Kerala and Maharashtra present unique agricultural landscapes and dietary practices, making them ideal for exploring the knowledge and perceptions of millets among college students. Kerala, known for its rich agricultural diversity and cultural heritage, has seen a gradual shift in dietary patterns, often favoring rice and wheat over traditional millets (Nair *et al.*, 2019) ^[4]. Conversely, Maharashtra, with its varied agro-climatic zones, has a history of millet cultivation, yet the younger

generation is increasingly moving towards processed foods (Patil *et al.*, 2022) ^[5].

This research aims to investigate the awareness levels, attitudes, and consumption patterns of millets among college students in these two states. By identifying gaps in knowledge and potential barriers to millet adoption, this study seeks to contribute to the promotion of millets as a sustainable food source. Enhancing nutritional education among youth is vital for fostering healthier lifestyles and ensuring food security in India (Singh *et al.*, 2021) ^[6].

Materials and Methods

The study was conducted in Latur, Maharashtra, and Thiruvananthapuram, Kerala, focusing on college students' knowledge regarding millets and millet-products. A total of 240 students aged 18 to 25 were selected equally from both districts, using convenient random sampling. Data collection involved structured questionnaires administered through face-to-face interviews by trained researchers. A pilot study with 35 participants helped to refine the tools. Statistical analysis included frequency and percentage analysis for interpretation.

Results

Knowledge of Millets and Millet Products

In Kerala, 44.17% are aware of various millet types, while 55.83% are not. In contrast, 55.83% of young adults in Maharashtra know about millet varieties, with 44.17% lacking this knowledge. Regarding cooking methods, only 22.5% of young adults in Kerala are familiar with how to cook millets, compared to 72.5% in Maharashtra who know the cooking methods. When it comes to awareness of millet-based products, 56.67% in Kerala are aware of them, while 51.67% in Maharashtra report similar knowledge. A high percentage in both states recognize millets available in the market: 75.83% in Kerala and 87.5% in Maharashtra.

Awareness of Millets and Millet Products

In Kerala, 58.33% are aware of millet-based bread, while 52.5% in Maharashtra share this knowledge. For cakes, 55% in Kerala are aware, compared to 46.67% in Maharashtra. Awareness of biscuits is higher in Maharashtra (62.5%) than

in Kerala (55%). Cookie awareness is lower in both states, at 46.67% in Kerala and 39.17% in Maharashtra. Muffin awareness is low overall, with only 16.67% in Kerala and 17.5% in Maharashtra. Regarding millet-based sweets, 41.67% of young adults in Kerala are aware of them, while 56.67% in Maharashtra are knowledgeable. Awareness of millet flour is equal in both states at 61.67%. A significant difference exists for roti awareness: 52.5% in Kerala versus 84.17% in Maharashtra. For dosa mix, awareness is 46.67% in Kerala and 54.17% in Maharashtra, while idli mix awareness is 36.67% and 50.83%, respectively. Awareness of grain soup is low overall, with 14.17% in Kerala and 22.5% in Maharashtra aware of it. Vermicelli awareness is higher in Kerala (40%) than in Maharashtra (15.83%), while pasta/noodles awareness is similar at 49.17% for Kerala and 40.83% for Maharashtra. Finally, for flakes/poha, awareness is 35% in Kerala compared to 43.33% in Maharashtra.

Awareness of benefits of millet and millet products

Table 1: Distribution of young adults according to their awareness about health benefits of millets

	Kerala		Maharashtra	
	Yes	No	Yes	No
High protein content	77 (64.17)	43 (35.83)	104 (86.67)	16 (13.33)
Lowers high blood pressure	64 (53.33)	56 (46.67)	44 (36.67)	76 (63.33)
Good for dietary measures (Diabetics)	90 (75)	30 (25)	87 (72.5)	33 (27.5)
Has more fiber content	81 (67.5)	39 (32.5)	72 (60)	48 (40)
Gluten free and non-allergic	52 (43.33)	68 (56.67)	65 (54.17)	55 (45.83)
Rich in minerals & vitamins	65 (54.17)	55 (45.83)	84 (70)	36 (30)
Less simple sugar	53 (44.17)	67 (55.83)	67 (55.83)	53 (44.17)

Values in parenthesis indicates percentage.

Table 1 shows that young adults in Maharashtra have a higher awareness of the benefits of millets compared to those in Kerala. For example, 86.67% in Maharashtra recognize millet's high protein content, while only 64.17% in Kerala do. Awareness of millet's role in lowering blood pressure is 53.33% in Kerala and 36.67% in Maharashtra. Both states show high awareness of dietary benefits for diabetics, with 75% in Kerala and 72.5% in Maharashtra acknowledging this. Regarding fiber content, 67.5% of young adults in Kerala know that millet is rich in fiber,

compared to 60% in Maharashtra. Awareness of millet being gluten-free is higher in Maharashtra (54.17%) than in Kerala (43.33%). Knowledge about millets being rich in minerals and vitamins is also greater in Maharashtra (70%) compared to Kerala (54.17%). Finally, 55.83% of young adults in Maharashtra know that millet contains less simple sugar, while 44.17% in Kerala are aware of this benefit.

How they came to know about benefits of millet

Table 2: Distribution of young adults according to their sources of knowledge about health benefits of millets

	Kerala		Maharashtra	
	Yes	No	Yes	No
From parents	62 (51.67)	58 (48.33)	98 (81.67)	22 (18.33)
From Forefathers	11 (9.17)	109 (90.83)	47 (39.17)	73 (60.83)
Publicity in Newspaper	38 (31.67)	82 (68.33)	36 (30)	84 (70)
Publicity in T.V.	52 (43.33)	68 (56.67)	39 (32.5)	81 (67.5)
Exhibitions	40 (33.33)	80 (66.67)	14 (11.67)	106 (88.33)
Food parks	13 (10.83)	107 (89.17)	19 (15.83)	101 (84.17)
Visit to KVK	23 (19.17)	97 (80.83)	10 (8.33)	110 (91.67)
Neighbors or friends	28 (23.33)	92 (76.67)	29 (24.17)	91 (75.83)
Personal contacts	29 (24.17)	91 (75.83)	36 (30)	84 (70)
Others	56 (46.67)	64 (53.33)	80 (66.67)	40 (33.33)

Values in parenthesis indicates percentage.

Table 2 shows how young adults learned about the benefits of millets, highlighting differences between Kerala and Maharashtra. In Maharashtra, 81.67% learned from their parents, compared to 51.67% in Kerala. Awareness from forefathers is also higher in Maharashtra (39.17%) than in

Kerala (9.17%). Publicity through newspapers is a minor source in both states, with 31.67% in Kerala and 30% in Maharashtra gaining knowledge this way. Television has a greater impact in Kerala (43.33%) compared to Maharashtra (32.5%). Exhibitions are more effective in Kerala (33.33%)

than in Maharashtra (11.67%). Visits to Krishi Vigyan Kendra (KVK) are significant sources of information for 19.17% of respondents in Kerala but only 8.33% in Maharashtra. Neighbors and friends are similar sources, with 23.33% in Kerala and 24.17% in Maharashtra reporting them as knowledge sources. Lastly, a larger proportion of

young adults in Maharashtra (66.67%) reported learning about millets through other sources compared to 46.67% in Kerala.

Discussion

Knowledge of Millets and Millet Products

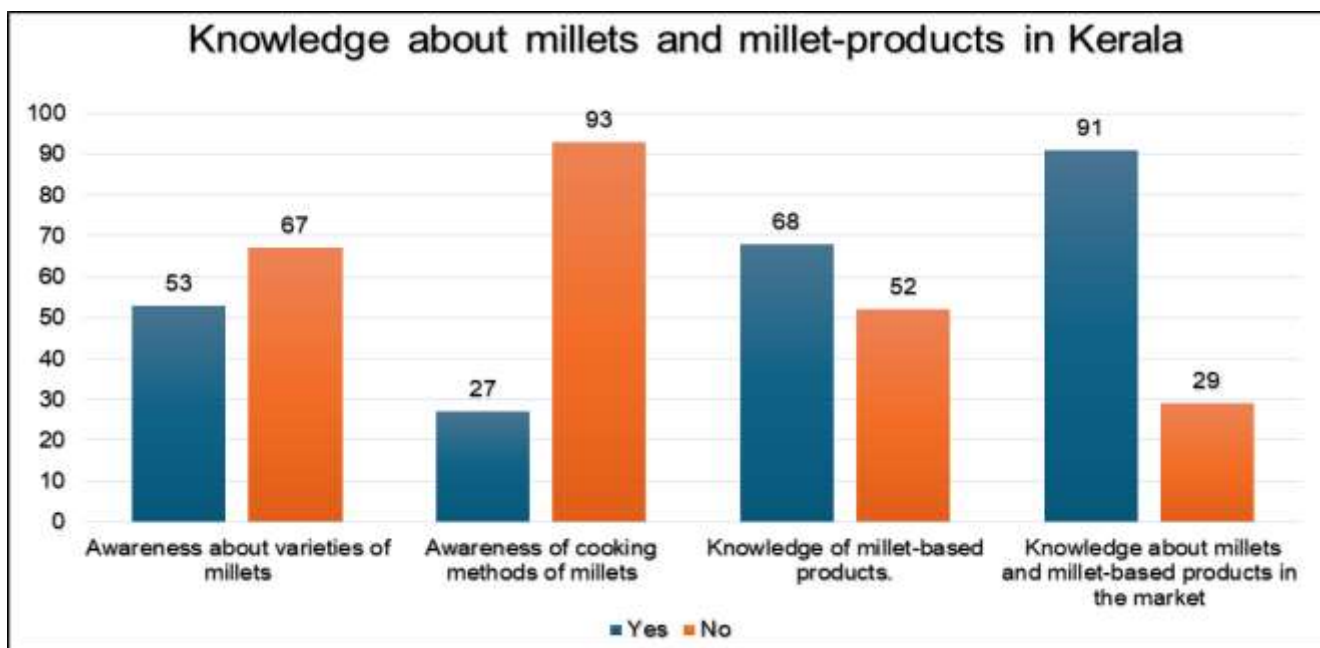


Fig 1: Distribution of young adults according to their knowledge about their millets and millet-products in Kerala

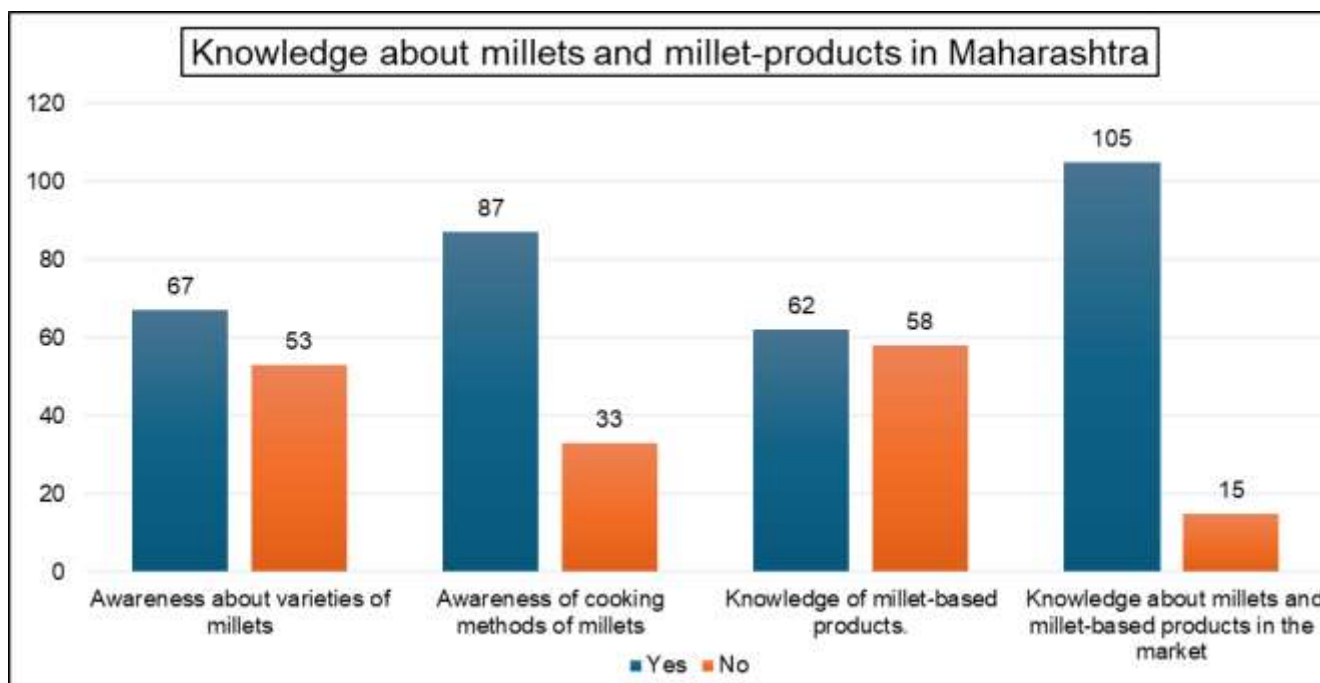


Fig 2: Distribution of young adults according to their knowledge about their millets and millet-products in Maharashtra

The study reveals notable differences in knowledge and awareness of millets among young adults in Kerala and Maharashtra. In Kerala, only 44.17% are aware of various millet types, while 55.83% lack this knowledge. Conversely, Maharashtra shows higher awareness, with 55.83% knowledgeable about millets. This gap may stem from Kerala's reliance on rice and coconut-based diets,

overshadowing traditional millet use (Rao *et al.*, 2019) [8]. Maharashtra's diverse agricultural landscape and educational initiatives promoting millets likely enhance awareness and cooking skills, as indicated by cooking method familiarity: 22.5% in Kerala versus 72.5% in Maharashtra. While Kerala has slightly higher awareness of millet-based products (56.67%) compared to Maharashtra

(51.67%), understanding how to incorporate them into diets remains limited, particularly in Kerala. The recognition of millets in the market is high (75.83% in Kerala and 87.5% in Maharashtra), suggesting a gap between awareness and actual consumption practices (Kumar *et al.*, 2020; Singh *et al.*, 2018) ^[7, 10].

Awareness of Millets and Millet Products

The findings indicate varying levels of awareness regarding millet-based products among young adults in Kerala and Maharashtra. In Kerala, awareness is relatively high for millet-based bread (58.33%) and cakes (55%), while Maharashtra shows stronger awareness for biscuits (62.5%) and sweets (56.67%). The lower awareness of cookies

(46.67% in Kerala and 39.17% in Maharashtra) and muffins (16.67% in Kerala and 17.5% in Maharashtra) suggests limited exposure to these products. This disparity may be influenced by cultural dietary preferences and the availability of millet-based options in local markets, as noted by the Food Safety and Standards Authority of India (2023) ^[12]. The government's efforts to promote millets as "nutri-cereals" have gained traction, yet challenges remain in increasing public knowledge and acceptance (NABARD, 2023; APEDA, 2022) ^[13, 11]. Enhanced educational initiatives could further bridge this gap, improving overall consumption patterns.

Awareness of Millet Health Benefits

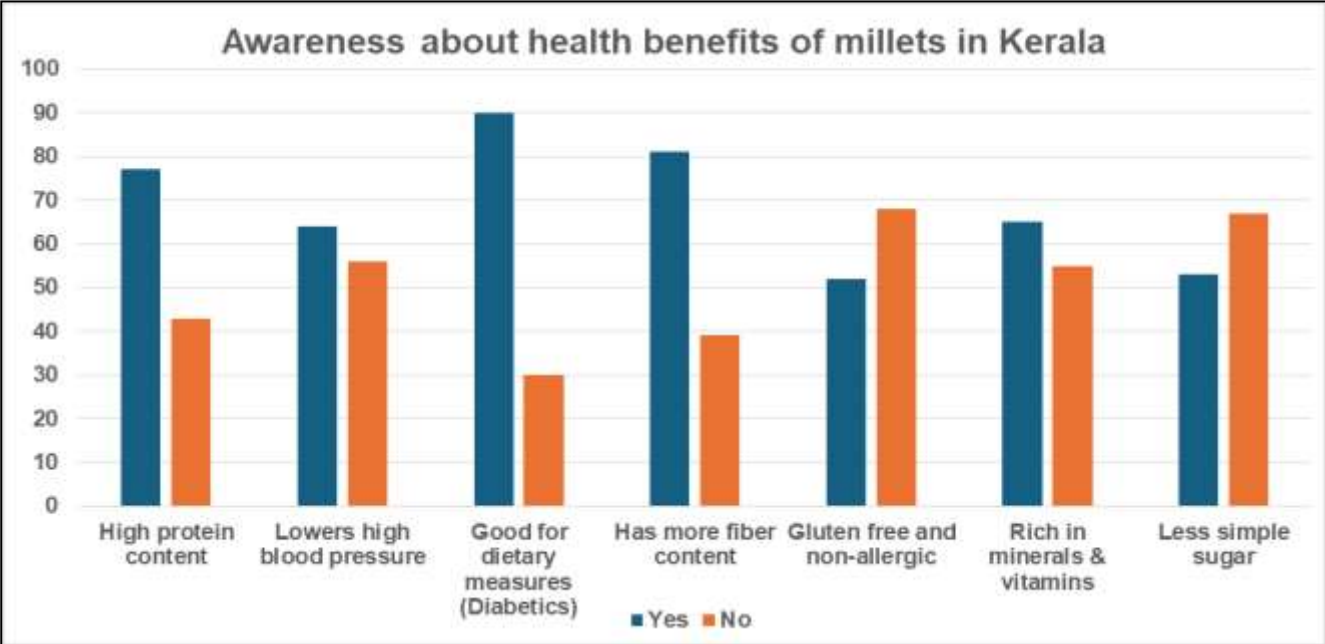


Fig 3: Distribution of young adults according to their awareness about health benefits of millets in Kerala

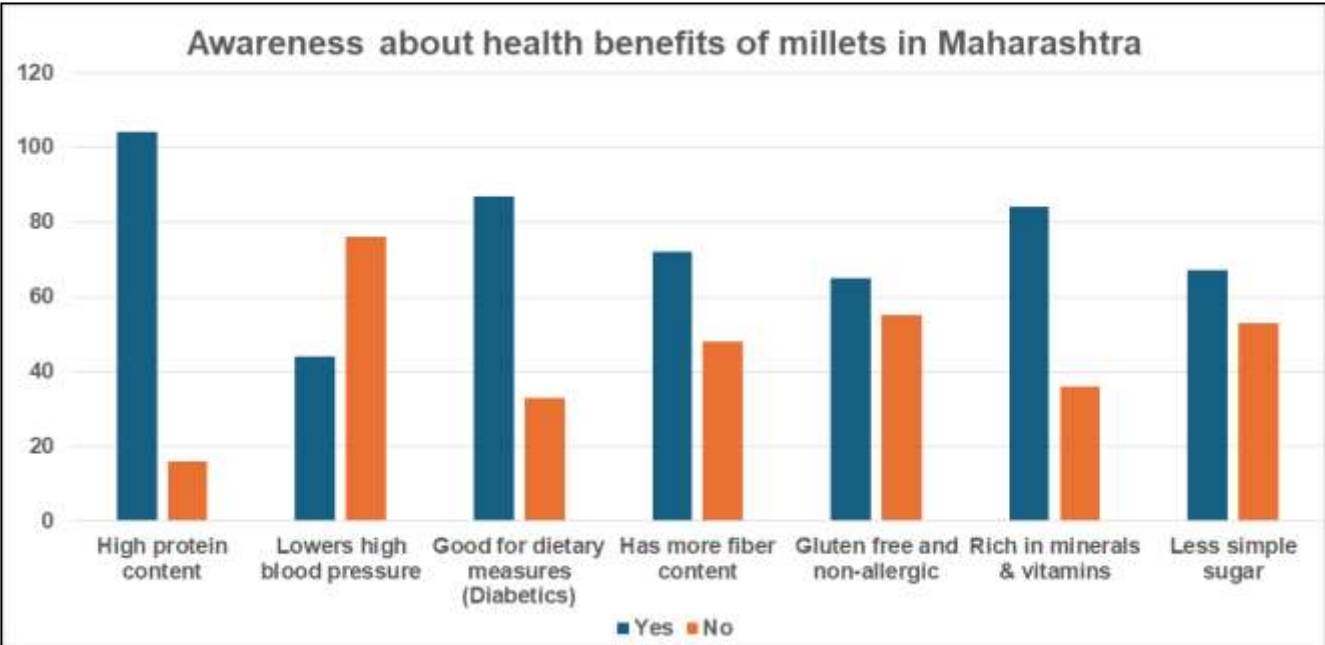


Fig 4: Distribution of young adults according to their awareness about health benefits of millets in Maharashtra

The results indicate that young adults in Maharashtra generally have a higher awareness of millet benefits compared to those in Kerala. For instance, 86.67% of participants in Maharashtra recognize millet's high protein content, compared to 64.17% in Kerala. This difference may be attributed to Maharashtra's stronger emphasis on millets as "superfoods," which has been promoted through various government initiatives and community engagement (APEDA, 2022; Rao, 2023) ^[11, 14, 15]. Awareness of dietary benefits for diabetics is high in both states, but the recognition of millet's gluten-free status is notably higher in Maharashtra (54.17%) than in Kerala (43.33%). This suggests that targeted educational campaigns could effectively enhance awareness in Kerala, where millets have historically been overshadowed by rice and wheat (B Dayakar Rao, 2023) ^[14, 15]. Overall, increasing public knowledge about millets can promote healthier dietary choices and improve nutritional outcomes.

Sources of Knowledge about Millets

The data reveals significant differences in how young adults in Kerala and Maharashtra learn about the benefits of millets. In Maharashtra, 81.67% learned from parents, compared to 51.67% in Kerala. This suggests a stronger familial transmission of knowledge in Maharashtra, which may be linked to cultural practices that emphasize traditional food education (B Dayakar Rao, 2023) ^[14, 15]. The low awareness from forefathers in Kerala (9.17%) indicates a potential loss of traditional knowledge over generations. Publicity through newspapers and television also plays a minor role, with Kerala relying more on television (43.33%) than Maharashtra (32.5%). Exhibitions have proven effective in Kerala (33.33%), highlighting the importance of community engagement in raising awareness (IIM Bodh Gaya, 2022) ^[16]. The higher percentage of young adults in Maharashtra learning through other sources (66.67%) suggests a broader array of educational initiatives, underscoring the need for targeted awareness programs in Kerala.

Conclusion

The study highlights significant disparities in awareness and knowledge of millets among young adults in Kerala and Maharashtra. While Maharashtra demonstrates higher overall awareness, particularly regarding the nutritional benefits of millets, Kerala shows potential for improvement through targeted educational initiatives. The reliance on familial sources for knowledge in Maharashtra underscores the importance of cultural practices in food education. In contrast, Kerala's lower awareness from traditional sources indicates a need to revive and promote historical dietary practices. Both states exhibit gaps between awareness and actual consumption, suggesting that enhancing public knowledge about millets could lead to healthier dietary choices. Future efforts should focus on community engagement and educational programs to bridge these gaps, thereby promoting millets as a sustainable and nutritious food source essential for improving food security in India.

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