

Household survey on sociodemographic factors, suggestions and constraints of millet consumption in Parbhani city, Maharashtra

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Abstract

This study investigates the socio-demographic characteristics and factors influencing millet consumption patterns among urban residents in Parbhani city, located in the Marathwada region of Maharashtra, India. The socio demographic data's regarding age distribution, educational attainment, gender representation, occupation, family size and type, family income and sources of information about millets were collected and analyzed. The findings reveal that the majority of respondents fall within the middle age group, with a significant proportion holding graduate-level degrees. Females comprise the majority of respondents and housewives constitute the largest occupational group. Small nuclear families with lower annual incomes dominate the demographic landscape. Family, relatives, friends and agricultural university scientists/extension workers are the primary sources of information about millets. Additionally, the study identifies key constraints hindering millet adoption, such as lack of knowledge about millet preparation and availability, as well as taste preferences and pricing concerns. To address these challenges, various suggestions are proposed, including training programs, awareness campaigns and policy interventions. Overall, this research provides valuable insights into the socio-demographic profile and informational preferences of urban residents regarding millet consumption.

Keywords: Millet consumption, socio-demographic characteristics, urban residents, constraints and suggestions

1. Introduction

Millets are traditional crops that have been cultivated since ancient times and are utilized for various purposes, including food, animal feed and fodder. They are one of the major food crops grown globally, with cultivation spanning over 100 countries. Millets are predominantly grown in the semi-arid tropical regions of developing countries, such as those in Asia and Africa, with notable production in India, Mali and Nigeria, which collectively account for 97% of global millet production. India stands out as the largest producer of millets, contributing to more than 80% of Asia's millet production. Millets are often referred to as "Nutri-Cereals" due to their rich content of essential nutrients. They are packed with protein, dietary fiber, minerals, vitamins and antioxidants, making them a highly nutritious food source. According to Prashanthi *et al.* (2022) [8], these nutritional benefits underline the importance of millets in promoting food security and improving dietary quality in regions where they are a staple crop.

These are rich in essential nutrients that help control diabetes, cardiovascular diseases, cancer, celiac disease and aging. Durairaj *et al.* (2019) [1] also noted that millet consumption positively impacts the height, weight and hemoglobin levels of school children. However, the advent

of the Green Revolution in the 1960s led to a decline in millet production and consumption. Several studies, including those by the Food and Agricultural Organization (2019) [2], Smith *et al.* (2019) [11] and John and Babu (2021), have documented a significant decrease in millet production and a concurrent rise in rice production from 1961 to 2017, resulting in rice becoming the staple food in many regions. The Green Revolution "pushed out" the intake of nutrient-dense coarse cereals and pulses by increasing the availability and affordability of rice and wheat. These grains became more affordable and easier to prepare, further reducing the cultivation and consumption of minor millets. The shift towards cereals, pulses and commercial cash crops has also contributed to the decline in the area and production of minor millets, as highlighted by Satish Kumar *et al.* (2022) [9]. Consequently, millets have been relegated to the diet of the economically disadvantaged and have been largely neglected by the broader community.

Globally, millets have gained popularity due to their numerous health benefits, low agricultural input requirements, minimal irrigation needs, ability to mitigate climate change and potential for ensuring food and nutritional security. Recognizing these advantages, the United Nations General Assembly declared 2023 as "The

International Year of Millets" (IYOM 2023) [3] to raise awareness and promote the production and consumption of millets. Millets are uniquely positioned to address current global health and nutritional challenges.

The present research study focuses on the socio-demographic profile and the assessment of suggestions and constraints for millet consumption in urban households of Parbhani city in the Marathwada region of Maharashtra. This study aims to provide valuable insights into the factors influencing millet consumption and to identify potential strategies to overcome barriers and enhance the acceptance of millets as a staple food in urban settings.

Methodology

The current investigation aimed to explore the socio-demographic profile and assess suggestions and constraints

regarding millet consumption within the Marathwada region of Maharashtra, specifically focusing on urban households in Parbhani city. Employing an ex post facto research design, the study utilized a structured questionnaire as the primary data collection tool. Direct household surveys facilitated the collection of requisite data, resulting in a total of 120 valid responses from diverse areas of Parbhani city forming the respondent sample. Following data collection, statistical analysis was conducted using Microsoft Excel, employing tools such as frequencies and percentages to analyse the received responses comprehensively. The overall research design is mentioned in Figure 1. This research endeavour contributes to the understanding of factors influencing millet consumption patterns within urban settings, thereby informing potential interventions to promote healthier dietary habits in the region.



Fig 1: Research design of the house hold survey in the Parbhani City, Maharashtra

3. Results and Discussion

3.1 Socio demographic profile of respondents

The table 1 outlines various socio-demographic characteristics and factors influencing millet consumption patterns among respondents in urban Parbhani city, Marathwada region, Maharashtra. It presents data regarding age distribution, educational attainment, gender representation, main occupation, family size, family type, family annual income and sources of information about millets. Regarding age, the majority fall within the middle age group (29 to 44 years), comprising 63.33% of respondents, followed by the older age group (45 & above) at 19.17%, while the youngest age group (up to 28 years) constitutes 17.5%. In terms of education, the highest proportion holds a graduate-level degree (21.67%), followed by secondary school (14.17%) and primary school (12.5%). Gender-wise, females comprise the majority (72.5%) of respondents compared to males (27.5%). Regarding occupation, housewives represent the largest group (55.84%), followed by those engaged in private jobs (33.34%). Family size predominantly consists of small families (up to 4 members), accounting for 70% of respondents, with nuclear families being the prevalent

family type (78.5%). In terms of family annual income, the majority fall within the group of up to Rs. 1,00,000 /- (49.16%). Sources of information about millets vary, with family/relatives/friends being the most common (45.83%), followed by agricultural university scientists/extension workers (15%).

Similar results were observed by Kapse *et al.* (2023) [5] in their study on the socio-demographic profile of the Marathwada region. This study primarily focused on identifying the correlates of awareness and consumption of millets among the residents of Marathwada. Additionally, Shinde *et al.* (2020) [10] reported similar socio-demographic patterns in the dietary habits of selected diabetic subjects in Parbhani city, Maharashtra.

These findings offer valuable insights into the socio-demographic landscape and the informational preferences of urban residents concerning millet consumption. They highlight the importance of understanding the demographic factors that influence dietary choices and awareness, which can aid in the development of targeted interventions to promote healthier eating habits, including the integration of millets into daily diets.

Table 1: Distribution of the respondents according to their socio demographic profile (N=120)

Sr. No.	Profile / Characteristics	Frequency	Percentage
1	Age		
	Young (Upto 28 yrs)	21	17.5
	Middle (29 to 44 yrs)	76	63.33
	Old (45 & Above)	23	19.17
2	Education		
	Illiterate	10	8.33
	Primary school	15	12.5
	Secondary school	17	14.17
	Higher secondary	39	3.25
	Diploma level	8	6.67
	Graduate level	26	21.67
	PG level & above	5	4.17
3	Gender		
	Male	33	27.5
	Female	87	72.5
4	Main occupation		
	Agriculture	3	2.5
	Business / Entrepreneur	2	1.67
	Government job	5	4.17
	Private job	40	33.34
	House wife	67	55.84
	Students	3	2.5
5	Family Size		
	Small (upto 4 members)	84	70
	Medium (5 to 6 members)	20	16.66
	Large (7 & Above)	16	13.34
6	Family Type		
	Joint	27	22.5
	Nuclear	94	78.5
7	Family Annual Income		
	Upto Rs. 1,00,000 /-	59	49.16
	Rs. 1,00,001 to 2,00,000/-	41	34.17
	Rs. 2,00,001 to 3,00,000/-	10	8.34
	Rs. 3,00,001 to 4,00,000/-	5	4.17
	Rs.4,00,001 & Above	5	4.17
8	Source of Information about millets		
	Radio	0	0
	Television	16	13.34
	News paper	7	5.84
	Magazine	5	4.17
	Family/Relatives / Friends	55	45.83
	Social Media	10	8.33
	Doctors / Dietician	6	5
	Agriculture University's Scientist / Extension Worker	18	15
	Shop keeper / Retailer of millet products	3	2.5

3.2 Constraints faced by the respondents in consuming millets.

The table 2 presents an overview of the constraints encountered by respondents in adopting millets into their diets. Firstly, the data indicates that the most prevalent constraint, as reported by 110 respondents (equating to 91.67% of the total), was a lack of comprehensive knowledge about all types of millets. This constraint earned the highest ranking, denoted by "I." Following closely behind was the challenge of insufficient understanding regarding the preparation of millet-based products, which was mentioned by 84 respondents, constituting 70% of the total. This constraint secured the second ranking (II). Moreover, 65 respondents, representing 54.17% of the total, cited the non-availability of millet-based products as a significant hurdle, positioning it third in the rankings (III).

Additionally, the taste preferences of children emerged as a concern, with 39 respondents (32.5% of the total) indicating it as a barrier, earning it the fourth ranking (IV). Lastly, the high price of millet-based products was identified by 21 respondents, accounting for 17.5% of the total and was ranked fifth (V). Overall, these findings shed light on the multifaceted challenges impeding the wider adoption of millets, encompassing issues ranging from knowledge gaps to accessibility and affordability concerns.

In a study conducted by Mohan *et al.*, in 2021^[6] on millet consumption in Kerala, similar findings were observed. Likewise, in 2023, an assessment of knowledge, attitude and practice regarding millet usage among low and high socioeconomic status households in Mumbai, Maharashtra, revealed comparable constraints to millet consumption. Notably, a predominant reason cited by non-millet

consumers for abstaining from millets was limited availability. This insight underscores a significant message for policymakers: at the grassroots level, many individual families lack adequate resources to access millets. Additionally, respondents highlighted concerns such as

longer cooking times, dislike for the taste, absence of familial tradition around millet consumption and perceived high prices as deterrents to integrating millets into their diets.

Table 2: Constraints faced by the respondents in consumption of millets

Sr. No	Reason	Frequency	Percentage	Ranking
1	Lack of proper knowledge about preparation of millet based products	84	70	II
2	Lack of knowledge about all millets	110	91.67	I
3	Non- availability of millet-based products	65	54.17	III
4	Taste is not preferred by children	39	32.5	IV
5	High price of millet based products	21	17.5	V

3.3 Suggestions to improve the consumption of millets in the respondents

The table 3 presents a range of suggestions aimed at bolstering the consumption of millets among respondents, each accompanied by its frequency, percentage and ranking. Foremost among these proposals is the organization of training programs on millet-based value-added products and ready-to-eat options by extension agencies, a recommendation supported by 119 respondents, accounting for an overwhelming 99.17% of the total, thereby earning it the second-highest ranking. Similarly, the proposition to upload instructional videos showcasing the preparation of various millet-based recipes on platforms like YouTube and social media garnered significant backing, with 110 respondents, constituting 91.67% of the sample, ranking it as the most favoured suggestion.

Another notable recommendation involves conducting awareness campaigns and advertisements elucidating the importance of millets in one's diet, particularly in retail settings and malls, an idea endorsed by 80 respondents, or 66.67% of the total, positioning it third in the rankings. Moreover, guidance on utilizing millets tailored to different health conditions received support from 40 respondents, representing 33.33% of the sample, placing it fourth in priority. Ensuring the availability of millets in public distribution systems and ration shops was also emphasized,

with 36 respondents, constituting 30% of the total, ranking it fifth. Further suggestions include organizing awareness programs targeting school children (endorsed by 31 respondents), integrating millet-based products into school mid-day meals (backed by 20 respondents) and advocating for an increase in the Minimum Support Price (MSP) of millets (supported by 14 respondents), each addressing specific facets of promotion, accessibility and affordability. Prashanthi *et al.* (2022) [8] provided similar suggestions to increase awareness and consumption of millets in rural and urban areas of Telangana State, India. They emphasized the need for more research to create awareness about the benefits of millets. The study suggests that future research should focus on millet nutrition education through various media channels, developing knowledge about the significance of millets, and implementing interventions to change people's attitudes toward millet consumption. Collectively, these suggestions form a holistic strategy to encourage the widespread adoption of millets. This strategy includes educational initiatives, public outreach campaigns, policy interventions, and institutional reforms to facilitate the inclusion of millets in everyday dietary practices. By addressing these areas, the aim is to enhance public understanding and acceptance of millets, ultimately integrating them into the regular diet of both rural and urban populations.

Table 3: Suggestions to improve the consumption of millets in the respondents

Sr. No	Suggestions	Frequency	Percentage	Ranking
1	Extension agency should organise the training programme on millet based value added product/ready to eat product	119	99.17	II
2	Upload the videos on preparation of various recipes related millet based value added product on Youtube/social media	110	91.67	I
3	Awareness /publicity campaign cum advertisement about importance of millet in diet should be organised at retail shop, mall etc.	80	66.67	III
4	Guidance on use of millets as per different diseases	40	33.33	IV
5	Availability of millets in public distribution system/ration shops	36	30	V
6	Awareness programme about millets based products among the school children should be organised	31	25.83	VI
7	Millet based product should be included in mid day meals in school	20	16.67	VII
8	Minimum Support Price of millet should be increased	14	11.67	VIII

4. Conclusion

In conclusion, this study sheds light on the socio-demographic characteristics and factors influencing millet consumption patterns among urban residents in Parbhani city, Maharashtra. The findings underscore the need for targeted interventions to promote millet consumption, considering the identified constraints and preferences of the

target population. By addressing knowledge gaps, improving accessibility and affordability and raising awareness about the nutritional benefits of millets, stakeholders can facilitate their wider adoption in urban diets. The proposed suggestions, ranging from educational initiatives to policy reforms, offer a comprehensive approach to promote millet consumption and contribute to

the broader goal of enhancing food security and nutrition in urban areas.

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Conflict of Interest

All authors declares no conflict of interest to publish this manuscript.

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