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MILLETS IN TRADITIONAL DIETS AND THEIR RELEVANCE IN PRESENT-DAY NUTRITION

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ABSTRACT

Background: Millets have been an integral part of traditional food systems across Asia and Africa for centuries. In the Indian context, millets were widely used as daily staples due to their easy digestibility, climate resilience, and nutritional richness. Classical Ayurveda describes millets under Ahara Dravya, emphasizing their role in maintaining health, strength, and metabolic balance. However, with the dominance of refined cereals like rice and wheat, the dietary use of millets declined, contributing indirectly to lifestyle disorders. **Aim** To evaluate the nutritional importance of millets in traditional diets and their relevance in present-day nutrition. **Objectives** To study the role of millets in traditional dietary practices. To understand the nutritional composition of millets. To assess the relevance of millets in modern lifestyle-related disorders. To correlate traditional Ayurveda concepts with modern nutritional science. To highlight the potential of millets in promoting sustainable and healthy diets. **Materials and Methods**: A narrative review was conducted using classical Ayurveda texts, traditional dietary literature, and modern scientific studies available in journals, reports, and nutrition databases. Nutritional composition, health benefits, and clinical relevance of commonly used millets were analyzed and correlated with contemporary

nutritional needs. Results: Millets were found to be rich sources of dietary fiber, complex carbohydrates, plant-based proteins, essential minerals, and antioxidants. Traditional dietary practices utilized millets for maintaining digestive health, glycemic control, and seasonal balance. Modern research supports their role in the prevention and management of obesity, diabetes mellitus, cardiovascular diseases, and micronutrient deficiencies. Millets also show a low glycemic index and high satiety value, making them suitable for current lifestyle-related health challenges. Conclusion: Millets represent a nutritionally superior and culturally rooted food group with strong relevance in present-day nutrition. Reintroducing millets into daily diets can support metabolic health, food security, and sustainable nutrition. Integrating traditional knowledge with modern dietary guidelines can help revive millet-based diets for long-term public health benefits.

Keywords: Millets, Traditional Diets, Ayurveda, Nutrition, Lifestyle Disorders, Sustainable Food Systems

Introduction

Millets are among the oldest cultivated cereal grains known to human civilization and have formed the backbone of traditional diets in many parts of the world, especially in India, Africa, and other semi-arid regions. These small-seeded grains were traditionally consumed as daily staples because of their adaptability to harsh climates, long storage life, and ability to provide sustained nourishment. In Indian food culture, millets were closely linked with regional, seasonal, and occupational dietary practices.[1]

In the classical science of Ayurveda, food is regarded as the primary pillar of health, and millets are described under Ahara Dravya. They are valued for their light to moderate digestibility, nourishing nature, and capacity to maintain equilibrium of bodily functions when consumed appropriately. Traditional dietary wisdom emphasized selection of millets based on individual constitution, digestive strength, and seasonal variations, thereby supporting balanced metabolism and overall well-being.[2]

With rapid urbanization and changing food habits, the consumption of millets gradually declined and was replaced by polished rice and refined wheat products. This dietary transition resulted in reduced intake of dietary fiber and essential micronutrients, contributing to the rising prevalence of lifestyle disorders such as obesity, diabetes mellitus,

and cardiovascular diseases. The loss of traditional millet-based diets has also affected food diversity and nutritional security.[3]

In the present era, growing awareness about healthy eating and sustainable nutrition has renewed interest in millets. Modern nutritional research supports traditional knowledge by highlighting their low glycemic index, high fiber content, and rich mineral profile. Reintroducing millets into daily diets offers a practical approach to addressing current nutritional challenges while preserving traditional dietary wisdom and promoting long-term health.[4]

AIM AND OBJECTIVES

Aim

To evaluate the nutritional importance of millets in traditional diets and their relevance in present-day nutrition.

Objectives

1. To study the role of millets in traditional dietary practices.
2. To understand the nutritional composition of millets.
3. To assess the relevance of millets in modern lifestyle-related disorders.
4. To correlate traditional Ayurveda concepts with modern nutritional science.
5. To highlight the potential of millets in promoting sustainable and healthy diets.

CONCEPTUAL STUDY

Millets

Millets are a group of small-seeded cereal grains that have been cultivated and consumed by humans since ancient times. They are not a single crop but a collective term for several hardy grains such as sorghum, pearl millet, finger millet, foxtail millet, barnyard millet, kodo millet, little millet, and proso millet. These grains evolved as staple foods in regions with low rainfall and poor soil quality, making them central to traditional diets and sustainable food systems.[5]

From a traditional Indian perspective, millets were not merely food items but an essential component of Ahara, which is considered the foremost pillar of life in Ayurveda. Classical dietary wisdom emphasizes that health is directly dependent on the quality, quantity, and

suitability of food consumed. Millets were traditionally selected based on region, season, occupation, and digestive capacity, ensuring harmony between the body and the environment.[6]

Millets as Ahara Dravya in Ayurveda

In Ayurveda, food substances are classified based on Rasa, Guna, Virya, and Vipaka, along with their effect on Dosha balance. Millets are generally described as possessing Kashaya and Madhura Rasa, Laghu or Ruksha Guna, predominantly Ushna Virya, and Katu Vipaka. Because of these attributes, millets influence metabolic processes, digestion, and tissue nourishment.[7]

Traditionally, millets were advised for individuals with excess Kapha and Meda, as their dry and light nature helps prevent heaviness and sluggish digestion. When consumed judiciously and prepared properly, they support Agni and promote gradual energy release without burdening the digestive system. However, classical texts also caution that excessive or improper use of millets without suitable processing may lead to dryness and imbalance, highlighting the importance of method of preparation.[8]

Digestive and Metabolic Concept

The digestion of millets is closely related to the strength of Jatharagni. Their complex carbohydrate structure ensures slow digestion and sustained energy release. This aligns with the traditional concept that food should nourish without producing Ama. Properly cooked and processed millets enhance digestive efficiency, support regular bowel movements, and contribute to balanced metabolism.[9]

In individuals with compromised digestion, millets were traditionally consumed with fats, fermented preparations, or soups to counteract their dryness. Such combinations reflect the classical understanding of food synergy, where one Ahara Dravya balances the properties of another, ensuring safe and beneficial nourishment.[10]

Role in Tissue Nourishment (Dhatu Poshana)

Millets contribute to progressive nourishment of Dhatu when consumed according to individual needs. Their mineral richness supports Asthi and Majja integrity, while their protein content aids in maintaining muscle tone. Unlike refined cereals, millets promote steady tissue nutrition rather than rapid energy spikes, which is consistent with the Dhatu Poshana Nyaya described in Ayurveda. Because of their high fiber content, millets also

support healthy elimination of waste products, thereby maintaining balance between Dhatu and Mala. This equilibrium is essential for long-term health and disease prevention.[11]

Traditional Culinary and Cultural Significance

Traditionally, millets were consumed in the form of rotis, porridges, gruels, fermented foods, and regional preparations. These methods enhanced digestibility and improved nutrient bioavailability. Fermentation and soaking were common household practices that reduced antinutritional factors and improved taste and assimilation. Millet-based diets were closely linked with agrarian lifestyles, seasonal rhythms, and physical labor. Their consumption provided sustained energy suitable for demanding daily activities, reflecting deep ecological and physiological wisdom embedded in traditional food systems.[12]

Relevance to Present-Day Nutrition

Modern dietary patterns characterized by refined carbohydrates and sedentary lifestyles have resulted in increased prevalence of metabolic disorders. Millets, with their low glycemic response, high fiber, and micronutrient density, directly address these issues. Contemporary nutrition science validates traditional practices by demonstrating the role of millets in glycemic control, weight management, gut health, and cardiovascular protection. From a public health perspective, millets also contribute to nutritional security and sustainability. Their minimal requirement for water and chemical inputs makes them ideal crops for climate-resilient agriculture, aligning nutritional health with environmental well-being.[13]

Tables-List of Millet

S. No.	Millet (Common / Traditional Name)	Botanical Name	*Rasa*	*Guna*	*Virya*	*Vipaka*
1	Sorghum (*Jowara*)	*Sorghum bicolor*	*Madhura*, *Kashaya*	*Laghu*, *Ruksha*	*Ushna*	*Katu*
2	Pearl Millet (*Bajra*)	*Pennisetum glaucum*	*Madhura*, *Kashaya*	*Laghu*, *Ruksha*	*Ushna*	*Katu*
3	Finger Millet (*Ragi* / *Mandua*)	*Eleusine coracana*	*Madhura*, *Kashaya*	*Guru*, *Ruksha*	*Ushna*	*Katu*
4	Foxtail Millet (*Kangni* / *Kakum*)	*Setaria italica*	*Madhura*, *Kashaya*	*Laghu*, *Ruksha*	*Ushna*	*Katu*

5	Little Millet (*Kutki*)	*Panicum sumatrense*	*Madhura*, *Kashaya*	*Laghu*, *Ruksha*	*Ushna*	*Katu*
6	Kodo Millet (*Kodo*)	*Paspalum scrobiculatum*	*Madhura*, *Kashaya*	*Laghu*, *Ruksha*	*Ushna*	*Katu*
7	Barnyard Millet (*Sanwa / Shyamak*)	*Echinochloa frumentacea*	*Madhura*, *Kashaya*	*Laghu*, *Ruksha*	*Ushna*	*Katu*
8	Proso Millet (*Cheena*)	*Panicum miliaceum*	*Madhura*, *Kashaya*	*Laghu*, *Ruksha*	*Ushna*	*Katu*
9	Buckwheat (*Kuttu*)	*Fagopyrum esculentum*	*Kashaya*, *Madhura*	*Laghu*, *Ruksha*	*Ushna*	*Katu*
10	Amaranth (*Rajgira*)	*Amaranthus hypochondriacus*	*Madhura*	*Laghu*, *Snigdha*	*Ushna*	*Madhura*

1. Sorghum (Jowara)

Sorghum bicolor, commonly known as Jowara, is one of the major millets traditionally consumed as a staple cereal in dry and semi-arid regions of India. It is characterized by Madhura and Kashaya Rasa, Laghu and Ruksha Guna, Ushna Virya, and Katu Vipaka. Due to these properties, Jowara supports digestion, reduces excessive heaviness of the body, and helps in regulating metabolism. Classical dietary understanding considers Jowara suitable for individuals with dominant Kapha constitution when consumed in appropriate quantity and form.

From a modern nutritional point of view, Jowara is rich in dietary fiber, complex carbohydrates, and antioxidants. It helps in maintaining satiety, controlling blood glucose levels, and improving gut health. Because of its gluten-free nature, it is useful for individuals with gluten intolerance. Proper processing such as fermentation or cooking with fats is advised to balance its Ruksha Guna and prevent Vata aggravation.

2. Pearl Millet (Bajra)

Bajra (Pennisetum glaucum) is widely used in traditional Indian diets, especially in colder and arid regions. It possesses Madhura–Kashaya Rasa, Laghu and Ruksha Guna, Ushna Virya, and Katu Vipaka. Due to its warming nature, Bajra is considered highly beneficial in winter seasons. It enhances digestive fire (Agni) and helps in reducing Kapha and Meda accumulation.

Nutritionally, Bajra is a rich source of iron, magnesium, protein, and dietary fiber. It supports hemoglobin formation, energy metabolism, and bowel regularity. Its low glycemic index makes it suitable for individuals with diabetes mellitus. Traditional preparations with ghee or buttermilk are recommended to enhance digestibility and reduce dryness.

3. Finger Millet (Ragi / Mandua)

Ragi (Eleusine coracana) holds a unique place among millets due to its relatively nourishing nature. It exhibits Madhura and Kashaya Rasa, Guru and Ruksha Guna, Ushna Virya, and Katu Vipaka. Unlike other millets, Ragi has a comparatively strengthening effect and supports Asthi Dhatu, making it useful during growth, lactation, and old age when used properly.

Modern nutrition identifies Ragi as an excellent source of calcium, dietary fiber, and amino acids. It is beneficial in bone health, diabetes control, and weight management. Because of its Guru Guna, it should be consumed with light preparations or fermentation to avoid digestive discomfort, especially in individuals with weak Agni.

4. Foxtail Millet (Kangni / Kakum)

Foxtail millet (Setaria italica) is a traditionally used minor millet valued for its light and digestible nature. It possesses Madhura–Kashaya Rasa, Laghu and Ruksha Guna, Ushna Virya, and Katu Vipaka. It helps in regulating metabolism and preventing excessive accumulation of body fat, making it suitable in sedentary lifestyles.

From a nutritional perspective, foxtail millet is rich in dietary fiber, iron, and plant-based proteins. It aids in glycemic control and improves intestinal motility. Regular inclusion of Kangni in diet supports energy balance and metabolic health, especially when prepared as porridge or fermented foods.

5. Little Millet (Kutki)

Kutki (Panicum sumatrense) is traditionally consumed in tribal and rural diets. It shows Madhura and Kashaya Rasa, Laghu and Ruksha Guna, Ushna Virya, and Katu Vipaka. It is known for its capacity to reduce heaviness, cleanse channels (Srotoshodhana), and support digestion when taken in moderation.

Modern studies show that little millet has high fiber and mineral content with a low glycemic index. It is beneficial in diabetes mellitus, obesity, and digestive sluggishness. Proper cooking and inclusion of fats or pulses improves its palatability and nutritive value.

6. Kodo Millet (Kodo)

Kodo (Paspalum scrobiculatum) is traditionally advised in conditions of excess Kapha and Meda. It is characterized by Madhura–Kashaya Rasa, Laghu and Ruksha Guna, Ushna Virya, and Katu Vipaka. Classical understanding indicates its utility in regulating appetite and reducing metabolic sluggishness.

Nutritionally, kodo millet is rich in fiber, antioxidants, and micronutrients. It supports detoxification, glycemic control, and gut health. Because of its drying nature, it is best consumed with adequate hydration and fats to avoid Vata imbalance.

7. Barnyard Millet (Sanwa / Shyamak)

Shyamak (Echinochloa frumentacea) is traditionally used during fasting and as a light cereal substitute. It possesses Madhura and Kashaya Rasa, Laghu and Ruksha Guna, Ushna Virya, and Katu Vipaka. It supports digestive balance and does not overload Agni.

From a nutritional viewpoint, barnyard millet is low in calories and high in fiber, making it ideal for weight management. It also provides essential minerals like iron and zinc. Its easy digestibility makes it suitable for therapeutic diets when prepared simply.

8. Proso Millet (Cheena)

Cheena (Panicum miliaceum) is a traditional millet used for its lightness and quick digestibility. It shows Madhura–Kashaya Rasa, Laghu and Ruksha Guna, Ushna Virya, and Katu Vipaka. It helps in balancing digestion and preventing heaviness after meals.

Modern nutrition recognizes proso millet for its protein content, antioxidant properties, and low glycemic response. It supports cardiovascular health and energy metabolism. Regular but moderate use is recommended along with proper cooking.

9. Buckwheat (Kuttu)

Buckwheat (Fagopyrum esculentum), though botanically not a true millet, is traditionally grouped with millets due to its similar dietary use. It possesses Kashaya and Madhura Rasa, Laghu and Ruksha Guna, Ushna Virya, and Katu Vipaka. It helps in reducing excessive Kapha and supports digestion.

Nutritionally, Kuttu is rich in flavonoids, fiber, and high-quality proteins. It is gluten-free and beneficial in cardiovascular disorders and diabetes mellitus. It is commonly used during fasting due to its light yet nourishing nature.

10. Amaranth (Rajgira)

Rajgira (Amaranthus hypochondriacus) is valued for its nourishing and strengthening properties. It exhibits Madhura Rasa, Laghu and Snigdha Guna, Ushna Virya, and Madhura Vipaka. Unlike most millets, it supports tissue nourishment and strength when used appropriately.

From a modern perspective, amaranth is rich in calcium, iron, protein, and essential amino acids. It supports bone health, muscle strength, and overall vitality. Its balanced nature makes it suitable for children, elderly individuals, and convalescent diets.

Importance of Millets in Traditional Diets and Their Relevance in Present-Day Nutrition

Millets have occupied a central role in traditional diets for thousands of years, particularly in India, Africa, and Asia, where they served as daily staple foods rather than occasional alternatives. Their use was closely aligned with local climate, geography, seasonal cycles, and physically active lifestyles, providing sustained energy, easy availability, and long storage life. Traditional food systems valued millets for their adaptability and ecological harmony. From the perspective of Ayurveda, millets are included under Ahara Dravya and are recognized for their role in maintaining health through proper digestion and metabolic balance. Dietary wisdom emphasized suitability according to Agni, Prakriti, season, and occupation. Due to their Laghu and Ruksha nature, millets were especially advised in conditions of excess Kapha and Meda, helping to prevent heaviness, lethargy, and metabolic sluggishness while supporting an active and balanced life.[14]

In recent decades, the replacement of millets with polished rice and refined wheat led to reduced dietary fiber intake and increased consumption of high-glycemic foods, contributing to the growing prevalence of lifestyle disorders such as obesity, diabetes mellitus, and cardiovascular diseases. In present-day nutrition, millets have regained importance because of their rich fiber content, complex carbohydrates, essential minerals, antioxidants, and low glycemic index, making them suitable for metabolic regulation, gut health, and weight management. Their gluten-free nature further adds to their dietary relevance. Beyond individual health, millets contribute significantly to sustainable nutrition, as they require less water, thrive in marginal soils, and tolerate climatic stress. Thus, the revival of millets

represents a meaningful integration of traditional dietary wisdom and modern nutritional science, supporting long-term health, food security, and environmental sustainability.15

Traditional Consumption of Millets

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Staple foods in ancient and rural diets

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Adapted to local climate, season, and physical activity

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Provided sustained energy and nourishment

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Ayurvedic Dietary Concept

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Classified as Ahara Dravya

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Selected based on Agni, Prakriti, and season

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Maintained balance of Dosha and metabolism

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Dietary Transition

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Shift to polished rice and refined wheat

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Reduced fiber and micronutrient intake

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Health Impact

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Rise in lifestyle disorders

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Obesity, diabetes mellitus, cardiovascular diseases

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Nutritional Properties of Millets

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High fiber and complex carbohydrates

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Low glycemic index

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Rich in minerals and antioxidants

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Present-Day Relevance

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Improved glycemic control and gut health

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Supports weight management and metabolic balance

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Sustainability Aspect

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Low water requirement

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Climate-resilient crops

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Supports food security

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Final Outcome

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Revival of traditional dietary wisdom

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Integration of Ayurveda with modern nutrition

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Promotion of long-term health and sustainable living

Results and Findings

- Millets were identified as nutritionally rich traditional staple foods providing sustained energy and long-lasting satiety.
- Regular intake of millets was associated with improved digestive efficiency and balanced metabolism due to their high dietary fiber and complex carbohydrate content.
- Millets exhibited a low glycemic index, indicating their beneficial role in the prevention and dietary management of diabetes mellitus.

- Consumption of millets supported effective weight management by enhancing satiety and reducing excessive caloric intake.
- Traditional dietary use of millets contributed to the maintenance of *Agni* and helped prevent abnormal accumulation of *Kapha* and *Meda*.
- Millets were found to be rich sources of essential minerals, antioxidants, and plant-based proteins, supporting overall nutritional adequacy.
- The gluten-free nature of millets increased their suitability for individuals with gluten intolerance and digestive sensitivity.
- Declining millet consumption was associated with increased dependence on refined cereals and a rise in lifestyle-related disorders.
- Reintroduction of millets in daily diets contributed to improved gut health, bowel regularity, and metabolic stability.
- Millets demonstrated significant importance in sustainable nutrition due to low water requirement, climate resilience, and suitability for marginal agricultural conditions.

Discussion

The present study highlights the significant role of millets as nutritionally dense and metabolically favorable foods rooted in traditional dietary systems. Traditionally, millets were consumed in harmony with seasonal patterns, physical activity, and digestive capacity, which ensured sustained energy and metabolic stability. From the Ayurveda perspective, their classification under Ahara Dravya and their predominance of Laghu and Ruksha Guna explain their usefulness in preventing excess Kapha and Meda. This traditional wisdom aligns well with modern nutritional observations that associate millet consumption with improved digestion, better glycemic control, and reduced risk of metabolic disorders.[16]

The gradual dietary shift toward refined cereals resulted in reduced intake of dietary fiber and micronutrients, contributing to the rising burden of lifestyle disorders. The findings suggest that reintroducing millets into daily diets can address these challenges by improving satiety, regulating blood glucose levels, and supporting gut health. Modern research validates traditional practices by demonstrating the role of millets in weight management, diabetes mellitus, and cardiovascular health. Their gluten-free nature further expands their applicability in present-day dietary planning.[17]

Beyond individual health benefits, millets hold substantial importance in the context of sustainable nutrition and food security. Their ability to grow in low-water and marginal soil conditions makes them ideal crops in the face of climate change. Integrating millet-based diets into contemporary nutrition not only promotes metabolic health but also supports environmental sustainability. Thus, millets represent a convergence of traditional dietary knowledge and modern nutritional science, offering practical solutions to current public health challenges.[18]

Conclusion

Millets are nutritionally superior, culturally rooted, and environmentally sustainable food grains with strong relevance in present-day nutrition. Their traditional use as daily staples, supported by Ayurveda principles and modern scientific evidence, highlights their role in maintaining metabolic balance, preventing lifestyle disorders, and promoting overall health. Reintroducing millets into regular diets can contribute to long-term well-being, nutritional security, and sustainable living.

CONFLICT OF INTEREST –NIL

SOURCE OF SUPPORT –NONE

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