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Suheli Mehta
Professor, Head, Department of
Home Science, Patna University,
Patna, Bihar, India

Assessing the awareness of nutritional benefits of millets

Suheli Mehta

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Abstract

“Millet” i.e. Bajra, which we mainly refer to as coarse grain, is playing an important role in Indian food today. Millet is making its place in our food lifestyle in many dimensions and in many forms. Millet is included in India from household dishes to processed food. Millet is famous as the most nutritious food grain among all the food grains because it contains high quality amino acids rich proteins. Millets are a four-season crop, cultivated globally, but after the Green Revolution, their cultivation has declined significantly due to greater emphasis on rice, wheat and maize. The primary supplier of carbohydrates on which humanity depends is lacking in the amino acids and minerals necessary for proper nutrition. Lack of nutrients in dietary lifestyle welcomes many diseases like heart disease, obesity and diabetes. Millet is unique in being rich in dietary fiber, antioxidants, proteins, carbohydrates and fats. The current global spectacle of climate change has forced us to conserve our natural resources. In this case, millets are those that are cultivated in poor soils. This review article reviews the benefits of millet in contrast to human health because certain polyphenols, such as catechins and sinapic acid, polyphenols found in millet have many lasting health benefits such as protection against arthritis, heart diseases, cancer and inflammation. Minimum water requirement for staple grains, less fertile soil, less use of pesticides and fertilizers for millet cultivation provides many beneficial benefits to our ecosystem. Including millet in a person's daily diet can help cure many health complications. (Ayele A, 2020) ^[1].

Mainly this study of mine is about awareness and consumption of millet among people. I have conducted this study among the girl students of Magadh Mahila College campus because only the girl students will take care of our house as housewives, hence by increasing the knowledge about millet among the girl students, the knowledge and consumption of high quality grains like millet among the people of our country can be increased by the girl students.

Keyword: Millet, processed food, green revolution, poor soils, polyphenols

Introduction

Millets are considered crops of the future as they are resistant to the majority of pests and insects and could easily be grown in harsher environments like arid and semi-arid zones in most parts of Asia and Africa. Large populations in the Xeric and steppe climate zones rely on millets as a source of nutrition. Millets are typically grown in regions where other major crops, such as wheat (*Triticum aestivum*), rice (*Oryza sativa*), and maize (*Zea mays*), are unable to provide adequate support for sustainable agricultural production. (Ahmed S & Alam, MA, 2016) ^[2, 3]. The crop has a number of advantageous characteristics, including rapid maturation, resistance to stress and drought, and the capacity to be kept for an adequate amount of time without being damaged by insects. (Amadou I, 2013) ^[4]. Millets have been entirely ignored, especially since the Green Revolution era, even though the bulk of the world's population relies on wheat, rice, and maize as their primary source of nutrition. (Ayele A, 2020) ^[5]. Millets are recognized as “penurious people's grains” or crop cereals. (Babele PK, Kudapa H, Singh Y, Varshney RK, Kumar A) ^[6]. These grains are cultivated because of their significance as both food and animal feed. The crop was previously ignored because of changes in people's eating habits and status symbols, but today these nutria crops are making a powerful upturn in the world's crop production sectors. (Bora P, Ragae S, Marcone M, Braicu C, Ladomery MR, Chedea VS, Irimie A, Berindan-Neagoe I) ^[7, 8].

Millets are processed before ingestion to improve shelf life and nutritional value T (Gessaroli M, Frazzoni L, Sikandar U, Bronzetti G, Pession A, Zagari RM, Fuccio L, Forchielli ML) ^[9].

Corresponding Author:
Suheli Mehta
Professor, Head, Department of
Home Science, Patna University,
Patna, Bihar, India

Raditional clarification methods such as fermenting, malting, flaking, baking, cooking, and puffing are encouraged to innovate millet-based value-added processed food items. (Giridharan B, Sakthivel V, Vedamanickam R, Anandan P, Bupesh G, Vasanth S) ^[10]. Industrial methods that are used for enhancing these grains are not properly modified as they lead to the loss of important nutrients. (Godfrey WH, Kornberg MD) ^[11].

Some basic types of Millets

- Sorghum Millet (Jowar)
- Proso Millet (Chena / Barri)
- Pearl Millet (Bajra)
- Foxtail Millet (Kakum / Kangni)
- Finger Millet (Ragi)
- Browntop Millet (Korle)
- Barnyard Millet (Sanwa)
- Little Millet (Moraiyo)
- Buckwheat Millet (Kuttu)
- Amaranth Millet (Rajgira)
- Kodo Millet

Nutrition value of millets

Millets are highly nutritious and offer various essential nutrients, these grains are rich in

1. **Proteins:** Millets are a good source of plant-based proteins, containing varying amounts depending on the type of millet. They provide essential amino acids necessary for building and repairing body tissues.
2. **Carbohydrates:** Millets are primarily composed of carbohydrates, supplying the body with energy. They also have a lower glycemic index compared to refined grains, contributing to more stable blood sugar levels.
3. **Dietary Fiber:** Millets are a notable source of dietary fiber, aiding digestion, promoting a healthy gut, and potentially assisting in weight management by providing a feeling of fullness.
4. **Vitamins:** Millets contain B vitamins such as niacin, thiamine, riboflavin, and vitamin B6. These vitamins play vital roles in energy metabolism, nervous system function, and overall health.
5. **Minerals:** They are rich in minerals like magnesium, phosphorus, iron, calcium, and zinc, which are crucial for bone health, immune function, and various physiological processes in the body.
6. **Antioxidants:** Millets contain antioxidants like polyphenols and flavonoids, which help combat oxidative stress and reduce the risk of chronic diseases.

Millet Deficiency diseases

Millets can contribute to addressing certain nutritional deficiencies due to their nutrient-dense composition. Here's how millets may help in addressing specific deficiencies

1. **Iron Deficiency Anemia:** Some millets, like pearl millet (bajra), contain notable amounts of iron. Iron is crucial for red blood cell production, and incorporating iron-rich foods like millets into the diet can help in managing iron deficiency anemia.
2. **Vitamin Deficiencies:** Millets contain various vitamins, including B vitamins like niacin, thiamine, riboflavin, and vitamin B6. Consuming millets as part of a balanced diet can contribute to meeting daily vitamin requirements.
3. **Mineral Deficiencies:** Millets are rich in minerals such

as magnesium, phosphorus, calcium, zinc, and others, which are vital for various bodily functions. Including millets in the diet can support meeting mineral needs and potentially help in addressing certain mineral deficiencies.

Millets should be eaten in following circumstances

Millets can be beneficial for various groups of people due to their nutritional richness and health benefits. Specific groups that may particularly benefit from incorporating millets into their diets include:

1. **Individuals with gluten sensitivity or celiac disease:** Millets are naturally gluten-free, making them an excellent alternative to gluten-containing grains like wheat, barley, and rye. Those with gluten sensitivities or celiac disease can safely consume millets as part of a gluten-free diet.
2. **People with diabetes or blood sugar concerns:** Certain types of millets have a lower glycemic index compared to refined grains. Foods with a lower glycemic index release glucose more slowly into the bloodstream, potentially aiding in managing blood sugar levels. This can be beneficial for individuals with diabetes or those aiming to regulate their blood sugar.
3. **Vegetarians and Vegans:** Millets are a good source of plant-based proteins and can serve as an essential protein source for individuals following vegetarian or vegan diets.
4. **Individuals seeking weight management:** Millets are rich in dietary fiber, which can promote a feeling of fullness and aid in weight management by reducing overeating.
5. **Those with iron deficiency anemia:** Some millets, like pearl millet (bajra), contain notable amounts of iron. Incorporating millets into the diet can be beneficial for individuals with iron deficiency anemia.
6. **People looking for nutrient-dense foods:** Millets are packed with essential nutrients, including vitamins, minerals, antioxidants, and dietary fiber, making them a nutritious addition to anyone's diet.

Health Benefits of Millets

Millet flours, derived from different types of millets like sorghum, finger millet (RAGI), pearl millet (BAJRA), etc., offer a range of nutritional benefits

1. **Gluten-Free Alternative:** Millet flours serve as an excellent gluten-free substitute for traditional wheat flour, making them suitable for individuals with celiac disease or gluten sensitivities.
2. **Rich in Nutrients:** Millet flours contain essential nutrients like vitamins (especially B vitamins like niacin, thiamine, and riboflavin), minerals (such as magnesium, phosphorus, and iron), antioxidants, and dietary fiber. These nutrients contribute to overall health, supporting energy production, proper nerve function, and maintaining healthy blood cells.
3. **Dietary Fiber:** Millet flours are a good source of dietary fiber, aiding digestion, promoting a healthy gut microbiome, and assisting in maintaining a feeling of fullness, potentially supporting weight management.
4. **Lower Glycemic Index:** Some millet flours have a lower glycemic index compared to refined flours. Foods with a lower glycemic index release glucose more gradually into the bloodstream, helping manage blood sugar levels, potentially beneficial for individuals with diabetes or

those aiming for more stable energy levels.

5. **Versatility in Culinary Uses:** Millet flours can be used in various culinary applications, including baking, cooking, and as a thickening agent in soups or sauces. They add a nutty flavour and unique texture to dishes, contributing to their versatility in different recipes ^[12].

Objectives of the study

1. To find out the information related to millet among the girl students.
2. To find out the utilisation patterns of millet among girl students.

Hypotheses

1. By increasing the knowledge about millet among the girl students, the knowledge about millet among the people can be increased.
2. Improve the utilisation patterns of millets will increase consumption of millets among girl students.

Methodology

Methodology: For this pilot study following methods have been adopted.

- **Method of study:** Pilot survey was done.
- **Area of study:** P.G. Department of Home Science, Magadh Mahila College, P.U., Patna.
- **Sample:** 50 girls were selected as Sample by purposive sampling method.
- **Tools:** Following tools were used for data collection.
- **Interview:** The researcher took self-prepared schedule to ask questions from sample.

Table 2: Classification of respondents on the basis of information regarding knowledge of different types of millet

SI. No.	Response	Number	Percentage
1.	Buckwheat Millet (Kuttu), Pearl millet (Ragi), Sorghum Millet (Jowar)	5	10
2.	Pearl millet (Ragi),	10	20
3.	No knowledge	35	70
4.	Total	50	100

Table 2 deals with the respondents who were knowing about the types of millets and we found that Maximum 70% percent students had no knowledge regarding millets. Only 5% of the girl students had knowledge about two-three types of millets. We found that 70% of girl students' families did not know about millets; they used only wheat and rice in their diet. Only 5% of girl students' families knew about some types of millet products because they belonged to agricultural families.

Table 3: Distribution of respondents based on consuming different types of millets

SI. No.	Response	Number	Percentage
1.	Yes	15	30
2.	No	35	70
3.	Total	50	100

Table 3 deals with the consuming different types of millets by the respondents and we found that only 15% respondents were taking millets in their diet while 70% students were not. It was found that 70% of girl students' families did not know about the millets and their nutritional value. That's why they used only wheat and rice in their diet. Only 5% of girl students' families knew about the nutritional value of millets

- **Schedule:** It was a set of structured questions in which answers were recorded by the interviewers.

Results and Discussion

The following facts were obtained through tabulation, analysis and discussion of the data obtained.

The following facts were obtained through tabulation, analysis and discussion of the data obtained regarding objectives of the study:

Objective 1

To find out the information related to millet among the girl students.

Table 1: Classification of respondents on the basis of intake of millet (N-50)

SI. No.	Response	Number	Percentage
1	Yes	15	70
2	No	35	30
3	Total	50	100

Table 1 deals with the structure of intake of millet of respondents. It was found that Maximum 70% respondents were not in taking millet in their diet while Minimum 30% were taking millets.

We found that the vast majority of respondents were not taking bajra in their diet because they were ignorant about the nutritional benefits of millets and also they had no knowledge about millet. Only 30% respondents had information about the millet and were able to take millet.

so they used different kinds of millets in their diet.

Table 4: Distribution of respondents based on their knowledge regarding nutritional value of millets.

SI. No.	Response	Number	Percentage
1.	Yes	5	10
2.	No	45	90
3.	Total	50	100

Table 4 deals with the knowledge regarding nutritional value of millets of the respondents and we found that only 5% respondents had knowledge regarding nutritional value of millets while 70% students had no knowledge.

It was found that 90 of girl students' families did not know about the nutritional value. Because why they used only wheat and rice in their diet and apart they were neither health conscious nor well educated while 5% of girl students' families knew about the nutritional value of millets so they used different kinds of millets in their diet because they were health conscious and well educated too.

Objective 2

To find out the utilisation patterns of millet among girl students.

Table 5: Distribution of respondents on the basis of how many times they consume millet in a day

SI. No.	Responses	Number	Percentage
1.	Once a day	10	20
2.	2 to 3 times or more	5	10
3.	Not even once a day	35	70
4.	Total	50	100

Table 5 deals with the respondents on the basis of how many times they consume millet in a day. We found that only 5% respondents take millet 2 to 3 times in a day and 10 percent respondents took millet once a day while 35% respondents did not take millet once a day.

We find that 70% of girl students' families did not take millet once a day because they didn't know about the millets and their nutritive value apart some of them were economically weak so they were unable to afford highly expensive grains like millet. That's why they used only wheat and rice in their diet. Only 5% of girl students' families knew about the nutritional value of millets so they used different kinds of millets in their diet and they were economically strong as well.

Table 6: Distribution of respondents based on utilisation patterns of millets (N-15)

SI. No.	Responses	Number	Percentage
1.	Salad	2	14
2.	Cooked food	3	20
3.	Processed	10	66
4.	Beverages	00	00
5.	Total	15	100

Table 6 deals with the utilisation patterns of millets by respondents and we find that Maximum 66% respondents were utilising millets as processed food only 3% respondents were using millets as cooked food while Minimum 2% respondents were consuming millet as raw like salads or in sprouted form.

We find that Maximum respondents had less time for cooking and some of them were preferring taste rather than health that's why they were consuming millets as processed foods. Minimum respondents were consuming millets raw like salads or sprouted form because they knew the cooking process and apart they used to prefer health over nutrition.

Conclusion

Millet is highly nutritive grain. It is a traditional food grain of India which was mostly consumed by the people in India before the Green Revolution, but after the Green Revolution, instead of millet in India, more attention was paid to the cultivation of other food grains like rice and wheat.

Due to planting and increasing their production, instead of millet, the main place in people's diet was taken by food grains like rice and wheat, hence people gradually started forgetting many types of millet, that is why today we should pay special attention to the cultivation of market.

It should be made accessible to the people by increasing its production.

Suggestions

- We should promote the cultivation of Millets.
- We should take frequently Millets in our diet.
- We should eat millets raw as salads or sprouted.
- We should eat snacks made from millet.
- We should use processed form of millets.

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