

Millets In Farming System: Promoting Sustainable Diet & Lifestyle

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Abstract:

One of seventeen Sustainable Development Goals (SDG) aims to achieve "zero hunger" by 2030. The official wording of SDG two is: "End hunger, achieve food security and improved nutrition and promote sustainable agriculture". A profound change in the global food and agricultural system is needed to nourish today's 800 million people. Recently it has been realised that, It can be possible by focusing on millet production as nearly 40 percent of the global land surface is dryland and millets are the most suitable crop for dryland agriculture. Considering these aspects, the United Nations declared the Year 2023 as the International Year of Millets on 5th March 2021, on the proposal moved by India and supported by 72 countries. As evident, millets are the first plants to be domesticated for food. Before the Green Revolution millets made up around 40% of all cultivated grains, as a result contributing more than wheat and rice. But it became a forgotten food after the green revolution. The intent to revive millets came from the environment sensitive approach that realises millet as a climate resilient crop and has higher survival rate in rain fed areas. Comparatively higher nutrition value of the produce is also an added factor contributing to the movement. This paper focuses on revival of millet in the present day farming system in the state of Odisha. The current study focuses on the consumption pattern and acceptance of millet as a food in 300 sampled households from two different blocks of Bargarh district of Odisha, India. The study result revealed that millet as a diet is well accepted in those areas under study and also gaining popularity among the people day by day. Majority of the studied population have accepted millet in their daily diet though few of them are aware about its nutritional facts.

Key Words: Millet, Nutrition, Sustainability, climate resilient crop.

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I. Introduction:

'Millets' are the small-seeded cereal grains that are recently considered as a miraculous grain with a great source of nutrition. The term originated from the Latin word 'Milum' and these crops are widely grown around the world as cereal crops or grains for human food and also as fodder. These are warm weather grasses belonging to the C4 group of plants, tolerant to ecological stresses and with a short maturation period (Weber, 1998, Hunt and Jones, 2008, Pokharia et al. 2014). As evident from paleo-archaeological studies "Millets" are the first plants to be domesticated for food. Prehistoric evidence suggested that millets are cultivated for thousands of years in many parts of the world. These have been considered as an integral part of the diet of over half a billion people across Asia and Africa for centuries. There is evidence of the cultivation of millet in the Korean Peninsula dating to the Middle Jeulmun Pottery Period (around 3,500-2,000BC). In India, millets have been mentioned in some of the oldest Yajurveda texts, identifying foxtail millet (*priyangava*), Barnyard millet (*aanava*) and black finger millet (*shyaamaka*), thus indicating that millet consumption was very common, pre-dating to the Indian Bronze Age (4,500BC).

Millets was the major grain grown in India even until fifty years ago. Earlier it was considered as a staple food and integral part of local food cultures, along with many other foods. The staple food that the ancestors of man have lived on, but that they had left behind and exchanged for a more "refined" diet. Unfortunately, this said refined diet lacks the nutrients critically important for our survival. Along with such changes the state policies during the Green Revolution have also changed in favour of rice and wheat and become another factors for decline in millet production and consumption. Before the Green Revolution, millets made up around 40 percent of all cultivated grains (contributing more than wheat and rice). However, since the revolution, the production of rice has increased doubly and wheat production has tripled.

As per nutrition facts millets are rich in both macro and micro nutrients. They contain non-starchy polysaccharides, gluten-free proteins, high soluble fibre content, high antioxidants, low glycemic index, and are

rich in bioactive compounds. It is a good source of beta-carotene and B vitamins. Along with their nutritive value they are considered as climate-resilient crops as these are resistant to drought, diseases and pests. These plants need minimal care as they grow well in shallow and low fertile soils with a pH range from acidic to alkaline soil. Being a rainfed crop it has a low water requirement and can be grown even under extremely high temperatures and less rainfall. Millets are also good for the environment. These are C4 plants that can convert CO₂ into carbohydrates with higher photosynthetic efficiency than C3 plants.. These annual, short-duration plants can ensure food security, nutritional security, and economic security for people.

Recognising the enormous potential of Millets to generate livelihoods, increase farmers' income and ensure food & nutritional security worldwide, the Government of India (GoI, 2011) has prioritised Millets. In April 2018, Millets were rebranded as "Nutri Cereals", followed by the year 2018 being declared as the National Year of Millets, aiming at more extensive promotion and demand generation. Sustainable Development Goal (SDG) 2 aims to achieve "zero hunger" by 2030. It is one of the 17 Sustainable Development Goals established by the UN in 2015. The official wording is: "**End hunger, achieve food security and improved nutrition and promote sustainable agriculture**". A profound change in the global food and agricultural system is needed to nourish today's 800 million people. Recently it has been realised that, It can be possible by focusing on millet production as nearly 40 percent of the global land surface is dryland and millets are the most suitable crop for dryland agriculture.

The current research paper is an attempt to focus on the behavioural aspects and culture driven attitude of people towards the acceptance of nutritive diet. The study tried to analyse the millet consumption pattern of the studied population. In the facet of health, growing malnutrition is becoming one of the challenges for all . Malnutrition impairs body composition and body function of human being thereby impairing their quality of life. Malnutrition is the consequence of energy and protein deficiencies that cause adverse effects on body composition and on body function such as impaired muscle function, decreased bone mass, immune dysfunction, anaemia, reduced cognitive function, poor wound healing, delayed recovery from surgery, higher hospital admission and readmission rate and increased mortality (Stratton et al., 2003). Thus, prevention and treatment of malnutrition became an important challenge for the health care system. In the backdrop of above mentioned scenario, the current research aims to assess the consumption pattern of millets among people in different villages from two different blocks of the district Bargarh, Odisha, India with the following objectives

- 1.To assess the knowledge and perception of the people about the millet based diet.
2. To examine the potential consumer and the consumption pattern of millet based food at household level.
- 3.To study the acceptance of millet based recipes at household level among the people living in the millet production area.

II. Study Methodology:

The current research paper is the outcome of an empirical research carried out in the two blocks of Bargarh district of Odisha, namely, Bijepur and Gaisilet. Data for the research was gathered from villages of those two blocks of the studied district. Nine Gram Panchayat (GP) From Bijepur block and six GP from Gaisilet block have been selected. A total of fifteen villages were selected from those nine GP of two blocks. After selecting those villages by using stratified random sampling a list of households involved in millet cultivation is prepared. Depending upon the population of the selected areas a total of 181 subjects from Bijepur and 131 elderly from Gaisilet block were selected randomly from those fifteen villages of both the blocks. Millet consumption pattern of elderly of those households was assessed by using a pre-tested structured schedule. A semi structured interview guide was also used to conduct Focus Group interview (FGD). The author also used observation methods to collect data on consumption patterns of millets in the studied area.

III. Results and Discussion:

The current research study comprises elderly people and majority of whom were of below seventy years. Millet consumption patterns of both male and female elderly were queried during the research study. Sample structure of the studied population constituting 12.17 percent of elderly of age eighty and above including 13.01 percent female and 12.16 percent male in this age group category. The sample of the current research consisted of three centenarian elderly male. Only about 4 percent were of age 85 and above . Mean age of elderly male was 67.29 whereas the mean age of female elderly was calculated as 65.85

Table # 1 Knowledge and Perception of studied population about millet

People's Perceptions	No. of responses	%
Do you think millets are healthy?		
Yes	266	85.25
No	02	0.64

May be or a little	25	8.01
Don't know	03	0.96
What do you think is healthy about millets?		
No Responses		
Good for Diabetics	50	16.02
Good for Babies	15	04.81
Good for women	30	09.62
Good for Pregnancy	47	15.06
Good for Cancer	35	11.22
High in Calcium	02	0.64
High in Iron	43	13.78
Other (Good for stomach, Blood Pressure)	35	11.22
	14	04.49
Why do you eat millets?		
No Response	26	8.33
It is Healthy	267	85.58
As having health issues like Diabetics	24	07.69
Help losing body weight	03	0.96
Keeps full longer	13	4.17
It is tasty	37	11.86
As served at home	35	11.22
Cheap to buy	06	01.92
Others		
Why have you started eating millets at home?		
Good for Health		
Make body strong	258	91.35
Help in weight reduction	09	02.88
Provides Nutrition	03	0.96
Make bone strong	02	0.64
Good in taste	07	2.24
Easy to digest	06	1.92
Others (As cultivated, people motivated)	02	0.64
	04	1.28

(Multiple responses are there)

of up gunji, which is usually made during puspuni (Pausha Purnima, a local harvesting festival) you will never forget the taste of the same". From the statement the cultural significance of the millets can be well understood and perception of elderly people towards millets was assessed by asking structure open ended questions. After analysing the responses of the sampled elderly population it observed that, a majority of about 85 percent of studied elderly considered millet as a healthy diet (Table#2). A very few of them denied the healthy fact of the millet and about 8 percent expressed their doubt over the health fact of the millet. While giving the responses about the health fact of this cereal product, only about 13 and 11 percent of elderly expressed that millet is rich in micronutrients like calcium and Iron respectively. Elderly people of the study region eat millets as the majority (85.58) of them think that it is a healthy diet. About 11 percent elderly people expressed that millet is very tasty. Many of the elderly male expressed their interest and inclination towards the eating of 'Gunji'(Little) and 'kodo' millet. About 11 percent of elderly eat the diet as it is served at home. On queries of why millets have been consumed at home, about 90 percent of people indicated its health fact. Only about 1.92 percent of women found this tasty and 0.64 percent of the studied elders found millet very palatable.

Consumption pattern and Acceptance of millet as diet:

Over the past few years, the perception of people towards food has changed a lot. Food and its intake pattern is considered as a major factor for human evolution. Earlier emphasis was given on satisfying hunger and survival, but now the focus is on nutraceutical food, which promotes better health. Millets are used as nutraceuticals as they contain a better source of minerals than cereal crops like rice and wheat (Rajput et al., 2019). Including millets in the daily meal can help to overcome malnutrition issues and can control illness such as diabetes, cancer, improve the digestive system, and strengthen the immune system (Behera, 2017).

Consumption of millets is influenced by various factors. Consumers' perceived value towards millets also have a crucial role in the consumption pattern. As revealed from the study conducted by Barratry and Rajapushpam (2018) consumers include millets in their daily diet because of its healthy and high nutritional content. In addition to this, Kalaiselvi et al. (2016) found that one of the factors that influence consumers to purchase millets is because it is the best food for diabetics. Dhevika and Saradha (2018) found that consumers

prefer cereals and millets because it prevents high blood pressure. According to Patil (2013), millets' health benefits are the major factor that influences consumers to consume millets. Furthermore, consumers prefer millet because it is free from adulteration (Bharathy and Rajapushpam, 2020). In addition to this, it was also found that nutritional value is a major reason behind the preference of consumers towards millets (Chitra and Sulaiman, 2017; Harshitha and Jayaram 2019). It has been observed that consumers who want to adopt a healthy lifestyle tend to include millets in their daily diet. Supporting this in a study conducted by Shading and Jaganathan (2017), it was found that one of the reasons consumers consume millets is because of the advice from their nutritionist. Patil and Sankangoudar (2019) in their study have found that consumers consume millets only during special occasions as it is considered as traditional food.

Table# 2 Consumption pattern of millet among the studied Population

Sl. No.	Pattern of Millet Consumption	Number	Percentage
1	Have you ever eaten Millets?		
	Yes	284	91.02
	No	21	6.73
2	What are the types of millet ever consumed by you?		
	Pearl		
	Sorghum	04	1.28
	Finger	80	25.64
	Foxtail	267	85.57
	Barnyard	11	3.52
	Kodo	04	1.28
	216	69.23	
3	Since how long have you been eating millet ?		
	Since last 5 Years		
	Between 6 to 10 years	70	22.43
	16 years or more than that	07	2.24
	Since childhood.	02	0.64
	214	68.59	
4	Who is the Main consumer of millet in your Household?		
	Self		
	Wife/Husband	247	79.17
	Main Earner of the household	98	31.41
	Daughter / Daughter in law/Sister / Sister in Law	16	05.13
	Son/Son in law / Brother / Brother in law	30	09.61
	Grand Children	28	08.97
		22	07.05

(Multiple Responses are there)

Data regarding the consumption pattern of millets among the elderly population were presented in table# 3. As revealed by the study respondents, about 91 percent of the study participants were having the habit of eating millet based food. Only 6.73 percent of studied elderly expressed that they do not want to eat millet and the reasons for not eating are many. Of the nine varieties of millet, people of the studied areas have shared that they have consumed six different types of millet such as, Pearl, Sorghum ,Finger ,Foxtail ,Barnyard and Kodo. Among these six different millets, finger millets are usually consumed by about 86 percent elderly. After finger millet, kodo is the next choice of the studied sample which was preferred by 69 percent of studied elderly.. About 26 percent of the study sample expressed that they consumed Sorghum. The local name of finger millet is 'Mandia' and this is the most popular millet consumed by the people. As narrated earlier millet based food is not new to the studied area. These foods were also very popular earlier among the studied population. While discussing millets, many of the elderly have shared that they have seen as well as consumed millet since their childhood (68.59%). One of the male respondents of a village namely Talpadar of Bijepur block village has narrated that,

“ My father had three siblings and combined we had 13 Acres of land. At that time my family was cultivating more Mandia (Finger Millet) than rice. We cultivated 'mandia' and consumed it. There was no such facility to sell it. After some time when me and my siblings grew up, my father was in need of money to bear the expenses of the marriage of my sisters. During that time groundnut was gaining popularity and many of my father's fellow mates have tried to cultivate it. They also earned money by selling peanuts in the market. To bear

the family expenses my father also had tried to reduce the 'mandia' cultivation and get involved in some other food grains".

About 22 percent of elderly said that they have been eating millet since the last 5 years. Prior to that, they were unaware about the benefits of millet. With the initiation of millet promotion by Odisha Millet Mission, millets specifically 'mandia' gained popularity and people also enjoy the taste of this grain.

The study respondents were queried regarding the frequency of millet consumption at the household level. In the response 84.61 elderly said that the grain is cooked very frequently in their household. Only 2.88 percent responded that they took the millet based diet occasionally. In response to the question, 'How often do you eat something with millet?' 34.61 percent said that they eat millet 2 to 3 times per week and another 37.18 percent said that they usually consume it hardly once in a week

IV. Conclusion:

Millets as a diet are not only consumed by the indigenous population, those were equally preferred by the rural communities earlier. Prior to rice cultivation it was cultivated hugely by the peasant communities mainly for their household consumption. Rural communities used to eat different varieties of millets as their staple food. They not only used it as a staple food to meet their hunger only, they have also relished the taste of the millet products. The people knew very well how to use these coarse grain as food and how to make palatable recipes from it. Specific millets were used in special cultural observance. However, on arrival of different cash crops like ground nuts and different pulses, millets lost their significance from the life of rural people. With the changing necessity of more cash, peasants started the cultivation of cash crops and with the advent of rice cultivation millets started disappearing. However, people of the studied district have narrated that they reduced the cultivation of millets but have not forgotten it especially the finger millet. Elderly subjects have narrated their appetite for little millet, kodo and sorghum. They also have the knowledge about the nutritional as well as medicinal components of the millets to some extent. Each year they used to make different recipes from finger millet and used to eat that to keep themselves away from stomach related problems during hot summer sessions. With the deadened effort of Odisha Millet Mission (OMM) now millets are gaining popularity and farmers were encouraged to involve in the millet production. But there is an urgent need to popularise it among the potential consumers, the younger generation who are having a keen appetite for junk food. It is essential to retain the nutritional value of these wonder grains. Thus it is important to initiate an intervention approach to bring these nutri-cereals back into the food plate of every citizen. In this regard the indigenous knowledge (IK) about the food preparation of elderly citizens may do wonders.

References

- [1]. Anil K. Pokharia, Jeewan Singh Kharawal, Alka Srivastava (2014), Archaeobotanical Evidence Of Millets In The Indian Subcontinent With Some Observations On Their Role In The Indus Civilization, *Journal Of Archaeological Science*, 42,442-455
- [2]. Bharathy, D., & Rajapushpam, R. (2020). A Study On Purchasing Behaviour Of Millet Products Among Consumers In The Salem Region. *International Journal Of Scientific And Technologyresearch*,9(2).
- [3]. Changmei Shadang And Dorothy Jaganathan (2017). Consumption Pattern And Its Purchasing Behaviour Of Millets In Coimbatore City. *Indian Journal Of Applied Research*. 7, (2), 774-776
- [4]. Chitra, D. L., & Sulaiman, D. (2017). A Study On Consumer Awareness And Consumption Of Minor Millets As A Diabetic Food Product - With Reference To Madurai City. *International Journal Of Advanced Scientific Research & Development*, 4(1), 38-44.
- [5]. GOI. 2011. Population Census. Office Of The Registrar General And Census Commissioner, India, New Delhi, Ministry Of Home Affairs, Government Of India.
- [6]. Harshitha And Jayaram 2019). Harshitha H, Jayaram D. Consumers' Preference For Value-Added Products Of Finger Millet (Eleusine Coracana). *Indian Journal Of Economics And Development*. 2019;7(9):1
- [7]. Kalaiselvi A, Razia Fathima LA, Parameswari M. Awareness And Consumption Of Millets By Women - A Study On Coimbatore City. *Indian Journal Of Applied Research* 2016;6(2):96-99.
- [8]. Mallavva Patil And Surekha Sankangoudar (2019) Consumption Pattern Of Minor Millets Among Growers And Non-Growers Of Minor Millets *Journal Of Pharmacognosy And Phytochemistry* 2019; 8(3): 3726-3729
- [9]. Rajput, S.G. And Santra, D.K. (2016). Evaluation Of Genetic Diversity Of Proso Millet Germplasm Available In The United States Using Simple-Sequence Repeat Markers, *Crop Sci.*, 56: 2401-2409.
- [10]. R.Subramaniya Barratry And R.Rajapushpam, (2018), A Study On Perception Of Millet Products Among Household Consumers In Salem District *IOSR Journal Of Business And Management* 20, 8. Ver. IV (August. 2018), PP 67-76
- [11]. Shading And Jaganathan (2017),Changmei Shadang And Dorothy Jaganathan (2017) Consumption Pattern And Its Purchasing Behaviour Of Millets In Coimbatore City Volume - 7 | Issue - 2 | February - 2017