

A Comparative Study on the Acceptance and Consumption Patterns of Millets in Various Forms among Professors across Colleges in Hyderabad

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ABSTRACT

BACKGROUND: Millets are small seeded grains cultivated for thousands of years in arid and semi-arid regions, are a staple for communities in India, due to their resilience and nutritional benefits and potential to address food security and climate change concerns due to their low water and input requirements.

INTRODUCTION: Research on the knowledge, preferences, and difficulties associated with millet intake is being conducted among professors in Hyderabad.

Aims and Objectives: The study investigates the acceptance and consumption pattern of millets among Hyderabad College professors, their knowledge of nutritive benefits and ecological sustainability, and the challenges they face in incorporating millets into their diet.

METHODOLOGY: The survey was conducted among the professors of different colleges of Hyderabad from September to December 2023, to explore the acceptance and consumption pattern of millets among various forms. Utilising a self-structured validated questionnaire for the survey, the study focused on demographic details, familiarity, consumption patterns in various forms, level of awareness and hindrance to consumption along with accessibility to millets, with a calculated sample size of 198 accounting for a 10% non-response rate.

RESULT: The study reveals a high level of awareness with millets while only 5.1% are unaware. Daily millet consumption is reported by 6.1% with Ragi the most popular one. Nutritional benefits, dietary restrictions, and cultural beliefs are the main reasons for consumption. Preferences included were the chapatis/rotis, porridge and powder forms. Millet based products include flour, snacks and porridges. Commercial shops and ready-made products were the primary sources.

CONCLUSION: The study found that while 6.1% of academics, mostly aged 38-45, regularly consume millets, most are familiar with ragi due to its nutritional benefits. However, lack of knowledge about preparation and cultural preferences hinder consumption.

CHAPTER 1

INTRODUCTION

1.1 WHAT ARE MILLETS ...

Millets are a group of cereal grasses with small grains that are divided into major and small grain categories according to the size of the grains. While finger millet, foxtail millet, kodo millet, proso millet, barnyard millet, and little millet are examples of small grain millet, major millets include sorghum and pearl

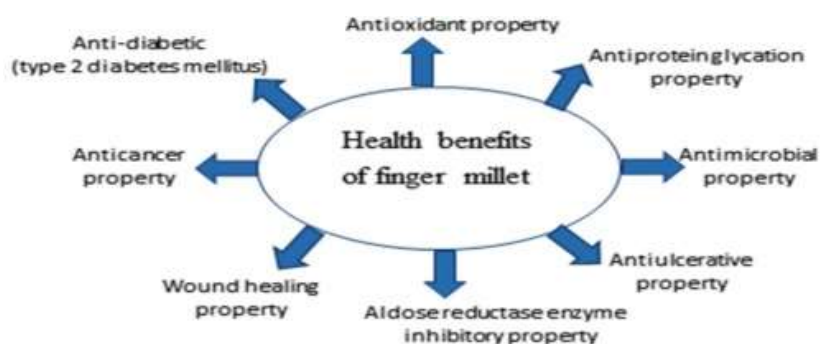
millet.(1)Given all these amazing qualities combined, millets deserve the moniker "miracle grains" or "nutria-cereals."(1) A wise step toward sustainability is the intentional inclusion of millet crops in cropping systems, especially in delicate ecosystems.(1) Millets are exceptional because of their abundance in proteins, dietary fibre, antioxidants, minerals, phytochemicals, and polyphenols, which work as an elixir to combat illnesses.(2) Millets are C4 plants with very superior photosynthetic efficiency, short duration, higher dry matter production capacity, and a high degree of tolerance to heat and drought. With millets' aforementioned benefits in mind, efforts to gather, preserve, and use millets' germplasm in breeding programs have accelerated.(2)

1.2 TYPES OF MILLETS

Millets are small-seeded grains that are members of the Poaceae family's Chlorideae and Paniceae tribes.(3) Major and Minor millets are the two general categories into which these fall . (3)The four main types of millets are finger (Eleusine coracan), foxtail (Seratiatalica), proso (Panicum miliaceum), and pearl (Pennisetum glaucum). On the other hand, the minor millets include teff (Eragrostis tef), black fonio (Digitariaiburua), white fonio (Digitariaexilis), Kodo (Paspalum scrobiculatum), barnyard (Echinochloa colane), and little (Panicum miliare).(3)

• FINGER MILLET (Eleusine coracan) :

The most widely grown small millet is finger millet (FM), or Eleusine coracana (L.), among the various varieties of millets found worldwide. It is high in dietary fiber, calcium, fatty acids, and essential amino acids. It is a member of the Poaceae family. Moreover, it has a number of bioactive substances with potent antioxidant potential. FM are hypoglycaemic in nature and have a low glycaemic index, which is attributed to their high dietary fiber and resistant starch content.(4)Grain millet is grown in Nepal, Bhutan, Sri Lanka, and the Indian Himalayan regions. In addition, the grain is grown in South Carolina, China, Taiwan, Japan, and Korea (albeit in small amounts). (5) Africa is the continent where the majority of FM produced worldwide is grown, primarily in Ethiopia, Kenya, Nigeria, Malawi, Tanzania, Uganda, Zambia, and Zimbabwe. Around 4.5–5 million tons of millets are produced annually worldwide; roughly 2.5 million tons are produced in India alone, and another 2 million tons are produced in some African nations. According to reports, India is the world's largest producer of FM, accounting for 60% of the total production.(5) About 7% protein, 1-2% fat, 66% carbohydrates, 1% dietary fiber, and 2% minerals are present in finger millet.(6) The benefits of finger millet include antioxidation, wound healing, nephroprotection, antimicrobial and anti-hypocholesterolaemia, antifungal and antibacterial, and antidiabetic (type 2 diabetes).(6)



(7)



FINGER MILLET

- **FOXTAIL MILLET (*Setaria italica*)**

Italian millet, also called German millet or foxtail millet (*Setaria italica* L.), is a member of the Poaceae family and is grown all over the world, including India.(9) In several parts of Asia and Africa, it is also a staple diet. Numerous germplasm collections are kept in nations like China, Japan, the USA, and India, and there is a great deal of genetic diversity among them.(8) Because the grains include large amounts of proteins, vital amino acids, minerals, vitamins, and micronutrients like iron and zinc, the crop is nutritionally superior.(8) Foxtail millet can therefore be helpful in biofortification initiatives meant to fight malnutrition.(8) Foxtail millet has a high protein, fiber, mineral, and phytochemical content.(9) Antinutrients in this millet, such as phytic acid and tannin, can be reduced to negligible levels by using appropriate processing methods. Millet is also said to have hypolipidemic, low-glycaemic index, and antioxidant properties.(10)



FOXTAIL MILLET

- **PROSO MILLET (*Panicum miliaceum*)**

Proso millet (*Panicum miliaceum* L.) is a short-season, drought-tolerant C4 species that can make use of limited water supplies and is well-suited for dryland crop rotations in the Central Great Plains.(10) Proso millet is a climate-smart, gluten-free, ancient, and small grain cereal that is good for both humans and the environment. It is high in minerals, dietary fiber, polyphenols, vitamins, and proteins. It is gluten-free, making it ideal for gluten-intolerant individuals.(11) Proso millet contains a lot of lecithin, which helps the nervous system. It is high in vitamins (niacin, B-complex vitamins, folic acid), minerals (P, Ca,

Zn, Fe), and essential amino acids (methionine and cysteine).(11) It has a low glycaemic index and lowers the risk of type 2 diabetes. It aids in the control of winter annual grass weeds, the management of disease and insect pressure, and the retention of deep soil moisture for wheat.(12)



PROSO MILLET

- **PEARL MILLET (*Pennisetum glaucum*)**

Pearl millet [*Pennisetum glaucum* (L.) R. Br.] is the sixth most important cereal crop, following rice, wheat, maize, barley, and sorghum.(12) It is widely grown on 30 million ha in the arid and semi-arid tropical regions of Asia and Africa, accounting for nearly half of global millet production. (13) More than 90 million people in SSA and SA depend on pearl millet for their livelihood and nutritional security. It is prized for its nutrient-rich grain for human consumption as well as its green fodder and dry stover for livestock.(13) Energy, carbs, dietary fibers (soluble and insoluble resistant starch), proteins, ash, antioxidants, fat, iron, zinc, and vitamins are all abundant in this cereal. It is rich in minerals, vitamins, and essential amino acids, and has a high nutritional value. Additionally, it has 74% polyunsaturated fatty acids and omega-3 fatty acids.(14) Functional qualities of pearl millet include its low glycaemic index, which makes it a good substitute for other foods when trying to control weight and lower your chance of developing chronic illnesses like diabetes.(15)



PEARL MILLET(8)

• **KODO MILLET (*Paspalum scrobiculatum*)**

One of the world's oldest grains, kodo millet was domesticated in India a few thousand years ago after emerging from Africa.(15) It is a plant that resists drought. This millet crop is cultivated in arid and semi-arid areas of Asia and Africa. In India, the Deccan region is the primary location for Kodo millet cultivation, which also stretches to the Himalayan foothills.(16) Kodo grains are a reliable starvation reserve with 8.35% protein, 1.45% fat, 65.65% carbohydrates, and 2.95% ash.(16) They are high in minerals, folic acid, vitamin B3, and B6. Glutamine is the primary protein, with 9% crude fiber content. Kodo millet provides 353 Kcal of energy per 100 grams.(17) Kodo millets are gluten-free, easy to digest, and beneficial for postmenopausal women with cardiovascular disease symptoms. They also help maintain blood sugar levels in type 2 diabetes patients and are effective in treating atherosclerosis, diabetic heart disease, heart attacks, migraines, asthma, and high blood pressure.(18)



KODO MILLET (8)

• **BARNYARD MILLET (*Echinochloa colane*)**

An ancient millet crop called barnyard millet is widely grown throughout Asia, especially in China, Japan, Korea, and India. With an average productivity of 1034 kg/ha over the previous three years, India is the biggest producer.(18) This short-duration crop, which has a higher nutritional value and is less expensive than major cereals like rice, wheat, and maize, is mainly used for human consumption and animal feed.(19) The millet contained 398 kcal/100 g of energy, 10.5% protein, 3.6% fat, and 68.8% carbohydrates. Dietary fiber made up of both soluble (4.2%) and insoluble (8.4%) fractions made up a high total of 12.6%.(20) Gluten-free barnyard millet flour protects against diabetes, heart disease, obesity, skin issues, cancer, and celiac disease. Patients with diabetes and celiac disease can include it in their diets, and more research may increase its nutritional content.(21)



BARNYARD MILLET (8)

- **LITTLE MILLET (*Panicum miliare*)**

Little millet is primarily grown in eastern India as a component of tribal agriculture. The highest known concentration of crude fiber in millet grains is found in little millet. Based on the shape of the panicles, the crop is broadly categorized as belonging to races nana and robusta.(22)



LITTLE MILLET(8)

1.3 ACCEPTANCE OF MILLETS

India produced 51.15 million tonnes of millets in 2020–21, with Rajasthan leading the country in hectares planted to the crop. The main crop was pearl millet, which was followed by minor millets, sorghum, and finger millet. 2.45 million tonnes of millets were produced in Andhra Pradesh on 0.51 million hectares of millets.(23)

Due to shifting dietary habits and an increase in the prevalence of non-communicable diseases, a study conducted in Delhi, India, discovered that urban households consume less Nutri-cereals, including millets. The consumption rate of most Nutri-cereals is less than 50%. These include finger millet, foxtail millet, proso millet, barnyard millet, kodo millet, little millet, amaranth, and sorghum. The health advantages, cultural importance, and ease of preparation and serving at home are among the factors that influence millet consumption in households.(24)

The main forces behind the shift to millets are social media and health concerns; the main barriers to trying millets are lack of knowledge, difficult access, high costs, a dearth of branded products, family resistance to the change, and the absence of alluring promotional discounts and cashbacks.(25)

Reviving millet consumption has gained more attention since the United Nations General Assembly declared 2023 to be the "International Year of Millets." To encourage millet-based diets and increase millet consumption, the Indian government has implemented a number of initiatives. In an effort to boost millet consumption and production nationwide, the government launched the MILLET MISSION. A number of other campaigns, such as "India's Wealth, Millets for Health," "Millet Startup Innovation Challenge," "Mighty Millets Quiz," and "Logo and Slogan Contest," have also recently been unveiled.(26)

1.4 CONSUMPTION PATTERN OF MILLETS

A consumption pattern is the method by which individuals look for, recognize, buy, and use goods and services to satisfy all of their needs and wants. (26)

The majority of consumers were eating little millet (77.50%) and sorghum (48.75%) once a month, kodo millet (67.50%) and proso millet (66.25%) once every three months, while pearl millet (42.50%) and foxtail millet (51.25%) were consumed once a week.(27)

The majority of consumers are eating traditional foods, which include things like ragi sangati for lunch, pakora, murukku, etc., breakfast foods like idly, dosa, and upma, etc., dinner foods like flatbreads, etc., and sweets like halwa, Kesari, and kheer. Customers were spending more money on traditional recipes on average because they were a preferred form of consumption.(28)

The majority of them were eating traditional recipes, according to the results (67-80%), followed by bakery and pasta products (11.86% and 10.55%). According to average price, traditional recipes accounted for over half of consumer spending (58.58%), with pasta products coming in second (17.55%) and bakery products third (13.72%).(29)

1.5 FACTORS INFLUENCING CONSUMPTION OF MILLETS

The study shows that a number of factors, including residents' knowledge of the nutritional and health benefits of millet products, as well as their texture, appearance, price, promotion, and consumer demographics, have a significant impact on how much of them they consume.(30)

A number of factors, including their cultural significance, traditional method of food preservation, adaptability to climate variability, satiety, appealing taste, and perceived nutritional benefits, encouraged the consumption of millets. Local climate effects on agroforestry systems, easy access to food obtained from markets or provided by government food security programs, and local agricultural organizations' promotion of hybrid seeds emerged as possible obstacles.(28)

The aim of the study is to explore the acceptance and consumption pattern of millets in various forms among professors of various college in Hyderabad.

The information gathered will be useful in creating campaigns and interventions that encourage the use of millets, as well as in identifying the socio economic and cultural variables that impact the dietary choices and paving a way for sustainable food practises.

CHAPTER 2

AIMS AND OBJECTIVES

AIM: The aim of this study is to explore the acceptance and consumption patterns of millets in various forms among professors from different colleges in Hyderabad.

OBJECTIVE:

1. To assess the knowledge of awareness among professors regarding the nutritional benefits and ecological sustainability of millets.
2. To determine the current consumption patterns of millets among professors, including traditional and innovative forms.
3. To identify the factors influencing the acceptance or rejection of millets as a dietary choice among the academic community.
4. To explore the potential barriers and challenges faced by professors in incorporating millets into their regular diet.

CHAPTER – 3

REVIEW OF LITERATURE

1. (Samtiya et al., 2023) The present review defines numerous health-promoting nutritional attributes of millet seeds and their derivatives, including but not limited to their antioxidant, immunomodulatory or anti-inflammatory, antibacterial or antimicrobial, hypocholesterolaemia, hypoglycaemic, and anti-carcinogenic potential, as well as their function as gut health modulators. This article mostly focuses

on pearl millet (*Cenchrus americanus*, also known as *Pennisetum glaucum*), one of the most popular millet crops cultivated in India, however there are other types as well. The naturally occurring components of millet seeds that have health-promoting qualities, such as proteins, peptides, polyphenols, polysaccharides, oil, isoflavones, etc.(31)

2. **(K. et al., 2023)**In April 2018, millets, led by Mr. Vilas Tonapi, were deemed the healthiest cereal in India. He said that 2023 will be recognized as the International Year of Millet and that every attempt will be made to raise awareness of millet consumption and cultivation throughout the world. It is utilized all throughout the world and has been growing for thousands of years. Africa, Egypt, Greece, China, India, and Africa provide a sizable portion of the world's millet exports. But even in rural regions, some grains—like sorghum, finger millet, and pearl millet—are used for human consumption, and the remainder is fed to animals. Dr. Khadar Vali, a nutritionist and termed as the "Millet Man of India".(32)
3. **(A et al., 2023)**Seeing the potential of millets, the Indian government has started a number of development projects to encourage their growing and eating. To encourage their cultivation and consumption, the Indian government, for example, proclaimed millets to be "Nutri-Cereals" in 2018–19 and initiated the "National Mission on Nutri-Cereals." In addition to the Central Government's activities, a number of state governments in India have introduced promotional programs, such as the 'Millet Village Scheme' concerning millets in Kerala and Odisha.(33)
4. **(Balkrishna et al., 2023)**Nine types of millets are widely utilized in India, and numerous cultivars have been produced by national agricultural institutes to improve the grain's quality, size, colour, biomass, and resistance to disease. Overall millet crop quality has increased dramatically as a result of this concentrated effort. Furthermore, value-added food items, such as ready-to-eat and ready-to-cook varieties, are being created to better suit millets to the needs of contemporary society. Millets can be eaten raw, roasted, or boiled with sugar and milk. They are very easy to digest. Sometimes rice and millets are combined, then the mixture is fermented to create beer. The fact that millets are gluten-free is one of its amazing qualities, which makes them a great option for people who have celiac disease or gluten sensitivity.(34)
5. **(Gairola et al., 2023)**The consumption of millets has decreased globally by 0.9%, according to a survey. However, some encouraging developments are anticipated in the worldwide millets market over the next five years, or 2019–2024. Africa is seeing an increase in millet production, despite the fact that India, Niger, and China are the world's three greatest producers of millet, respectively, in terms of planted area. It is projected that 27.8 million tons of millets are produced worldwide. The countries that consume the most millet is those in Africa, especially Nigeria, Sudan, Niger, Burkina Faso, and Mali. More than 40 percent of millets are consumed by them.(35)
6. **(Thakur & Tiwari, n.d.)**) The world's largest producer of millets is India. All of the millet crops that were harvested in India in the 1970s were used as staple foods. Although millet output had doubled annually in India by the 2000s, the country's various areas had seen a 50% to 75% decrease in millet consumption per person. A large portion of the millet grown in India is utilized for non-food purposes like making alcohol and cattle feed.(36)
7. **(A.S__paper-Libre.Pdf, n.d.)**Small millets, also known as minor millets, are cereal crops grown for their tiny grains on short, grassy stalks. The most significant minor millets in India include teff, job's tears, finger millet, proso millet, barnyard millet, Italian millet, and kodo millet.(37)

8. **(Ashoka et al., 2020)**About one-third of the world's population relies mostly on millets, a highly valued crop in India. They taste like nuts and are available in pearled and dehulled varieties. They are somewhat sweet. Often referred to as "Nutri-cereals" or Nutri millets, millets are high in nutrients. They have been a mainstay crop for ages and may help both rich and developing nations produce more food.(38)
9. **(Hrideek & Nampoothiri, 2017)**In the arid regions of India, millets—small-grained grains belonging to the Gramineae family—are essential for ensuring food and nutritional security. They are rich in phytochemicals and micronutrients and have a high nutritional value that is on par with major grains. Because millet is devoid of gluten, it's a great choice for people with diabetes, heart disease, and atherosclerosis. They can aid in the fight against malnutrition and food insecurity.(39)
10. **(Eduru et al., n.d.)**Millets are important for ensuring food security because of their genetic potential. They are non-acidic, readily digested, and allergic. They are a vital crop for food security, processing industries, nutrition, and health since they can thrive in drought-stricken areas without sacrificing output. To fully realize their potential, more research is required.(40)

Nutritional and ecological Benefits of Millets

1. **(Tomar et al., n.d.)**Millet grains, rich in non-starchy polysaccharides and dietary fiber, have 65% carbohydrates, reducing cholesterol and preventing constipation. Regular millet users report lower incidences of duodenal ulcers, cardiovascular illnesses, and hyperglycaemia. Despite their nutritional value, millet consumption has decreased due to lack of standardized processing methods.(41)
2. **(Saleem et al., 2023)**Millets are regarded as "Nutraceuticals" because of their advantageous nutrigenomic role. They are high in dietary fiber, vital amino acids, vitamins, minerals, fatty acids, and antioxidants. These phytochemicals defend against degenerative illnesses, especially PUFA-related ones, which benefits human health. The high PUFA content of millet oil makes it a gluten-free option for those with celiac disease and helps fight chronic heart disease.(42)
3. **(Tripathi et al., 2023)**According to the study, millets are a healthy complement to a balanced diet because of their high nutritional content, which includes proteins, fiber, vitamins, and minerals. In order to meet certain dietary requirements, it also examines their gluten-free qualities. The study also looks at the possible health advantages of millets, such as their capacity to avoid chronic conditions like diabetes and cardiovascular disease, as well as their effects on intestinal health, sustainability in the future, and global food security.(43)
4. **(Sanodiya et al., 2023)**The nutrient-dense, climate change-resistant millets grow well in marshy and flooded fields. They raise farmers' incomes and enhance public health. Even if industrialization and urbanization have made millets less important, people still consume them. They are now a sensible addition to a well-balanced diet and can help reduce the risk of metabolic disorders including diabetes, hypertension, and cardiovascular disease.(44)
5. **(Navruz-Varli & Sanlier, 2016)**High in proteins, fats, fiber, vitamins, minerals, and vital amino acids, quinoa is a pseudo grain that is packed with nutrients. It improves digestive, circulatory, and metabolic health and contains phytochemicals that are good for the body. It's not, however, commonly consumed.(45)
6. **(Bansal, 2023)**Though it is high in protein, jowar is deficient in important amino acids, such as cystine, methionine, and lysine. Certain types have high leucine content, which results in niacin shortage.

Legumes and jowar combined in a 70:30 ratio can yield high-quality protein. Jowar is high in dietary fiber and the B complex vitamins.(46)

7. **(Department of Food Science & Nutrition, Faculty of Home Science, Banasthali University, Tonk, Rajasthan-304022, India et al. - 2016 - Potential of Millets Nutrients Composition and He.Pdf, n.d.)**An alkaline diet such as millet is essential for both fighting malnutrition and promoting health. The limited bioavailability of minerals in cereal-based meals in underdeveloped nations is a concern for young children and newborns. In order to acknowledge millets as a significant food and present them to the world's population as a wholesome choice, this research attempts to create targeted agendas for millets.(47)

AWARENESS & CONSUMPTION OF MILLETS

1. **((Rizwana et al., 2022))**According to the survey, the majority of respondents eat millet to maintain their health, with immunity from oneself and one's family being the most crucial component. Millet is known to 80.6% of women, yet only 62.7% of them actually eat it. Consumption and non-consumption behaviour are influenced by both motivating and demotivating stimuli, as well as demographic characteristics including age, income, and qualification.(48)
2. **(Hemamalini & Hemamalini, 2023)**It is critical for the company to understand the preferences and tastes of its customers in order to boost sales and cultivate a positive reputation with them. The proliferation of different millets brands has been greatly aided by television. Because of climate change, our forgotten crops may become future staples due to their adaptive ecological behaviour.(49)
3. **(Patil and Sankangoudar - Knowledge of Minor Millets among Growers and Non- .Pdf, n.d)**According to the survey, 48% of people in non-growing regions had medium knowledge of minor millets, compared to 75% of growers and 25% of non-growers in the same communities. But only 11% knew a lot, while 44% knew very little. The respondents knew very little about the government's millet initiatives.(50)
4. **((Nadar et al., 2023))**The survey discovered that millets were usually well-know and seen favourably by households in both low and high socioeconomic strata. But both groups lacked practice, with a sizable percentage (72.5%) of low SES households exhibiting inadequate millets usage.(51)
5. **(Prashanthi et al., 2022))**According to the survey, more over half of the respondents who lived in rural regions knew about millets, whereas the other respondents didn't. There was variation in the awareness of millet; school-age children were more familiar with finger millet, pearl millet, and sorghum. 53.12% of respondents in urban areas did not know about millets, whereas 46.88% did. The types of millet—sorghum, pearl millet, finger millet, and small millet—were used to determine the spread of millet awareness.(52)
6. **(Venkataramanan, 2023)**75% of respondents to the study said they were aware that 2023 has been declared the International Year of Millets. The study results demonstrate the considerable importance of cultural variables in millet adoption, as a sizable portion of respondents were accustomed to consuming millets as a result of their family's traditional dietary patterns. It offers important insights into the incorporation of various millets in various locations.(53)
7. **(Ahmed, 2018)**MILLETS are a nutrient-dense BioSource that also has medicinal advantages, such as preventing heart disease. They may be included into both classic and creative dishes. Research, marketing, and entrepreneurship training may promote competitive, high-quality millets for urban

areas, helping to bring them back to life. Processing facilities are essential for local millet growing in arid areas.(54)

8. **(Kavitha et al., 2017)** Indian farmers plant little millets, which are prized for their quick maturation period, tolerance to drought, and better pricing. Food for the impoverished has become more of a luxury item due to its exorbitant costs at Coimbatore, Tamil Nadu, online grocery stores. To make these nutrient-rich grains available to all Indians, the research recommends government marketing programs.(55)

ACCEPTANCE OF MILLETS

1. **(Asrani et al., 2023)** The study draws attention to millets' poor consumer acceptance in spite of their many health advantages. It exhorts scientists and farmers to support millets and enhance shelf -life restrictions. The study highlights how millets may improve health security and lessen reliance on the environment for growth and production, and it also examines several physical processing technologies for millet-based food items.(56)
2. **(Kaur et al., 2023)** According to a study conducted in Bangalore, India, millets are becoming more and more well-liked because of their high nutritional value, advantages for the stomach, benefits for managing weight, and benefits for cardiovascular health. Regardless of family wealth, millets are consumed by consumers, and variables that affect their consumption include health, family customs, and rising youth awareness. This study emphasizes how millets are becoming more and more popular in Indian culture.(57)
3. **(Patil, 2018)** Three value-added products were evaluated for acceptance in Kohler village, Vijayapura district, Karnataka: finger millet malt, little millet paddu, and foxtail millet bisibelebath. The small millet paddu received a score of 4.7 out of 5, while the foxtail millet bisibelebath received a score of 4.4. Finger millet malt had a rating of 4.6 out of 5.(58)
4. **(Ranganna et al., 2014)** The five tiny millets employed in the study to create cold-extruded goods were barnyard, foxtail, kodo, little, and proso. These millets were used to make pasta masala and vermicelli kheer, which were then sensory assessed. The favoured millet kheer was foxtail, followed by proso and kodo.(59)
5. **(McSweeney et al., 2016)** A research utilizing refined proso millet flour on biscuits and extruded snacks discovered that a higher millet content in the goods resulted in a lower like for flavour, texture, and overall liking. Additionally, millet added to the bitter flavour and aftertaste of food products, making them dry and granular. According to the report, creating marketable product varieties in North America is essential for millet acceptance.(60)
6. **(Cichońska et al., 2020)** A nutritious plant-based beverage free of gluten and high in dietary fiber and polyphenols is millet. Its scent and plant-based Flavors make it less popular, but when you add pureed banana or apple, it becomes more popular. Delaminating millet drinks can be avoided by stabilizing them with agar-agar and pectin, two naturally occurring stabilizers.(61)

CONSUMPTION PATTERN OF MILLET BASED PRODUCTS(VALUE-ADDED PRODUCTS)

1. **(Arora et al., 2023)** In place of wheat and rice, the research assessed eight food products made from foxtail millet: rusk, kheer, pinni, sattv, vegetable dahlia, biscuits, bar, and papad. The items were highly palatable and had a high protein content, with the most protein being found in kheer. The items were

suitable for diabetics because they also had low PGI and high resistant starch. According to the study, these goods may aid in the prevention of type 2 diabetes and malnutrition.(62)

2. **(Verma & Patel, 2023)**Due to the lack of urban-style items, finger millet, also known as ragi in India, is mostly utilized in rural and tribal regions. It is an important crop grown in tiny millets. Using both conventional and contemporary processing methods, finger millet might benefit tribal populations' livelihoods, nutritional status, and rate of consumption. The preparation of ragi Ladoo, ragi halwa, and weaning meals utilizing alternative grains are the main topics of this study.(63)
3. **(A Study on Dietary Intake of Millet-Based Food Products in Coimbatore City, n.d.)**Pearl millet was the most popular choice among responders, followed by proso millet, barnyard millet, finger millet, sorghum foxtail millet, tiny millet, and kodo millet. Products made with millet instant mix, millet snacks, morning cereals, bread and baked goods, and drinks made with millet were their top choices; millet pasta and noodles were their least favourite.(64)
4. **(Bhardwaj et al., 2023)**Eleven millet-based meal dishes from the ethnic groups of Arunachal Pradesh—the Adi, Apatani, Nyishi, Monpa, and Idu Mishmi—are revealed in the study. The main ingredients are finger millet, kodo millet, and sorghum. Local veggies, milk, eggs, ghee, coconut, sugar, and millet flour are among the other components. Boiling, frying, and steaming are examples of cooking methods. The most popular dish is apong, an alcoholic beverage that is often made with rice and finger millet.(65)
5. **(Prasad, 2023)**The National Dairy Research Centre in Karnal created bajra lassi, a millet-based drink produced with beneficial lactic bacteria and pearl millet. It is comparable to Oshikundu, a traditional drink of Namibia, and madua, an Indian beverage made from finger millet. Because skim milk is used in place of sour buttermilk during manufacturing, the product is more suitable for industrial production.(66)
6. **(Hema et al., 2022)**To reintroduce millets as functional foods, this chapter covers the manufacturing of both traditional and unconventional millet products in addition to innovative food items. While modern technologies like extrusion, baking, spray drying, and brewing are utilized to generate fast mixes, handy meals, and innovative food items like millet milk and edible films, traditional processing processes include milling, roasting, germination, and fermentation. The chapter stresses that in order to produce a wider variety of millet products, it is crucial to integrate traditional knowledge with cutting-edge technologies.(67)
7. **(Maruthanayagam et al., 2023)**According to the survey, those with higher incomes are more likely to routinely eat millets and items made from millet. The HealthyifyMe App is most frequently used for breakfast, followed by evening meals, and lunchtime.(68)
8. **(Pravallika et al., 2020)**The majority of consumers eat millet as a staple food grain (29%), in both RTE and RTC forms (46%), and in both RTC and RTE forms (12%). Idly and dosa where powder mixes are quite popular. Cookies and other RTE items are quite popular. Cookies and biscuits made from millet are extensively stocked and marketed.(69)
9. **(Anitha et al., 2019)**All of the millet-based menu items scored highly on the sensory evaluation, but three in particular stood out: finger millet idly, a fermented savoury cake cooked in steam; little and pearl millet bisi belle bath, a hot millet-lentil meal; and upma, a pearl and little millet-vegetable meal. These findings imply that millets have a large potential to replace or enhance rice in school meal programs, improving children's nutritional outcomes.(70)

FACTORS INFLUENCING CONSUMPTION OF MILLETS

1. **(Mohan et al., 2021)** This study investigates how consumers view millet and the variables that affect their choice to buy. It suggests tactics including launching a range of millet-based snacks, creating guidelines to support millet-based food, and bringing millet-based snacks to the attention of the food and health department and food manufacturing enterprises.(71)
2. **(Singh & Vemireddy, 2023)** The main forces behind the shift to millets are social media and health concerns; the main barriers to trying millets are lack of knowledge, difficult access, high costs, a dearth of branded products, family resistance to the change, and the absence of alluring promotional discounts and cashbacks.(72)
3. **(Vahini et al., 2023)** The analysis reveals that age, gender, knowledge of millet's health benefits, taste impression, and nutritional value significantly influence consumption. Education has negligible effects, while higher costs lead to a decline in consumption. Income has minimal impact. The study identifies factors influencing consumers' decisions to buy millet goods.(73)
4. **(Meng et al., 2021)** According to the study, a number of factors, including residents' knowledge of the nutritional and health advantages of millet products, as well as their texture, look, quality, pricing, promotion, and customer demographics, have a big impact on how much of them they consume.
5. **(Pravallika et al., 2020)** Using a five-point Likert scale, the most important variables impacting millet intake were identified. The greatest influential factor was determined to be health, which was followed by diabetes, flavour, and availability. Price was the most important criteria, with flavour, brand, deals, and packaging coming in second and third. Its USP Health and Nutrition is consistent with millet inclusion.(69)
6. **(George et al., 2021)** Age, gender, and marital status all have a big impact on how much millet is consumed; people in their middle years tend to be more aware of the health advantages. Since women and married families tend to be more informed, gender and marital status also have an influence on consumption. Of the respondents, 47.12% eat finger millet, and 35.61% eat sorghum. Pearl millet is not used; other millets include Kodo millet, foxtail millet, barnyard millet, and tiny millet.(75)
7. **(Health-Awareness-about-Organic-Cereals-and-Millets-among-Women-College-Teachers-in-Tiruchirappalli-Libre.Pdf, n.d.)** According to the study, the ability of organic grains and millets to lower blood pressure is the most significant element affecting health knowledge about them, while their advantages for the immune system, the prevention of cancer, and the stimulation of the respiratory system are the least significant factors. Respondents with PG and M. Phil degrees, 15-20 years of experience, and work in the arts area had the greatest level of health awareness. There was no discernible difference between the type of the department and health awareness.(76)
8. **(Nivetha & Uma, 2021)** The majority of responders purchase Nutri cereals due to their excellent nutritional value and lack of customizable alternatives. Friends and family are the sources of information. After graded, packed, and labelled goods, the majority are ready to pay an additional 10% for cleaned and processed grains. Nutritional promotion and customized goods should be the primary emphasis of companies that process cereal.(77)
9. **(Shah et al., 2023)** While infrequent customers exhibit little understanding, regular consumers are aware of the advantages millet growing has for the environment. In addition to cooking meals for parents who suffer from lifestyle disorders, they actively eat millets and introduce them to their family. Some customers, nevertheless, rely on the millet-based meals of others. Both customers voice their

displeasure with millet marketing, which presents millets as therapeutic meals for ailments or weight reduction.(78)

10. (*JETIR_Product_Awareness-Libre.Pdf*, n.d.) In this study, which focuses at consumer awareness of organic cereals and millets, family nature, monthly income, and awareness level are shown to be significantly correlated, although age and residence are not significantly correlated.(79)

METHODOLOGY

A collaborative meeting was conducted involving members from the parent institution and the CoGuide team. During this meeting, the research proposal was presented to the ethical committee. Valuable suggestions provided by the committee members were incorporated into the study design, ensuring a comprehensive and ethically sound research approach.

STUDY DESIGN

The research is a survey based cross-sectional study conducted among various colleges i.e., Wesley Degree & Pg college, Kasturba Gandhi College for Women and RBVRR College degree & Pg college in the cities of Hyderabad and Secunderabad. The Study aimed to assess the knowledge and acceptance of millets in various forms in their day to day lives.

STUDY POPULATION Professors (Associate & Assistant) of age group more than 35 years

STUDY PERIOD This Study was conducted from September to December 2023

SAMPLE SIZE

Sample size was calculated by taking prevalence of millet consumption (p) as 86.6% (i.e. 0.866) as per the study by K Prasanthi et al. (Reference: K Prasanthi and Dr. G Sireesha. Individuals' Knowledge, Attitude and Practices on Millets. Int J Food Nutr Sci 2022;11:21-27.). The other parameters considered for sample size calculation were 5% (i.e. 0.05) two-sided alpha error and 5% (i.e. 0.05) margin of error. The following formula was used to calculate the sample size:

Sample size (N) = $((Z_{\alpha/2})^2 \times p(1-p)) \div d^2$

Where,

- $Z_{\alpha/2} = Z_{0.05/2} = 1.96$ (From Z table) at 5% alpha error
- p = Prevalence according to previous study
- d = Margin of error

Sample size (N) = $((1.96)^2 \times 0.866(1-0.866)) \div 0.05^2 = 0.4458 \div 0.0025 = 178.32 \sim 178$

As per the above calculation, the required sample size will be 178.

On adding 10% non-response rate:

$N^* = N \div (1-0.1) = 178 \div 0.9 = 197.78 \sim 198$

Hence, the required sample size will be **198**.

INCLUSION CRITERIA

- Professors - The study will include individuals who hold the designation of "professor" or its equivalent in various colleges located in Hyderabad.
- Age: Participants must be above a specified minimum age (e.g., 25 years) to ensure they are adults capable of providing informed consent.

- Full-time Faculty: Only full-time professors will be included in the study to ensure that the respondents have a stable and significant connection with their respective colleges

EXCLUSION CRITERIA

- Part-time or Visiting Faculty: Professors working on a part-time or visiting basis will be excluded from the study to maintain consistency in the sample population.
- Administrative Staff : Individuals holding administrative positions without a primary teaching role, such as college principals or non-teaching staff, will not be considered for participation.
- Professors from Non-Academic Institutions: Professors employed in institutions that do not primarily focus on education (e.g., research organizations, corporate training centres) will be excluded to maintain the study's academic focus.

METHODS OF DATA COLLECTION

A cross sectional study will be conducted across various colleges of Hyderabad. A minimum of 198 will be taken for the study. After analysing the inclusion and exclusion criteria a structured and a validated questionnaire was designed using the available literature. Questions were designed based on the demographic , food patterns& factors influencing, consumption of millets , and dietary choices, and the level of knowledge related to millets along with the availability of millets in their locality. (Refer Annexure 1)

RESULTS AND DISCUSSION

RESULTS

Statistical Analysis:

Descriptive analysis was carried out by frequency and proportion for categorical variables. Continuous variables were presented as **mean $\pm$ SD**.

RStudio Desktop Version 2023.03.0+ 386 was used for statistical analysis. (Reference: *RStudio Team (2023). RStudio: Integrated Development for R. RStudio, PBC, Boston, MA URL <http://www.rstudio.com/>.*)

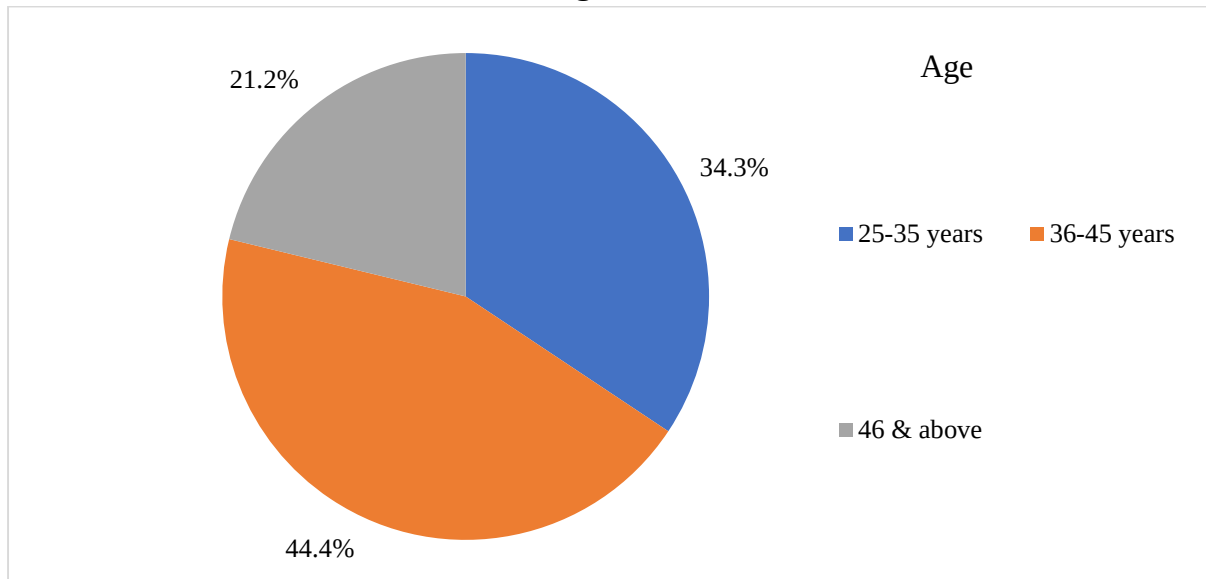
Results:

A total of 198 cases were included in the study.

Table 1: Descriptive analysis of Age in the study population (N=198)

Age	Frequency	Percentages
25-35 years	68	34.34%
36-45 years	88	44.44%
46 & above	42	21.21%

Figure 1:



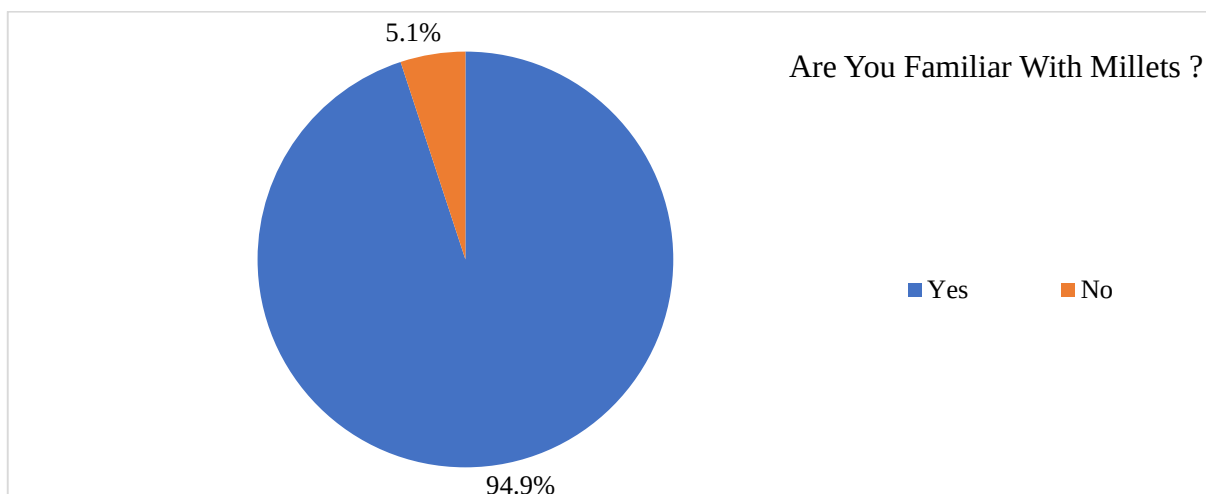
AGE OF THE STUDY POPULATION

The study population comprised of 198 participants. The descriptive analysis reveals a noteworthy proportion of participants, specifically 44.4%, who are in the age group of 38-45 years, followed by those in the 25-35 years (34.3%) and 46 & above (21.21%) age groups, respectively.

Table 2: Descriptive analysis of Qualification in the study population (N=198)

Qualification	Frequency	Percentages
Graduate	1	0.51%
Post Graduate	154	77.78%
Doctor	39	19.70%
Other	4	2.02%

Figure 2:



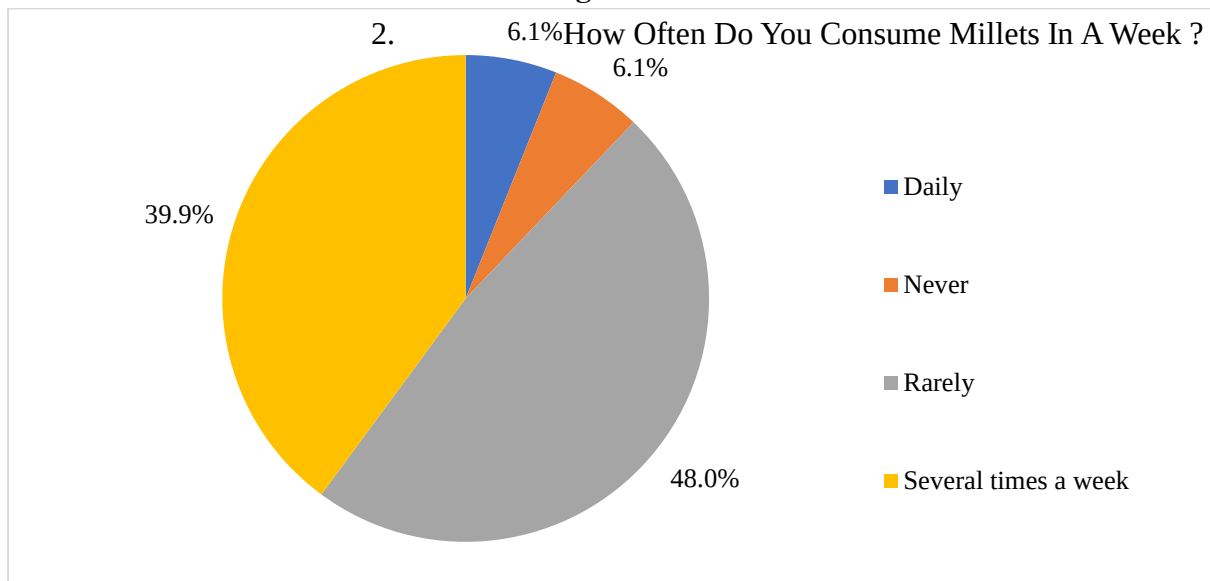
FAMILIARITY OF MILLETS

Only 5.1% of the population does not know what millets are, according to the study's descriptive analysis, while 94.9% of professors do.

Table 3: Descriptive analysis of Millet Consumption Habits in the study population (N=198)

Millet Consumption Habits	Frequency	Percentages
Are You Familiar with Millets ?		
Yes	188	94.95%
No	10	5.05%
How Often Do You Consume Millets in A Week ?		
Daily	12	6.06%
Never	12	6.06%
Rarely	95	47.98%
Several times a week	79	39.90%
How much millet do you typically consume in a meal ?		
Less than ¼ cup	67	33.84%
¼ to ½ cup	89	44.95%
½ or more than ½ cup (one cup)	30	15.15%
I never consume.	12	6.06%
If You Consume During Which Time of The Day, Do You Typically Consume Millets ?		
Breakfast	61	30.81%
Dinner	50	25.25%
Lunch	32	16.16%
Other	9	4.55%
Snacks	46	23.23%
What Is the Most Common Millet You Prefer to Consume?		
Bajra	20	10.10%
Jowar	72	36.36%
Quinoa	23	11.62%
Ragi	83	41.92%
Do You Consume the Millet in Combination with The Cereals		
Yes	129	65.15%
no	69	34.85%
What Changes Do You Often Observe After the Consumption of Millets		
Feeling bloated	14	7.07%
Feeling of fullness	112	56.57%
Feeling thirsty	10	5.05%
None of the above	62	31.31%

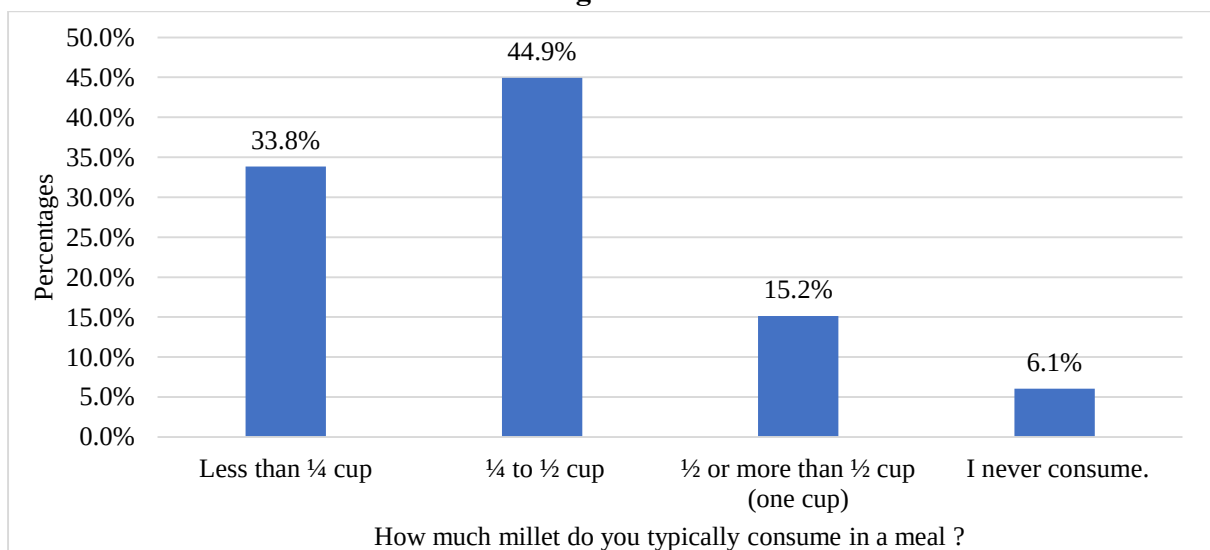
Figure 3:



CONSUMPTION OF MILLETS

According to the study's descriptive analysis, only 6.1% of the study population eats millets every day, compared to 48% who eat them infrequently, 6.1% who had never eaten them, and 39.9% who eat them several times a week.

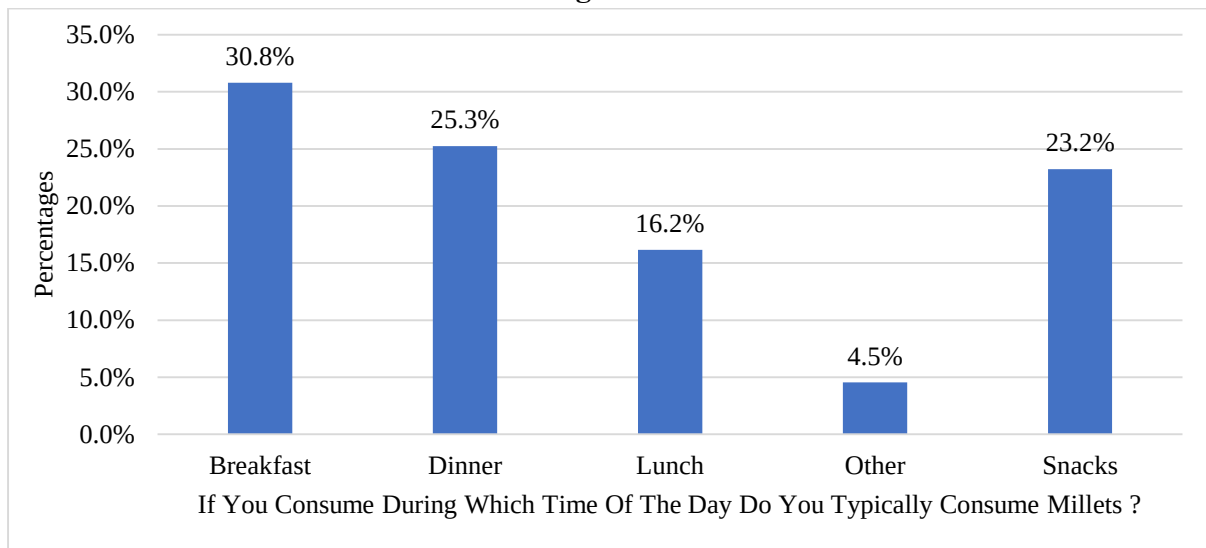
Figure 4:



TYPICAL CONSUMPTION OF MILLETS

Based on the study's analysis, 44.9% of the participants ingested between $\frac{1}{4}$ and $\frac{1}{2}$ cup of millets, 33.8% consumed less than $\frac{1}{4}$ cup, 15.2% consumed one cup, and 6.1% never cooked with millets.

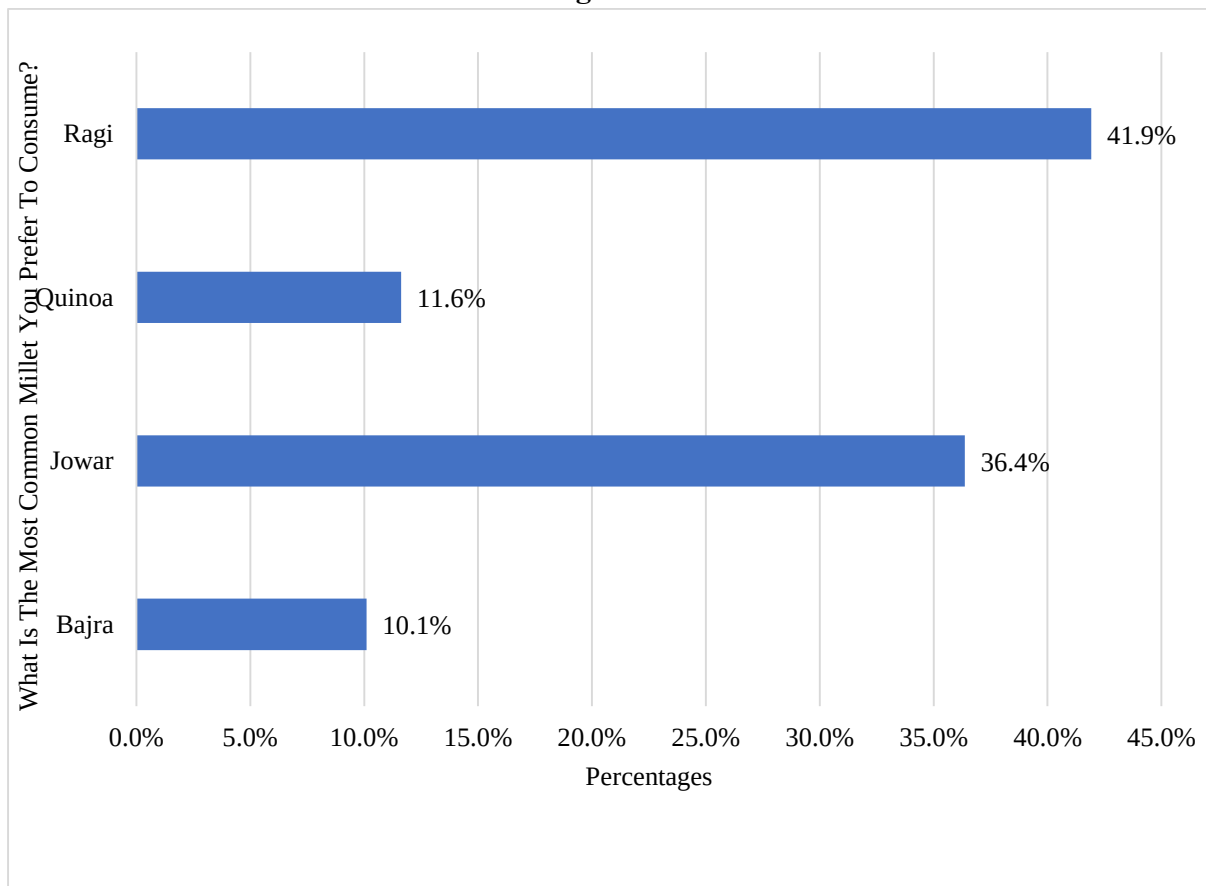
Figure 5:



MILLET CONSUMPTION TIMINGS

The study's descriptive analysis revealed that the majority of participants ate millets for breakfast (30.8%) and dinner (25.3%), with the remaining being consumed during other times of the day (4.5%), snacks (23.2%), and lunch (16.2%).

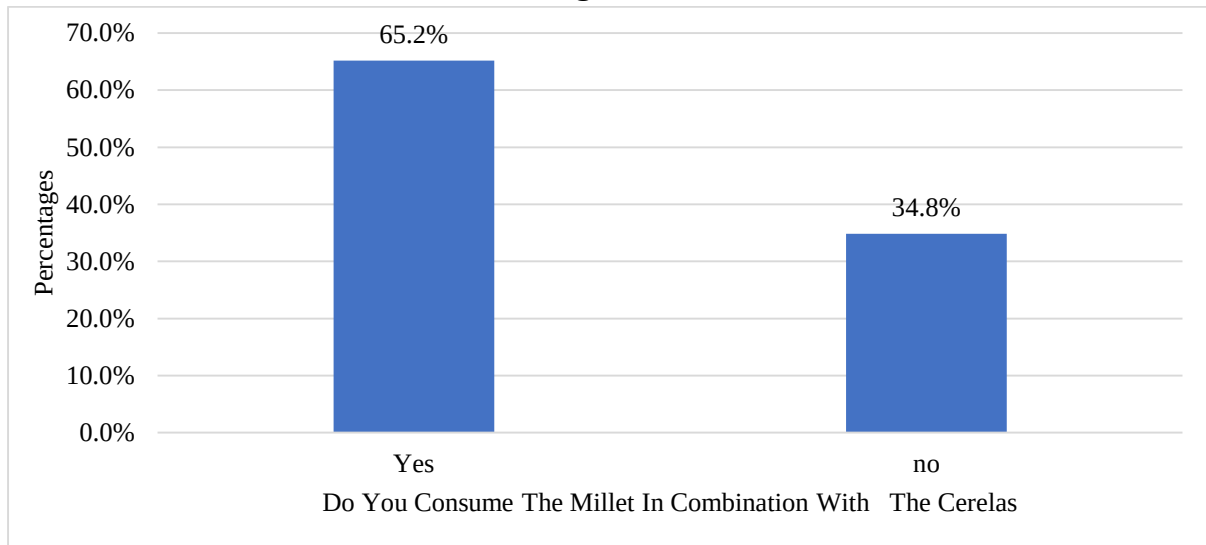
Figure 6:



MOST COMMON MILLET PREFERRED

According to the study's descriptive analysis, ragi (41.9%) is the most popular millet, preferred over bajra (10.1%), quinoa (11.6%), and jowar (36.4%).

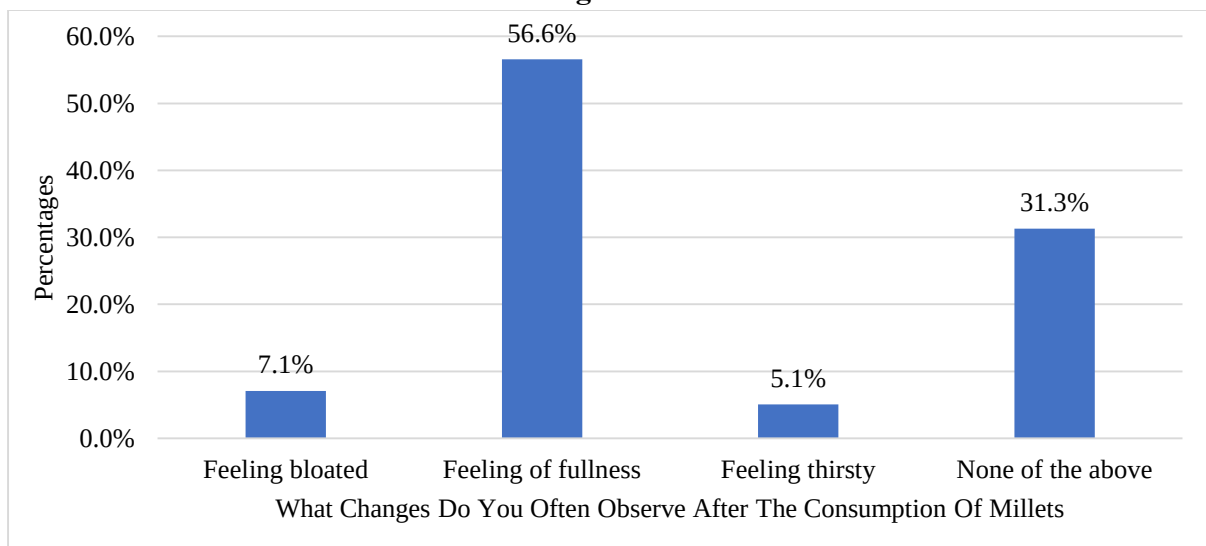
Figure 7:



MILLET IN COMBINATION WITH CEREAL

According to the study's descriptive analysis, 35.8% of the study population does not consume millets in addition to cereals, while the 65.2% percentile does.

Figure 8:



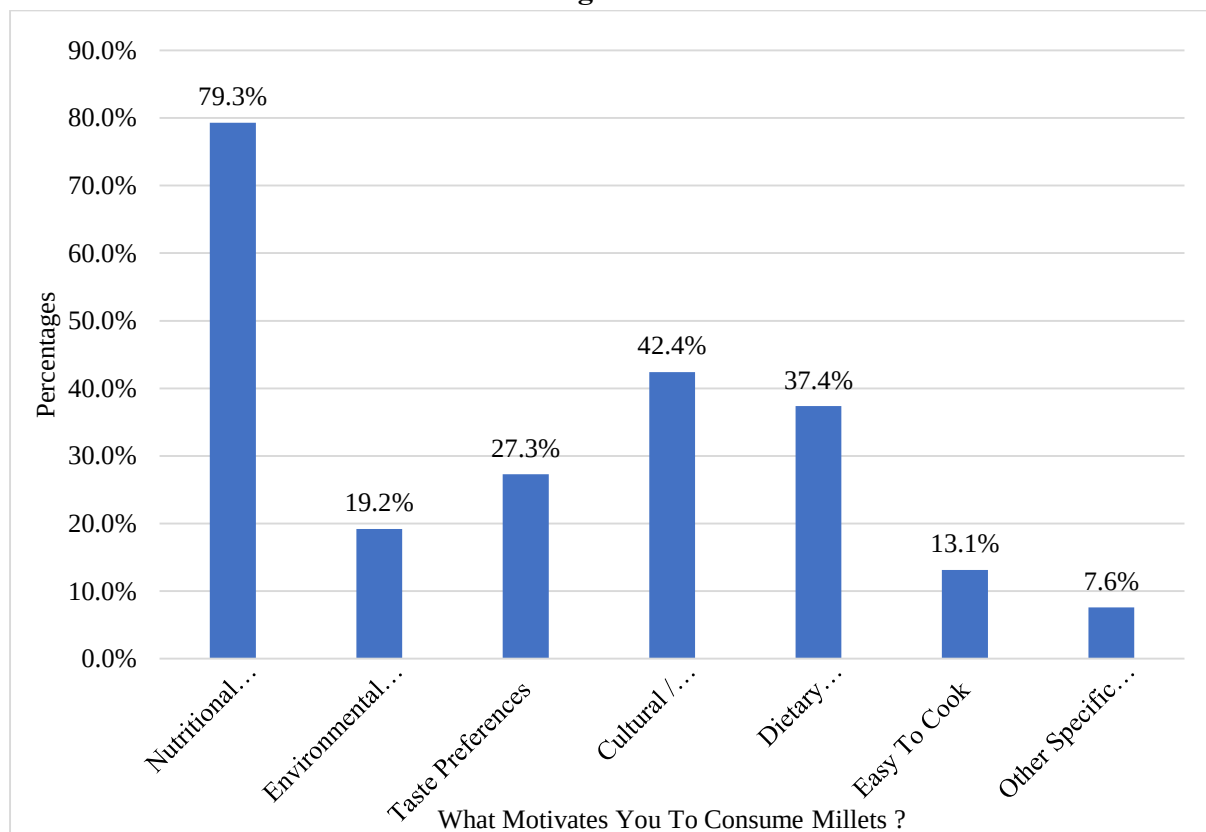
CHANGES OBSERVED AFTER CONSUMPTION OF MILLETS

According to the study's descriptive analysis, 56.6% of the population reported feeling full, 7.1% reported bloating, 5.1% reported being thirsty, and 31.3% reported having none of the aforementioned symptoms.

Table 4: Descriptive analysis of Reason for Millet consumption in the study population (N=198)

Reason for Millet Consumption	Frequency	Percentages
What Motivates You to Consume Millets ?		
Nutritional Benefits	157	79.29%
Environmental Sustainability	38	19.19%
Taste Preferences	54	27.27%
Cultural / Traditional Beliefs	84	42.42%
Dietary Restrictions	74	37.37%
Easy To Cook	26	13.13%
Other Specific Reasons	15	7.58%

Figure 9:



REASON FOR MILLET CONSUMPTION

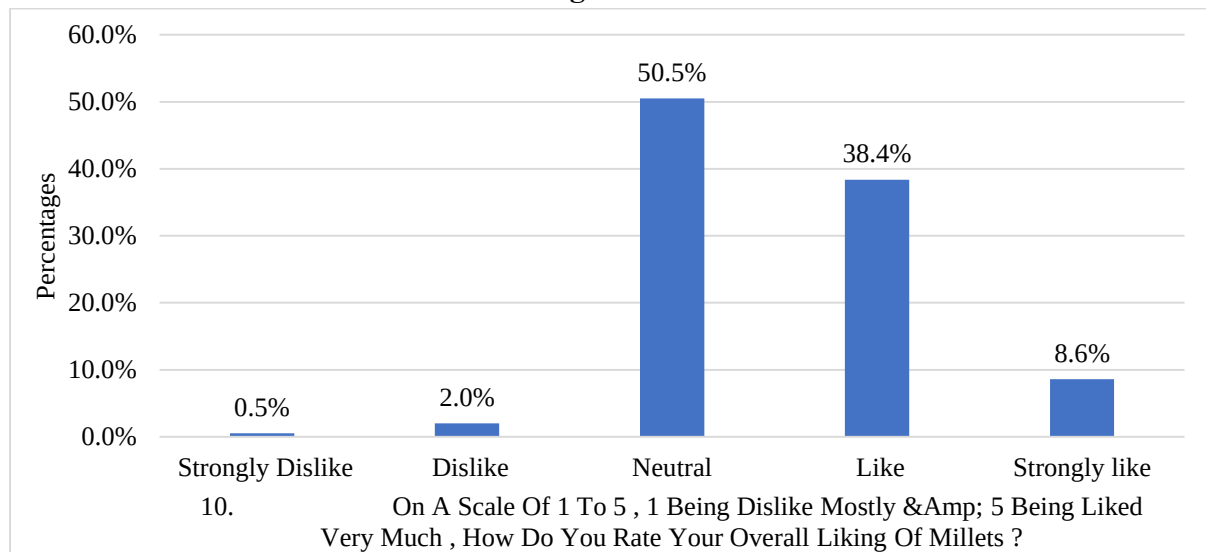
The Descriptive Analysis of the study reveals that 79.29% of respondents state that "Nutritional Benefits" is the main reason they eat millets. The most frequently cited reasons are "Dietary Restrictions" (37.37%) and "Cultural/Traditional Beliefs" (42.42%), in that order. Although they are less prevalent, other reasons like "taste preferences" (27.27%), "environmental sustainability" (19.19%), and "easy to cook" (13.13%) are also there.

Table 5: Descriptive analysis of Acceptance and preference in the study population (N=198)

Acceptance and Preference	Frequency	Percentages
How Do You Rate Your Overall Liking of Millets ?		

Strongly Dislike	1	0.51%
Dislike	4	2.02%
Neutral	100	50.51%
Like	76	38.38%
Strongly like	17	8.59%
What are the factors that influence your liking for millets		
Taste	31	15.66%
Nutritional Value	148	74.75%
Easy To Cook	30	15.15%
Health Benefits	139	70.20%
Price	12	6.06%
Cultural / Regional Beliefs	58	29.29%
What are the reasons for disliking millets?		
Bad Taste or Texture	33	16.67%
Did Not Find Any Nutritional Benefit	17	8.59%
Do Not Know How to Cook	61	30.81%
Previous Negative Experiences	33	16.67%
Cultural Or Regional Preferences to Other Cereal Grains	49	24.75%
Other	113	57.07%
Which method of preparation do you think is better accepted with respect to Organoleptic properties		
Porridge	70	35.35%
Dosa Or idly	92	46.46%
Chapatis / Roti	107	54.04%
As A Supplement Taken with Milk	74	37.37%
Biscuits/Desserts	52	26.26%
How Do You Usually Prepare the Millet Products ?		
in fermented foods such as Idly, dosas etc	45	22.73%
porridges	33	16.67%
powder forms	84	42.42%
Pressure Cooking	36	18.18%

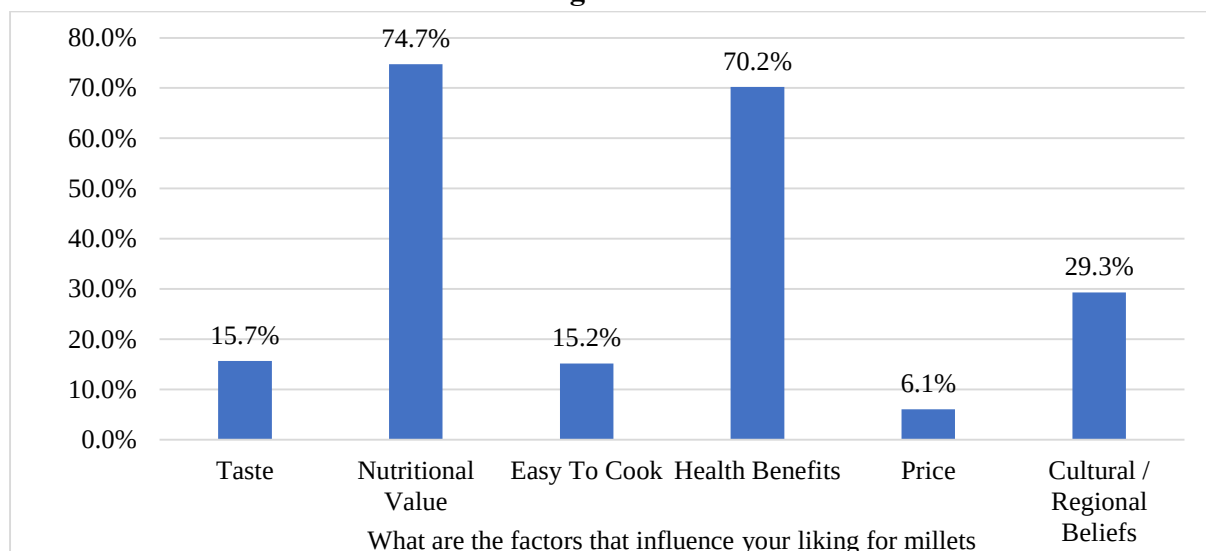
Figure 10:



LIKING OF MILLETS

The Descriptive analysis of the study shows that the 50.51% of respondents choosing "Neutral," as their most common response, it indicates a neutral attitude toward millets. 46.97% of respondents indicated that they either "Like" or "Strongly Like" millets. 2.53% of respondents indicated that they "dislike" or "strongly dislike" millets overall.

Figure 11:



FACTORS INFLUENCING LIKING OF MILLETS

The Descriptive analysis of the study shows that the 50.51% of respondents choosing "Neutral," as their most common response, it indicates a neutral attitude toward millets. 46.97% of respondents indicated that they either "Like" or "Strongly Like" millets. 2.53% of respondents indicated that they "dislike" or "strongly dislike" millets overall.

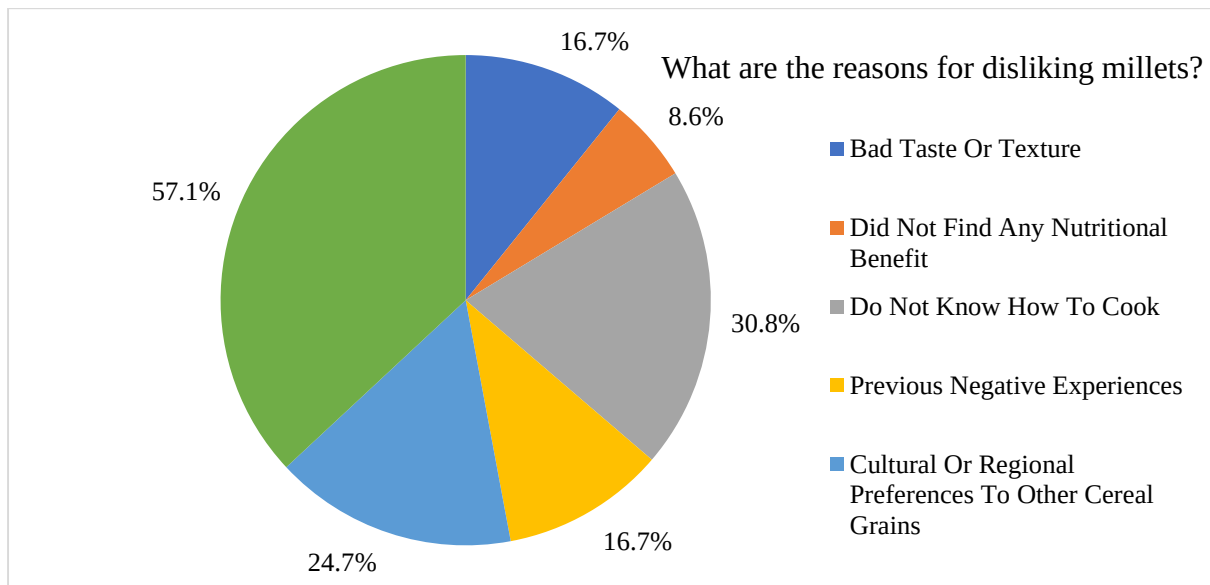
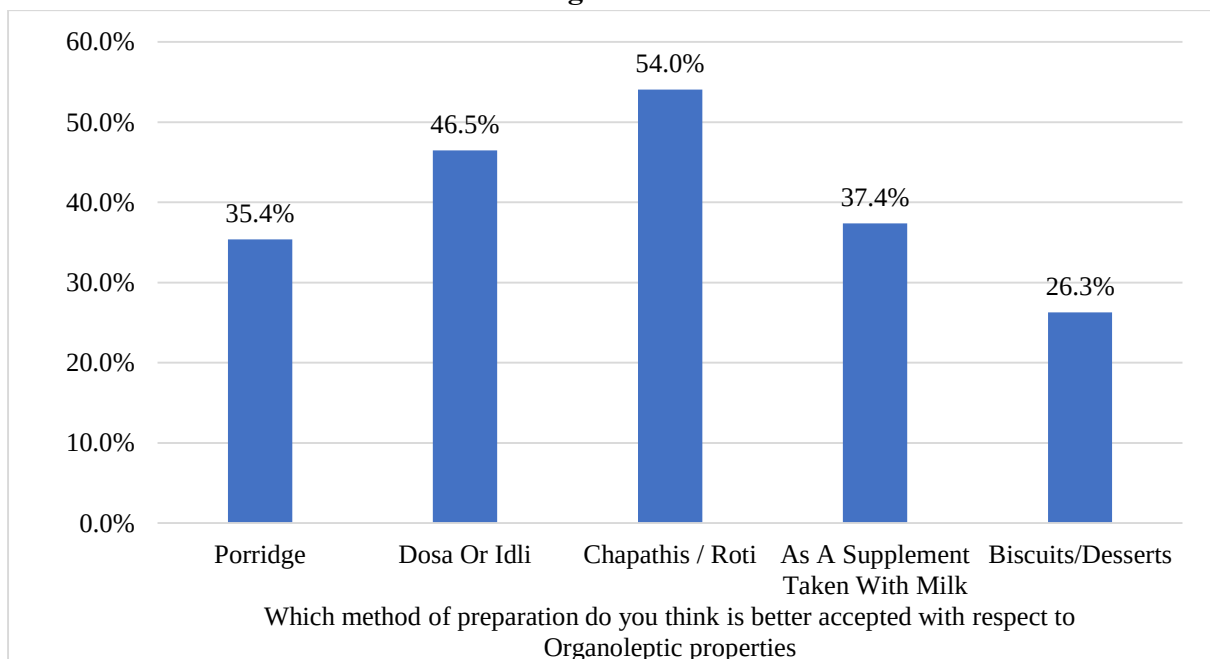


Figure 12:

REASONS FOR DISLIKING OF MILLETS

The Descriptive analysis of the study shows that "Other" (57.07%) and "Do Not Know How to Cook" (30.81%) are the most commonly stated objections to millets. The moderately prevalent reason for not liking millets is "Cultural or Regional Preferences to Other Cereal Grains" (24.75%). A lower proportion of respondents mentioned "Bad Taste or Texture" (16.67%) and "Previous Negative Experiences" (16.67%). Relatively fewer people (8.59%) gave "Did Not Find Any Nutritional Benefit" as their reason for not enjoying millet.

Figure 13:

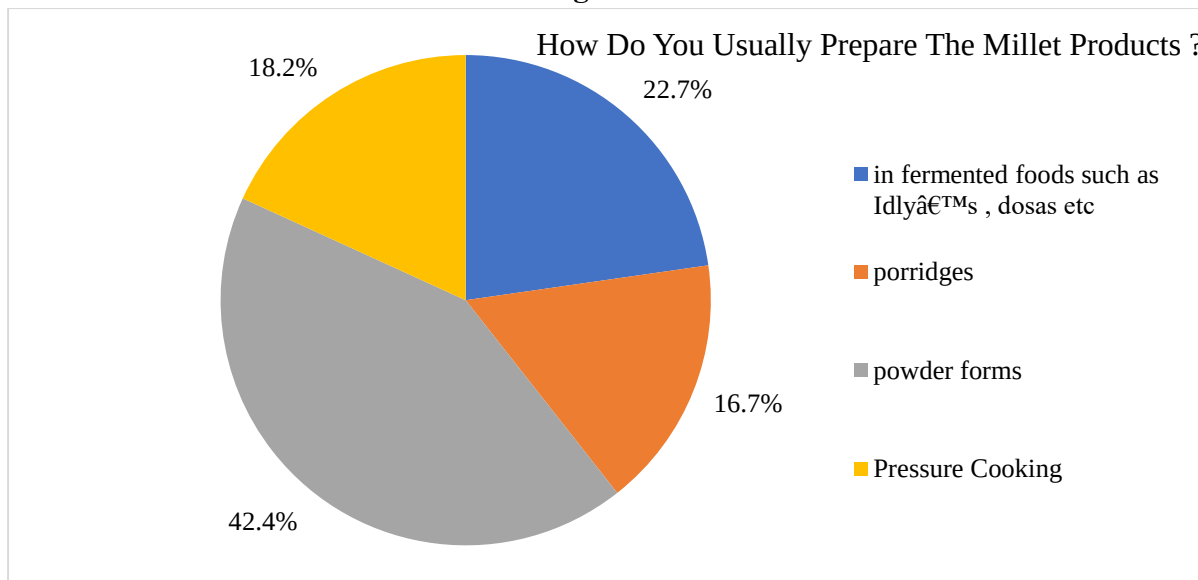


METHOD OF PREPARATION BETTER ACCEPTED.

The Descriptive analysis of the study shows that the method of preparation that is most preferred is "Cha-

patis/Roti" (54.04%). The next most popular methods are "Porridge" (35.35%) and "Dosa or Idly" (46.46%), which are also widely accepted. Another method is "As A Supplement Taken with Milk" (37.37%). The percentage for "Biscuits/Desserts" (26.26%) is lower, indicating that this method is not as popular due to its organoleptic properties.

Figure 14



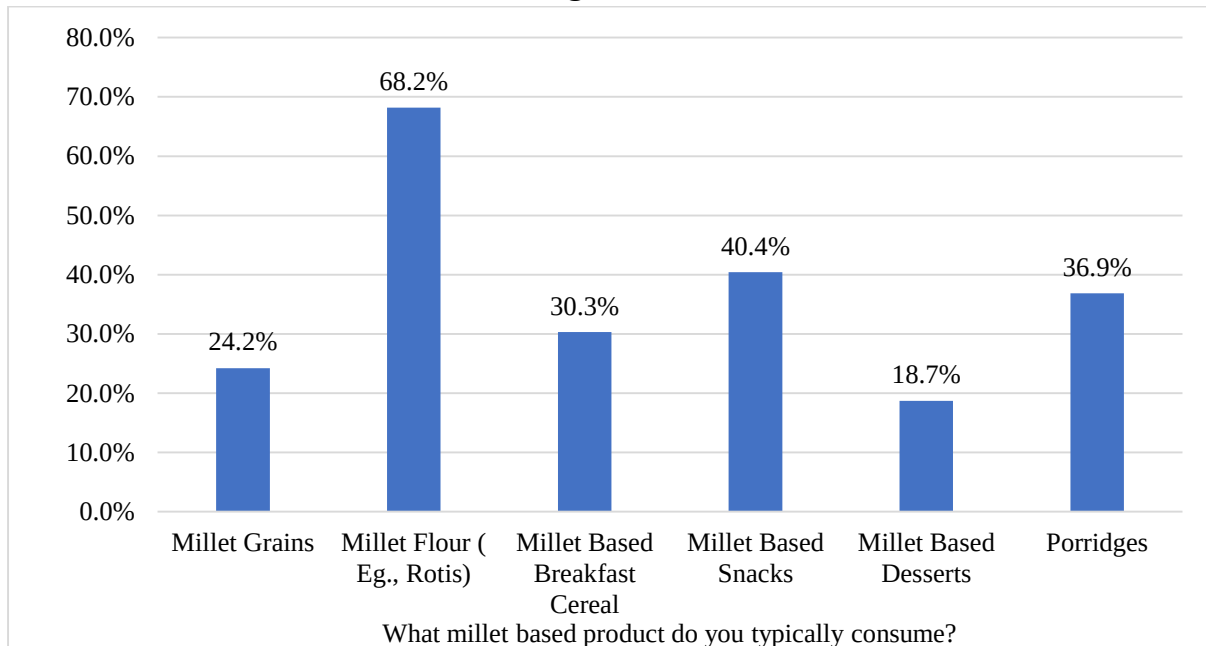
PREPARATION OF THE MILLET PRODUCT

The Descriptive analysis of the study show that the "Powder Forms" (42.42%) is the most often mentioned method, suggesting that a sizable percentage of respondents favour utilizing millet products in powdered form. "In Fermented Foods such as Idly, dosas, etc." (22.73%) comes in second (very closely), "Pressure Cooking" (18.18%) is another technique that a significant portion of respondents use, and "Porridges" (16.67%) is a smaller but still noteworthy percentage.

Table 6: Descriptive analysis of Millet products in the study population (N=198)

Millet Products	Frequency	Percentages
What millet-based product do you typically consume?		
Millet Grains	48	24.24%
Millet Flour (E.g., Rotis)	135	68.18%
Millet Based Breakfast Cereal	60	30.30%
Millet Based Snacks	80	40.40%
Millet Based Desserts	37	18.69%
Porridges	73	36.87%
Where Do You Generally Get Your Millet?		
All the above	25	12.63%
Commercial shops	112	56.57%
Home made	19	9.60%
Readymade products	42	21.21%

Figure 15:



TYPE OF MILLET PRODUCT CONSUMED

The most widely used millet-based product is millet flour (such as rotis), as reported by respondents (68.18%). While "Millet Based Breakfast Cereal" (30.30%) is consumed by a moderate percentage of respondents, "Millet Based Snacks" (40.40%) and "Porridges" (36.87%) are also popular choices among respondents. Although their percentages are comparatively lower, "Millet Grains" (24.24%) and "Millet Based Desserts" (18.69%) nevertheless account for a sizeable portion of respondents.

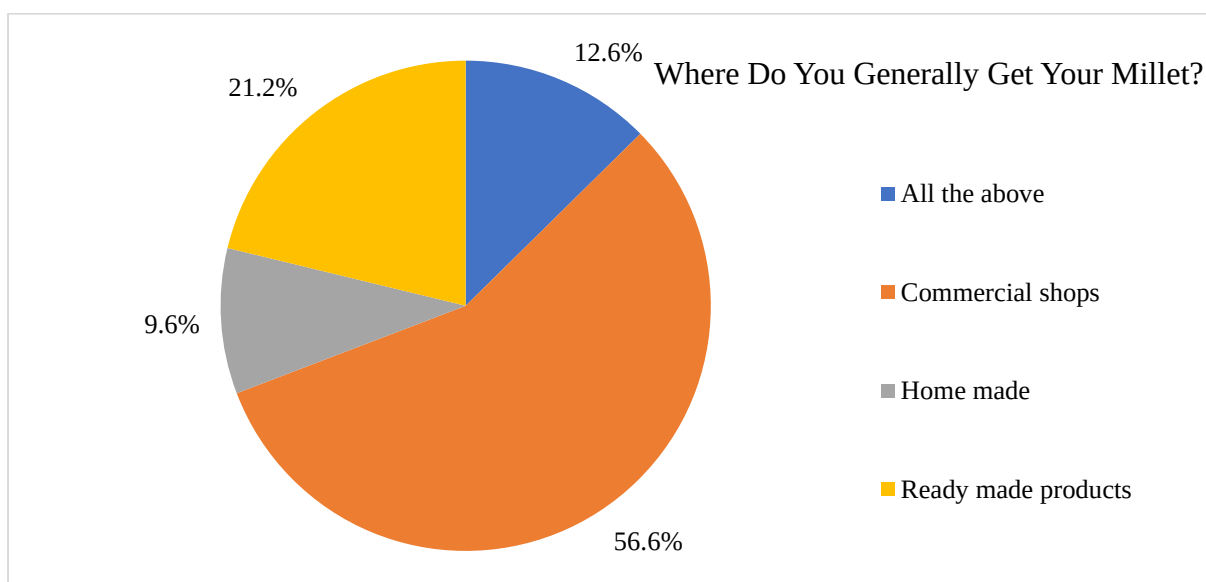


Figure 16:

AVAILABILITY OF THE MILLETS

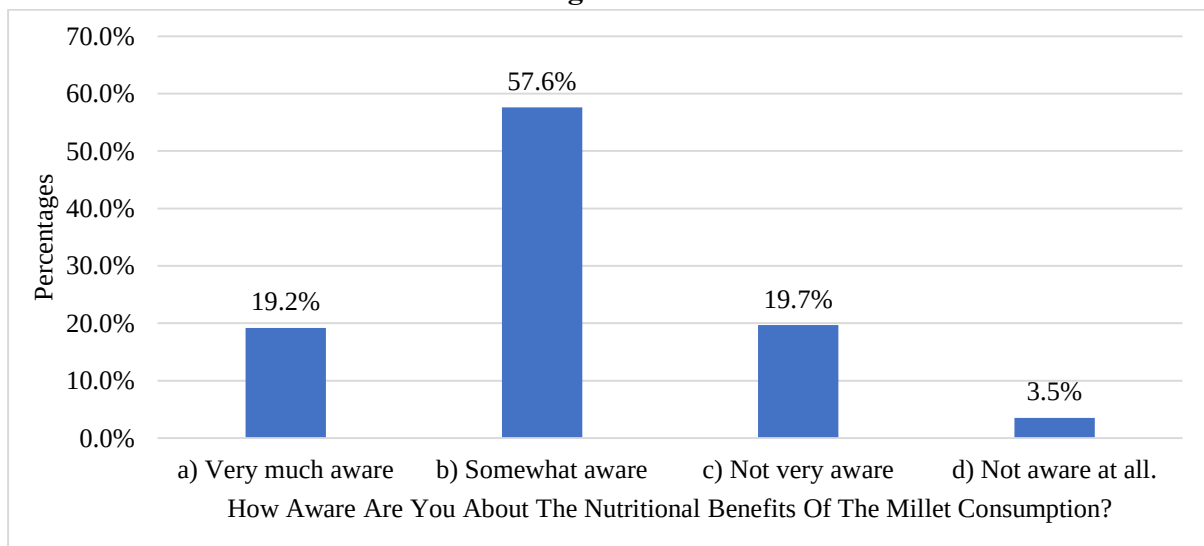
The Descriptive analysis of the study reveals that the Commercial Shops (56.57%) are the most common place to find products made from millet. The percentage of "Ready Made Products" (21.21%) is

noteworthy, indicating that a considerable segment of the participants favours pre-made millet products that are readily available in the market. All the Above" (12.63%) is a category that includes respondents who get millet-based products from various sources, indicating a diverse approach in their procurement methods. Home Made" (9.60%) indicates that a smaller, yet significant, proportion.

Table 7: Descriptive analysis of Awareness and Education in the study population (N=198)

Awareness and Education	Frequency	Percentages
How Aware Are You About the Nutritional Benefits of The Millet Consumption?		
a) Very much aware	38	19.19%
b) Somewhat aware	114	57.58%
c) Not very aware	39	19.70%
d) Not aware at all.	7	3.54%
How Did You Come to Know About the Health Benefits of Millets ?		
A) Doctors	26	13.13%
B) Dietitians	39	19.70%
C) Colleagues	102	51.52%
D) Other	31	15.66%
What Do You Think Are the Health Benefits of Millets ?		
A) Controls Blood Sugar Levels	39	19.70%
B) Improves Digestive health	58	29.29%
C) Protects Heart	11	5.56%
D) Promotes antiaging	2	1.01%
E) All the Above.	88	44.44%
Have You Received Any Formal Education or Information Regarding the Nutritional Benefits of Millets ?		
Yes	53	26.77%
No	145	73.23%

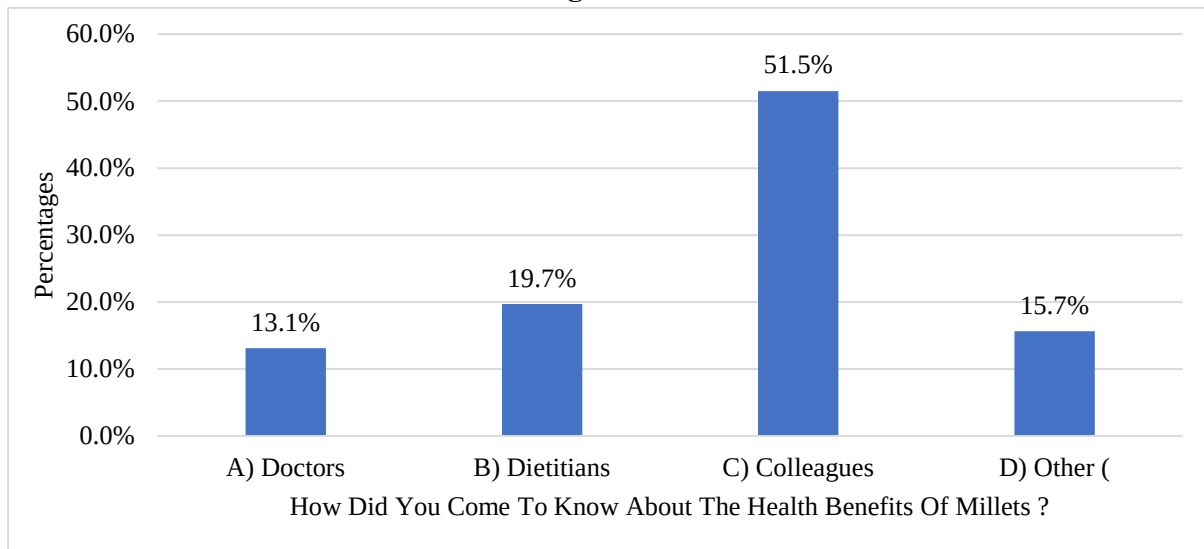
Figure 17:



AWARENESS AND EDUCATION

The Descriptive analysis of the study shows that 57.58% of respondents indicating a moderate level of awareness, "somewhat aware" is the most frequently given response. After that, "Very much aware" (19.19%) and "Not very aware" (19.70%) are about equal. "Not aware at all" has the lowest percentage (3.54%), indicating that a tiny percentage of respondents express total ignorance of the health advantages linked to millet consumption.

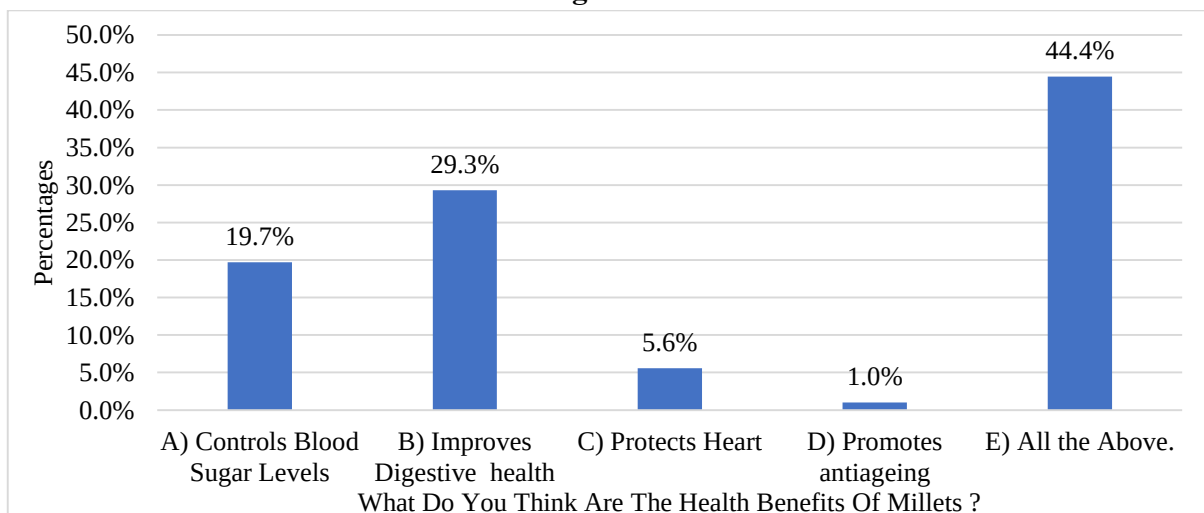
Figure 18:



SOURCE OF AWARENESS

The Descriptive analysis of the study reveals that the most popular information source is "colleagues," as reported by 51.52% of respondents who said they first heard about millets' health advantages from their coworkers. With 15.66% coming from "Other" sources, it is clear that there are a variety of channels that are not included in the pre-established categories. After this, "Dietitians" (19.70%) make up a sizeable portion of the population. With the lowest percentage (13.13%), "doctors" denote that a comparatively smaller percentage of respondents obtained information from medical professionals.

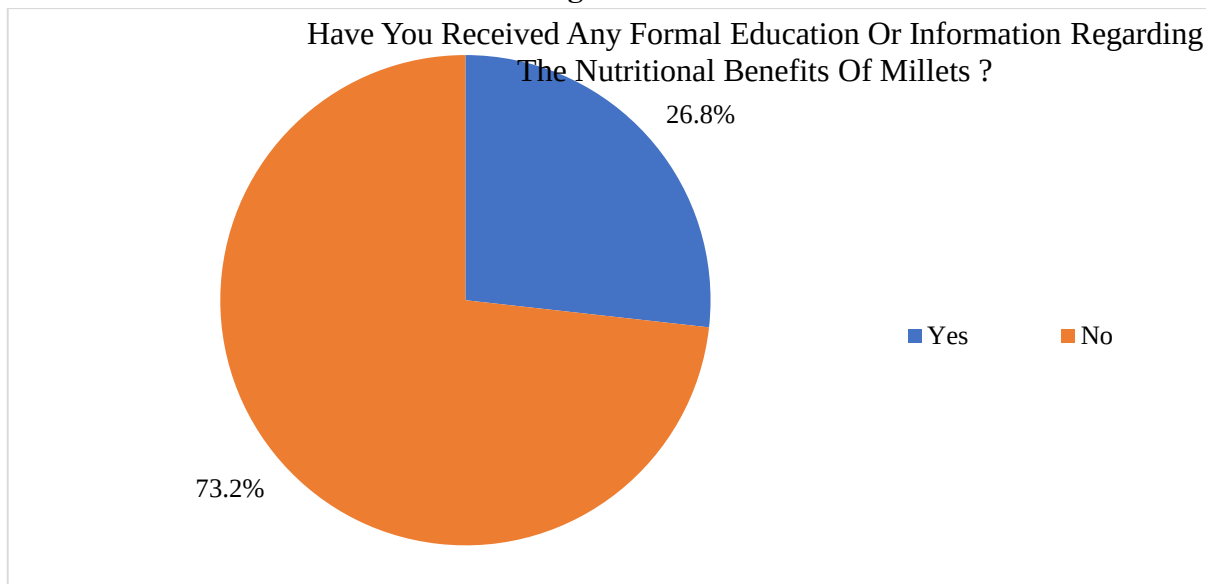
Figure19:



HEALTH BENEFITS OF MILLETS

The Descriptive analysis of the study shows that the most popular response is "All the Above," with 44.44% of participants saying they think millets have a range of health advantages, such as lowering blood sugar, enhancing digestive health, preventing heart disease, and fostering anti-aging effects . At 29.29% of respondents, "Improves Digestive Health" is the second most popular choice . Controls Blood Sugar Levels" is selected by 19.70% of participants, while "Promotes Antiaging" and "Protects Heart" have lower percentages (1.01% and 5.56%, respectively).

Figure 20:



FORMAL EDUCATION

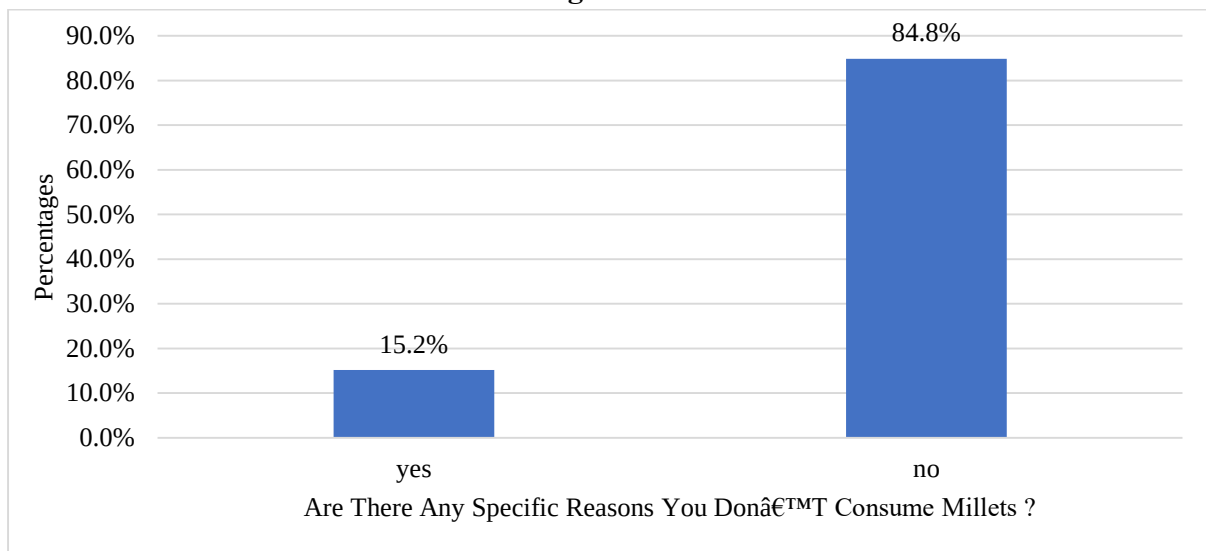
The Descriptive analysis of the study shows that 6.77% of respondents said "Yes," indicating that they had been informed about the nutritional advantages of millets through formal education. 73.23% of respondents, the majority, indicated that they had not been formally educated or informed about the nutritional advantages of millet.

Table 8: Descriptive analysis of Hinderances to Millet consumption in the study population (N=198)

Hinderances to Millet consumption	Frequency	Percentages
Are There Any Specific Reasons You Don't Consume Millets?		
yes	30	15.15%
no	168	84.85%
Do You Find Millets to Be More Expensive Than Other Cereal Grains Like Rice & Wheat ?		
Yes	124	62.63%
No	74	37.37%
Do You Find It Convenient to Cook or Perceive It as A Difficult Process ?		
convenient	115	58.08%

difficult	83	41.92%
Is The Availability of Millets Limited in Your Local Grocery Stores or Markets ?		
yes	126	63.64%
no	72	36.36%

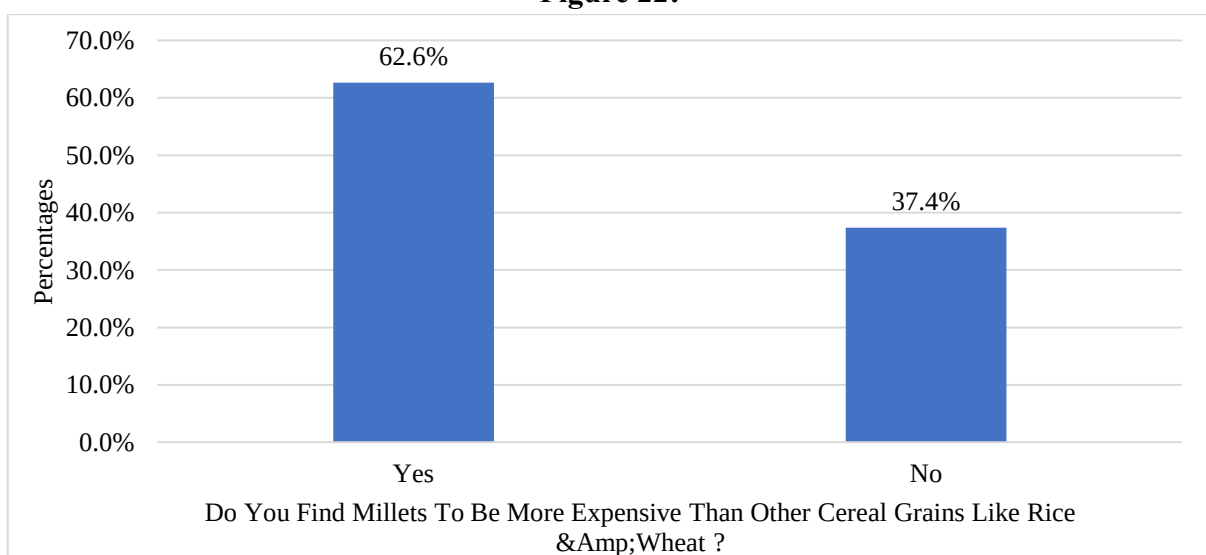
Figure 21:



HINDERANCE TO MILLET CONSUMPTION

Of those surveyed the descriptive analysis reveals that 15.15 percent said "Yes," indicating that they don't eat millet for particular reasons. With 84.85% of respondents answering "No," it appears that most respondents do not have a specific reason why they do not consume millets.

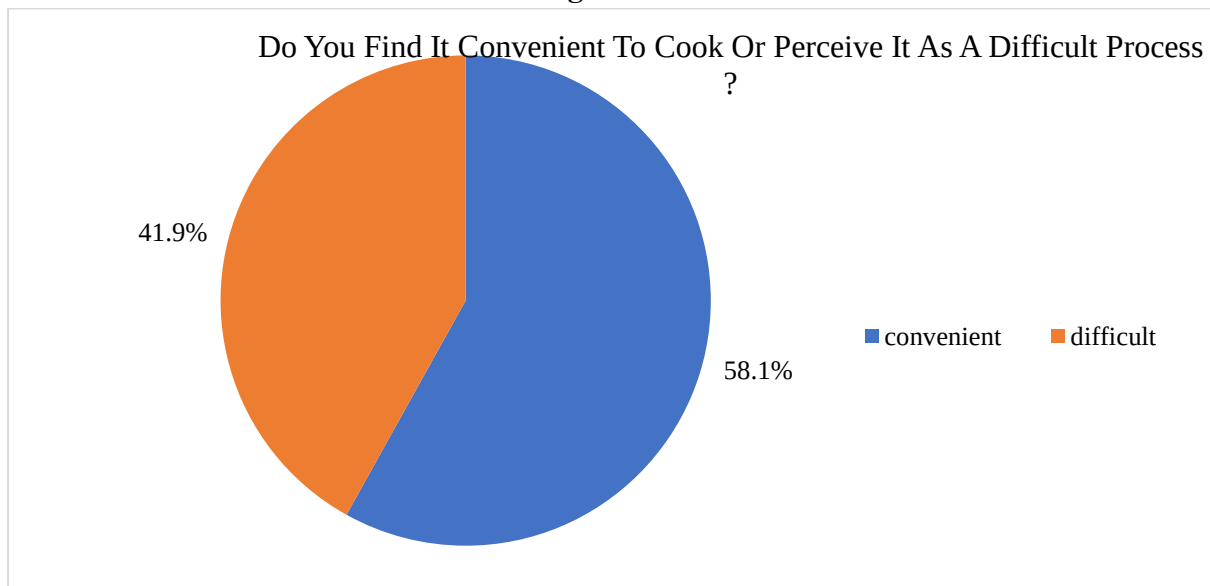
Figure 22:



Cost of millets

According to Descriptive analysis of the study 62.63% of respondents, who selected "Yes," millets are thought to be more costly than other cereal grains like wheat and rice. In contrast, 37.37% of respondents indicated that they did not think millets were more expensive than other cereal grains by answering "No."

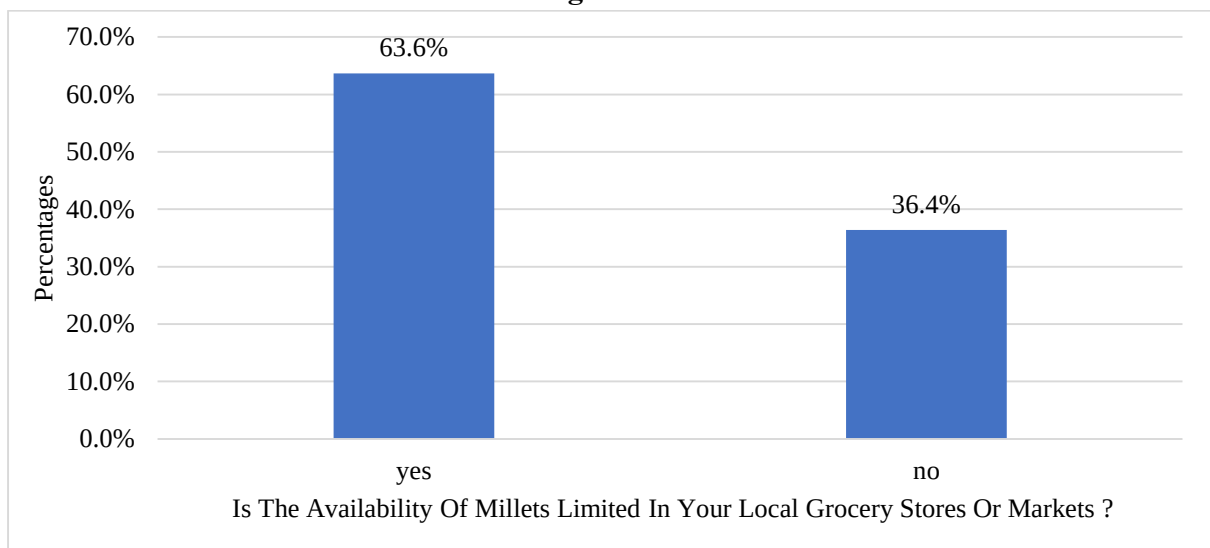
Figure 23:



PERCEPTION OF CONVENIENCE OF COOKING

The Descriptive analysis of the study interprets that , cooking of millets is convenient, according to 58.08% of respondents. This indicates that the majority of those surveyed thought cooking millet was a simple and manageable process. Conversely, 41.92% of participants believe that cooking millet is a challenging task.

Figure 24:



PERCEPTION OF AVAILABILITY OF MILLETS

According to the Descriptive analysis of the study , 63.64% of respondents said "Yes," indicating that they thought there wasn't much millets available in their neighbourhood markets or grocery stores. On the other hand, 36.36% of respondents indicated that they did not think millets were scarce in their neighbourhood markets or grocery stores.

DISCUSSION

The study investigates the acceptance and consumption patterns of millets among professors in colleges in Hyderabad, India. A survey conducted from September to December 2023 revealed that participants aged 38-45 years had extensive awareness about millets, although some faced challenges and misconceptions due to lack of awareness.

Similar studies have shown no relation between awareness and department type, marital status, and gender in millet consumption as depicted by the research conducted among the teachers with PG and M.Phil. degrees in Coimbatore city of Tamil Nadu (*Health-Awareness-about-Organic-Cereals-and-Millets-among-Women-College-Teachers-in-Tiruchirappalli-Libre.Pdf*, n.d.)(1)

The descriptive analysis provided valuable insights. The majority of participants being between 25-45 years highlight the need to promote millets to younger populations. While awareness was high, formal education on millets was low, indicating a gap. Consumption frequency and portion sizes being low aligns with previous research showing millets are not dietary staple (Pandit et al., 2020).(2)

As per the analysis of the study the traditional forms like rotis or chapatis with millet flour with ragi millet being most preferred, has revealed that the contemporary practises are well accepted rather than the traditional forms paving a way for the advances in cooking methods which is analogous to the corresponding studies where ragi Ladoo and ragi halwa were the most accepted in the purposive sampling survey.(Pravallika et al., 2020) (3)

The analysis has drawn major findings with respect to the nutritional value and health benefits of millets to be more influencing among the professors which coincides with the millets as therapeutic meals for the lifestyle disorders and health benefits such as weight reduction among the individuals.(Shah et al., 2023)(4)

The findings of the study has clearly shown that the professors perceived millets to be more expensive than the other cereals in their locality whereas the a parallel study findings reveal that the consumer were willing to pay a extra 10% for the processed grains such as millets. (Shah et al., 2024)(4).

In conclusion, the study highlights the importance of understanding factors influencing millet consumption among professors and consumers in Hyderabad. It also highlights the need for better processing methods and value addition to millets to ensure their widespread availability and acceptance.

CONCLUSION:

A cross-sectional survey conducted from September to December 2023 involving 198 professors aimed to understand the acceptance and consumption patterns of millets within the academic community. The survey revealed a diverse demographic, with 94.9% of participants being familiar with millets. The most preferred millet is Ragi, with nutritional value and health benefits being the primary motivators. However, common objections include lack of awareness about preparation and cultural preferences. Chapatis/Roti emerged as the preferred preparation method, while millet flour was the dominant product. A majority of professors were somewhat aware of millet benefits, with colleagues playing a pivotal role in providing information. A significant percentage recognized health advantages, but a significant majority had not received formal education on millet nutrition. Despite these challenges, 84.85% of professors lack specific reasons for not consuming millets. A significant proportion perceived millets as more expensive than cereals, but cooking millets was found convenient. Addressing these challenges could enhance millet adoption rates.

STRENGTHS

One notable strength is the study's breadth, covering demographic information, consumption patterns, and factors influencing preferences. The mix of quantitative data and qualitative responses adds depth to the analysis. The study's practical implications are evident, especially in identifying popular millet products like millet flour and preferred preparation methods, which can guide interventions to promote millet consumption.

Limitations:

However, the study has limitations that should be acknowledged. The demographic details provided are limited, and a more comprehensive exploration, including factors like occupation and geographic location, could provide a more nuanced understanding. Additionally, the study primarily presents associations, lacking in-depth causation analysis to identify the factors influencing preferences and attitudes toward millets. Self-reporting bias is a potential concern, as participants may provide socially desirable responses, affecting the accuracy of the findings.

Further Recommendations:

To address these limitations and further enrich the study:

- **Qualitative Follow-up:** Conduct follow-up interviews or focus groups to delve deeper into the reasons behind certain preferences or dislikes, providing richer insights and a more nuanced understanding.
- **Longitudinal Study:** Consider undertaking a longitudinal study to explore changes in attitudes and consumption patterns over time, identifying trends and potential shifts in millet preferences.
- **Geographic Variation:** Investigate regional variations in millet preferences and consumption patterns to tailor interventions based on geographic influences, acknowledging the diversity in cultural practices.
- **Cultural Impact Analysis:** Conduct a more extensive examination of cultural influences on millet consumption, considering regional variations and diverse cultural backgrounds to better understand the contextual factors at play.
- **External Factors:** Explore external factors such as marketing strategies, policy interventions, or societal trends that might impact millet consumption patterns, providing a more comprehensive view of the influencing factors.

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