

# Indigenous Food System During Monsoon in the Context of India

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**Abstract:-** India, the monsoon season is a culinary spectacle where ancient food traditions, intricately woven through generations, come to life. This period highlights the diverse indigenous food systems, which hold both cultural and ethnic significance, alongside their nutritional value. The monsoon's arrival transforms the culinary landscape, ushering in a vibrant array of flavors and dishes.

Indian cuisine shares a symbiotic relationship with the monsoon. The use of indigenous spices not only enhances the taste but also offers antibacterial and antiviral properties, bolstering immunity against seasonal ailments. This season's dynamic platter invites a deeper appreciation for indigenous delicacies like the Maharashtrian 'Vagheteyachi bhaji' and the Indigenous agrarian communities of Chattisgarh celebrating 'Hareli' with medicinal brews of herbs and roots. Even festivals like Janmashtami see unique monsoon-centric dishes like 'Alvati' grace the table.

The title of our research project acts as a portal into the intriguing world of culinary choices and practices across diverse Indian communities. Through this endeavor, we aim to unravel the impact of the monsoon on food and health, with a special emphasis on promoting and preserving ancient food practices.

The Millet Revolution in India adds another dimension to our exploration. Millets, being resilient crops that thrive in diverse climatic conditions, have gained recognition for their nutritional benefits and suitability for monsoon cultivation. Our research delves into the scientific and religious rationales behind consuming various indigenous foods during different seasons, including those that are avoided to prevent seasonal illnesses.

We evaluate governmental initiatives aimed at supporting small-scale farming institutes responsible for producing monsoon seasonal foods. Our research methodology combines primary data collection through questionnaires and community conversations, supplemented by secondary data from official statistics provided by the Government of India on the production of various indigenous food species.

**Keywords:-** Monsoonal Diet, Health, Indigenous Food, Governmental Initiatives, Traditional Values.

## I. INTRODUCTION

Indigenous food system can be defined as a food system of agricultural, culinary, and dietary practices developed and maintained by indigenous peoples over generations. These systems are deeply rooted in traditional knowledge, cultural values, and ecological sustainability, reflecting a holistic understanding of the relationship between humans, nature, and food. India is a land of different foods, culture, traditions, seasons, preferences and lifestyle. Monsoon is the pivot point in India during which several dietary practices are recommended by our ancient culture. These dietary practices ensure that we are protected from a number of viral and bacterial diseases which are prominent in Monsoon. This research is important in linking monsoon, food and health altogether to have a holistic understanding of the context which the ancient culture were set in and what importance it holds in present times with climate change being an utmost challenge for our generation.

➤ *Charak Wrote:*

- *Without a proper diet, medicines are of no use;*
- *With a proper diet, medicines are unnecessary.*

Ranging from a number of ancient texts, monsoon (Mausem in Arabic) beautifully describes its formation and importance in nurturing the crops, celebrations, providing the relief from summer heat. **Rudyard Kipling** describes the pre-monsoon heat of northern India in his story False dawn.

The traditional view of monsoon discusses the village soothsayers. Khushwant Singh speaks about division of summer monsoon into eight periods of 13-14 days each, depending on the signs of the zodiac known as Nakshatras. Of the 27 nakshatras the fifteenth known as Svati (late October) is considered the most auspicious. The Svati rain falling on bamboo trees produces "vanslochan" a precious medicament of Ayurveda, the indigenous Hindu system of medicine.

All Indian languages have innumerable proverbs stressing the importance of monsoon. Different regions celebrate monsoon in diverse ways- Rajasthan marks it with celebration of the festival Hatayali teej, Maharashtrian culture celebrates Ganesh Chaturthi, the whole of North India holds significant ritualistic and cultural value towards monsoon which is evident with different celebrations and festive days

which varies not only across different regions but also across multitude of indigenous communities.

**Francis Zimmermann** mentions that in the view of indigenous thought, monsoon is periodic reversal of sun and rains and not winds which was validated by western scholars. ‘According to local priests, astrologers and physicians who were responsible for establishing the cycle of the festivals, calendar of agricultural activities, the seasonal diets and regimes - Monsoon comes after the summer solstice, when April (the sun ) reverses its course and the earth comes under the rule of Soma( the moon ), who is dispenser of rain’, stated Zimmermann.

Monsoon is viewed in terms of farmer's world especially in context of India because even today productivity of agricultural area around 139.42 million ha is still dependent on monsoon ( Source : Ministry of Agriculture and Farmer's welfare). The year is partitioned in six seasons or 12 lunar months in South Asian calendar. The monsoon covers a period of four months. In Sanskrit, this period is named as '**Chaturmas**' . Monsoon marked the beginning of agricultural year in India. The mythological stories goes that the god Vishnu goes to sleep during rainy season, and the earth deprived of it's lord remains in the power of demons. Hence , several ancient texts specially ayurveda provide advisory which should be followed to have some degree of protection against these demons. The religious texts and folklores further reiterates the importance and dangelurching during monsoon which can be avoided to some extent through prayers, preparing simple food and religious offerings and fasting.

➤ *The main Calendrical Festivals Occurring in Chaturmas are-*

	Ananta System of reckoning	Alternations of dark and bright fortnights	Purimnanta System of reckoning
			Full moon
	New moon	Dark waning	Asadha
July	Asadha	Bright waxing	Sravana
August	Sravana		Bhadrapada
Sept	Bhadrapada		Asvina
Oct	Asvina		Karttika
Nov	Karttika		Margasirsa
Dec	Margasirsa		

Dates	Festivals	Names
11th Bright	Vishnu's sleep	Vishnu's sleep
Full moon	Guru Purnima	Guru Purnima
5th Bright	Nag	Nag
Full moon	Panchami	Raksha
3rd Bright	Raksha	Bandhan
1-9th bright	Bandhan	Teej
10th bright	Curga Puja	Curga Puja
Full moon	Dashers	Dashers
11th Bright	Dipavli	Dipavli
Full moon	Vishnu's wake	Vishnu's wake
	End of rains in ancient text	End of rains in ancient text

Fig 1 Festivals Occurring in Chaturmas,  
(Source - K.L. Merrey, Religious festivals in South India  
and Sri Lanka. 1982)

Dharmashastras, ancient Sanskrit texts, intricately delineate the rules governing diet, or 'Bhojana'. They bestow immense significance upon the type of food, the season, and the direction in which offerings are made, recognizing their profound impact on individual psychology and societal health. During the Vedic period, characterized by an agrarian society, the dietary landscape comprised cereals, pulses, dairy products, and an abundance of fruits and vegetables. This culinary tableau evolved in concert with the rhythms of nature, particularly during the monsoon season, which not only transformed the landscape but also exerted a profound influence on dietary habits.

Despite its superficial appearance as a culinary tradition, the dietary practices rooted in the monsoon season possess a robust scientific rationale. Seasonal ingredients such as fenugreek and spinach, along with fresh produce like okra and corn, and aromatic spices including turmeric and ginger, were strategically incorporated to bolster immunity against prevalent infections during the monsoon. Each generation has contributed its own distinct nuances to this culinary tapestry, enriching it with diverse flavors and nutritional wisdom.

However, the transition from ancient to contemporary times has ushered in new challenges. While traditional food practices endure, they coexist with the modern generation's temptation towards street food and a propensity for an imbalanced diet. This dichotomy underscores the need for a revival of traditional food systems, especially in light of the escalating health issues plaguing today's generation. The exponential rise in health problems, exacerbated by dietary imbalances, is particularly pronounced during the monsoon season, with reported cases of dengue and malaria reaching unprecedented levels in the past five years.

In response to these challenges, there is a discernible resurgence of interest in reviving traditional food systems. This resurgence is driven by a growing recognition of the timeless wisdom encapsulated in ancient dietary practices, which offer a holistic approach to well-being. As we navigate the confluence of tradition and modernity, there's hope for a healthier future where the harmonious integration of age-old wisdom and contemporary sensibilities fosters optimal health and vitality."

➤ *Objectives and Scope*

- It aims to investigate traditional agricultural crop and culinary choices during monsoon.
- It encompasses seasonal changes with special focus on monsoon which influence health.
- It explores the relevance of ancient textually described food system in contemporary framework.
- It analyses governmental initiatives in promoting indigenous food system.

➤ *Research Hypothesis*

Indigenous food system during monsoon is more beneficial in terms of health and more resilient in terms of food security than contemporary food system and should be promoted.

➤ *Research Questions*

- How does the indigenous food system during monsoon is pivotal in today's parlance?
- What is the interlinkage between monsoon, food and health within the context of India?

- What are the distinct nuances between traditional and contemporary food preferences during monsoon?

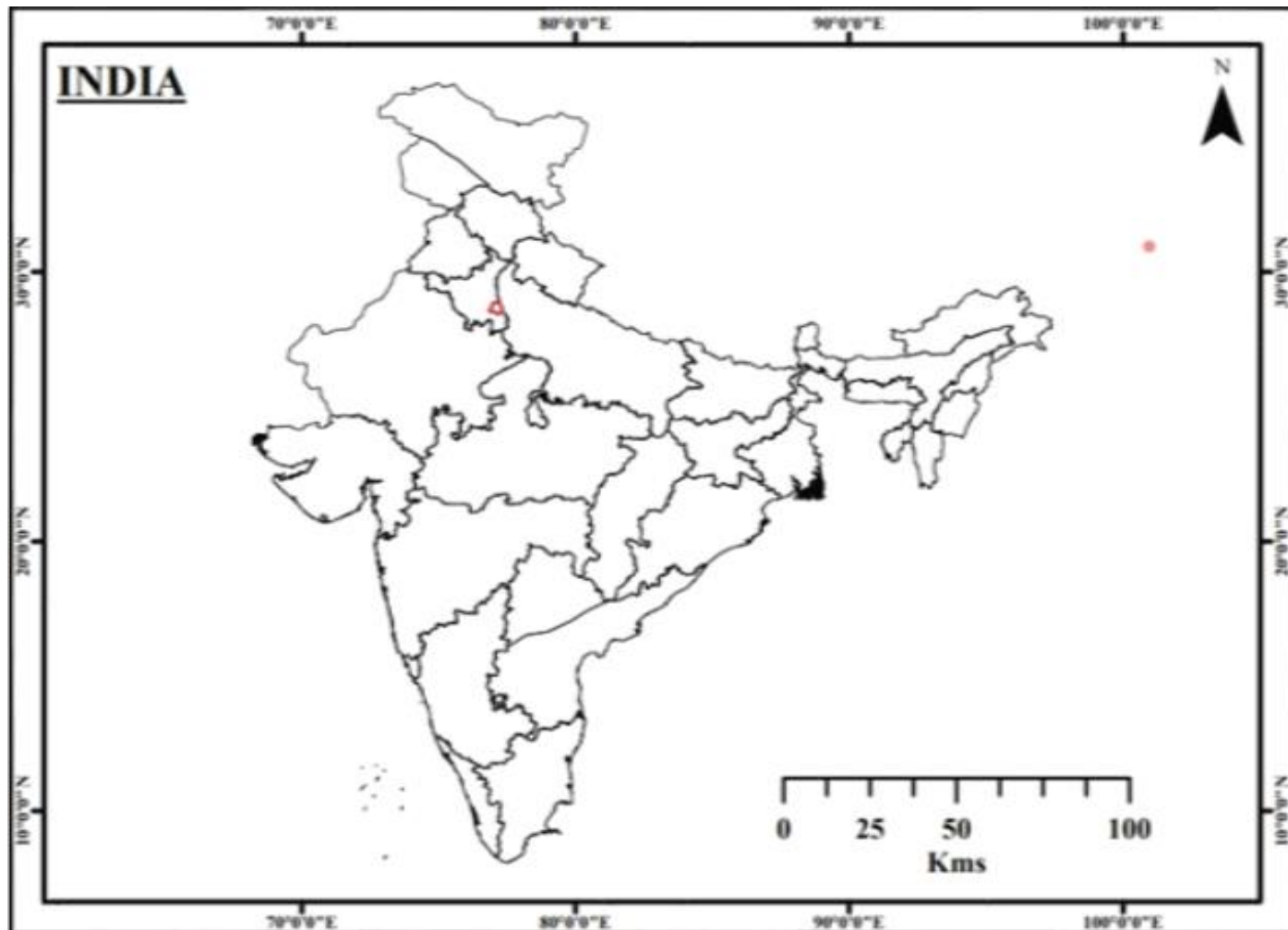
➤ *Study Area*

Fig 2 Study Area - Map of India, 2024

The study area comprises of the entire region of India located on the southern part of Asian continent. The country lies to the north of the equator between  $8^{\circ}4'$  and  $37^{\circ}67'$  north latitude and  $68^{\circ}7'$  and  $97^{\circ}25'$  east longitude, with a total land area of 3,287,263 sq. km. bounded by the Indian Ocean on the south, the Arabian Sea on the southwest, and the Bay of Bengal on the south-east, India has a coastline of 7517 km. The wide variety of physical features and climatic conditions have led to many diversified ecological habitats such as forests, grasslands, wetlands, coastal and marine ecosystems, and desert ecosystems, which harbour and sustain the immense biodiversity. Being a tropical country, it has diversity in climatic zones as well, ranging from the tropical region in the central, southern and north-western part of the country to the temperate and alpine region in the Himalayan north and northeastern part of the country, where elevated regions receive sustained winter snowfall. While there are regions that receive scanty or no rainfall such as in western and central India, the eastern part of India receives some of

the highest rainfall in the world during the monsoon season. The climate is strongly influenced by the Himalayas and the Thar Desert, both of which drive the economically and culturally pivotal summer and winter monsoons. Temperatures in some parts of the Indian plains sometimes fall below freezing while the highest temperature has been recorded up to  $50.6^{\circ}\text{C}$  which shows the wide variability in the country. The agricultural sector with high dependency on monsoon is the most important sector of India's economy accounting for 15% of the GDP. India is the most populous country in the world with one-sixth of the world's population. According to World Health Statistics 2021, the average life expectancy is 70.8 years in India. According to the National Family Health Survey-5, the Infant Mortality Rate (IMR) in India was 35 per 1,000 births from 2019 to 2021, which is 15 percent lower than the numbers in 2015-16. In 2023, the Global Hunger Index ranked India at 111th out of 125 countries.

## II. LITERATURE REVIEW

**Singh (2001)** explores the monsoon's symbolic significance in Indian literature, representing life's cyclical nature and emotional depth. Through vivid imagery and metaphor, he depicts the monsoon's transformative power, evoking themes of renewal, romance, and resilience. Singh's essay highlights how writers across generations have captured the monsoon's essence, weaving it into the fabric of Indian storytelling to reflect human experiences and societal dynamics, making it a timeless and integral motif in Indian literary tradition. Zimmerman delves into the profound impact of the monsoon on traditional societies, particularly in South and Southeast Asia. Zimmerman explores how the monsoon season is intricately woven into cultural practices, rituals, and beliefs, serving as a source of inspiration, renewal, and spiritual significance. He examines various cultural expressions linked to the monsoon, such as festivals, folklore, and artistic representations, illustrating its role in shaping community identities and fostering resilience in the face of nature's cycles. Zimmerman's work underscores the enduring influence of the monsoon on traditional cultures and the dynamic interplay between humans and their natural environment. Monsoon is a global phenomenon. El Niño, Southern Oscillation, Location of Jet stream, ITCZ, change in direction of Trade Winds is some of the global events which impact monsoon. Monsoons is a seasonal climatic phenomena experienced by south Asian subcontinent. For India Monsoons not only have impact on agriculture but also directly influences economy, political and cultural calendar. recent years that extreme monsoon events like flash floods and cloud burst trigger landslides and floods causing massive damage and destruction in some regions and deficit of rainfall results in droughts in some regions during same year (**Bali, 2023**). The agriculture sector in India remains dependent on monsoon rainfall, especially on south-west monsoons (SWM). The average annual precipitation in India is estimated to be 4,000 billion cubic meter (BCM), with the average precipitation during SWM (June-September) at 3,000 BCM contributing about 80 per cent of the annual precipitation (State of Indian Agriculture, Government of India, 2017). The precipitation during SWM remains critical for agriculture production during kharif season; however, with increasing irrigation facilities both in terms of quantity and reach, and adoption of water-efficient irrigation techniques, the dependency of Indian agriculture on monsoon rainfalls is reducing. (**Gulati, 2023**). **Prabhu (2024)** states monsoon are crucial for the Indian economy and are credited with being the backbone of agricultural sector which employs more than half of India's Population. The variability of Indian Monsoons and the associated wet and dry conditions have direct impacts on socioeconomic aspects of the country. Authors analysed the data sources from Indian Monsoon Data Assimilation and Analysis project. **Naidu (2009)** can be cited in using long term (1871-2005) summer monsoon rainfall data over 30 meteorological subdivisions of India, overall tendencies of the rainfall have been studied. Most of the subdivisions reveal systematic increasing and decreasing trends in different segments of the time series. In the global warming era (1970-2005), 19 out of 30 meteorological

subdivisions showed negative tendencies in summer monsoon rainfall.

### ➤ *Indigenous Food Systems:*

**Kumar (2023)** describes how metabolism, immunity, pathogenesis, gene expression, food and drug efficacy is interconnected to Ayurvedic knowledge of the association of the human gut microbiome with the varying seasons, called as Ritucharya. **Kalia (2023)** highlights the diversity of food found in India with the change in season accordingly. Also, the significance and benefits of the different crops and spices used in the various recipes. Every single recipe is connected to purely scientific knowledge of Ayurveda. **Dwivedi (2022)** give details of Ayurveda as the ancient Indian science of life, which has largely emphasised on the importance of maintaining health and preventing diseases through proper diet and lifestyle, rather than focusing only on treatment and cure. **Bannerjee (2020)** focuses on the Traditional knowledge system (TKS) in India. Ayurveda, India's traditional medicinal system, talks about the holistic approach to healthcare embedded in TKS. Ancient texts like the Ramayana and Mahabharata highlights the virtues of nutritious foods, highlighting their role in promoting health and well-being. **Kumar (2013)** gives details of India's rich food culture. Giving reflection of its diverse biodiversity and varied cultural practices across different regions, the ancient food in India encompasses health, nutrition, social, cultural, and religious rituals, mentioned in ancient texts such as the Vedas, the Ayurveda and the Bhagavad Gita. Whereas, in the present times, junk food has spread several negative impacts in Indian society. Sarkar (2015) establishes relation between Food and Health in the Indian region from the ancient times till now. It provides a detailed account of the various food practices in Indian households and how are these practices affected with modernisation. **Binu (2021)** Hinduism, Jainism and Buddhism believe that certain foods should be avoided during 4 months of monsoon which is known as "chaturmas". Green vegetables, curd, milk and pulses are avoided due to various reasons that link with movement, metabolism and structure (vatta, kapha, pitta) of the human body. Ancient knowledge of ayurveda links this prevalence with current scientific reasons. To avoid water borne disease, bacterial infections, slowing down metabolic activity, weakened digestive system, lactose intolerance ancient Indian cuisine culture has suggested these methods for a healthy lifestyle. **Chaudhary (2017)** Report says that farmers in regions like Koraput are inclining towards the indigenous crops with the time. Dr. Debal Deb has done extensive work in the field of seed conservation and research. Farmers from Orissa's Koraput have started to yield ancient indigenous monsoonal crops such as— Kolamali, Sonaseri, Tikkichuri, Kosikamon, Samudrabaali, Raji and governmentchuri, Kolajeera, kolakrushna. The heirloom varieties of rice better performed in cyclone withstanding, monsoon failure, had a pest protection and tasted better and their byproducts could be used as fodder for cattle, mulch for the soil, and hay for thatching the roofs of their huts. By reviving seeds, they are also reviving food, taste, ritual, nutrition, and sustainability. Sarkar (2015) delves into the significance of traditional and Ayurvedic foods in Indian culture and the efforts made by the government to promote and preserve these aspects of the



country's culinary heritage. In India, traditional foods have been an integral part of the cultural fabric for centuries, reflecting the country's diverse culinary traditions and Ayurvedic principles of holistic health. Recognizing the importance of these foods, the government has implemented various policies and initiatives aimed at their promotion and preservation. One of the main government policies highlighted in the article is the establishment of regulatory frameworks to ensure the quality and authenticity of traditional and Ayurvedic foods. This includes the implementation of standards and guidelines for production, packaging, and labeling of these products. By setting standards, the government aims to protect consumers from adulteration and ensure that traditional foods maintain their authenticity and nutritional value. Pande (2021) cites Research done on Indian food and cuisines with reference to the history of the subcontinent, the data shows that the food habits and methods have changed over a time span of 4000 years, starting with the age of Aryans and Indus valley civilisation to the contemporary times. Chickpea and red lentils (masur dal) were crops of monsoon and used to be harvested in the next autumn; served the people of indus valley civilisation. Aryans were more specific with their food choices and rice, lentils were major monsoon meals whereas sesame seeds, kidney beans, millets, panicum grains, prose or broomcorn millets were harvested during post monsoon. Buddhist or mahajanpad era brought more varieties of vegetables and vegetarian food in cooking, rice, mudga beans (green grams), masur dal, sesum oil are mentioned in Buddhist scriptures that find their roots in monsoon agriculture.

#### ➤ Old Ways to Predict Monsoon:

Monsoon all is not only trysting time for humans but also for animals and birds: India's national bird, the peacock. Yogesvara (circa A.D. 800) describes the courtship dance in these beautiful lines (4, page 125, verse 216):

- *With tail-fans spread, and with undulating wings*
- *With whose vibrating pulse the air now sings,*
- *Their voices lifted and their beaks stretched wide,*
- *Treading the rhythmic dance from side to side,*
- *Eying the raincloud's dark, majestic hue,*
- *Richer in color than their own throats' blue,*
- *With necks upraised, to which their tails Now advance,*
- *in the rains the screaming peacocks dance*

Another body of literature where many references to monsoons can be found are brahmanas (12 months) composed by poets of northern India. We are not sure when the tradition of composing bārahmanas came into vogue but by the sixteenth century it had become well established and most poets tried their hand at describing the changing panorama of nature through the year. The Sikh's holy Granth Sahib, has two baramahs scripture, The (Punjabi version of barahmasa) of which the one composed by the founder of the faith, Guru Nanak (1469-1539), in Raga

The names of months used in these verses from Raga Tukhari are from the old Punjabi. They are similar to the Sanskrit (see Chapter 3) but are pronounced and spelled differently. Tukhari (8) has some memorable depictions of the weather. Since the monsoons in the Punjab break sormetime after mid-July. Nanak first describes the summer s heat in his verse on Asadh June-July):

- *In Asadh the sun scorches*
- *Skies are hot*
- *The carth burns like an oven*
- *Waters give up their vapours*
- *It burns and scorches relentlessly*
- *Thus the land fails not*
- *To fulfil its destiny*

#### ➤ Present Scenario:

**Sarkar and Preetam (2015)** delves into the significance of traditional and Ayurvedic foods in Indian culture and the efforts made by the government to promote and preserve these aspects of the country's culinary heritage. In India, traditional foods have been an integral part of the cultural fabric for centuries, reflecting the country's diverse culinary traditions and Ayurvedic principles of holistic health. Recognizing the importance of these foods, the government has implemented various policies and initiatives aimed at their promotion and preservation. One of the main government policies highlighted in the article is the establishment of regulatory frameworks to ensure the quality and authenticity of traditional and Ayurvedic foods.

#### ➤ Some Recent Data and Technologies Used to Predict Monsoon:

**Artificial intelligence** had predicted normal summer monsoon rainfall for India in 2023. In the report, seasonal forecasts made by these physical models for 2002–2022, found that only six out of 21 years were within the specified range. Recently artificial intelligence (AI) and machine learning (ML) have emerged as powerful and promising techniques for predicting ocean and atmospheric variations.

### III. DATA AND RESEARCH METHODOLOGY

#### ➤ Primary Data:

The research project focused on investigating the impact of Indigenous food consumption during the monsoon season on health. Employing a mixed-method approach, the study utilised a **questionnaire** administered to 234 participants to gather quantitative data on dietary habits and health outcomes. Additionally, qualitative insights were obtained through interviews with participants to delve deeper into their experiences and perceptions regarding Indigenous food consumption. Furthermore, input from dieticians was sought to provide professional recommendations and insights into the nutritional aspects of Indigenous diets. By combining both quantitative and qualitative methodologies, along with expert input, the research aimed to provide a comprehensive understanding of the relationship between Indigenous food consumption during the monsoon and its effects on health, as perceived and experienced by individuals.

➤ *Secondary Data:*

In our research project, we conducted a thorough literature review to gather existing knowledge on Indigenous food consumption during the monsoon and its implications for health. We analysed data and reports from relevant sources to supplement our understanding and identify trends or patterns. Utilising secondary data sources, including charts and graphs, we synthesised information to provide a comprehensive overview of the topic. By integrating findings from various studies and reports, we aimed to contextualise our research within the broader body of knowledge and identify gaps or areas for further investigation. This secondary methodology allowed us to build upon existing research and enhance the robustness of our findings, contributing to a more nuanced understanding of the relationship between Indigenous food and health outcomes during the monsoon season.

#### IV. RESULT AND FINDINGS

➤ *Do People believe in Traditional Method of Prediction of Monsoon?*

This question aims to gauge people's beliefs in traditional methods for predicting the monsoon. The majority (77.8%) affirm they do believe in these methods, indicating a cultural adherence to such practices. The key point here is that these beliefs often stem from stories or folklore surrounding the arrival of the monsoon, highlighting the significant role of oral traditions in shaping cultural perceptions of weather patterns. Despite modern advancements, a substantial portion (22.2%) still do not subscribe to these traditional methods, reflecting a blend of skepticism and reliance on contemporary forecasting techniques.

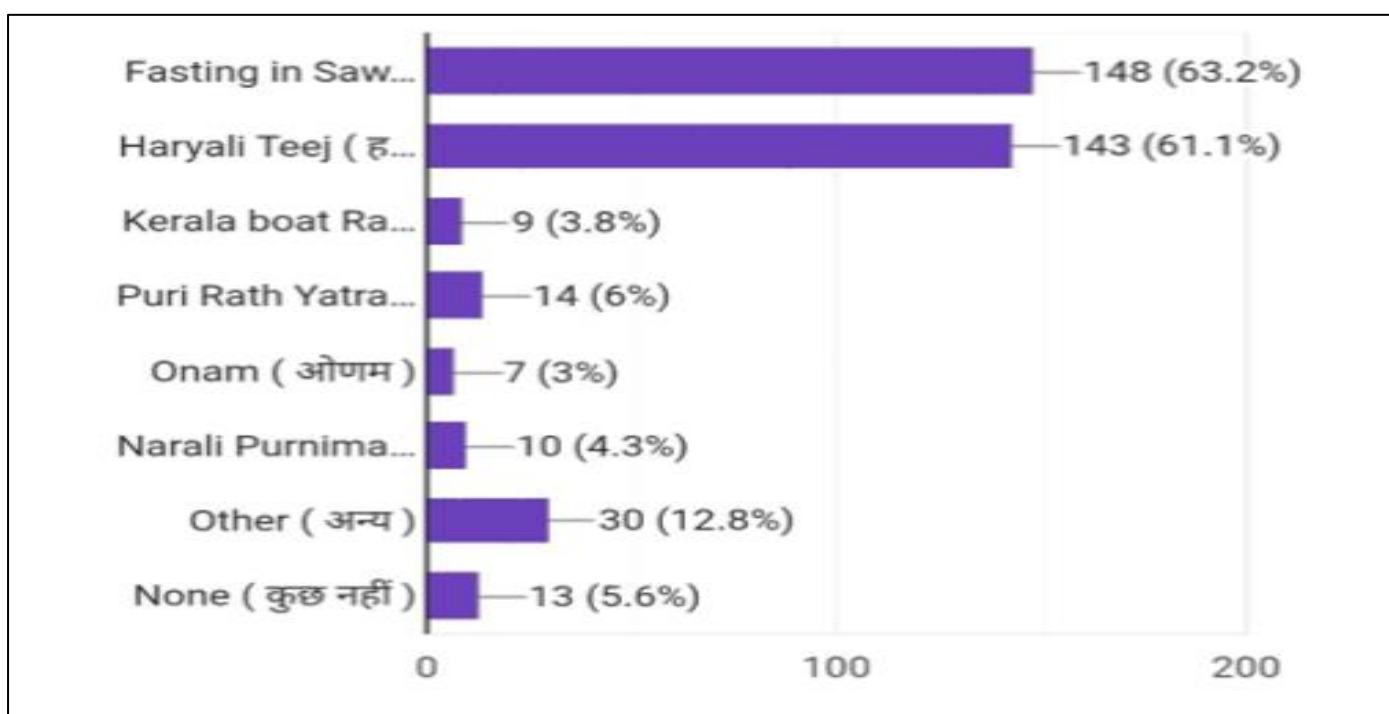


Fig 3 Traditional Food Cooked during Festivals.

➤ *Does Agriculture have Dependency on Monsoon in the Region of the Participants?*

The question asks whether agriculture in the region is reliant on the monsoon. With 81% affirming dependency, it suggests a strong reliance on monsoon rains for crop cultivation. This dependency is further underscored by increased crop availability, particularly for rice, maize, and sugarcane, indicating favourable outcomes when the monsoon is regular.

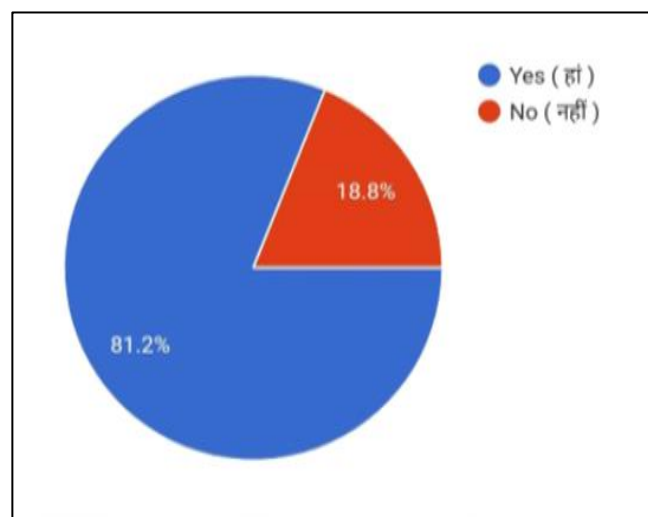


Fig 4 Agriculture Dependent on Monsoon.

Additionally, the mention of changes in monsoon patterns affecting harvesting seasons highlights the vulnerability of agriculture to shifts in weather patterns, emphasizing the significance of monsoon rains in shaping agricultural outcomes in the region.

➤ *What are Festive or Special Days of Celebration Associated with Monsoon in the Region of the Participants?*

During the monsoon season, several customs and festivities mark the arrival and significance of the rains. One such tradition is the celebration of Teej, a Hindu festival dedicated to Goddess Parvati, where married women pray for the well-being of their husbands. Another notable event is Raksha Bandhan, where sisters tie a protective thread around their brothers' wrists, symbolising their bond and seeking blessings for safety. Additionally, communities often organise kite flying competitions during monsoon, symbolising joy and freedom. These customs and festivities add colour and vibrancy to the monsoon season, fostering a sense of unity and celebration.

➤ *Are Allopathic Medicines Favoured more than the Traditional Culinary Remedies in Treating Diseases/Infections during Monsoon?*

The question implies assessing the preference between allopathic medicine and traditional remedies, with 47.4% of respondents favouring traditional methods and remedies. Key points indicate that monsoon is a disease-prone month, highlighting the need for effective treatments. Additionally, regional traditional remedies like Tulsi leaves and ashwagandha are cited, suggesting a cultural reliance on alternative healing methods. Overall, the interpretation suggests a divided preference between allopathic medicine and traditional remedies, with acknowledgment of both the challenges of disease prevention during specific seasons and the cultural significance of indigenous treatments.

➤ *Have any Participants or known to Participants Suffered from any Disease or Infection during Monsoon Ranging from cold and cough to Flu, Dengue, Malaria etc.?*

The data suggests a significant health concern during the monsoon season, with nearly half of the population experiencing illnesses ranging from cold, cough, to dengue and malaria. Interestingly, 92.3% advocate for traditional remedies during this period, highlighting the reliance on indigenous knowledge. Integrating indigenous foods during the monsoon can play a pivotal role in bolstering health. Traditional foods like turmeric, ginger, garlic, and herbal teas possess antimicrobial properties, aiding in combating infections prevalent during this time. Embracing these indigenous foods not only connects us to our cultural heritage but also offers natural remedies that can fortify our immune system against monsoon-related ailments.

➤ *Do the Participants Feel the Need to Revive the Traditional Advisory Specially during the Month of Monsoon with Increase in Health Risks?*

The statistics highlight a widespread recognition of the necessity to rekindle traditional advisories for monsoon precautions, implying acknowledgment of their effectiveness

in safeguarding health during the rainy season. Moreover, the call for innovation suggests a willingness to enhance these practices, potentially incorporating indigenous food systems. Embracing indigenous foods during the monsoon can offer nutritional benefits, aiding in fortifying the immune system against seasonal illnesses. By integrating traditional wisdom with modern innovations, such as promoting indigenous crops known for their resilience to monsoon conditions, communities can cultivate a healthier relationship with the rainy season, mitigating health risks and fostering well-being.

➤ *What are Different Precautionary and Unique Preparation Methods used by the Participants to Prepare Food during the Monsoon?*

In indigenous food systems, traditional food preservation techniques play a vital role, especially during the monsoon season. Methods like drying, pickling, and fermentation are commonly employed to preserve seasonal produce for extended periods. These practices not only ensure food vacuity during spare times but also contribute to salutary diversity and nutrition. also, reliance on indigenous preservation styles reduces reliance on external, frequently reused, foods, promoting a healthier life. By conserving original yield, indigenous communities maintain their culinary heritage, acclimatize to environmental challenges, and foster sustainable food systems that are flexible to the oscillations of the thunderstorm and promote better health outgrowth.

➤ *What's the type of Food Preferred by Actors in Moment's Parlance?*

In contemporary times, people's preferences during the thunderstorm season reflect a nuanced mix of convenience, health knowledge, and culinary indulgence. While 23.5 % conclude fast food for its quick medication and ease, 29.9 % spare towards lower racy options, conceivably to palliate digestive enterprises. Turmeric's essential part, valued at 48.7%, underscores the focus on anti-inflammatory parcels amidst heightened health mindfulness. Despite the significance of traditional remedies, there is a notable interest in fried foods, indicating a partiality for comfort and indulgence. This culinary geography portrays a delicate balance between ultramodern tastes, health considerations, and the dateless appeal of comfort foods during the thunderstorms.

## V. DISCUSSION

➤ *Monsoon in Indigenous Culture:*

The ancient textbooks provide the physiological characteristics of each season and the applicable authority and the diet are described in the medical covenants. For illustration, green water, provokes, Phlegm as well as wind and tendency of water to turn so provokes corrosiveness and numbness, that's the reason of recommending honey in small amounts, to overcome the moistness of the stormy season. Physicians formulate diets and advisory grounded on seasonal cycle of 12 lunar month.

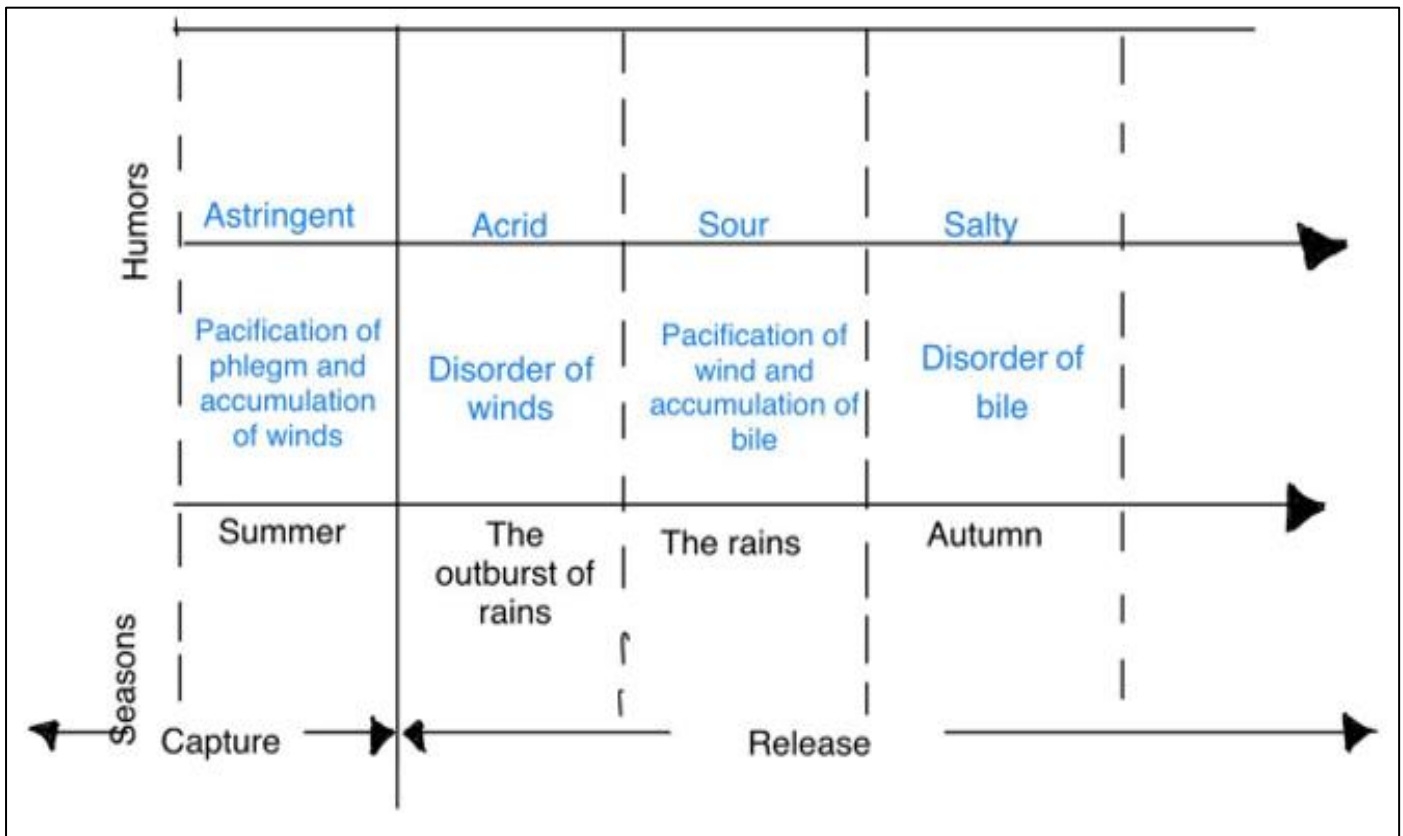


Fig 5 Monsoon in Indigenous Culture

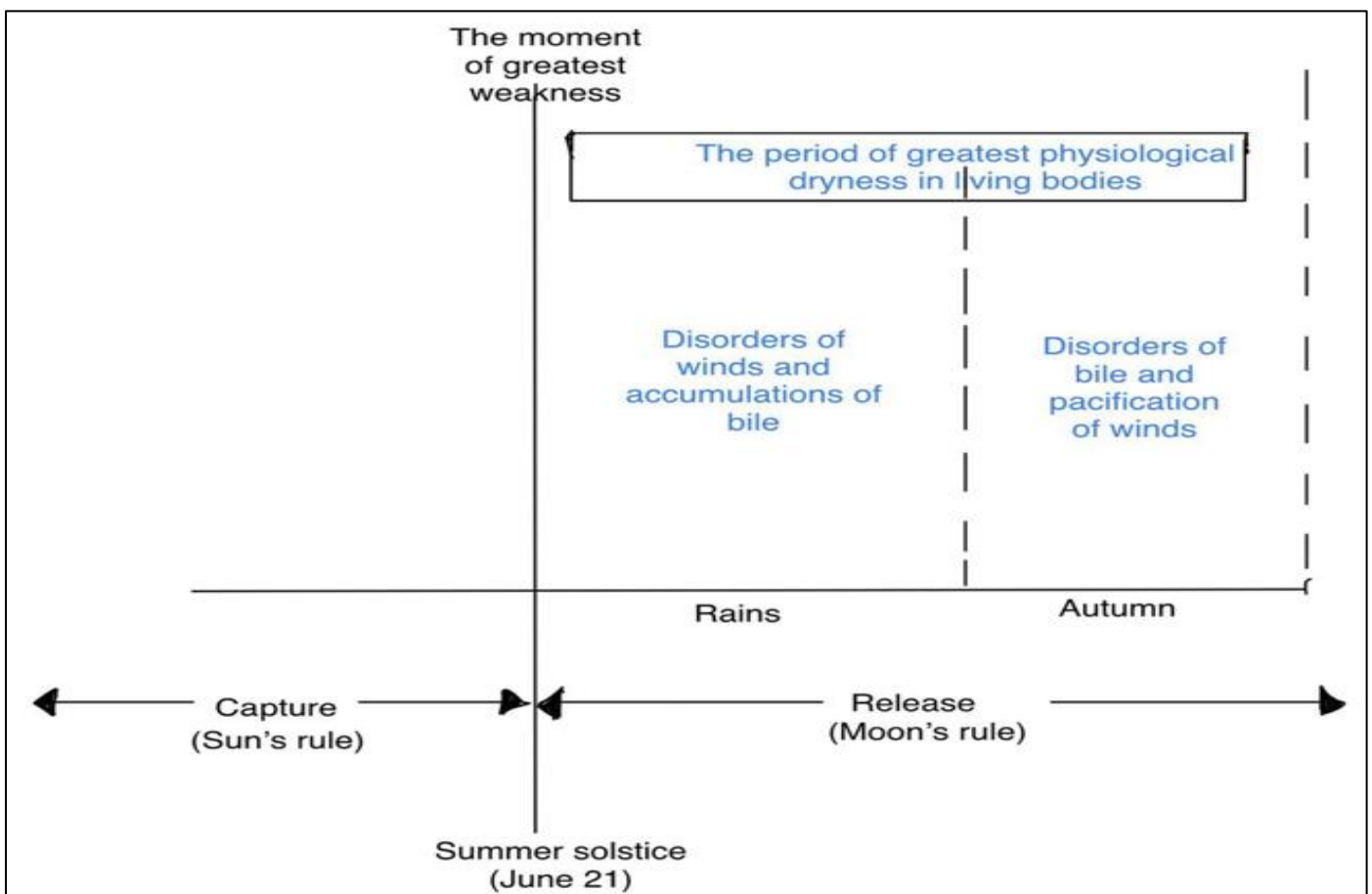


Fig 6 Monsoon in Indigenous Culture

(Source - Cakrapanidatta, quoted by Zimmermann Social Science and medicine,1980)



➤ *Indigenous Food System during Monsoon:*

Food being an integral part of every society plays a significant part in our lives. In Indian society, Food isn't simply for food, or taste, or nutrition, but is always believed to have certain spiritual rates. The purpose of food was to join together the spiritual aspiration of the person eating the food with the advanced purpose of living. Indigenous food system can be defined as a food system of agrarian, culinary, and salutary practices developed and maintained by indigenous peoples over generations. These systems are deeply embedded in traditional knowledge, artistic values, and ecological sustainability, reflecting holistic understanding of the relationship between humans, nature, and food. India is a land of different foods, culture, traditions, seasons, preferences and life. The traditional Indian foods and their salutary guidelines are specified in the Ayurveda. Ayurveda deals with areas concerning the healthy and long life of mortal beings. There's so important similarity in ayurvedic dietetics and traditional foods that numerous of the traditional health foods in India can be called ayurvedic foods. Recommended salutary guidelines according to age and health condition of the consumer, and seasonal considerations are presented for each of the traditional health foods of India. It preaches that we live to eat and don't eat to live. With the change in season, the change is veritably apparent in the terrain we live in. We see colorful changes in bio-life around us, similar as flowering in spring, hibernation of numerous creatures with the coming of downtime, and so on. As mortal being is also part of the same ecology, the body' is greatly told by external terrain. For this the principle of Ritucharya is bandied in Ayurveda, where balanced food is concentrated according to seasons. Not only Ayurveda, food is bandied in the notorious primer of statecraft written in 300 BC, the Arthashastra of Kautilya, where a balanced mess of gentleman is described. This consists of rice 500gm, dhal 125gm, oil painting 56gm and swab 5gm, independently. Also, The Charaka Samhita and the Susrutha Samhita, firstly composed about the 6th 5th century centuries BC, but with accretions later over several centuries, set down the principles and practice of Ayurveda.

➤ *The Famous Principle of Ayurveda include:*

• *Tri Dosh Theory –*

It has been said that the tridosha proposition in Ayurveda began from the proposition of the five rudiments of the macrocosm. The names of these three doshas, which are roughly original to humour, are vata(wind), pitta(corrosiveness), and Kapha(numbness), corresponding to the three rudiments of the macrocosm air, fire, Earth, sky and water. A person's diet should be according to the dosha or doshas. (Endo, J., & Nakamura, T. (1995). Kagakushi kenkyu. [Journal of the history of science, Japan, 34(193), 1–9.]

• *Swastavritta Theory –*

It substantially focuses on the balancing of Tridoshas. As the entire body is the residence of all the three Doshas, the normal or abnormal countries of which are responsible for good or bad issues independently. exemplifications of good issues include growth, strength, complexion, happiness, etc.

while the bad issues, manifested due to abnormal countries of Doshas, cause colorful types of conditions.

• *Rasa Theory –*

Mid-July to mid-September(roughly) is considered as Varsha Ritu. During this season the sky is covered by shadows and rains do without rainstorm. The ponds, gutters, etc., are filled with water. The predominant Rasa and Mahabhuta during this season are Amla(sour), and Prithvi and Agni, independently. The strength of the person again becomes lower, vitiation of Vata Dosha and deposit of Pitta Dosha, Agni also gets vitiated.

➤ *Ritucharya*

'Ritu' means seasons and 'charya' means geste or behavior. It's important to each according to the season. This is the season when humans are most prone to conditions. The digestive exertion of the body weakens further and gets vitiated by doshas. Hence all styles to alleviate doshas and measures to enhance digestive exertion should be espoused. One should consume fluently digestible food particulars to avoid farther vexation of the digestive system. beats, meat juice, mists, old grains and thin water of yoghurt can be taken in food. One could get a Panchakarma (sanctification and detoxification) treatment to help restore the balance of the doshas in the body. Sleeping in the day and heavy exertion must be avoided in this season.

➤ *Some of the Problems/Diseases that usually occur during Monsoon Includes:*

- More exposed to bacteria
- Fungal infections
- Cholera
- Typhoid
- Poor immunity
- Dysentery
- Hepatitis A
- Malaria
- Poor Digestive system
- Cold and Flu

➤ *For this, Ayurveda Suggests Certain Food items to be Added in the Food during Monsoon:*

- Ginger – It helps in improving assimilation and transportation of nutrients to the body's tissues, much needed to keep colds and flu away.
- Garlic – It boosts metabolism, immunity and acts as an antioxidant.
- Mint – It prevents cold and flu.
- Moong beans – It has proteins, vitamins and minerals. Boosts immunity as well.
- Honey – It improves digestion.
- Turmeric – It improves immunity.
- Red Rice – It contains iron and other essential minerals.

➤ *Food Items to be Avoided during Monsoon Includes:*

- Fish and seafood (because there is a risk of waterborne diseases)
- Leafy vegetables (these are contaminated in this season)
- Curd (it can cause cold)
- Fried stuff
- spicy and uncooked food
- heavy grains should be avoided (stomach is weak)

➤ *In the Present Times there are some Regional Food which are Deeply Connected to the Land (Regional Food):*

- **Lingudi** fix in Uttarakhand (Rich source of vitamin C)
- **Lotus Seeds/ Makhana** in north eastern countries (a good source of protein and fibre and are a low glycemic indicator food, that means they get digested sluggishly in the body, so are a better bet for diabetics too)
- **Fiddlehead** fern in Himachal Pradesh, Jammu and Kashmir and Assam (High antioxidants and essential adipose acids)
- **Nettle splint** in Himalayan region (Vitamin-c)
- **Colocasia** leaves, also called taro or kesu, these big heart-shaped leaves grow untamed during the showers. From Gujarat to Kerala, every home in littoral India uses colocasia leaves to prepare thunderstorm delectables. In Gujrat, the dish is cold Patra. (Vitamin C and Vitamin E)
- **Hog plums**- This sour fruit, which resembles mango, is available only during Monsoons. Known as Aambade or Amte Kaayi in Maharashtra and Amra in Bengal, it is used to prepare sweet and sour pickles, chutneys and even gravies (source of vitamin C).
- **Bihiden** Mushroom, set up only in Odisha and in some places in Jharkhand, this mushroom has a long stalk and a small head. White in colour, the Bihiden mushroom is considered a maha prasad (immolation to Gods). Among the ethnical communities, there's a custom to put Bihiden mushrooms behind the cognizance of a invigorated baby and after that, the baby can see the mushrooms in front of her. (Helps in balancing cholesterol).
- **Kantoli** or Spine Gourd: Also called kantola or jangli karela, this spiky vegetable belongs to the gourd family. Its external skin is scraped and also cut into pieces for making a simple stir- shindig vegetable with onion garlic and other spices. It can also be stuffed and cooked in gravy (Has antioxidants and improves immunity).
- **Bamboo** shoots in north eastern India (boosts immunity)

**Traditional wisdom about processing of food, its preservation techniques, and their therapeutic effects have been established for many generations in India.** Food systems can deliver multitudinous natural functions through salutary factors in the mortal body. Indian traditional foods are also recognised as functional foods, because of the presence of functional factors similar as body- mending chemicals, antioxidants, salutary filaments, and probiotics. These functional notes help in weight operation, and blood sugar position balance and support impunity of the body. These are some thunderstorm specific cookerries grounded on indigenous interpretation:

• *Idli –*

Idli is a fermented product prepared from rice and black gram batter by brume cuisine. turmoil of batter improves the nutritive and protein effectiveness value. The major microorganisms involved in the leavening process are heterofermentative lactic acid bacterium, *Lactobacillus mesenteroides*. The acidity of the batter is regulated by homofermentative lactic acid bacterium *Streptococcus faecalis* (19). In addition to these, probiotic microorganisms similar as *Lactobacillus plantarum* and *Lactobacillus lactis* are also present in idli batter. These microorganisms can produce vitamin B and  $\beta$ - galactosidase enzymes <sup>12</sup>.

• *Dosa-*

Dosa is another fermented dish like idli substantially set up in the south Indian region. It's further digestible and nutritionally thick, and hence is recommended to senior people and children youngish than 10 times. It's consumed with palya or curry in all seasons.

• *Ambali –*

Ambali is a cutlet millet- grounded fermented semi-liquid product of south Indian countries, Karnataka and Tamil Nadu. The turmoil process decreases the leucine to lysine rate (from 3.6 to 4.1) and increases the attention of thiamin, riboflavin, tryptophan and bioavailability of minerals. Leucine to lysine is an index of the pellagragenic character of protein. Ambali is considered a senior food because of the presence of high calcium and low resistant bounce in cutlet millet

• *Ragi Hurihittu-*

Ragi hurihittu is the flour of popped cutlet millet, rich in salutary filaments and nutrients. Ragi hurihittu is composed of slow cell wall declination factors, which are useful in medication of fiber-rich foods.

• *Enduri Pitha –*

Enduri pitha is a flavoured cutlet, native to Odisha state, prepared during the prathamastami jubilee. Black gram proteins are deficient in methionine and cysteine amino acid, this lowers the natural value of proteins and turmoil seems to enhance the nutritive quality of the mix of black gram and rice.

• *Dhokla –*

Dhokla is indigenous probiotic breakfast food set up substantially in Gujarat state. The antioxidant property of dhokla helps in curing age- related conditions and oxidative stress- convinced degenerative conditions.

• *Hawaijar-*

Is an alkaline- fermented soybean product consumed daily as a source of protein in Manipur. Hawaijar consists of answerable proteins ranging from 26 to 27. Presence of *Bacillus* spp. gives high fibrinolytic exertion to the product. Selroti is a rice- grounded fermented food, which is spongy and ring shaped. It's consumed in Sikkim and Darjeeling. The nutritional value of selroti is analogous to idli and has good quantum of digestible proteins. *Lactobacilli*, *Pediococci*,

Enterococci, and Leuconostocs are the top microorganisms present in selroti.

➤ *Use of Spices in Monsoon:*

Spices have been an integral part of Indian cuisine for centuries, and their benefits extend beyond adding flavor to our dishes. They are packed with antioxidants, have anti-inflammatory properties, and can help boost the immune system.

• *Turmeric:*

A quintessential Indian spice, turmeric is known for its anti-inflammatory and antioxidant properties. It is a staple in monsoon recipes, providing warmth and boosting immunity. The benefits of this spice are numerous, making it a must-have in your monsoon diet.

• *Ginger:*

Another monsoon spice, ginger, is a powerhouse of health benefits. It aids digestion, helps fight colds and flu, and adds a zing to your monsoon-special recipes. Its warming effect makes it perfect for the rainy season.

• *Cinnamon:*

This spice is not only delicious but also packed with antioxidants. Cinnamon can help regulate blood sugar levels and has anti-inflammatory properties. Its sweet and spicy flavor makes it a popular addition to monsoon recipes.

• *Cloves:*

Cloves are known for their antiseptic and germicidal properties, which can help fight infections, making them one of the best spices for the monsoon season. They also aid in digestion and have anti-inflammatory properties.

• *Black Pepper:*

A common ingredient in spicy food for the rainy season, black pepper is known for its ability to enhance digestion and promote intestinal health. It also has anti-inflammatory properties and can help relieve cold and cough symptoms.

• *Thymol Seeds/Ajwain:*

Thymol seeds, commonly known as ajwain, are tiny seeds with a unique and slightly bitter flavour. Ajwain is a popular spice used in Indian cuisine, particularly during the rainy season. Apart from its culinary uses, ajwain is known for its digestive properties and its ability to relieve bloating and indigestion.

• *Fennel Seeds:*

Fennel seeds, or saunf, are widely used in Indian cooking and hold a special place during the rainy season. During the monsoon season, fennel seeds help prevent water retention and bloating.

• *Cumin Seeds:*

Cumin seeds, or jeera, are an indispensable spice in every Indian kitchen. Cumin seeds are known for their digestive properties and are commonly used in curries, rice,

lentil soups, and spice blends. They add depth, richness, and a distinct aroma to monsoon recipes.

Research done on Indian food and cuisines with reference to the history of the subcontinent, the data shows that the food habits and methods have changed over a time span of 4000 years, starting with the age of Aryans and Indus valley civilisation to the contemporary times. **Chickpea and red lentils** (masur dal) were crops of monsoon and used to be harvested in the next autumn; served the people of Indus valley civilisation. Aryans were more specific with their food choices and rice, lentils were major monsoon meals whereas sesame seeds, kidney beans, millets, panicum grains, prose or broomcorn millets were harvested during post monsoon. Buddhist or mahajanpad era brought more varieties of vegetables and vegetarian food in cooking, rice, **mudga beans** (green grams), **masur dal**, **sesum oil** are mentioned in Buddhist scriptures that find their roots in monsoon agriculture. With the coming of kingdoms and afterwards the food and culture started to be inclined towards meat and non vegetarian food staples. But monsoonal meals made from soaked and sprouted beans, nuts, enriched with spices like **ginger, garlic, turmeric, coriander, cinnamon, cardamom, aniseed** were became more and more prominent in the upper class citizens of kingdom era but meals prepared from lentils and rice of different types became a staple food for farmers and lower strata of society, this food is still known and eaten as "khichdi" in northern India with addition of various spices and herbs in it. Moghul era, specially with the realm of Akbar, a variety of monsoonal cuisines came back to life. Lentils (masur dal), Chickpeas (chana), Millets (bajra, jowar), Rice (especially varieties like Basmati rice), Mung beans (mung dal), Vegetables such as spinach, okra, pumpkin, and gourds, Fruits like mangoes, lychees, and melons, Various leafy greens and herbs used in cooking, such as fenugreek leaves, coriander, and mint used for cooking and not only the lower class but the upper ruling class also used them in their kitchen and understood their importance to mention them in their writings. British rule brought the most important part of Indian household to India, that is "tea". Although this crop is and was never related to any specific season but could only be harvested where all time monsoon situation stated, and they chose the northeastern part of India for its cultivation.

**And with this Indians got their full day monsoon meals starting with a cup of tea**, and having a full meal of lunch containing lentils and different types of vegetables that are safe to eat in rainy season, having pakoras in evening snacks and ending the day with light meal of khichdi; India and Indians have enriched their food choices with the course of 4000 years and it is still evolving.

➤ *Governmental Initiatives in Current Scenario:*

Promoting indigenous foods in India through government initiatives, programs, and policies rooted in ancient culture is an endeavour that encapsulates both preservation of traditional knowledge and sustainable development. India boasts a rich culinary heritage that spans millennia, with diverse regional cuisines and traditional practices that have sustained communities for generations. However, with the advent of globalisation and changing

dietary preferences, there has been a gradual erosion of indigenous food systems. Recognising the importance of preserving this cultural heritage and promoting healthy, sustainable diets, the Indian government has undertaken various initiatives aimed at reviving indigenous foods. **One of the key initiatives in this regard is the promotion of millets. Millets, such as finger millet (ragi), pearl millet (bajra), and sorghum (jowar),** have been staple foods in many parts of India for centuries. These nutrient-rich grains are resilient to drought and require minimal inputs, making them well-suited to India's diverse agro-climatic conditions. **The government has launched programs like the National Mission for Sustainable Agriculture (NMSA) and the National Food Security Mission (NFSM)** to promote millet cultivation among farmers. Additionally, schemes like the Millets Mission aim to increase the availability and accessibility of millets in the market, thereby encouraging their consumption.

Furthermore, initiatives like the **Pradhan Mantri Kisan Sampada Yojana (PMKSY)** support the processing and value addition of indigenous foods. By establishing food processing units and cold chains, the government aims to reduce post-harvest losses and enhance the shelf life of perishable indigenous crops. This not only provides economic opportunities to farmers but also makes indigenous foods more readily available to consumers. Incorporating indigenous foods into government nutrition programs is another critical step in promoting their consumption.

The Integrated Child Development Services (ICDS) and the Mid-Day Meal Scheme have started incorporating traditional foods like millets, pulses, and locally grown fruits and vegetables into their menus. By providing nutritious meals to children and pregnant women, these programs not only address malnutrition but also contribute to the preservation of indigenous food traditions.

Moreover, the government has launched awareness campaigns and educational programs to highlight the nutritional and cultural significance of indigenous foods. Through events like the National Nutrition Week and campaigns like "Eat Right India," the government seeks to encourage people to embrace traditional diets and culinary practices. Additionally, initiatives like the Swasth Bharat Yatra promote the consumption of locally sourced and indigenous foods as part of a healthy lifestyle.

In tandem with government efforts, various non-governmental organisations (NGOs) and community-based organisations are actively involved in promoting indigenous foods at the grassroots level. These organisations work closely with farmers to promote agro-ecological practices and traditional farming techniques that support the cultivation of indigenous crops. They also conduct awareness programs and culinary workshops to educate people about the nutritional and cultural value of indigenous foods.

The promotion of indigenous foods is not just about preserving culinary traditions but also about promoting agro-biodiversity and ecological sustainability. Many indigenous

crops are well-adapted to local environmental conditions and require fewer inputs like water and chemical fertilisers, making them environmentally sustainable options. By promoting the cultivation and consumption of indigenous foods, the government is not only safeguarding cultural heritage but also contributing to food security and environmental conservation. Furthermore, there is growing recognition of the role of indigenous foods in addressing contemporary health challenges, such as non-communicable diseases (NCDs) like diabetes and obesity. Traditional diets, rich in whole grains, pulses, fruits, and vegetables, have been associated with lower rates of NCDs compared to Westernised diets high in processed foods. By promoting the consumption of indigenous foods, the government aims to improve public health outcomes and reduce the burden of NCDs in the country. The promotion of indigenous foods in India through government initiatives, programs, and policies rooted in ancient culture is a multi-faceted endeavour with far-reaching implications for nutrition, culture, and sustainability. By supporting the cultivation, processing, and consumption of indigenous crops, the government is not only preserving culinary traditions but also promoting food security, environmental sustainability, and public health. However, sustained efforts are needed to overcome challenges such as changing dietary preferences, market access, and awareness barriers to realise the full potential of indigenous foods in India's food system.

#### ➤ *Indigenous Food System during Monsoon Remain Pivotal in Today's Parlance:*

Indigenous food system during monsoon remain pivotal due to their sustainability, resilience and nutritional value. These systems often rely on locally adapted crops that are suited to the monsoon climate, ensuring security even during challenging weather condition exemplified by millets. Indigenous food are often nutrient dense and diverse contributing to dietary diversity and overall health, embracing the indigenous food system. Also, promotes cultural preservation and poster resilience against climatic change. Indigenous food system traditionally relies on crops that thrive in monsoon climate providing the essential nutrition to the body. The seasonal abundance of diverse fruits, vegetables, and grains during monsoon ensures a varied diet-encompassing immune function. It incorporates medicinal herbs, spices, offering natural remedies for common ailments exacerbated by monsoon. A ray to follow for holistic health and well-being. The traditional varieties are very well - adapted to local climate and rainfall patterns. Rice, millets, pulses, vegetables such as Okra and fruits like mangoes. These crops cultivated for generations providing sustenance and livelihoods. On the other hand, contemporary crops include hybrids or genetically modified varieties. Although it has higher productivity and faster growth but it also enhances environmental concerns and potential health risks.

With the above mentioned evidence we can support the research hypothesis that is 'Indigenous food system during monsoon are more beneficial in terms of health and more resilient in terms of food security than contemporary food system and should be promoted'.



## VI. LIMITATIONS

- One limitation of our research project is the regional focus on the northern part, which may limit the generalizability of our findings to other geographical areas. Due to resource constraints, we were unable to collect as much data from other regions
- Additionally, the reliance on self-reported data through questionnaires and interviews may introduce e-response bias and inaccuracies.
- There was no written or proper documentation of the traditional data and more reliability on oral accounts were used.
- Comparative studies could not be conducted because of the non-financial outlook of a research project.

### ➤ Lesson Learnt and Further Scope

The lesson learnt from studying indigenous food systems during the monsoon is the resilience and adaptability of traditional diets to seasonal changes, fostering food security and nutrition. Further research should explore the nutritional benefits of indigenous crops during the monsoon, their impact on health, and their potential for climate-resilient agriculture. Understanding indigenous food systems can inform sustainable agriculture practices and public health policies, promoting dietary diversity and combating malnutrition. Additionally, investigating traditional knowledge systems can help preserve cultural heritage and foster community resilience in the face of climate change-induced challenges.

## VII. CONCLUSION

In conclusion, our research project sheds light on the significant impact of Indigenous food consumption during the monsoon on health outcomes. By focusing on the changes in traditional and contemporary dietary practices during this season, as well as the role of Ayurvedic medicine and crop choices, we have highlighted the complex interplay between cultural, environmental, and health factors. Moreover, our findings underscore the importance of government interventions in promoting sustainable agricultural practices and preserving Indigenous food knowledge. Moving forward, addressing these dynamics holistically is crucial for fostering healthier communities and promoting food sovereignty in the face of changing environmental conditions.

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