

A background photograph showing a group of women in rural Bihar, India, sitting on the ground. They are wearing colorful saris in shades of green, pink, and blue. In the foreground, there are several stalks of green rice plants with small, developing grains. The scene is outdoors with trees and foliage in the background.

**DOCUMENTATION OF
INDIGENOUS TRADITIONAL
KNOWLEDGE (ITK) AND GOOD
PRACTICES OF HEALTH AND
NUTRITION IN RURAL BIHAR**

Documentation of indigenous traditional knowledge (ITK) and good practices of health and nutrition in rural Bihar

Design & Layout

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CONTENTS

ACKNOWLEDGEMENT	I	CHAPTER VII:	
EXECUTIVE SUMMARY	II	LIVELIHOOD THROUGH ITK	26
CHAPTER I:		CHAPTER VIII:	
INTRODUCTION	01	RECOMMENDATIONS	27
CHAPTER II:		CHAPTER IX:	
METHODOLOGY	02	CONCLUSION	28
CHAPTER III:		Annexure I	29
SOCIO-ECONOMIC DEMOGRAPHIC PROFILE OF INTERVENTION AREAS	04	Annexure II	31
CHAPTER –IV:			
FINDINGS	08		
CHAPTER V:			
TRADITIONAL RECIPES	21		
CHAPTER VI:			
COMMUNITY PERCEPTION AND KNOWLEDGE ABOUT INDIGENOUS FOOD ITEMS	24		

ACKNOWLEDGEMENT

We would like to thank Caritas India for entrusting us with the responsibility of documenting indigenous traditional knowledge (ITK) and good practices of health and nutrition under CI Global Program India. This was a great learning experience for our team.

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We must extend our gratitude and thanks to the Directors of the Partner Organizations and the project team members for their inputs and feedback and for efficiently organizing the field visits within tight

deadlines. We are impressed by the efforts of project team members working at the community level in organizing the interactions with the beneficiaries and their zeal to improve the condition of the people in the intervention areas.

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EXECUTIVE SUMMARY

Restoring the indigenous traditional knowledge (ITK) in agriculture is significant given the effects of climate change the world is already facing. Climate change is crippling crop cycle with erratic weather patterns affecting cultivation which in turn is increasing the price of basic food items that of green leafy vegetables, potato and onions. In India agriculture is the primary source of livelihood and the 'gross value added by agriculture, forestry and fishing is estimated to be INR 19.48 lakh crore (US\$276.37 billion) in FY 2020. Huge growth in Indian food industry with modern farming techniques, population pressure and industrial development has only eroded the indigenous knowledge and practices of food production. Traditional crops and cropping practices are becoming extinct and knowledge on adaptation to climate change is also limited. Indian agriculture is majorly dependent on climate and on top of that our country is vulnerable to climate change. Preserving the indigenous agricultural knowledge and traditional crop practices is vital given dependence on agriculture for not only food supply but also employment. ITK will help sustain farming practices preventing plant genetic erosion and environmental deterioration, thus, contributing to sustainable food security and conservation of variety and variability of animals, plants and soil properties.

²Agri Biotech Foundation conducted case studies in five villages in India under distinct rainfall zones to study traditional knowledge on coping with climate change in agriculture in India and found that there is a need to strengthen dissemination of indigenous knowledge and integrating with modern approaches in climate change resilience. Similarly, Global Program India hosted by Caritas India with support of Federal ministry for Economic Cooperation and Development (BMZ), Government of Germany and Caritas Germany aims at improving the life situation of the marginalized population of eighteen identified districts in four Indian States. The program focused on four

development themes that of resilience to natural calamities, enhanced nutritional and food security, social inclusion and strengthening civil society learning.

Caritas India has served the underprivileged sections of the society, hailing from socially excluded communities' e.g. Dalits and Maha-Dalits, the Scheduled Caste and Scheduled Tribes, and religious minorities by exercising preferential actions for the most marginalized. The organization is taking lead to document the best practices of ITK and including them in the development programs and planning for the benefit of the marginalized communities to help them lead a healthier life. Caritas India engaged consulting firms in their intervention states for conducting this large study and the following paragraph provides a glimpse of the study findings which are detailed in the 'Findings' chapter of this report.

In all the five districts it was found through the Focus Group Discussions that the middle-aged women and especially the elderly women in the community still recall the medicinal values of the indigenous flora and the herbs used for cooking and treating the ailments back in their younger days. The younger married women have very little knowledge of the nutritive value of the indigenous plants as they depend more on the latest market produce which has more of food adulterants than any nutritive value. Although the consumption pattern of the respondents tells us that they grow green leafy vegetables and their diet involves vegetables, fish, pulses, rice and flour providing a mixture of nutrients that of vitamins, minerals, protein and carbohydrate. The respondents of each of the five districts shared their traditional recipes prepared out of indigenous plants and herbs. They could also share the value that these recipes add to their health and nutrition and some help in fighting some medical conditions.

¹<https://www.ibef.org/industry/agriculture-india.aspx>

²https://www.wageningenacademic.com/doi/10.3920/978-90-8686-820-9_12

CHAPTER 1

INTRODUCTION

Challenges of climate change, natural disaster, biodiversity loss, destabilized ecological services, food and nutritional inequality, problems of sanitation and health calls for emphasizing ITK as alternative solution for a sustainable existence. ITK or Indigenous traditional knowledge needs to be studied for incorporation into formal research and extension practices to strategize agricultural practices to be more sustainable.

The indigenous people do suffer from nutritional deficiency and health problems despite them being the treasure trove for invaluable plant and animal biodiversity of the food systems and ecosystem knowledge. In the present scenario these people want to revive their healthy cultural nutrition practices. The ethnic minorities, rural and Maha Dalit populations, women and other disadvantaged communities who are deprived of economic, political and social benefits are more dependant upon such knowledge. It is important to preserve and document information on traditional ways of growing, harvesting, preserving and preparing the food and using this information to build health-promotion activities.

ITK is found to be socially desirable, economically affordable, sustainable, environmentally safe and minimum risk to research users and widely believed to

conserve resources. Taking the above into consideration Caritas India took lead to document the best practices of indigenous traditional knowledge and include the findings during the planning of the development programmes.

The sole purpose of documenting the ITK of the minorities, Dalits and Maha-Dalits are to improve their nutrition and health and to create knowledge resources for the general masses. The specific objectives of this documentation are as follows:

- To Profile all existing and extinct Indigenous traditional food and dietary practices in selected project location of Bihar
- To understand the socio-economic factors which are gradually uprooting many of the untapped resources from their native habitats resulting in loss and erosion of very rich indigenous knowledge.
- To assess how the ITK was helping the rural community in sustain their livelihood and improve the health and nutritional condition of their community.
- To Identify, document, and incorporate ITK in daily livelihood activities (food system) which can contribute to improving nutrition and health of Indigenous communities.

CHAPTER 2

METHODOLOGY

Collecting the information about ITK involved using mixed method approach of qualitative and quantitative data collection.

Qualitative data collection methods:

Focused Group Discussion -

Focus group discussions (FGDs) will be used to elicit a detailed description of IF availability, access, and utilization in the community. The community health worker and the village head will be informed in advance about the FGD. They will be asked to inform the community members about the scheduled FGD. In order to ensure adequate representation from different age groups and stakeholders in the community, adult women, adult men, the elderly (men and women), community health, and nutrition workers and community leaders were invited to participate. Mothers will be especially invited by the core team and the community health workers to attend because they were mainly responsible for food preparation and feeding their families. The FGDs will be held in accessible areas such as anganwadi centers (community-based centers for women and children) or in open areas in the villages.

The FGDs that used pre-tested FGD guides facilitated a free listing exercise to identify the range of foods including IFs consumed by the community. Information on the local names of plant or animal foods and their characteristics such as availability, seasonality, and habitats will also be documented. The various foods identified were then categorized under different food groups based on their edible parts/parts consumed (leaves, roots and tubers, vegetables, seeds, fruits, etc.). Participants will also be asked to list IFs that are popular, preferred, little used, and historically consumed. The perceptions on the reason why specific IFs were preferred or little used (e.g., availability, accessing/production, and/or taste) were also assessed using the FGD guide.

The FGDs will be conducted with married women aged 15-49 years and among them will be pregnant women, lactating women having 0–6-month-old children and those having 6–24-month children. The second group would consist of middle-aged women (50-60) and the third group is old women aged 60+

All the FGDs will be recorded and transcribed from Maithli/Maghi/Angika to Hindi by the local field team. The Hindi transcripts were then translated into English. The text of the FGDs will be analysed using

thematic analysis. The data will be used to generate a compiled free list of all the IFs currently, as well as historically, consumed by the community along with their habitat and seasonality. Other themes related to their popularity and frequency of use will be also examined.

Transect Walk-

As part of the qualitative enquiries and till the point of data saturation, transect walks will be performed in 45 out of 60 villages to observe their locations, the landscape, mainland uses and distribution of resources in the context of food access including market access. This will be conducted by the core team assisted by a village elder or the community health and nutrition worker of the village.

Quantitative data collection methods:

Different quantitative methods used for assessing access to different Indigenous Foods (IFs), their identification and nutrient analysis will be as follows:

Food Access- Pre-tested tools will be used to elicit information on different foods accessed by the community in three crop cycles i.e., (i) summer and (ii) monsoon and (iii) winters. These will include an agriculture diversity tool and a market survey tool. A detailed agriculture diversity tool (will be administered on a sample of 45 households from 45 panchayats)

Identification of Food Samples-Based on the free listing activity done through FGDs, a list of commonly consumed IF items will be compiled (including cereals, legumes/pulses/seeds, roots and tubers, vegetables, Green Leafy Vegetables, fruits, mushrooms, and animal foods).

General Eating Pattern-The survey would also capture their eating patterns based on the findings of the FGD.

Commonly Consumed Indigenous Foods-Based on the FGDs, a short list of foods will be prepared which are currently consumed by the community and were available for a significant duration in a year will be prepared.

Preferred IFs among the Community-The commonly consumed foods under each food group in a specific season will be compared and ranked using pairwise ranking based on criterion like taste, availability, ease of production or collection by the community.

Little Used or Historically Consumed IFs within the Community-Indigenous Foods Routinely Accessed by the Community: Based on the agricultural diversity assessment tool and the market surveys, foods (indigenous as well as non-indigenous or hybrid) that will be accessed in different seasons during the previous year.

CHAPTER 3

SOCIO-ECONOMIC

DEMOGRAPHIC PROFILE OF INTERVENTION AREAS

An overview of Maha-Dalits in Bihar:

Dalits constitute nearly 15 percent (83 million) of Bihar's population. The poorest ones were declared Maha-Dalits in Bihar. A government commission has identified 18 of the 22 Dalit sub castes, including Musahar, Bhuiyan, Dom, and Nat as Maha-Dalits. They constitute 31 percent of the Dalit population in the state. As many as twenty-three (23) castes constituted the category of Scheduled Castes in Bihar, as per Census 2001.

Prominent Scheduled Castes (SCs) in the descending order of population size are Chamar, Dusadh, Musahar,

Pasi, Dhobi and Bhuiya. The six most populous SCs constitute 93.2 % of the total SC population of the State. The overall sex ratio of the SC population in Bihar is 923 per 1000 males, which is marginally higher than the sex ratio of Bihar (919). Among the 38 districts of Bihar, Gaya has the highest proportion of SC (29.6 per cent) population in the district, followed by Nawada, Aurangabad, Kaimur, 14% in Vaishali and Nalanda. Kishanganj district has the lowest proportion of the SC population (only 6.6 per cent).

Table 1: District Wise SC Population of Mushar in Bihar (Caritas India Intervention Districts)

Sl. No.	District Name	Population in 2011	Population in 2001
1	Araria	203983	157694
2	Madhubani	133715	106534
3	Rohtas	15115	11959
4	Buxar*	8810	7204
5	Madhepura	174453	132043
6	Purnea	209448	171609
7	Sharsha	154397	112846
8	Munger	44795	35060
9	Patna	118864	93062
10	Bhagalpur	31738	25817
11	Supaul*	107186	76655
12	Sitamarhi	55836	42279
13	Sekhpura*	33436	28876
14	West Champaran	97831	75964
15	East Champaran	71818	53175

Source: Census of India 2001 and 2011

According to the Agricultural Census of 2005-06, the concentration of marginal holdings in Bihar is very high in the case of Scheduled Castes (95%) and Scheduled Tribes (88%). The backwardness of SCs and STs in terms of their socio-economic status reflects clearly in several vital indicators related to health. According to third edition of National Family Health Survey (NFHS-3) report on the relative levels of achievement of Millennium Development Goals (MDGs) in India, critical indicators reflecting on early childhood mortality rates in India point towards a much higher vulnerability of Scheduled Castes and Scheduled Tribes children compared to other social groups. (Among SCs Neo natal mortality rate is 46%, Infant mortality rate is 66% and Under 5 mortality rates is 88%).

Education Status of Maha-Dalit in Bihar

Literacy among the Scheduled Castes and Scheduled Tribes of Bihar is dismally low. In the 2011 census, the

overall literacy rate in Bihar was 63.6% (All India 74%), the literacy rate among Scheduled Castes was 48.6% and for Scheduled Tribes was 51.1%. Although the gender disaggregated data is not available yet, it can be said that the gender gap is considerable within the SC and ST communities and between SC/ST and other dominant communities. In the 2001 census the literacy gap between SC/ST men and overall men was 20% and that between SC/ST women and overall women was about 50% (the literacy rate of SC/ST women was 15% and 33.1% for all women). Within Scheduled Castes, some groups account for extremely low literacy rates. For instance, as per report published by ST & SC Welfare department of Bihar Musahars have an overall literacy rate of only 9%, while females among Musahars account for a literacy level of only 3.9%. About half a dozen castes included in the Maha Dalit category have a female literacy rate of less than 5%.

Table 2: Level of Education among Scheduled Caste in Bihar (figures in %)

S c s	Literate without educational level	Below Primary	Primary	Middle	High School	Graduates	Tech/Non-Tech
	6.6	31.1	28.4	13.1	15.1	3.6	0.1

Source; Census of India, 2001

The latest Economic Survey published by the Government of Bihar, points at a high drop-out rate among students from SC and ST communities at primary, upper-primary and secondary levels of schooling. It is evident that the dropout rates of SC & ST Children are relatively high in higher classes. It is also evident that only about 19 SC and 35 ST students out of 100 students enrolled in class I could reach Class X in the year 2009-10, indicating very high dropout rate. Only half of the SC students enrolled in class I could go beyond class V during the same period.

With regard to access to higher education as well, the SCs and STs have been in an unfavorable position. According to Indian census, 2011, access to higher education for all the disadvantaged social groups is

substantially below national average: the participation of women (23.2%) and OBCs (26.2%) as a whole was marginally below the national average.

Nutrition Status of Maha-Dalits in Bihar

Bihar continues to have the highest rates of child malnutrition in the country and globally, particularly stunting, or a failure to grow tall enough. This becomes evident in the child as early as the second year of life, by the end of which most children clearly fail to put on height according to global standards. A child normally grows rapidly from the time she is in her mother's womb to the time she is two years old, and then puts on height more slowly. When this 'window of opportunity' of the first 1000 days is missed and the

child fails to put on as much height as her the gap becomes virtually permanent – the child grows to a stunted adult. Besides being an underlying cause in a significant proportion of child mortality, stunting is known to be associated with poorer cognitive development and slower learning. Together, these physical and mental handicaps affect health, survival and productivity. Malnutrition in childhood is also associated with long-term consequences on the health and wellbeing, paradoxically making individuals vulnerable to chronic conditions such as diabetes,

cardiovascular disease and obesity. Stunting in children are the effects of long-lasting inadequacy of diet, repeated illnesses and a range of disabling and disempowering influences that arise from social injustice and poverty, and these effects are known to last generations. Other forms of malnutrition are also of concern. Severe wasting or thinness, also called Severe Acute Malnutrition (SAM), makes the child vulnerable to death. Anemia affects nearly two thirds of women and children and a third of men, and is mostly due to iron deficiency, a largely preventable

Table 3: Nutrition Status of Bihar

Children under 5 Years	Stunted	Wasted	Underweight	Anaemic
Bihar	48.3	20.8	43.9	63.5

Source: NFHS-4 2015-16

Status of Malnutrition in Bihar

The rates of malnutrition in Bihar exceed national averages by most measures. Constituting almost 9% of the country's population, Bihar contributes significantly to the national averages and has shown a positive trend but limited change in malnutrition between 2006 and 2015. Stunting prevalence has declined from 56 % to 48%, wasting declined from 27% to 21% (NFHS3 to NFHS4) (Figure 1). Severe wasting, also called severe acute malnutrition (SAM) declined as well from 8.3% to 7.0% (NFHS3 to NFHS4).

District Profile

Purnea

Starting with Purnea district which covers 3202.31 sq.kms of the state of Bihar is surrounded by Araria district in the north, Katihar and Bhagalpur district in the south, Madhepura and Saharsa district in the west and West Dinajpur district of West Bengal and Kishanganj district of Bihar in the east. The district is divided into 4 sub-divisions, 14 blocks, 251 Gram Panchayats and 1296 villages. The river Kosi and Mahananda are their tributaries irrigate different parts of the district. The sex-ratio is 923 females per 1000 males in rural areas of the district and child sex ratio is 954 girls per 1000 boys. In 2011 census, children under 0-6 formed 20.11% compared to 21.61% in 2001 census, the net change being -1.5% compared to previous censuses.

Table 4: Nutrition Status in Purnea among Dalit children

Children under 5 years are stunted	53.9%
Children under 5 years are wasted	20.6%
Children under 5 years are severely wasted	5.7%
Children under 5 years who are underweight	48.3%
Pregnant women age 15-49 years who are anemic	72.9%

Source NFHS 4, 2015-16

Literacy rate in rural areas of the district is 48.38% as per 2011 Indian census. Male and female literacy stood at 56.70 and 39.28 percent respectively. Crops grown in the district are paddy, jute, wheat, maize, lentils-moong, masur, mustard, linseed, sugarcane and potato. Jute is the main cash crop of the district. Coconut, banana, mango, guava, lemon, jackfruit, pineapple are also grown here. Livestock rearing of goat, cow and pig is very popular in this district and Purnea is the biggest producer of poultry and eggs in the State.

Munger

The district of Munger is located in the southern part of Bihar and as per 2011 census, 72.21% population lives in rural areas. Sex ratio in rural areas is 873 females per 1000 males as per Indian census 2011. Child Sex Ratio as per census 2011 was 922 compared to 914 of census 2001. In 2011, Children under 0-6 formed 16.81% compared to 18.08% of 2001. There was net change of -1.27 percent in this compared to previous census of India. Child Proportion (0-6 Age) 16.81% (Boys 16.41 % and Girls 17.26%)

Table 6: Nutrition Status in Munger among Dalit children

Children under 5 years are stunted	48.4%
Children under 5 years are wasted	21.4%
Children under 5 years are severely wasted	4.9%
Children under 5 years who are underweight	44.8%
Pregnant women age 15-49 years who are anemic	56.1%

Source NFHS 4, 2015-16

Literacy rate in rural areas of Munger district is 66.22 % as per census data 2011. Gender wise, male and female literacy stood at 74.43 and 56.68 percent respectively. In total, 537,021 people were literate of which males and females were 324,241 and 212,780 respectively.

Patna

Patna district, the State capital has 56.93% population living in the villages surrounding the city as per 2011

census. In the villages the sex ratio is 904 females per 1000 males and the child sex ratio is 923 girls per 1000 males. Children under 0-6 years formed 16.16% as per 2011 census compared to 17.36% as per 2001 census with a net change of -1.2 percent. The child population comprises 18.28 % of total rural population of Patna district. Literacy rate in rural areas of the district is 62.38 % with male and female literacy at 72.57% and 51.04% respectively as per census data 2011.

Table 8: Nutrition Status in Patna among Dalit children

Children under 5 years are stunted	34.7%
Children under 5 years are wasted	29.9%
Children under 5 years are severely wasted	10.9%
Children under 5 years who are underweight	36.7%
Pregnant women age 15-49 years who are anemic	41.5%

Source NFHS 4, 2015-16

CHAPTER 4

FINDINGS

The results of the data collected can be divided into four parts-

- Cropping Pattern
- Food Habits
- Indigenous Food Items
- Traditional Food Preparation

1. Cropping pattern

Table 9: The cropping pattern of the respondents of five intervention districts are mentioned below in a tabular representation-

Category	Saharsa	Kaimur	Purnea	Saharsa	Patna
Vegetables	Ladies finger, Cauliflower, Cabbage, Brinjal, Parwal, Bitter Guard, Jhingi, Nenuwa, bottle guard etc.	Beet Root, Ladies finger, Cauliflower, Cabbage, Brinjal, Pointed Gourd, Bitter Guard, Ridge Gourd, Sponge Gourd, bottle guard etc.	Ladies finger, Cauliflower, Cabbage, Brinjal, Pointed Gourd, Bitter Gourd, Ridge Gourd, Sponge Gourd, bottle gourd, mushrooms, Bamboo shoots, etc.	Ladies finger, Cauliflower, Cabbage, Brinjal, Pointed Gourd, Bitter Gourd, Ridge Gourd, Sponge Gourd, bottle gourd, Moringa flower, mustard flower etc.	Ladies finger, Cauliflower, Cabbage, Brinjal, Pointed Gourd, Bitter Gourd, Ridge Gourd, Sponge Gourd, bottle gourd, Moringa flower etc.
GLV (Green Leafy Vegetables)	Spanish, Ghenari (Red and Green), Kacchu, Gram, Khesari, bathua, mustard, coriander, Methi, Poi, Moringa leaves	Spanish, Ghenari (Red and Green), Kacchu, Gram, Khesari, Bathua, Mustard, Coriander, Methi, Poi, Moringa leaves, Chaurai	Spanish, Ghenari (Red and Green), Kacchu, Gram, Khesari, Bathua, Mustard, Coriander, Methi, poi, Moringa leaves, Chaurai, Beng, Patanji, kundo (Sushni), Kachhu, potato leaves, karmi	Spanish, Ghenari (Red and Green), Kacchu, Gram, Khesari, bathua, mustard, coriander, Methi, poi, Moringa leaves, Chaurai, Beng, patanji, kundo (Sushni), Kachhu, potato leaves, karmi, Gumpa, Noni, Thariya	Spanish, Ghenari (Red and Green), Kacchu, Gram, Khesari, bathua, mustard, coriander, Methi, poi, Moringa leaves, Chaurai, Beng, patanji, kundo (Sushni), Kachhu, potato leaves, karmi, Gumpa, Noni, Thariya
Grains	Wheat, Maize and Paddy	Wheat, Paddy and Maize Jinora in small	Wheat, Paddy and Maize	Wheat, Paddy, Maize	Wheat, Paddy, Maize
Oil Seeds	Mustard	Mustard	Mustard	Mustard and Flake seed	Mustard

Category	Saharsa	Kaimur	Purnea	Saharsa	Patna
Pulses	Masoor, Gram, Peas, Moong and Arhar	Masoor, Gram, Peas and Moong	Red Lentil(Masoor), Gram, Peas and Moong	Peas, Red lentil, Horse Gram, Moong	Peas, Red lentil, Arhar and Moong
Fruits	Mango, Papaya, Guava and Banana	Mango, Papaya, Guava and Banana	Mango, Papaya, Guava and Banana	Mango Papaya, and Guava etc	Mango, Papaya, Guava, and Amla
Flowers	Pumpkin, Ridge Gourd, Sponge Gourd, Moringa flowers	Pumpkin, Ridge Gourd, Sponge Gourd, Moringa flowers	Pumpkin, Ridge Gourd, Sponge Gourd, Moringa flowers, Banana and mustard	Pumpkin, Ridge Gourd, Sponge Gourd, and Moringa flowers.	Pumpkin, Ridge Gourd, Sponge Gourd, and Moringa flowers

From the above table it has been found almost similar cropping pattern in all the five intervention areas and the indigenous crops and vegetables grow naturally in the region but they do not cultivate those. The indigenous crops and vegetables are gradually becoming extinct and need to be preserved. Previously, the villagers used to eat the indigenous vegetables and grains only when they faced food shortages but now food is easily available to them due to various reasons like improved irrigation, increase in production of food items, government social security schemes etc.

2. Food Habits

The consumption pattern / food habits of the respondents show us that their diet include vegetables, fish, pulses, rice, flour which more or less provides them sufficient amount of food but not necessarily a balanced diet and a diverse variety of nutritious food which can be ensured through including the indigenous food in their food platter.

Table 10: The food habits / consumption pattern of the respondents of the five intervention districts are mentioned below in a tabular representation –

District	Summer			Winter		
	Breakfast	Lunch	Dinner	Breakfast	Lunch	Dinner
Munger	Chapati and vegetable Chura Murhi, Chai Biscuit, Gram Flour	Rice, Pulses and Vegetables, Gram Flour	Chapati and vegetable	Chapati and vegetable, Chura Murhi, Chai Biscuit	Rice, Pulses and Vegetables, Gram Flour	Chapati and vegetable
Kaimur	Chapati and vegetable Chai Biscuit, Gram Flour	Rice, Pulses and Vegetables, Gram Flour	Chapati and vegetable	Chapati and vegetable, Chai Biscuit	Rice, Pulses and Vegetables, Gram Flour	Chapati and vegetable
Purnea	Chapati and vegetable Chuda Dahi, Gram Flour	Rice, Pulses and Vegetables, Gram Flour, local fish	Chapati and vegetable Local fish	Chapati and vegetable, Chuda Dahi	Rice, Pulses and Vegetables, Gram Flour, Local fish	Chapati and vegetables, Local fish
Saharsa	Chapati and vegetable Chuda Dahi, Gram Flour	Rice, Pulses and Vegetables, Gram Flour, local fish	Chapati and vegetable Local fish	Chapati and vegetable, Chuda Dahi	Rice, Pulses and Vegetables, Gram Flour Local fish	Chapati and vegetable Local fish

3. Indigenous Food Items

In recent years due to improved irrigation facilities, increased agricultural production, access to government social security schemes, food security has been achieved in these communities but the consumption of indigenous food has declined to a considerable extent. It was found that the younger generation has little knowledge about indigenous food while the community members of middle age and old

age have sound knowledge about the indigenous food and its benefits. The discussion with the community members also revealed that the cropping pattern has changed because of high yielding variety of crops and focusing on cultivating mainly those grains which comes under Minimum Support Price (MSP). The other important reason for very low cultivation of indigenous variety of crops that preserving seeds for the next crop cycle is not being practiced.

Table 11: Indigenous food items in all the five intervention districts are displayed in the below table:

Munger	Kaimur	Purnea	Saharsa	Patna
Mahuwa, Kheri Rice, China/Sanwan	Mahuwa, Sera rice (red rice Motadana), Teni Rice, Sanwan, Chichor/ Gheur(root of Ridoi resembles ground nuts), seeds of beraberi (Red and Black seeds), Jinori, kewancch	Beng saag, patanji saag, kundo saag, Moringa leaves and flowers, bamboo shoots, snails, banana flower, mushrooms, khamruwa, Taad, baami and heiya fish, pipidi, koka, saruk, ban kundri	Beng saag, patanji saag, kundo saag, Moringa leaves and flowers, bamboo shoots, snails, khamruwa, Taad, baami fish, flakes seeds and heiya fish, koka, saruk, Ban kundri, Thariya Saag, Koka/Sorki/Ghencha, Chichora	Moringa leaves and flowers, snails, khamruwa, koka, saruk, Thariya Saag, Koka/Sorki/Ghencha, Siranti, Nuni, Karmi, Khubia, Jinori, Jharna Paddy (Teni Rice)

3.1 The indigenous plants with its benefits:

Indigenous crops, grains and vegetables have been an integral part of the diet of these communities since ages. The traditional food preparations full of nutrients were results of food scarcity faced by the community in the past. Gradually, these communities started cultivating high yielding crops using chemical fertilizers, pesticides and insecticides but this impacted

the health the soil quality unsuitable for indigenous crops. However, the middle aged and old women in the community believes that indigenous foods are good to taste and nutritious as well. These women showed the researchers few available indigenous plants that are locally consumed. The common indigenous plants, grains, vegetables and fruits in all the five intervention districts are listed below:



Jinori plant in Kaimur is an indigenous variety of Bajra which has multiple health benefits. It aids weight loss, manages diabetes, promotes good gut health, keeps the heart healthy, it is gluten-free and can protect against certain cancers.

Chaulai is a green leafy vegetable, commonly found in Kaimur. It has calcium, iron, sodium, potassium, Vitamin A, E & C and folic acid. This indigenous plant is good for anemia as it increases the blood production due to its rich iron content, it improves bone health and prevents osteoporosis and boosts bone density.



Karonda in Kaimur is a fruit, the benefits of which have been acquired by Indian medicine industry as this fruit is a rich source of iron and Vitamin C. Iron, as we know benefits patients with anemia and Vitamin C helps with growth and repair of tissues. The fruit also helps keep the liver healthy by checking the excessive secretion of bile. The fruit acts as an analgesic and comforts the body during diarrhea. The fruit keeps the heart healthy, reduces inflammation, helps fight cold and cough, cleans the blood, regulates blood pressure and helps in constipation.

Kewanch (*Mucuna Pruriens*) is used since ancient times in India as Ayurvedic medicine for treating male sexual disorders. The roots, leaves, seeds of this plant are used in the treatment of impotency, snake bite, diabetes, cancer and Parkinson's disease.



Barhal / Monkey fruit is used in preparations of pickle and vinegar and it is also sliced, dried and used as a substitute for tamarind. This fruit is used for treating dysentery and arthritic swelling and cleaning wounds. Traditional healers used the bark of this plant to remove poison from the body and its stem is used to expel tapeworms.

China Rice (Sanwa Millet) is high in protein and rich in fiber. The fiber in this rice helps in weight loss. This rice helps prevent anemia as it is packed with iron and it is a good source of Vitamin B. This rice is a valuable addition to gluten-free diet and diabetic diet. This rice has potassium and magnesium in it which helps to check cholesterol levels and blood pressure and also a healthy heart.



Beng Saag (*Centella Asiatica*) is an indigenous green leafy vegetable, rich in iron and dietary fiber. It is a versatile medicinal plant whose name is inspired by beng (the Bengali word for frog), for the chorus of frogs announcing the rains coincides with the appearance of this saag.

Patanji Saag (Purslane) has Vitamin A which is a powerful antioxidant essential for vision, healthy mucosa and for the skin. It also contains Vitamin C and B-complex vitamins as well as minerals such as iron, magnesium, calcium, potassium and manganese. It has Omega 3 fatty acids high in dietary fiber and low in calories. Purslane is good for people with diabetes.



Kundo (Sunsuniya Saag) / Sushni Saag is an aquatic plant, more like a fern and its leaves are used in traditional medicines for its curative value and is suggested for treating insomnia, hypertension, diarrhea, respiratory diseases and skin diseases.

Arbi (Colocasia) Leaves are packed with essential nutrients having traditional dishes in Bihar, Jharkhand, Bengal, Uttar Pradesh, Uttarakhand and Himachal Pradesh. The leaves are rich in iron, fiber, antioxidants, potassium, magnesium, vitamin A, B1,B2,B9,C, and E and resistant starch. Arbi has various health benefits like, it helps in keeping the blood sugar levels in control, reduces the risk of heart disease and reduces risk of cancer. It boosts immune system and maintain healthy digestive system.



Poi Saag (Malabar Spinach) is a climber plant with nutritious leaves having several health benefits e.g. it is low in calorie and rich in fiber and these leaves facilitate digestion, reduce cholesterol, boosts immunity and helps in cellular healing.

Karmi Saag (Water Spinach) is full of nutrients containing in abundance water, iron, Vitamin C & A. This spinach can be eaten raw or cooked and it is good for the skin and for proper brain function.



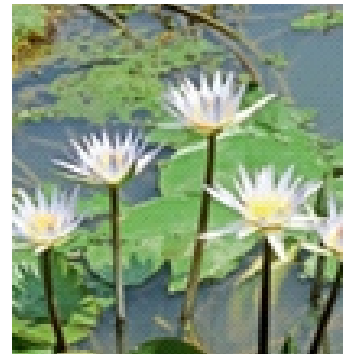
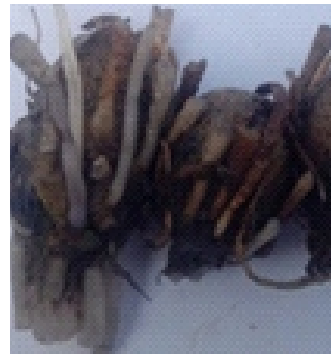
Khamarua is a species of yam from the yam family. It treats conjunctivitis, diarrhea, and dysentery. This generally grows 3-4 feet below the soil. It is useful for bone strength and does not require an extra effort to cultivate it. After one year of sowing, a large amount of yam is produced. Generally, it is prepared as a vegetable curry and some people eat it boiled.

Noni Saag (*Morinda Citrifolia*) has been used traditionally for curing colds, flu, diabetes, anxiety and high blood pressure. This spinach is used for treating depression and anxiety. Its bark is used for curing bacterial infections, cough, diarrhea in infants and stomach ailments. Its flowers are used for sore or irritated eyes, conjunctivitis, ocular inflammation and coughs. It can be used as a tonic.



Bhangraiya plant/Siranti, commonly known as Bhringraj is good for hair (improves hair growth), skin (treating eczema and other skin infections), liver (regenerates liver cells). The juice of its leaves helps in easing dysentery symptoms and helps in reducing gastric ulcers. This plant traditionally used to treat jaundice. It is good for the heart, relieves pain, improves immunity, and brings relief to respiratory problems like asthma and bronchitis. Bringaraj helps in balancing sugar levels effectively. It is considered to be effective for treating snakebites and scorpion stings.

Sorkhi (White Lotus flower) / Bhent roots are used for making various types of diet and decoction. It is also called white chives. It is widely consumed by the community living around water bodies. It is rich in iron.



Bathua leaves (Pigweed) is a winter vegetable having multiple health benefits starting from cell repair, it has good source of fiber and laxative properties, can help in losing weight, purifies blood giving one flawless skin. It promotes healthy hair and eye health and good for dental health.

Ban kundri (Ivy Gourd) is a fruit which is a good source of plant-based fiber and iron. It helps to lower blood sugar level, controlling high blood pressure, relieves those with constipation and good for weight loss.



Snails have protein with Vitamin A, iron and calcium. Vitamin A boosts immune system and Calcium helps to mend bone related problems like osteoporosis. Iron helps the red blood cells in circulation of oxygen to all parts of body.

4. Traditional Food Preparation

Now, let's delve into their traditional food preparation which is mentioned in tabular representation below- In Munger all the traditional food preparation has its own history and is being consumed by the community since ancient times. Such traditional preparation, prepared from indigenous plants, grains and herbs provide required energy, vitamins, minerals which improves the immunity of a person. The common traditional preparation which has nutritional and medicinal values are mainly consumed by the lactating women or by the women after delivery of baby like

Table 12: Traditional preparation in Munger

Panchmel Sattu is unique as it is not found elsewhere but only grows in this region. It is found in every household in Munger and is consumed in summer. It helps in preventing heat stroke. Sthoura Ladoo is

Panchmel Sattu, Sthoura Ladoo, Masala Pani in Munger; Pickles of Babul, Mahuwa ladoo, Jinori Ladoo, Jinori flakes Ladoo and Chotha in Kaimur; Haldi tea, bamboo pickle and Pocchai in Purnea; Adras in Saharsa; Moringa pickle, Haldi Kadha, Jirvani and Ochwani in Patna.

unique as well in this region as it helps in improving the health of lactating mother. Masala Pani is good in relieving body aches and fatigue.

Preparation	Ingredients	Beliefs	Available in Market	Remarks
Chhaunka/ Chhanka	Rice flour, ginger, turmeric, mustard oil, jaggery and fenugreek (methi)	It reduces the chances of getting cold and cough among in infants if given to lactating women for 6 days after delivery	No	Antioxidant and anti-inflammatory properties. Rich in iron. Shouldn't be given to mother who had c-section delivery. Taste is sour.
Panchmel Sattu	Gram, Maize, Barley, Black grass pea (Khesari), horse gram, wheat, (Kurthi) and green gram.	Prevent from heat stroke	No	High protein and fiber. Consumed in summer. Tastes good.
Sthoura Ladoo	Rice flour, dry ginger, fenugreek, Ghee (cow), dry fruits	Improve lactation and strength.	No	Anti-inflammatory and rich in mineral, and fat. Should be consumed for 15-20 days, one ladoo per day, can be consumed by anyone. Taste is very good.
Masala Pani	Many herbs, barks and leaves	Relieve body ache and fatigue.	Available in packet	Antioxidant and anti-inflammatory properties. Should be consumed for 5 -6 days. Sour and bad in taste.

Table 13: Traditional preparation in Kaimur

Pickles of Babul are unique to this area given that it is beneficial for treating gastric problems. Mahuwa ladoo and Chotha gives strength and has long shelf life and is

only found in this area. Jinori Ladoo and Jinori flakes Ladoo are very healthy and have high shelf life and is indigenous to this region.

Preparation	Ingredients	Beliefs	Available in Market	Remarks
Pickles of Babul	Babul and Spices	Beneficial in gastric problems	No	Rich in minerals and Vitamin-C. Long self-life, babul is freely available.
Karaunda pickle	Karaunda, spices and mustard oil eat, (Kurthi) and green gram.	Improves digestion	No	Rich in minerals and Vitamin-C. Long Self life.
Mahuwa Ladoo	Mahuwa and Jaggery	Gives strength	No	Rich in iron and fiber. Long self-life.
Mahuwa Chotha	Dry Mahuwa and Jaggery powder	Gives strength	No	Rich in fatty acid, magnesium, phosphorus and sodium. Can be value added with ground nut.
Methi Ladoo	Dry fruits, til (sesame), fenugreek, rice flour, flakes, Ghee, flakes seed oil	Boost immunity and protect from cold and cough		Rich in Vitamin B, dietary fiber, manganese and iron. Should be consumed in winter, healthy snacks.

Preparation	Ingredients	Beliefs	Available in Market	Remarks
Halwa	Wheat flour, jaggary, Ghee, turmeric, powder of Ochhwani (Mix of herbs and dry fruits)	Belief that it will clean the stomach and uterus after delivery.	Ochhwani (Mix of herbs and dry fruits)	Carbohydrate, fat, anti-oxidant and anti-inflammatory. It is consumed by women after delivery for early recovery and fast healing.
Sthaura Ladoo	Turmeric, rice flour, dry ginger, ghee, dry fruits and powder of Ochhwani (Mix of herbs and dry fruits)	It gives strength and improve the lactation.	Ochhwani (Mix of herbs and dry fruits)	Rich in dietary fiber and minerals. Anti-oxidant, anti-inflammatory. Lactating women should consume for 15-30 days, one ladoo per day.
Jinori Ladoo	Jinori, wheat flour, rice flour, flakes and jaggery	Very healthy	No	Rich in protein, fiber, minerals iron and calcium. Long self-life.
Jinori flakes Ladoo	Jinori flakes, ginger and Jaggary	Very healthy	No	Rich in protein, fiber, minerals iron and calcium. Used in winter season.
Jinori Halwa	Jinori flour, Ghee, turmeric powder, Jaggary, and dry fruits (optional)	Very healthy	No	Rich in protein, fiber, minerals iron and calcium. Used as desert.

Table 14: Traditional preparation in Purnea

Sudi, Haldi tea, bamboo pickle and Pochai are unique in this district. Haldi tea e.g. acts as a painkiller and as an antiseptic especially to women after delivery.

Pochai is a healthy drink made from fermented rice during festivals.

Preparation	Ingredients	Beliefs	Available in Market	Remarks
Laduwa	Rice flour, Jaggary and fennel	Gifted to daughter after marriage	No	Rich in protein, fiber, minerals iron and calcium.
Snails	Snails Meat and spices used to cook meat	High content of protein	No	Rich in protein and iron, also contains almost all of the amino acids needed for human nutrition. Very common in water logged area especially in Koshi region.
Chhaunka	Rice flour, ginger, turmeric, mustard oil, jaggary and fenugreek (methi)	It reduces the chances of getting cold and cough among infants if given to lactating women for 6 days after delivery	No	Rich in iron. Antioxidant and anti-inflammatory properties. Should not be given to mother have CS delivery. Taste is sour.
Bathua Seeds Chapatti	Bathua Seeds flour and wheat flour	Healthy	No	Bathua seeds are rich in amino acids, which are the basic building blocks of the body.

Preparation	Ingredients	Beliefs	Available in Market	Remarks
Sudi	Desi Chicken, Rice and Spices	Made only during festival	No	Rich in protein and amino acid.
Haldi Tea	Turmeric, ginger, jaggery and carom Seeds	It acts as painkiller and antiseptic for a woman after delivery.	No	Antioxidant and anti-inflammatory properties. Consumed 1 glass twice per day for 5 days.
Adhko Chyavanprash	Ginger, Turmeric, carom seeds, kalaunji, jaggery, mustard oil/ Ghee	One tea spoon per day with lukewarm water		Antioxidant and anti-inflammatory properties. Given to women after delivery for 15 days.
Mushrooms	Mushrooms and spices (Turmeric, coriander, chili, black pepper, salt etc.)	High content of protein	Available in Market	Rich in protein, calcium, iron and vitamin B.
Bamboo Pickles	Fermented Bamboo Shoot, Cumin Seeds , Fennel Seeds, Fenugreek Seeds , Mustard Seeds, Kalonji, Red Chili Powder, Bird Eye chili, Naga King Chili, Mustard Oil and Salt to taste	NA	Not Available	Rich in fiber and lignin.
Bamboo vegetables	Mustard, Turmeric, Chili Powder, Coriander Powder, Ginger, Garlic, Salt as per taste	Improves appetite and digestion.	Available in Market	High fiber and lignin. Available in monsoon season only.
Pochaai (Ranu)	It is a combination of 20-25 herbs, which is mixed with boiled rice and left to ferment.	Hadia made from ranu is main cuisine in any festival of tribes. Believed to be healthy drink.	Available in Market	Carbohydrate and rich in minerals like calcium, sodium, potassium, iron and phosphorous

Table 15: Traditional preparation in Saharsa

All Flake seed preparations are unique to this region and are good to have during winter. Adras is unique as

well to this region and is good especially for lactating mothers.

Preparation	Ingredients	Beliefs	Available in Market	Remarks
Bottle gourd with Flake seed	Flake Seed and Bottle Gourd	Highly healthy and nutritious	Available in Market	Rich in essential fatty acids.
Flake Seed chapatti	Flake Seed and Wheat flour	Highly healthy and nutritious	Available in Market	Flake seeds were abundantly available 20 years back

Preparation	Ingredients	Beliefs	Available in Market	Remarks
Flake seed and potato	Flake Seed and Potato	Highly healthy and nutritious	Available in Market	
Flake Seed Chatni	Flake seeds, green chili and Garlic	Highly healthy and nutritious	Available in Market	
Tilchaur Lai	Rice flour, Sesame and Jaggary/ Sugar	Highly healthy and nutritious	Available in Market	
Tishiyaori	Flake seeds and Red lentils	NA	Not available	Essential fatty acids. Used as snacks
Adauri	Gram, Peas, Khesari, Red lentils, Black gram	NA	Not available	Rich in protein & minerals. Used when vegetables are scarce in market during summer season.
Adras	Ginger, Turmeric, Jaggary, Mustard oil/Ghee and Dry fruits.	Good for women after delivery	Not available	Antioxidant and anti-inflammatory properties. It is taken two teaspoons twice per day for 7-8 days.
Halwa	Suji, Mustard Oil, Sugar and milk	Healthy for women after delivery.		High carbohydrate and rich in protein. Given to women after delivery for 6 days.

Table 16: Traditional preparation in Patna

Moringa pickle is rich in calcium, potassium, magnesium and phosphorus while Haldi Kadha works like an antiseptic and helps in the healing process for women after the delivery of baby. It has antioxidants

and anti-inflammatory properties. Jirvaani and Ochhwani are healthy for lactating mother due to their antioxidant and anti-inflammatory properties.

Preparation	Ingredients	Beliefs	Available in Market	Remarks
Pickles of Moringa	Moringa and Spices used for pickles	NA	Not Available	Rich in calcium, potassium, magnesium and phosphorus.
Flake Seed chapati	Flake Seed and Wheat flour	Very good for health especially in winter season	Available in Market	Rich in essential fatty acids.
Tishiyaori	Flake seeds and Red lentils	NA	Not available	Rich in essential fatty acids. Used as snacks
Adauri	Gram, Peas, Khesari, Red lentils, Black gram	NA	Not available	Rich in protein and minerals. Used when vegetables are scarce in market during summer season.
Charkhi Kheer		Highly nutritious with high calorie		Rich in Protein, calcium and fat.

Preparation	Ingredients	Beliefs	Available in Market	Remarks
Haldi Kadha	Turmeric, Milk and Jaggary	Antiseptic, helps the women in healing process after delivery.	Not Available	Antioxidant and anti-inflammatory properties. Shall be taken once per day for 5-6 days after delivery.
Jirvaani	Turmeric, Ginger, Jeera, dry fruits and Ghee	Very good for health especially in Healthy for lactating women winter season	Not Available	Antioxidant and anti-inflammatory properties. Taken two teaspoons twice per day for 15-30 days.
Ochhwani	Herbs of ochhwani available in market in packet, Jaggary and Ghee	Healthy for lactating women	Not available	Antioxidant and anti-inflammatory properties. Taken two teaspoons twice per day for 15-30 days.

CHAPTER 5

TRADITIONAL

RECIPIES

Indigenous Recipes collected from the respondents are described below:

Jirvaani:

Take 5 tea spoon of cumin seeds in a cleaned bowl then add-

1. 10 table spoons of raw turmeric paste
2. Two teaspoons of saunf
3. 5 table spoons of Ghee
4. 5 tablespoons of Jaggery

Preparation method

Roasted cumin seeds are to be crushed well so that it is mixed well with five table spoons of ghee and ten table spoons of raw turmeric paste. Two teaspoons of saunf powder and five table spoons of jaggery are to be added to the mixture until it turns golden brown. The mixture is poured in a bowl for cooling.

Ochhwani:

1. One packet of Ochhwani herbs
2. 5 table spoons of Ghee
3. 5 tablespoons of Jaggery
4. 5 table spoons of dry fruits

Preparation method

Crushed Ochhwani herbs are mixed in a bowl with five table spoons of heated ghee. The mixture will turn golden brown in colour. Five table spoons of jaggery is added to this golden brown mixture and stirred well. Let sit the mixture for some time to let it cool down

after which dry fruits are added.

Adras:

1. 5 tablespoons of ginger
2. 5 tablespoons of raw turmeric paste
3. 5 table spoons of Ghee/Mustard oil
4. 5 tablespoons of jaggery
5. 5 table spoons of dry fruits

Preparation method

Shredded ginger and turmeric paste are added to five table spoons of heated ghee in a bowl and mixed well. The mixture turns golden brown and it is left for cooling. Dry fruits are added before serving the preparation to the household members.

Stbaura Ladoo:

1. Rice flour
2. 1 tablespoon of dry ginger
3. Ochhwani powder
4. 5 table spoon of Ghee/Mustard oil
5. 5 tablespoons of jaggery
6. 5 table spoons of dry fruits

Preparation method

In a bowl five table spoons of heated ghee is poured and to this shredded ginger, rice flour and ochhwani powder are added and stirred well. The mixture turns golden brown in colour and to this five table spoons of jaggery is added and stirred well. The mixture is left for cooling and then it is shaped into a ladoo.

Jinori Ladoo:

1. 10 table spoons of Jinori
2. 10 table spoons of Jaggery
3. 1 table spoon of Ginger

Preparation method

Ten table spoons of jaggery is heated with water in a bowl till it boils after which shredded ginger and roasted Jinori are added and stirred well. The mixture is left for open for cooling and at the end, the dry fruits are added and the mixture is shaped into a ladoo.

Babul (Acacia pod) pickles: The ingredients required for preparing this pickle are-

1. Acacia pods (vachellianilotica seed pods) in a cleaned bowl
2. Two teaspoon of Dry Mango powder (Amchur Powder)
3. Three teaspoon of pickle masala
4. Two sprigs of curry leaves
5. One serving spoon of mustard oil
6. One teaspoon of dry red chili powder
7. 1/2 teaspoon of turmeric powder
8. Two teaspoons of saunf
9. One teaspoon of asafetida powder
10. 1/2 teaspoon of cumin
11. 1/2 teaspoon of ajwain,
12. Black Salt as per taste

Preparation method

In a bowl five glasses of water are added along with turmeric powder and salt and then it is heated till it boils. The Acacia pods (without seeds) are added and the thick syrup is boiled again. The syrup is left for cooling and later the pods are cleaned by taking out the threads from its sides. The next process involves the pods to be broken into pieces and dried in the sun for at least 12-24 hours.

In a pan oil is heated and curry leaves, cumin and asafetida are added and fried. Dried Acacia pods are fried lightly. Three teaspoon of pickle masala, one teaspoon of chili powder, 1/2 teaspoon of turmeric powder and two teaspoon of fennel are added to the

pan and stir fried for a minute on a low flame. The pickle is stored in a glass jar after 12 hours.

Barhal (Artocarpuslakoocha):

Barhal is a fruit which tastes more like an orange or a custard apple and is found in deciduous forests in India, Nepal, Bhutan, Bangladesh, Myanmar and Malaysia. All parts of the fruit are edible and is widely used in Northern India for making pickle and vinegar. Barhal is also sliced, dried and used as a substitute for tamarind. Traditionally this fruit is used for treating dysentery and arthritic swelling and cleaning wounds.

Following are the ingredients for preparing this pickle-

- 500 grams of unripe barhal, sliced with skin
- Two teaspoons of kalaunji or nigella seeds
- Two teaspoons of turmeric powder
- Three teaspoons of roasted, crushed aniseed
- Two teaspoons of roasted, crushed coriander seeds
- Two teaspoons of cumin seeds
- One teaspoon of red chili powder
- 1/2 teaspoon of black pepper powder
- 1/2 teaspoon of asafetida / hing
- Two teaspoons of Banarasi rye seeds
- One teaspoon of crushed mustard seeds
- Two teaspoons of Salt
- One teaspoon of black salt
- Two teaspoons of roasted, crushed fenugreek
- Fifteen peeled garlic cloves
- Two teaspoons of vinegar
- One tablespoon of Mustard Oil

Preparation Method-

Need to mix sliced barhal pieces with spices in lukewarm mustard oil. A pinch of hing to be roasted till fumes comes out. A glass jar is to be taken to let the fumes enter it. The sliced barhal in spice mixture is to be filled in the bottle. The jar is to be kept in sunlight for the next 7-10 days till the pickle is ready.

Vinegar Pickle:

Ingredients needed to prepare the pickle-

- 150 grams of sliced Unripe badhal with skin

- 10 Dried raw mango slices
- 15 Carissa (karonda)
- 15 Peeled garlic clove
- 2 teaspoons of Nigella (kalaunji)
- 2 teaspoons of Aniseed
- 3 teaspoon of crushed Coriander seeds
- 10 Red chilies
- 1 teaspoon each of Salt and mustard oil
- ½ litre of Sugarcane vinegar

Preparation Method

In sugarcane vinegar all spices are to be mixed with salt and mustard oil. In the vinegar sun dried barhal pieces, karonda, raw mango slices, peeled garlic cloves are to be put and stirred well. The mixture has to be kept in the sunlight for the next 7-10 days till the pickle is ready to be served with onions. This pickle is taken with daal chawal.

Bamboo Shoot Pickle:

This pickle is most popular in Nagaland. It has got subtle flavor and crunchy texture. The ingredients needed for the preparation of this pickle is –

- 2-cups of Fermented Bamboo Shoot
- 1 teaspoon of cumin seeds

- 1 teaspoon of fennel seeds
- 1 teaspoon of fenugreek seeds
- 1 teaspoon of mustard seeds
- 1 teaspoon of Kalaunji
- 1 teaspoon of red chili powder
- 2 teaspoon of bird eye chili
- 3 Naga king chili
- 2 tablespoons of vinegar
- ¼ cup of mustard oil
- Salt to taste

Preparation Method

Bamboo pieces are cut into small pieces and crushed with a motor and pestle. Next cumin, fennel, fenugreek seed, Mustard seed and Kalonji are to be dry roasted till splutters and later it cools down. Then the roasted masala is to be coarsely grounded along with bird eye chilies and Naga king chilies and chili powder. Next, in a mixing bowl the bamboo shoot, grounded masala, vinegar and half mustard oil are to be added with salt and then need to be mixed nicely. The mixture then has to be transferred to a sterilized jar and then the remaining mustard oil needs to be poured and the lid of the jar has to be closed tightly and it has to be sun-bathed for 2-3 days at least or for a week at places which receive sufficient sunlight.

CHAPTER 6

COMMUNITY PERCEPTION AND KNOWLEDGE ABOUT INDIGENOUS FOOD ITEMS

Knowledge, attitude and practice analysis has been categorized among three types of respondents: a) community members aged 15-49 years, b) middle aged community members between 50 to 60 years and c) old aged community members above 60 years.

Knowledge, attitude and practice of Married community members

The knowledge of married women aged 15-49 years about indigenous and traditional food and its different preparations is low as they are more attracted towards market produce given the perennial advertisements of the market products which have strongly influenced the food choice of these villagers. They consider having traditional food is out of fashion and those having traditional food are considered to be backward. The community has little knowledge about the medicinal and nutritional properties of indigenous and traditional food.

Food preparations based on indigenous ingredients after pregnancy, during festivals and social gatherings are part of their culture reinforced by older members of the households. Traditional recipes of locally grown leafy vegetables, tubers and eatables found in water bodies are prepared by the women in the household. Due to time and poverty, the women show less interest

and low willingness to learn the knowledge and skills of growing the traditional vegetables. There is high willingness to procure the indigenous food product having substantial shelf-life.

Knowledge, attitude and practice of Middle aged community members

Women between 50-60 years have better knowledge about indigenous food and the benefits of having these through their traditional recipes. The reason behind this is their dependency on indigenous vegetables and fruits as they faced food insecurity when they were young. These women are keen in transferring their knowledge on indigenous food and its recipes to younger generations during social gatherings, festivals and after child birth. The practice of traditional food preparations is low due to unavailability of indigenous food items. The cropping pattern has transformed hence, the indigenous crops are not being cultivated and the practice of preserving seeds for the next cropping season has become extinct, therefore the indigenous varieties have depleted as well which has led to rise in prices of these crops compared to normal staple crops. This group are in favour of having indigenous food as their staple food due to their high nutritive value. Moreover, these foods had become their staple diet because of lack of irrigation and

frequent occurrence of flood and drought in the past. But now, more and more the availability of indigenous foods are becoming scarce because of the new cropping pattern among farmers. During further interaction with them it was found that most indigenous food do not require fertilizers to grow and because of high use of chemical fertilisers the lands are no more suitable to grow indigenous crops.

Knowledge, attitude and practice of community members

The old age people have sound knowledge about the indigenous crops and traditional food preparation and this is because of frequent droughts and floods they experienced in the past which forced them to consume

the indigenous food items. Although they have no technical knowledge about the nutritional value of indigenous crops but did have strong beliefs that the indigenous foods are able to treat ailments, improve the nutrition level and manage malnutrition. They still are able to treat some ailments with existing available indigenous herbs, roots, plants and leafy vegetables. The old women interviewed are willing to improve their knowledge about indigenous foods. They would be more than willing to prepare traditional food from locally available indigenous crops or grains which are available in the local market and wish to pass on this knowledge to the younger generation.

CHAPTER 7

LIVELIHOOD THROUGH ITK

An assessment of the demand for the indigenous foods at the local market will help strategize the promotion of the traditional cuisines made out of indigenous ingredients. Promoting Nutri Karts and Nutri snacks would ensure nutrition for the community people especially pregnant, lactating mothers and children. As we know, the malnutrition level in Bihar is quite low; NFHS-5 survey conducted in 2019-2020 reports stunting at 42.90% in urban and 43.9% in rural, wasting at 22.90% in urban and 23.1% in rural and underweight children at 41% in urban and 41.8% in rural. The status of anaemia in the state is appalling with 69.4% children between 6 to 59 months and 63.6% of women are anaemic. 25.6% of women are also underweight as per NFHS-5 survey.

The livelihood of the local people will get a boost with the following enterprise model to be shared with the district and block officials-

Nutri Kart– Grocery shops owned by community members to sell indigenous foods with nutritive value at low prices to the locals. As an extension to these

grocery shops there will be E-Rickshaws customized into movable retails shops with proper branding and messaging. The messages would involve the importance of nutrition and a mention of the nutritive value of the food items sold in these e-rickshaws. The investment required for such an intervention is INR 2 lakhs (2700 USD approx.). The family responsible for running these E-Rickshaws can earn a monthly profit of INR 15000/- (200USD approx.)

Nutri Snacks- Community members especially women can be trained to make healthy and nutritious snacks e.g. Poshan Ladoo, Jinori Ladoo, Mahuwa Ladoo, Karaunda pickle and Babul pickle from local ingredients having a shelf life and can be sold via Grameen Bazars and Nutri Karts. This model will require an investment of INR 1 lakh (1350 USD approx.) and can generate monthly income of INR 30000/- (400 USD approx.) for the families.

CHAPTER 8

RECOMMENDATIONS

The following recommendations from the above study can be shared with the State / District government officials for approval and joint implementation-

- Develop training plan and module for local women and men on indigenous food items, imparting them its nutritive value
- Develop training plan and module for women and men on Nutri Karts and Nutri Snacks
- Networking with other Line departments such as ICDS , SHG and Education department to sell Nutri snacks at Anganwadi centres, Self Help Groups buying ingredients for cooking meals for children at schools for their mid-day meals
- Networking with Food Retail Industry for commercial scale up of Nutri Snacks e.g. Poshan Ladoo



CHAPTER 9

CONCLUSION

Retaining indigenous traditional knowledge is vital for preserving the region's rich resources having nutritive value and healing properties. Most of these have already withered away and will soon be lost if steps are not taken. Elderly in the community still recall the traditional methods of extracting the valuable components of the indigenous flora and the knowledge of these members should be harnessed for better use and well-being of the community.

The entire enterprise model mentioned above will have community ownership to ensure sustainability and it

will be revenue generating as well keeping in mind the livelihood opportunities it will create for the community members. This initiative need to be replicable and scalable in all the districts of the state taking the learning from the pilot. This would certainly call for joint convergence with the government stakeholders. The initiative will also support the Indian system of Ayurveda which goes as far as to treat terminal illnesses like cancer.

ANNEXURE 1

Data collection formats:

1. Cropping pattern

आम तौर पर उगाए जाने वाले फसल (ये प्रश्न किसी किसान से पूछा जाना है)				
फसल	गरमा	ख़रीफ़	रबी	बारह-मासा
अनाज				
मोटा अनाज				
दाल				
तिलहन				
हरा सब्जी				
हरे पत्तेदार सब्जी				

आम तौर पर उगाए जाने वाले फसल (ये प्रश्न किसी किसान से पूछा जाना है)				
फसल	गरमा	ख़रीफ़	रबी	बारह—मासा
फल				
फूल				
जमीन के नीचे होने वाले सब्ज़ी (कन्द आदि)				
लत्तर वाले सब्ज़ी				
मिर्च मसाला				
निम्बू प्रजाति वाले फल				
पेय पदार्थ				

2. Items available in local haat (market)

<p>हाट में उपलब्ध सभी खाद्य सामग्रियों की सूची हाट में खुद जा कर उपलब्ध सभी खाद्य सामग्रियों की सूची तैयार करना है नोट: वैसे कोई खाद्य सामग्री जो आमतौर पर नहीं दिखती है उसके बारे में विस्तृत जानकारी विक्रेता से जरूर इकठा करें हाट का नाम: हाट के क्षेत्रफल (अंदाजन वर्ग फीट में): हाट लगने का दिन: ब्लॉक का नाम: जिला का नाम:</p>	
फसल	उपलब्ध सभी खाद्य सामग्रियों
अनाज	
मोटा अनाज	
दाल	
तिलहन	
हरा सब्जी हरा सब्जी	
हरे पत्तेदार सब्जी	
फल	
फूल	
ज़मीन के नीचे होने वाले सब्जी (कन्द आदि)	
लत्तर वाले सब्जी	
मिर्च मसाला	
निम्बू प्रजाति वाले फल	

ANNEXURE 2

FGD checklist

Group Discussion

Objective: This FGD intends to capture major barriers and potential opportunities to make the city of Bihar disaster resilient. The major issues discussed in FGD, which is expected to be conducted over a period of sixty to ninety minutes are expected to throw light on the issues and strategies to improve the impact and relief delivery processes along with potential strategies to increase utilization of these services and uptake of disaster resilient approach. These interactions are expected to generate valuable insights into various issues relating to disaster. Given below are some of the most common advantages of FGDs:

- Provide access to rich source of data on social norms, attitude, behavior and structural features of a group or a community or cultural patterns.
- Reveals the full range of variation in possible responses to questions/constructs, which may be used for developing survey instrument
- Forms basis for generating important hypothesis, which may be tested qualitatively or quantitatively

Process of conducting FGD: One FGD consisting of 6-10 community members in fairly homogeneous conditions will be conducted in 25 villages in 5 districts included in the follow up study. One moderator and one note taker will be deployed for the purpose. The FGD should not last for more than ninety minutes, where the first 15 to 20 minutes should be devoted in preparatory cum introductory issues. Before initiating FGD, we should ensure consent of all the participants by asking please let me know if any one among you has any hesitation or problem in participation in this group discussion. We should however emphasize that we will appreciate to know if any one among you would have any problem in participating in this discussion. Any team of good facilitator and note taker should...

- have language skills that matches with respondents
- demonstrate that they can function well in group settings
- have no strong opinion about the topic in question

- or may be neutral during discussion
- not wish to use focus group as a platform for their own views
- be good listener
- have conceptual skills to summarize the discussion

During the process of conducting FGD, facilitators have several key responsibilities to smoothly complete the task. Given below are some of those activities, which should be treated as the topmost responsibilities of facilitators:

- Keep the discussion focused on topic
- Ensure that the topic to be discussed in the group are culturally acceptable to majority of the group members
- Help the participants to not reveal very personal disclosures that they might regret later
- Ensure that everyone in the group have opportunity to speak
- Ensure that all the ideas are equally valid and there is no wrong or right answer
- Each member's views should be heard and respected

The scientifically developed process of conducting FGD may not be implemented effectively in many situations. Therefore, the facilitators should be ready with some trouble shooting mechanism. Given below are some most common features of the trouble shooting mechanism in conducting FGD:

- Some people may not be opening up: Enquire them about their opinion or viewpoint on the issue/ opinion on the view point of X
- Someone speaks too much: Request to wait for his/her turn
- Someone speaks frequently/loudly: Remind the ground rule of FGD
- Someone starts talking to the next: Try to understand the reasons behind the problem including size of the group
- Someone takes stand on a fixed side of the issue: Remind differences in opinion are the

FOCUS GROUP DISCUSSION GUIDE FOR VILLAGERS

(To understand Indigenous Traditional Knowledge on Nutrition)

Identification

Name of the Village: _____ Block/District: _____

Name of Moderator: _____ Name of Recorder: _____

Date: _____ Duration of discussion: _____

Introduction: Namaste, my name is _____, I am from Patna (add experience of working if necessary). This is my (friend, associate, colleague, co-worker) _____ and we are currently working for CARITAS, an organization who is responsible for community development (please insert your own script if required to develop good quality rapport with the respondents or members participating in FGD).

List of Participants

S.N.	Name	Sex	Age	Education	Occupation	
1.						
2.						
3.						
4.						
5.						
6.						
7.						
8.						
9.						
10.						

1. Knowledge of Food habit of villagers

- 1.1 <Probe:>Can you tell us about season wise food consumption pattern?
- 1.2 <Probe:> What type of food generally you consume in your house?
- 1.3 <Probe:>Does both the gender consume same quality and quantity of food?
- 1.4 <Probe >Do you think that any change in food consumption pattern is required?

2. Special/unique crop in your village

- 2.1 <Probe:>Who is cultivating this unique crop?
- 2.2 <Probe:>Is there any market of these crops??

3. Special preparation of food for pregnant/ lactating mother?

- 3.1 <Probe: >What are the special/unique foods for pregnant/lactating mothers?
- 3.2 <Probe: > Apart from pregnant/lactating who other consume these items?
- 3.3 <Probe: > Can you tell us about taste of these items?
- 3.4 <Probe: >What are the ingredients and who prepare it?
- 3.5 <Probe: > What is the self-life of these items?
- 3.6 <Probe: >Does these items prepared any other time?
- 3.7 <Probe: > Is there any similar product available in the market?
- 3.8 <Probe: > What are the reasons for most of the people not showing interest in these preparations?

4. Special preparation of food for festivals or social gathering

- 4.1 <Probe: >What are the special/unique food for festivals or social gatherings?
- 4.2 <Probe: >What are the ingredients and who prepare it?
- 4.3 <Probe: >Can you tell us about taste of these items?
- 4.4 <Probe: >What is the self-life of these items?
- 4.5 <Probe: >Does these items prepared any other time?
- 4.6 <Probe: > Is there any similar product available in the market?



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