

## Baseline Indicators on Food and Nutrition Security in Khandwa, Barwani (Madhya Pradesh) and Nandurbar, Washim (Maharashtra)



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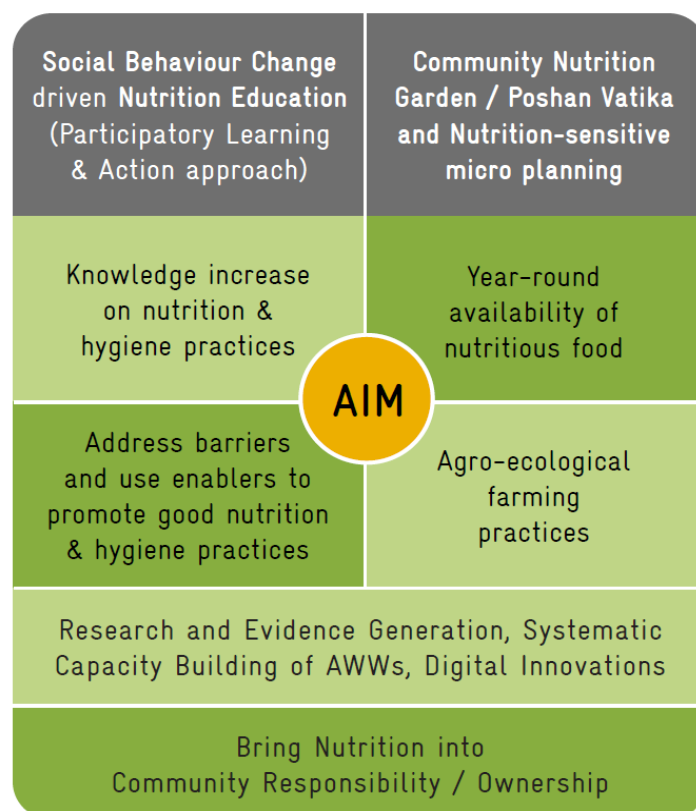
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## Introduction

The Indo-German development cooperation project ‘Securing Nutrition, Enhancing Resilience (SENU) – India’ implemented by Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH is part of the global special initiative ‘One World – No Hunger’ by the German Federal Ministry for Economic Cooperation and Development (BMZ). SENU implements a nutrition-sensitive integrated approach linking nutrition education with a multisectoral Community Nutrition Garden (CNGs) initiative which aims at improving the dietary diversity of women of reproductive age (15-49 years) and young children (6-23 months) in four districts in Madhya Pradesh (MP) and two districts in Maharashtra (MH), India.

### Nutrition-sensitive integrated approach



### The main objective of the survey is to provide:

- reliable baseline information on the food and nutrition security status of women of reproductive age (15-49 years) and young children (6–23 months) in the project districts (Barwani and Khandwa in Madhya Pradesh; Nandurbar and Washim in Maharashtra).
- reliable information on food production and utilization.
- information on household's access to nutritious food.
- information on knowledge and practice of nutrition and hygiene behaviours promoted by the project
- information on barriers and enablers of practicing nutrition and hygiene behaviours promoted by the project based on its Social Behaviour Change Strategy

**Indicators:** The results of the baseline survey provide a basis for the programming of the interventions as well as the definition of the baseline and target values for the *outcome indicators* that the project intends to achieve.

Outcome Indicators of the project	Definition
1. <i>Individual Dietary Diversity Score Women (IDDS-W) - [mean <math>\pm</math> SD]</i>	Scale indicator that measures the dietary diversity of an individual woman by counting the number of different food groups consumed by women of reproductive age (15 - 49 years) over a 24-hour recall period
2. <i>Proportion of children achieving Minimum Acceptable Diet (MAD) - [%]</i>	Dichotomous indicator indicating the proportion of breastfed and non-breastfed children aged 6 to 23 months who received in a 24-hr dietary recall period a) 4 or more out of 7 solid, semi-solid or soft food groups (Minimum Dietary Diversity, MDD) and; b) solid, semi-solid or soft foods the minimum number of times or more (Minimum Meal Frequency, MMF)

IDDS-W is used to measure the micro-nutrient adequacy of the diet of women in reproductive age and can be used as a proxy indicator for overall diet quality. In line with FAO/FANTA guidelines, data on women's dietary intake was collected using the qualitative "24 hours dietary recall" method, in which women were asked to recall all food and beverages consumed in the last 24 hours, most commonly from midnight to midnight. Foods were then classified into ten predefined food groups in order to calculate IDDS-W. Minimal dietary diversity in women is reached when five or more out of these ten food groups are consumed.<sup>1</sup>

For children, MAD is a composite indicator of MDD and MMF; it is the proportion of children 6–23 months of age who receive a minimum diversified diet and minimum meal frequency. Women were asked about the foods eaten on the previous day by their last-born child 6-23 months of age. Seven food groups are used for the calculation of the indicator: (1) grains, roots and tubers, (2) legumes and nuts, (3) dairy products (milk, yogurt, cheese), (4) flesh foods (meat, fish, poultry and liver/organ meats), (5) eggs, (6) vitamin-A rich fruits and vegetables, and (7) other fruits and vegetables. Children who receive foods from 4 or more of these food groups are counted in the numerator.

**Sampling:** The sample size was 800 interviews with women of reproductive age that have young children 6-23 months of age. In each district 200 interviews were conducted to be able to compare the Individual Dietary Diversity Score with a precision of 1 food group. As the most vulnerable groups are targeted by the project, the sampling strategy is built around the villages in the target districts with the highest share of Scheduled Tribe and Scheduled Castes to ensure sufficient coverage of these target groups while being able to apply a random selection of the households in the villages. The selection probability of each village is proportional to its population size. The size of interview clusters was set at 5 interviews per village. The survey was conducted between 13<sup>th</sup> and 28<sup>th</sup> September 2021 in Madhya Pradesh and between 21<sup>st</sup> and 2<sup>nd</sup> of October 2021 in Maharashtra. It was conducted by an independent agency, KANTAR India.

## Key findings

**Socioeconomic information of sample** women of reproductive age (15-49 years) that have young children 6-23 months of age

- 75.3% in MP and 53.9% in MH have not completed any schooling (only a small proportion of them can read)
- in MP, 68% belong to Scheduled Caste, 13.8% to Scheduled Tribes and 14% to other castes
- in MH, 54.5% belong to Scheduled Tribes, 20.8% to Scheduled Caste and 18.8% to other castes
- share households with approx. 6-7 other members

<sup>1</sup> FAO and USAID/FANTA (2016). Minimum Diet Diversity for Women. A guide to measurement. Rome, 2016.



- their sources of income are limited and include labour work, agriculture, and services
- 19% of men migrate for work, mainly without their family
- seen as the primary caregivers; at the same time, are responsible for household chores
- expected not to challenge the opinions of their mothers-in-law and husbands
- most are frequently in touch with Anganwadi workers
- their main wishes for their children's future are good education (55.9% in MP, 43.1% in MH) and good health (31.6% in MP, 42.8% in MH)

### Dietary Diversity of women (15-49 years) and young children (6 – 23 months)

The number of food groups consumed by women is around 4 food groups on average. The only exception is Barwani where women consumed more than half a food group less than in other districts ( $3.5 \pm 0.9$  food groups). About one third of women eat at least five food groups in Khandwa, Nandurbar, and Washim. Vitamin / mineral-rich ('immunity-boosting') food groups were consumed only by a minority of respondents (less than 16%).

	Barwani (N=200)	Khandwa (N=200)	Subtotal Madhya Pradesh (N=400)	Nandurbar (N=200)	Washim (N=200)	Subtotal Maharash- tra (N=400)	Total (N=800)
IDDS-W (mean $\pm$ SD)	3.5 $\pm$ 0.9	4.1 $\pm$ 1.1	3.8 $\pm$ 1	4.1 $\pm$ 1.1	4.1 $\pm$ 1.1	4.1 $\pm$ 1.1	4 $\pm$ 1.1
MDD (%)	10.5	33.5	22	33.5	33.5	33.5	27.75

Table 1: Dietary diversity of women (15 -49 years)

A closer look at the food consumption shows that in all districts, the three main food groups consumed were staples (almost 100%), pulses (over 90%), other vegetables (ranging from 71% in Barwani to 91% in Khandwa) and dairy products (ranging from 52.5% in Barwani to 74.5% in Washim).

*There is a substantial potential for improvement in consumption of dark green leafy vegetables and other vitamin A rich fruits and vegetables.*

Child nutrition is slightly better for Maharashtra than for Madhya Pradesh with the lowest value in Barwani, where children consumed on average  $2.3 \pm 1.2$  food groups, against  $2.9 \pm 1.1$  food groups in Khandwa and  $2.8 \pm 1.3$  in Maharashtra. Barwani scored significantly less than Khandwa and the two Maharashtra districts in all key child nutrition indicators.

	Barwani (N=200)	Khandwa (N=200)	Subtotal Madhya Pradesh (N=400)	Nandurbar (N=200)	Washim (N=200)	Subtotal Maharashtra (N=400)	Total (N=800)
IDDS-C (mean $\pm$ SD)	2.3 $\pm$ 1.2	2.9 $\pm$ 1.1	2.6 $\pm$ 1.2	2.9 $\pm$ 1.4	2.7 $\pm$ 1.2	2.8 $\pm$ 1.3	2.7 $\pm$ 1.3
MDD-C (%)	14.5	27.0	20.8	32.0	29.0	30.5	25.6
MMF (%)	66.5	79.5	73.0	79.1	79.5	79.3	76.2
MAD (%)	11.7	26.3	19.0	31.6	27.7	29.7	24.4

Table 2: Dietary diversity of children (6 – 23 months)

The value of all child nutrition indicators increases with the children's age. This is usually expected for the MDD as children are introduced to more diverse foods as they grow older. The MDD of the youngest age group is low to very low in Madhya Pradesh as close to no child achieves the MDD in this State. The situation is better in Maharashtra but still very low. This implies that young children are either not introduced to complementary feeding or are introduced to complementary feeding with, for example, porridge that is only staple food. This is supported by the fact that in Madhya Pradesh, the only food groups consumed by more than, or close to 50 % of children in the youngest age

group, are staple foods and dairy. In Maharashtra, pulses and nuts are also consumed by close to 50 % of children in this age group, partially explaining the larger share of children in this age group achieving MDD.

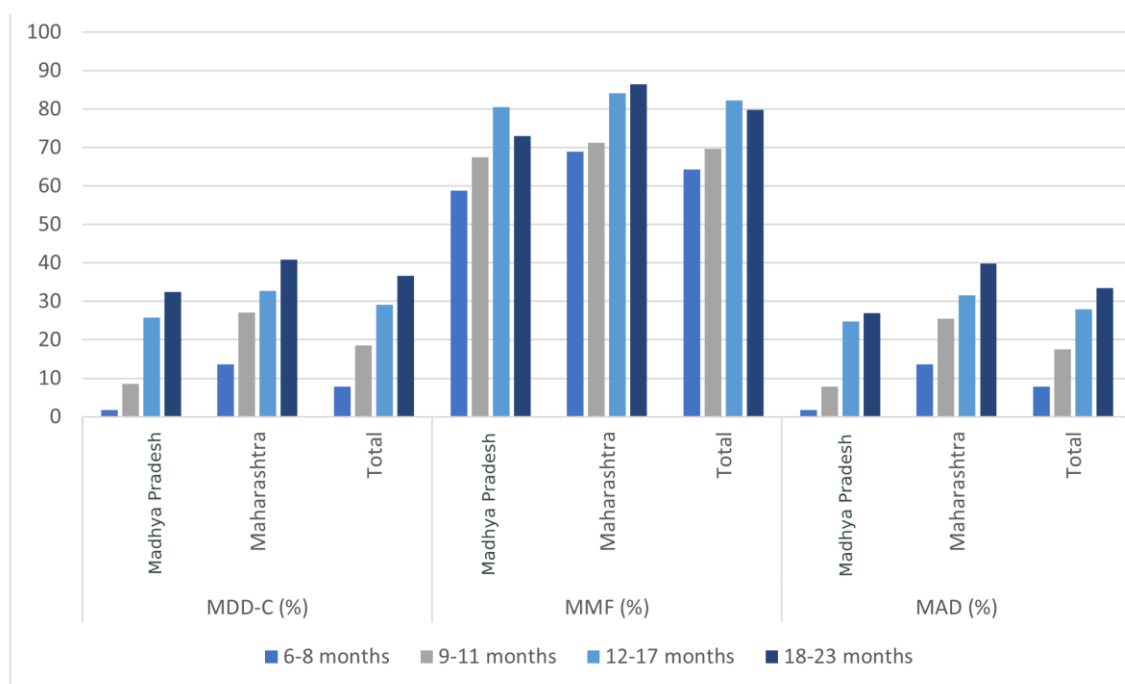


Figure 1: Dietary diversity of children by age groups

**Consumption by children is also very consistent with the food groups consumed by mothers. Vitamin A rich fruits and vegetables and flesh food are consumed by less than 5 % of children overall.** Starches were the most consumed food group by children (90%), followed by pulses (70%) and dairy products (55%). Other fruits and vegetables are consumed by about 36 % of the children.

There were significant differences across districts. In Madhya Pradesh, Khandwa respondents more frequently fed children almost every food group than in Barwani, especially dairy products (76% against 52%) and pulses/nuts (73.5% against 53%). Egg consumption of children is more common in Nandurbar (33%) compared to all other districts.

*There is substantial improvement for caregivers to feed to children vitamin / mineral-rich ('immunity-boosting') foods every day.*

## Perceptions about which foods to give to children (7-12 months) and which are to be consumed by pregnant women

The survey enquired about the respondents' opinions about which foods should be given to children (aged 7-12 months) and to pregnant mothers. Over 80% of respondents in the whole sample allowed almost all types of food to be fed to children. Few exceptions are in Khandwa where only half of the respondents consider eggs and only 17% consider fish to be adequate for children (aged 7-12 months). In Washim, fish is also considered as adequate only by 35% of respondents. Khandwa also stands out regarding what a pregnant woman should eat. In Khandwa, only 38.5% believe a pregnant woman should eat fish and 38% consider lemon as adequate.

## Household Food Security

**Over 90% of respondents were either food secure or mildly food insecure in almost all districts.** An exception is Nandurbar where 7% of respondents were moderately food insecure and 5% were severely food insecure. In turn, Nandurbar is also the district with the largest prevalence of moderately and severely food insecure households at about 12%.

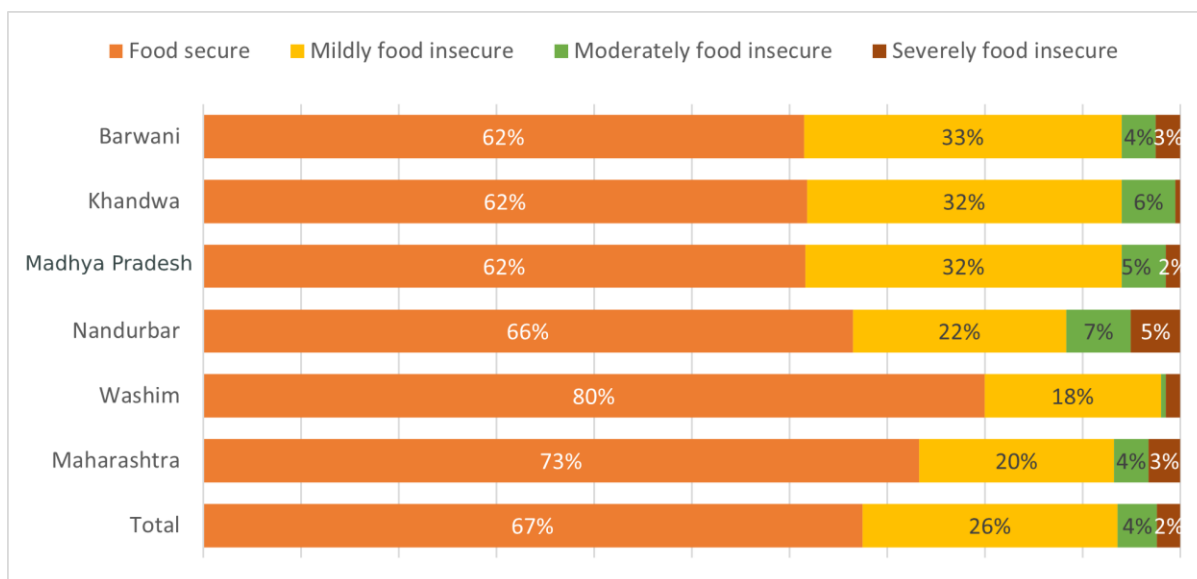


Figure 2: Household Food Insecurity Experience Scale (HFIES)

## Breastfeeding & Complimentary feeding

**Breastfeeding is practiced almost universally (99%) and 90% were exclusively breastfed.** Data on difficulties related to breastfeeding show that an overwhelming majority of women do not face any difficulties with breastfeeding.

**However, only 37% of families initiated timely complementary feeding with the mean age for introduction of solid food being around 6.9 months.** There is a sizeable share of children that are introduced to complementary feeding after 8 months, and quite a few before 6 months. On average, women could indicate 1.8 ingredients to enrich porridges, mainly by adding energy in the form of fat, followed by animal products, and finally with pulses or nuts. Only around a quarter of the respondents indicated vitamin A rich products to enrich porridge, be it in the form of orange fleshed vegetables or fruits, or green leafy vegetables.

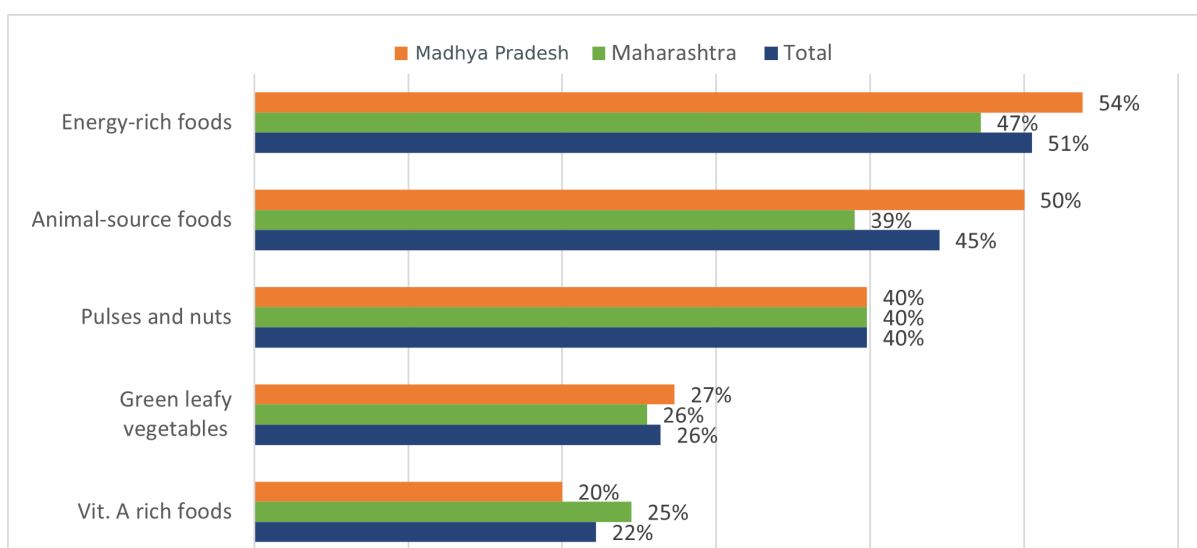


Figure 3: Porridge enrichment

On average, children are introduced to other fluids at around 6.4 months, with 37% at the age of 6 months. 87% are introduced to other liquids between 5 and 7 months of age. When it comes to snacks, children are introduced to them at about 7 months on average. A substantial number of households have reported buying snacks once a day or more with 43% overall and up to 62% in Barwani. This could

further highlight the low dietary diversity figures despite the larger agricultural activity and diversity in crops and vegetables.

*Changing feeding habits warrants particular attention during training and counselling.*

	Barwani (N=200)	Khandwa (N=200)	Madhya Pradesh (N=400)	Nandurbar (N=200)	Washim (N=200)	Maharashtra (N=400)	Total (N=800)
Age of child in months when first given small snack	6.8 ± 1.4	7.1 ± 1.8	6.9 ± 1.6	6.7 ± 1	7 ± 1.2	6.9 ± 1.1	6.9 ± 1.4
Age of child in months when given any other fluids apart from breastmilk	6.2 ± 1.3	6.3 ± 1.7	6.3 ± 1.6	6.3 ± 0.9	6.7 ± 1.1	6.5 ± 1	6.4 ± 1.3

Table 3: Feeding habits

**In terms of caregivers encouraging children aged nine months and above to eat the given food and supervise that they eat the provided amount, about 13 % of respondents leave their children to eat on their own ranging from 21 % in Barwani to only 5% in Washim.** The share of children who receive specific food prepared for them is the highest in Khandwa with 68% and lowest in Washim with 42 %.

## Access to nutritious food

**Access to a nutrition garden is relatively small with about 13% of all households declaring having one. While Barwani has the largest share of households with access to a nutrition garden (22.5%), Washim has the lowest (5.5%).** Apart from Nandurbar, close to all households having access to a nutrition garden, grow vegetables. In Nandurbar about one third of the households having access to a nutrition garden do not grow vegetables. Growing vegetables is usually done during the wet season in Barwani (66.7%) and Nandurbar (57.7%) while in Khandwa and Washim, vegetables are grown all year round (72.7% and 63.3% respectively).

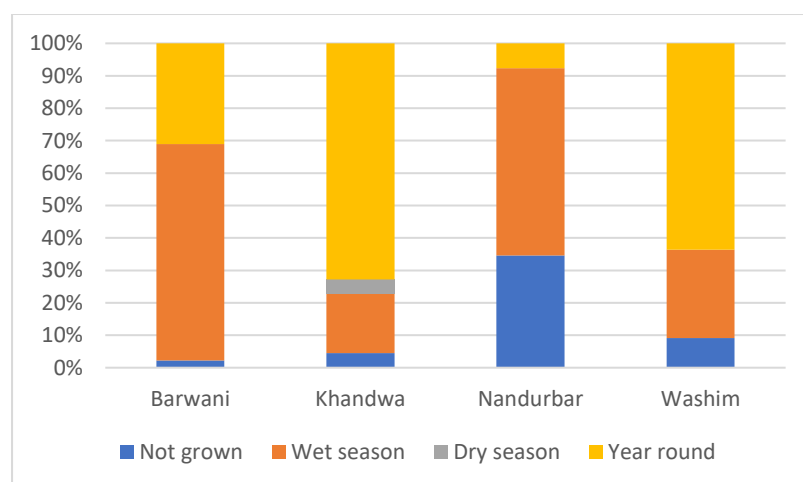


Figure 4: Seasonal vegetable production

The access to water is quite heterogeneous across districts as in Barwani, home gardening is mostly done during the wet season (66.7%) while in Khandwa vegetable are grown all year round (72.7%). In Maharashtra, Nandurbar records 57.7 percent of households growing vegetable during the wet season. In Washim vegetable are pre-eminently grown all year round (63.3%).

Barwani is the only district where agricultural activity is relatively developed. This is also consistent with the sources of income of the households in Barwani, income is almost exclusively generated from agricultural work while in the other districts regular employment is more spread. Combined with the data on work migration and asset ownership, it is possible that households in Barwani have heavy agricultural activity but either do not own the land, or that land is rather far away from their homes. This in turn could explain why nutrition indicators are lower despite higher agricultural activity.



	Barwani (N=200)	Khandwa (N=200)	Subtotal Madhya Pradesh (N=400)	Nandurbar (N=200)	Washim (N=200)	Subtotal Maharash- tra (N=400)	Total (N=800)
Access to nutrition garden (%)	22.5	11.0	16.8	13.0	5.5	9.3	13.0
- Of those with access to nutrition garden:  Household grows vegetables (%)	22.0	10.5	16.5	8.5	5.0	6.7	11.5
- Of those that grow vegetables:  Household grows vegetables all year round (%)	31.1	72.7	44.8	7.7	63.6	24.3	37.5
Access to fruits/trees (%)	25.0	22.5	23.8	23.5	22.5	23.0	23.4

Table 4: Access to nutrition garden and fruits/trees

Access to fruit trees appears rather limited and consistent across districts with about three in four households having access to fruit trees. Fruits accessed are mostly mangoes and guava and are more prominently accessed in Madhya Pradesh than in Maharashtra.

The most commonly grown vegetables are green or red pepper, bottle gourd, eggplant, green leafy vegetables, and tomatoes. It should also be noted that orange fleshed sweet potatoes, millet, and sorghum are only grown in Barwani. Beans are also mostly grown in Barwani and limited in other districts.

In Madhya Pradesh, a significant association was found between women's dietary diversity indicators and access to a vegetable garden: 53.8% of respondents who had access to a vegetable garden reached MDD, compared to just 30.5% of those who did not have access to it.

*Promoting households growing different types of seasonal, nutrient-rich vegetables/fruits throughout the year seems an impactful strategy to improve consumption and dietary diversity of families.*

## Caretaking of children

**When a child's mother was not home, grandmothers (either the mother's mother or their mother-in-law) were by far the most common person taking care of them, on average in 74.4% of cases.** In this regard, there were no major differences across districts. The importance of grandmothers was confirmed when asking about the main caretaker of the child on the day before the survey: mothers were the most common caretaker (in 68.4% of cases); when they were not, their mother or mothers-in-law substituted for them in 25.4% of households.

The survey also enquired about the perception of time availability for taking care of children. For all districts, it was easier to find time in the dry season (and especially for Khandwa and Nandurbar, where the differences were larger). In both seasons, respondents in Madhya Pradesh found it harder than respondents in Maharashtra.

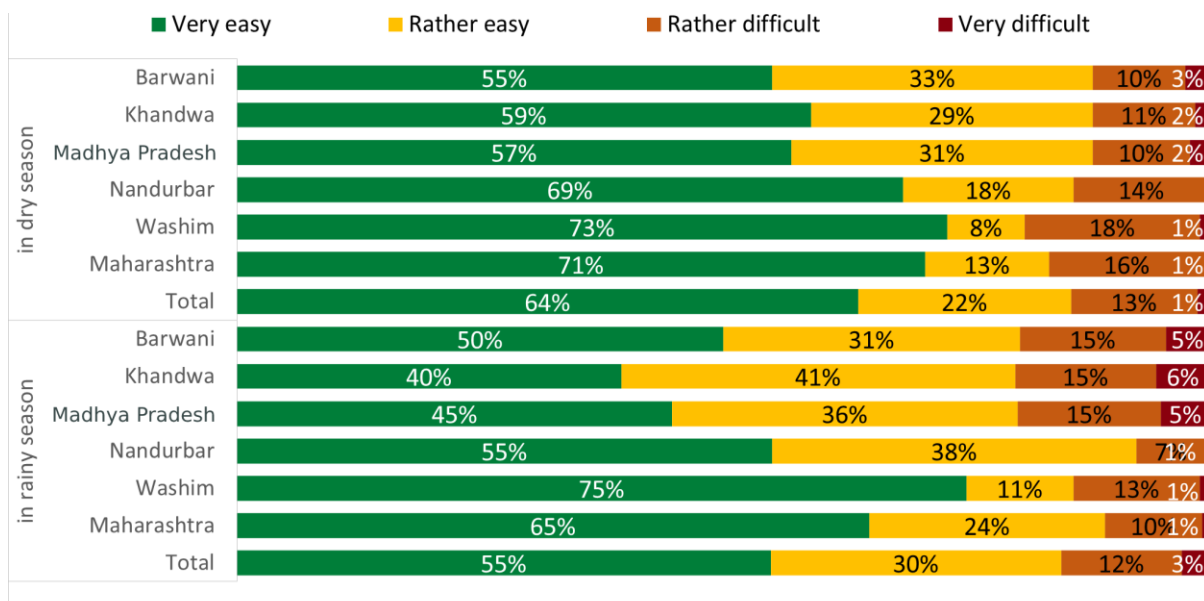


Figure 5: Perception of difficulty to find time to take care of children

## Hygiene practices

**Most of the households are practicing handwashing at critical times.** The two practices most largely reported are washing hands before meals and after going to the toilet. The handwashing practice that is the least reported in all districts is before feeding a child.

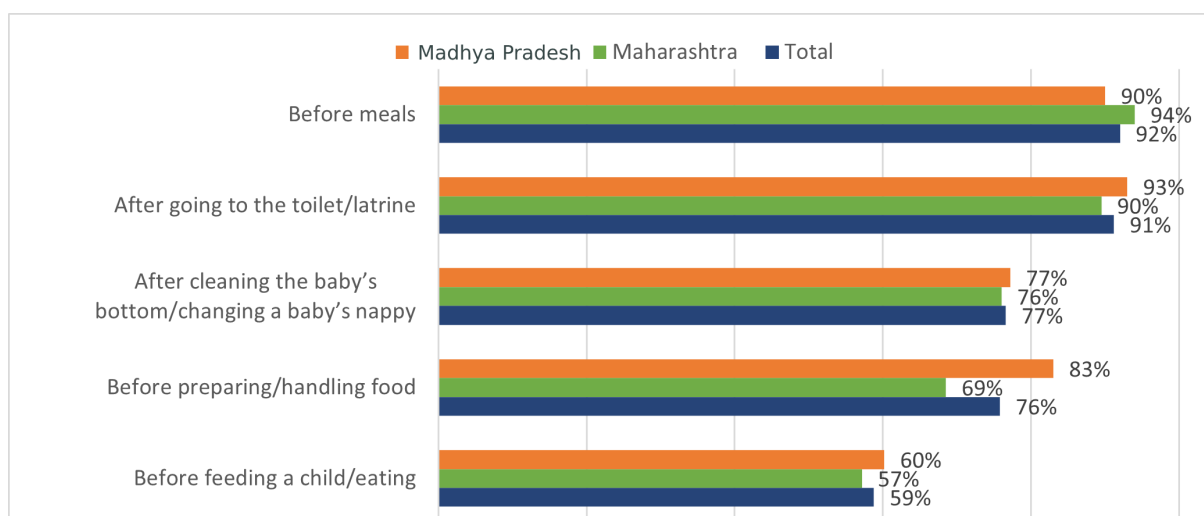


Figure 6: Handwashing practice

Use of soap while washing hands is also largely reported, mostly for washing the children's hands and after defecation. Use of soap after cleaning the child, before feeding the child, and before preparing food are reported by more than two thirds of respondents overall. Use of soap before eating, and for washing body or clothes are the least reported with 59% and 51 % of respondents mentioning these respectively. While 89.2% of women reported that they washed their hands with soap and water, only 10.9% had soap at the handwashing station. Additional 75.1% of respondents had soap at home (at a place other than the station).

**Close to all households treat drinking water in Washim compared to only 52.5% in Barwani.** The main treatment method reported by households is straining through a cloth, followed by boiling and

adding bleach, although only mentioned by 31 % in Maharashtra to as low as 3 % in Madhya Pradesh. The practices related to the treatment of water could be significantly improved with targeted support and training.

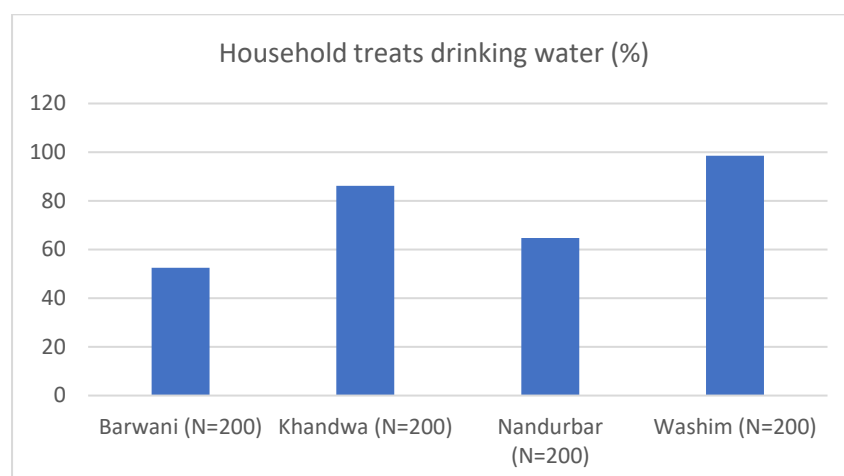


Figure 7: Treatment of water

**Around one in four households use appropriate practices of using clean and closed container for strong drinking water in all districts except Washim, where this practice is appropriate for more than half of the respondents.** The practice of using a specific scooper to pour water out of storage is reportedly observed by 81.2 % of all household, with marked difference between Washim and Barwani especially. The large extent of this recommended practice is, however, largely undermined by the limited observation of appropriate practices for transport and storage of water as well as having large access to protected drinking water.

Type of container used to store drinking water (%)	Barwani (N=200)	Khandwa (N=200)	Madhya Pradesh (N=400)	Nandurbar (N=200)	Washim (N=200)	Maharashtra (N=400)	Total (N=800)
Clean container or jar without cover	28.0	18.5	23.2	26.5	9.5	18.0	20.6
Covered container not clean	49.0	54.5	51.7	47.5	34.0	40.8	46.2
Clean and covered container or jar	21.5	27.0	24.2	24.0	54.5	39.2	31.8
Container or jar not seen				1.0		0.5	0.2
Type of scooper used (%)							
Specific scooper	71.0	83.5	77.2	80.5	90.0	85.2	81.2
Scooper that is also used for other purposes	29.0	16.0	22.5	19.0	9.0	14.0	18.2

Table 5: Handling of drinking water

**Access to improved latrines is quite diverse across districts.** Khandwa registers the highest share of households reporting the use of improved latrine with 77% followed by Washim with 73%. In Nandurbar, the share of households reporting use of improved latrines is 53% and Barwani registers the lowest share with 39.5%. It must also be stressed that Barwani records a share of 45.5% of households

reporting open defecation and even in the other districts where access to improved latrines is higher, the share of households practicing open defecation is relatively large with 23.5% on average in Maharashtra.

## **Recommendations**

### **Nutrition**

- Reinforce knowledge and practices regarding appropriate feeding of children, especially on the transition from exclusive breastfeeding to complementary feeding, and implications of weaning
- Promote more frequent feeding of vegetables to children
- Reinforce knowledge on enrichment of porridges with healthy and nutritious food items, especially vitamin A rich food
- Pay special attention to educating households about the drawbacks of regular consumption of snacks by children, especially in Barwani
- Reinforce the message that households should use their own production for their own consumptions (especially in Barwani)

### **Year-round availability of nutritious food**

- Develop messages on diversified food production, especially on nutrition garden, for a diversified diet.
- Support households in developing nutrition gardening activities with a view to increasing availability of least consumed food groups such as green leafy vegetables

### **Hygiene**

- Support the propagation of appropriate hygiene practices regarding treatment of water and handwashing in order to reduce the prevalence of diarrhoea in children, especially insisting on handwashing before feeding children.
- Promote treatment of drinking water before use to avoid infections and diseases.
- Support the availability of soap at handwashing stations in households.
- Advocate for construction of improved hygiene facilities to reduce open defecation.

### **Child-care**

- Ensure that participation of women in the interventions does not increase their workload. Promote a family approach to child-care and child feeding.

## **District specific approach and recommendations**

### **Barwani**

Barwani has a larger agricultural activity as well as the lowest education level, and the largest mean household size of all four project districts. This district also records the lowest share of modern roofing material and clean cooking fuel. Finally, it records the highest share of Scheduled Caste population (85%). It records the lowest IDDS-W and MDD-W, IDDS-C and MAD. However, household food security outcomes do not differ significantly from the other district in Madhya Pradesh.

It appears that Barwani combines a slightly more difficult context with some habits to improve when it comes to nutrition.

- Carefully consider the time availability of women for the participation to intervention as they appear to have an important agricultural activity and seem to be away from home for extended periods of time.

- Develop messages encouraging the consumption of agriculture produce grown by the household

### **Washim**

Washim shows a much better level of infrastructure regarding hygiene as well as better roofing material and clean fuel for cooking. There is very little agricultural activity in Washim and very little access to vegetable gardens. Most households appear to have income from regular work and could therefore buy most of their food. This could limit the impact of the introduction of vegetable gardens or there could be limited interest from beneficiaries in such activities.

Washim also shows the largest share of food secure households among the four districts.

- Carefully assess the interest of beneficiaries for nutrition gardens and possibly tailor timing and content of training for women having a regular/temporary employment.

### **Khandwa & Nandurbar**

Both districts are relatively similar and contrast somewhat with Barwani and Washim. Khandwa does however show a higher share of women headed households at 25 % while Nandurbar shows the lowest share of work migration and the lowest share of households growing vegetables of all four districts.