

Link NCA Final Report



NUTRITION CAUSAL ANALYSIS

April – August 2014

**Khaknar Block, Burhanpur, Madhya Pradesh,
India**



Humanitarian Aid
and Civil Protection

Blanche Mattern, NCA Expert

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Abbreviations and Acronyms

ACF	Action Contre La Faim / Action Against Hunger
ANC	AnteNatal Care
ANM	Auxiliary Nurse Midwife
ARI	Acute Respiratory Infection
ASHA	Accredited Social Health Activist
BPL	Bellow Poverty Line
CECOEDECON	Centre for Community Economics and Development Consultants Society
CHNW	Community Health and Nutrition Worker
CI	Confidence Interval
CMAM	Community Management of Malnutrition
FCS	Food Consumption Score
FGD	Focus Group Discussion
FPS	Fair Price Shop
FSL	Food Security and Livelihoods
GAM	Global Acute Malnutrition
HDDS	Household Dietary Diversity Score
HoH	Household
ICDS	Integrated Child Development Scheme
IDDS	Individual Dietary Diversity Score
IUD	Intrauterine Device
IYCF	Infant and Young Child Feeding
LBW	Low Birth Weight
LCD	Litres per capita per day
LCI	Lower Confidence Interval
MAHFP	Months of Adequate Household Food Provisioning
MAM	Moderate Acute Malnutrition
MDI	Maternal Depression Inventory
MDM	Midday Meal
MHCP	Mental Health and Care Practices
MNREGA	Mahatma Gandhi National Rural Employment Guarantee Act
MUAC	Mid Upper Arm Circumference
NCA	Nutrition Causal Analysis
NFHS	National Family Health Survey
NIN	National Institute of Nutrition
NNMB	National Nutrition Monitoring Bureau
NP-NSPE	National Programme of Nutritional Support to Primary Education
NRC	Nutritional Rehabilitation Centre
NRHM	National Rural Health Mission
OBC	Other Backward Castes
PDS	Public Distribution System
RC	Replacement cluster
RFS	Risk Factors Survey
SAM	Severe Acute Malnutrition
SC	Scheduled Castes
SMART	Standardized Monitoring and Assessment of Relief and Transitions
ST	Scheduled Tribes
STD	Sexual Transmission Diseases
THR	Take Home Ration
UCI	Upper Confidence Interval
VHND	Village Health Nutrition Day

Glossary

Preliminary note: this glossary was made using local definitions from the communities. It reflects the situation in the target area and definition may not be similar to other part of the country. It should be read with cautions and do not constitute a glossary of general definition. The aim of this glossary is to ease the reading and understanding of the present NCA report.

Adivasi: Aboriginal population (including different tribal and ethnic groups)

Traditional food served to children:

Kichdi: Semi-solid food made from sago or rice that can contain a small amount of dhal and vegetables. When this food is prepared for children, it usually does not contain salt or spices

Dalia: Broken wheat cooked till it become very smooth, can be cooked with few vegetables

Malnutrition:

Kuposhan: malnutrition

Sookha, Sookharog, Sookhibimari, Sookhgaya: “dried-up” disease. Blood, fat and muscles are believed to be “gone”. Bones are visible. Villagers mainly consider it as a magical disease and give a very close description of marasmus symptoms. The child can “catch” this disease or “be possessed by” the disease. In ancient time, it was considered as impossible to be cured and only the assistance of a spiritual practitioner would have helped.

Nowadays, most of the caregivers refer first to a health worker and to a traditional spiritual practitioner secondly, even if they believe it is helpless

Traditional practices and beliefs:

Bhagat, Ojha, Paryag: traditional Hindu spiritual practitioners who most of the time will not use herbs or home-made treatment, but “enchanted water”, “enchanted words”, blowing, red enchanted threads as protection against diseases and action against curses. They are also performing exorcism. Bhagatin are their female homolog but are rare in Khaknar block

Daima: traditional birth attendant and masseuses. One of the important functions of the daima is to provide traditional massages to the mother and her baby. This massage can be done at any time of the pregnancy or after delivery and at early stage of a child life. This massages do not have any medical purpose, they are mostly made for relaxation. Another function of the daima is to help the mother during the delivery. Nowadays in urban area, women mostly deliver in hospital and rarely refer to daima, even in rural area such as Khaknar block. It can happen when women do not have time to reach the hospital

Jadi butti: term used to define a range of traditional herbs from the forest

Ghoonghat, Jhund: common face covering practice used to limit women interactions with older members of their family in-law

Maulana/Moltani: traditional Muslim spiritual practitioners. Maulana and Moltani have the same function as Ojha, Paryag and Bagath

Preface

Chronic poverty and malnutrition, especially among the children has been a serious issue concerning both the governments and the World organizations working against hunger in the Asian and African countries. Due to the Constitutional commitment of the Nation towards the weaker sections of the society, the problem assumes special significance, especially in the tribal areas which have been found to suffer from both of the above problems. Burhanpur district, situated in the western tribal belt of Madhya Pradesh has lately been in special focus as it was reported to be facing an alarming nutritional situation by the National Family Health Survey (NFHS-3) of 2005-2006 and the National Nutrition Monitoring Bureau (NNM).

Though chronic poverty and malnutrition of children are largely linked to each other, poverty cannot be labeled as the only cause at the household level. At the ground level, other than food security and livelihood concerns, there are a number of corroboratory observable risk factors which are closely linked to the problem of under nutrition among the children, and therefore, to frame a holistic strategy of intervention and advocacy it becomes necessary to list out all the causal factors, along with their prioritization. The over generalized preconceived notion that merely ensuring food security and improving the access to food may elevate the problem of under nutrition among children is far from being the reality at the ground level. Many field level studies indicate that inappropriate infant and young child feeding might have stronger unmeasured effects. It must also be clearly understood that the causes of under nutrition are not just numerous and multi- dimensional, but are also intricately linked to each other and are area specific. Therefore mitigation of the problem is not possible unless a multi-pronged strategy is adopted and is implemented simultaneously, giving due weightage to the priority of the causal factors.

Focusing on the Khaknar tribal block of Burhanpur district of Madhya Pradesh, the present report is basically an attempt, made by ACF India, to identify the causal factors of under nutrition among the children of the local population, in order to design a strategy and Programme for the prevention of the same. The methodology adopted for the 'Nutritional Causal Analysis' is not based on working out of statistical association between independent and dependent variables, but the case of causality has been built on different sources of information and their qualitative and quantitative validation, both at the field level by the local community and by developing consensus among various technical experts and social scientists working in the area of nutrition and related social problems. In the present study causal hypotheses pertaining to different risk factors of under nutrition among the children from among different group of causes, such as, environmental, work pattern, access to food and safe drinking water, general health of the mother and child, prevalent child rearing practices, etcetera, were firstly built up based on the literature survey and the qualitative and quantitative data collected from the field. To undertake an intervention and advocacy programme at the ground level, in a systematic way, it is also necessary to prioritize the causal factors in the order of their importance. Therefore, in the methodological exercise adopted in the present report, the 16 identified risk factors have been grouped into three categories, that is, major, important and minor, based on the field experience and a general consensus arrived at in a workshop attended by fifteen experts.

Besides the methodological exercise of developing a clear understanding of the concept of good nutrition, mal nutrition and critical condition, pinpointing the causes of under nutrition within the target population and the seasonal and historical pathways to wasting, the report also crystallizes specific recommendations at the policy and execution level to mitigate the problem at various levels, such as, food security, livelihood, health and nutrition, mental health and care practices, water, sanitation and hygiene and other cross-cutting issues.

The outcome of this Nutritional Causal Analysis is expected to add both to the theoretical and practical knowledge. On the theoretical side the study, on the one hand paves a way for developing a better understanding of the causal pathway of under nutrition by which certain children in a target population become stunted and/or wasted and also provides an opportunity to the researchers to test the derived hypotheses in different locations and situations, on the other. On the operational side, the outcome of the present analysis may be helpful for the government and various action groups to plan and execute intervention strategies for alleviating the problem of under nutrition in the target areas in a holistic manner.

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Executive summary

Action Contre La Faim/Action Against Hunger (ACF) has been working in India since 2010 with interventions in Madhya Pradesh, Rajasthan, Odisha and Mumbai. Being present in Khaknar Block, Burhanpur District of Madhya Pradesh since 2012, ACF focuses in the management of acute malnutrition, its prevention and its treatment.

In Burhanpur District, ACF is working closely with the NRHM and the ICDS at district and village level. Its actions are focusing on the prevention and detection of acute malnutrition, referral of children with severe acute malnutrition (SAM) to nutrition rehabilitation centres (NRCs) and their follow-up with an integrated IYCF approach. ACF also aims at gathering information regarding malnutrition by using SMART and Nutrition Causal Analysis (NCA) methodologies. Within this objective, two SMART (November 2013 and June 2014) and a NCA (April-August 2014) were implemented in Khaknar Block.

Madhya Pradesh is considered as one of the poorest states of India and one of the BIMARU States.

Burhanpur district is marked by sensitive issues as inter-state migrations and a high landless population rate. Overall, the area possesses fertile lands that can be characterized by an average diversity of crops (maize, bananas, sugar canes, soya bean and cotton as a cash crop). However, the agriculture sector is linked to the monsoon circle and therefore, to the level of rainfalls. Most of the population being field workers, hot summers lead to a period with less employment that often conduct villagers to migrate for work. Meanwhile, no significant peak of “hunger” has been observed as the country food production allows the area to be supplied with essential sustenance throughout the year. Yet, the zone has persistently high levels of GAM (Global Acute Malnutrition) prevalence.

Finally, child undernutrition is a burning public health issue in India and former Indian Prime Minister Manmohan Singh

acknowledged the country’s undernutrition level as a “national shame”.

ACF together with scientific partners, have developed a standardized method of analysing the causes of malnutrition and consequently improving the relevance and effectiveness of stakeholders programming in a given context. Based on its Nutrition Causal Analysis (NCA) approach and in collaboration with NGO partners and Research Institutes, ACF conducted a NCA in Khaknar block from April to August 2014.

This report presents the findings from the NCA study.

Overall Objective

The overall objective of this NCA is to provide a greater level of understanding regarding the possible causes of child undernutrition in the operational ACF-India area of Khaknar block of Burhanpur district, Madhya Pradesh, India.

Specific Objectives:

- To estimate the prevalence of known risk factors for under-nutrition among the population and key “nutrition vulnerable groups”
- To identify main causes of wasting in order to inform the technical strategy and programs for the prevention of the same at a local level
- To determine which causal pathways of malnourishment are likely to explain most undernutrition cases in the target area
- To develop an “emic” definition and understanding of good nutrition, malnutrition and believed causes of undernutrition within the target population
- To understand the local seasonal and historical pathways to wasting
- To support technical advocacy on causes of wasting so as to support technical strategy.

Methodology

The aim of the NCA methodology proposed is not to demonstrate statistically causal association, but rather, to build up a case for causality, based on different sources of information, using the following steps:

1. Preparatory Phase: The preparatory phase is just to make sure recruitment process is on time; objectives are clear and the choice of NCA methodology (comprehensive, qualitative, quick) done.

2. Development of causal hypotheses: a literature review, data review and stakeholders interviews (Community Health and Nutrition Workers (CHNW) and NRC staff) were undertaken to generate an overall understanding of the local context of undernutrition and design a set of local causal hypothesis of undernutrition. These hypotheses have been validated to be field tested by Technical Experts at a workshop hold on the 9th May 2014 in New Delhi.

3. Data Collection: Both quantitative and qualitative data were collected to provide much needed evidence on levels of undernutrition, key risk factors and community perceptions, practices and constraints.

4. Identification of highest priority causes of undernutrition: Based on the evidence gathered as part of the NCA, the causal hypotheses were then ranked by order of importance paying particular attention to seasonal differences and vulnerable groups. The results were then validated with the local community before being presented at a final workshop on the 18th July 2014, where technical experts and NCA expert tried to reach a consensus on the evidence of the most important risk factors and priorities for action.

Underlying causes of malnutrition

Inadequate childcare practices

The NCA survey shows inadequate childcare practices as a main cause to child undernutrition.

Early initiation of breastfeeding is common, but infants are not exclusively breastfed. Indeed, the majority of the mothers are giving water to infants. This practice is inadequate but also highly at risk regarding the quality of the water.

Weaning practices are inappropriate with an inadequate introduction of complementary food and a lack of knowledge in regards of children' intakes. Moreover, meal frequency is inadequate. Indeed, mothers face heavy workload and cannot have time to feed their children during daytime.

Finally, women do not have a proper access and enough knowledge about contraception methods. In the target area, short birth spacing is an important issue, making the mothers less able to properly take care of their numerous children.

Inadequate child food intake

The link of food insecurity factors at the household level has been shown to have a relationship to inadequate dietary intake.

In the area, food mainly comes from the markets. Market days are few and in the summer, communities are facing difficulties to conserve fresh food. At this time of the year, income is low and families mainly release on pulse and cereals, both having an important impact on children' intake.

Poor child health

Communities seem to adopt correct health seeking behaviors. Indeed, almost all the caregivers consult a health professional when their children are sick and immunization coverage is good.

Even if most of the mothers deliver their infant in a health institution, one of the main issues related to health is the lack of antenatal care, having a direct impact on the health of the baby.

Finally, caregivers are facing barriers regarding the lack of access to primary health centers

that can be far from their home. Additionally, an important proportion of the population does not locate the nearest health center and consult costly private doctor instead.

Unhealthy Environments

The unhealthy environment that the community lives in was evident.

Communities are aware that inadequate sanitation contributes to disease prevalence. Most of them adopt a correct behavior by trying to go further from their village for open defecation, and use soap to wash their hand. Meanwhile, the dangerousness of children feces is not well understood, as knowledge on hygienic environment remains weak. Also, communities use to wash their hand after open defecation but a long time can separate both practices, because of the long distance between the house and the place of defecation. Households are not aware that the water quality in the area is poor. Nevertheless, they assume that it cannot be as good as they think, and use to filter it. Unfortunately, the way of filtering the water and knowledge in terms of water management is insufficient.

Conclusion

Through literature review, qualitative and quantitative enquiries, along with the validation of a wide range of experts, the following risk factors have been identified major, important and minor causes of undernutrition in Khaknar block, Burhanpur District, Madhya Pradesh:

Major

- Inappropriate breastfeeding practices
- Inappropriate complementary feeding practices
- Low Birth Weight
- Caregiver workload
- Poor psychosocial care of children
- Inadequate access to water
- Low agricultural production
- Poor diet diversity
- Poor access to food

Important

- Caregivers' level of education
- Inappropriate reproductive health
- Lack of hygiene
- Low income

Minor

- Poor health seeking behavior
- Land size v/s ownership
- Traditional believing

Because of a lack of information, or an important disagreement on the importance of the following hypothesis, the technical and the NCA expert were not able to reach a consensus on:

- Women empowerment
- Maternal wellbeing
- Inadequate family income management

Recommendations

Food, security and livelihood

- Advocate for a better diversification of cereals and leguminous provided by Public System Distribution shops
- Work with policy maker to improve access to irrigation system
- Additional research on local allocation of below poverty line ration card to advocate on risk of corruption toward BPL ration card allocation
- Advocacy for a better implementation of the MNREGA, especially to reduce time for payment
- Connect with NGOs working on landless issues to advocate on an improvement on land distribution
- Reduce price of livestock immunization and treatment, and improve access to governmental veterinary

Health and nutrition

- Improve knowledge of frontline workers on contraceptive methods and capacity building on maternal and child care programs delivered at Anganwadi center

- Awareness toward FGD and campaign on appropriate adolescent and maternal nutrition to reduce low-birth weight
- Promote dietary diversification and improve nutrition knowledge at community level with a specific target on adolescents, pregnant mothers and children under 5
- Strengthen knowledge of communities and frontline workers (ANM, ASHA...) on the importance of ANC in order to improve health condition and nutritional status of mothers and pregnant women
- Involve traditional healers for an improvement of adequate health seeking behavior
- Improve nutrient women supplementation, including beginning of iron supplementation at puberty
- Awareness on danger related to early child bearing and short birth spacing
- Improve knowledge of diarrhea and mosquitoes-borne diseases determinants through community education
- Improve efforts on acute malnutrition recognition, knowledge on stunting and treatment of undernutrition
- Strengthen health system to improve access to NRC and health center

Mental Health and Care Practices

- Implementation of an Assisting Behavior Change (ABC) strategy to better support mothers and pregnant women on issues related to inadequate child and maternal care practices
- In addition to the first recommendation, specific awareness program about weaning practices
- Additional research and understanding on mother wellbeing to understand how mothers resigned attitude impact on child care practices
- Promote income generating activities for women to somewhat improve their decision making power with regards to financial decisions, paying special attention not to increase women's workload with such activities

WASH

- Advocate for a better implementation of safe toilets in each villages

- Awareness on hand washing, specifically before breastfeeding
- Reduce risk of water contamination through providing practical education on water management at household level, with an emphasis on the importance of boiling drinking water before human consumption
- Improve access to safe drinking water sources locally
- Improve safe water distribution in the summer

Crossed-issues recommendation

- Identify positive coping mechanisms of traditional migrants to promote better information sharing between the two groups of migrants (traditional and new migrants)
- Additional research and understanding on castes discrimination

1. Introduction

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¹ BIMARU is acronyms for the first letters of Bihar (BI), Madhya Pradesh (MA), Rajasthan (R), and Uttar Pradesh (U), states that are considered as the poorest of the country. BIMARU was coined by Ashish Bose in the mid-1980s for its resemblance with the Hindi word “bimar” which means sick. BIMARU is commonly used to describe the bad state of economy of the four states. Lately, Odisha was included to the acronym that is now know as BIMAROU

² Dr Manmohan Singh’s Independence day speech, 15th august 2009

1.1 Study Area

Khaknar block is one of the two blocks of Burhanpur district, Madhya Pradesh. Southwest of the block is bordered by Burhanpur block, North by Khandwa district (former known as East Nimar district) and Southeast by Maharashtra State. Khaknar block was selected for the present NCA study as ACF is present in 80 villages of the area and the study will serve as important baseline study for future interventions and advocacy.



1.2 Context of the study

Even if some studies exist at state level, the composition of Madhya Pradesh is too much heterogeneous to get an accurate view of the district situation. The presentation of the context is mainly constructed based on the 2011 National Institute of Nutrition (NIN) survey of Burhanpur³.

1.2.1 Malnutrition

Child undernutrition remains a major public health issue in the block, reflected by high rates of malnutrition.

In 2011, NIN survey presented an alarming nutritional situation with 26.7% of GAM, 8.3% of SAM and 48.6% of stunting among the district. The National Family Health Survey (NFHS-3) of 2005-2006, completed by the Ministry of Health and Family Welfare, similarly showed high results of 35% of GAM, 12.6% of SAM and 50% of stunting. Also, the nutrition survey performed the same years by the National Nutrition

³ National Institute of Nutrition, Hyderabad, 2011. Assessment of Nutritional Status of under-five year rural children in the Districts of Madhya Pradesh State, District: Burhanpur.

Monitoring Bureau (NNMB) of Indian Council of Medical Research gave 24% of GAM and 58.7% of stunting.

ACF conducted a SMART survey in Khaknar block in November 2013 in which the prevalence of GAM was found as 24.6% [20.4% - 29.3% - 95% CI] and SAM as 3.4% [1.9% - 6.1% - 95% CI] according to WHO criteria. A second SMART was conducted in June 2014, after the summer season. This second survey gave 34.7% [30.6%-38.8% - 95% CI] of GAM and 4.7 % [3.3% - 6.0% - 95% CI] of SAM prevalence, according to the same criteria.

The Government of Madhya Pradesh has taken various steps in the recent years to address the issues of malnutrition. This includes the opening of NRCs in hospital and community health centres as well as the strengthening of the integrated child development services (ICDS). Anganwadi⁴ centres are in charge of detection, care in the community and prevention of malnutrition through an extended growth monitoring program. Since the Government of India did not approve the Community-based Management of Acute Malnutrition (CMAM) scheme, Anganwadi workers are referring SAM children to the NRC where they will receive intensive care and follow-up.

SAM children with medical complications are referred to the hospital, while uncomplicated cases are treated for a period of 14 days at the NRC with indigenously prepared therapeutic milk and food. Once discharged, the NRC will follow these children for two months. Caregivers of SAM children should stay at the NRC for the entire period and get compensation for lost wages (up to 80 INR a day⁵). Awareness sessions also took place inside the NRC, with topics addressed such as basic nutrition, food safety, feeding practices.

The first NRC was opened with the technical and financial support from UNICEF in April 2006 in Shivpuri District. Since then, the model has been scaled-up over the whole state.

Although the ICDS program provides positive results, the absence of a proper CMAM program results to several problems. For example, children caregivers may not be able to stay for the entire period at the NRC as they have to handle housework and field work. They also have to find a solution to take care of their other children. Finally, the follow-up after discharge is rarely respected. Some caregivers may refuse to join the program, or do it for few days, with consequently high defaulting rate. Also, the situation sometimes leads to lack of proper recovery and children may relapse as SAM again or be discharged still uncured. Repetition of SAM situation in childhood threatens the child's life and increases the risk of medical complications related to malnutrition, in a context where the stunting prevalence is equally concerning.

ACF works in Burhanpur district in collaboration with a local NGO named CECOEDECON to support the awareness and prevention of acute malnutrition. At the time of the survey, ACF and CECOEDECON were supporting three NRCs in the

⁴ Anganwadi centres have started as part of the Integrated Child Development Services (ICDS) program in 1975 to fight child malnutrition. They provide basic health care as contraceptive counselling and supply, nutrition education and supplementation, and pre-school activities. Anganwadi workers are the main frontline workers involved into the fight against child undernutrition.

⁵ 0.98 Euros [31/07/14, 1€=81.45INR]

block (Burhanpur, Neapanagar and Khaknar) and a total of 80⁶ villages where community mobilization and screening of children were set up.

1.2.2 Food Security and Livelihoods

Agriculture is the main economic source of the majority of the population, with a large proportion of landless families (63.5%)⁷. Due to a small quantity of lands being irrigated, most of the fields remain uncultivable for the entire summer season (3 months from late March to late June). Therefore, the area is highly dependent on rainfalls from the monsoon (3-4 months from June to September).

Major occupation of household is related to agriculture with a large proportion of labourers (69.9%)⁸ and a small percentage of cultivators (16.3%)⁹. 10% of the population mentioned working in business, service or as artisans.

Farming system is characterized by cultivation of maize, banana, soya beans and cotton as well as animal husbandry. Crops are mainly used as cash crops and communities use to get grains from markets and Public Distribution System (PDS).

The use of mechanized system scarcely exists in the area, and buffaloes and cows are mainly used for farming. Almost 50% of the population possess dairy animals for individual milk consumption¹⁰. The population being primarily vegetarian, the quantity of animals (goats, cows, chickens) owned for meat consumption is very low.

Access to market is relatively poor in this area; there are only few market days and they mostly open outside of the villages. In summer time, vegetables and fruits are rapidly spoiled due to high temperatures and the population mainly relies on pulses and cereals as main food. Meanwhile, no tangible food gap has been noticed, but a seasonal modification of the diet balance.

Farmers rely on the monsoon to harvest main crops/grains while banana can be found all over the year. Delay of monsoon or small rainfalls impact the availability of cash crop, and have subsequent consequences on the family income.

Several food security and livelihoods governmental programs are implemented in Madhya Pradesh State. Among others, the Midday Meal Scheme, the Public Distribution System (PDS) and the Mahatma Gandhi National Rural Employment Guarantee Act (MNREGA) can be mentioned as being implemented at national level in an effort to fight hunger and improve livelihoods.

According to the guidelines of the Midday Meal Scheme and Supplementary Nutrition Programme, each child enrolled in an Anganwadi Center or attending school till class VIII should benefit from free meals or fortified food ration.

Started in 1995 as a National Programme of Nutritional Support to Primary Education (NP-NSPE) and later extended to cover all children from Standard I to VIII, the Midday Meal Scheme (MDM) was designed to improve the nutritional status of school-age

⁶ The actual program in 80 villages has only a 60% effective referral with specific volunteer in each village.

⁷ National Institute of Nutrition, Hyderabad, 2011. Assessment of Nutritional Status of under-five year rural children in the Districts of Madhya Pradesh State, District: Burhanpur.

⁸ *ibid*

⁹ *ibid*

¹⁰ ACF, 2014. NCA survey: Khaknar block, Burhanpur District, Madhya Pradesh.

children and enhancing school enrolment/attendance by providing them one hot meal daily.

Children 6 to 59 months and pregnant/lactating women enrolled in Anganwadi Center are benefiting from Supplementary Nutrition Programme. Supplementary Nutrition is provided under the ICDS scheme as Take Home Ration (THR) in the form of Micronutrient Fortified Food and/or energy-dense food marked as ICDS Food Supplement (age group 6-35 months and pregnant/lactating women) or hot cooked meal and morning snack (36-60months)¹¹.

The Public Distribution System (PDS) is a food security system established under the Ministry of Consumer Affairs, Food and Public Distribution and managed jointly with State government and Food Corporation of India (government entity). Through a network of public distribution shops, also known as Fair Price Shops (FPS), the PDS distributed at very cheap prices basic food and non-food items such as rice, lentils, sugar, and kerosene.

The Mahatma Gandhi National Rural Employment Guarantee Act (MNREGA) is an Indian labour law and social security measures that aims to guarantee a right to work and ensure livelihood security in rural areas by providing at least 100 days guaranteed wage employment in a financial year to every household.

1.2.3 WASH

According to NIN survey, main source of drinking water in 2011 was tube wells (50.5%). One third of the population has access to tap water (33.4%) while 6.6% uses open wells.

The burden of collecting water falls on women. Water points are mainly available in each village, and women seldom have to travel long distance. Despite the availability of water point, women may spent a long time to collect water as they are used to do it before going to fields and large queue can happen. This situation is increasing during summer when tap water is less available and women have to collect extra water from bore wells.

NCA results show that water source are highly at risk of contamination and good practices in term of water management are poorly known. According to WHO, 900 000 Indians die each year due to lack of safe and clean drinking water¹².

The situation in terms of sanitation is alarming. Statistics provided by NIN survey indicate only 15.8% of safe sanitary latrines in use in 2011. Accordingly to ACF Risk Factors Survey (RFS), only 20.5% of the population are using latrines while 8.5% specifically use safe latrines. Open defecation is a burning issue in India. In Khaknar block, the NCA survey showed that most of the people walk a long distance to go outside of their village in specific area. This behaviour could lead to the improvement of healthy environment in the village. However, this also has an impact on personal hygiene since water points remain far and villagers have to delay hand-washing practices until they get back home. In contradiction, almost 75%¹³ of the villagers are said to use soap. Moreover, the unsafe disposal of children faeces highly contributes to unhealthy environment situation, as no alternative behaviours are adopted yet.

¹¹ Press Information Bureau, Government of India, Ministry of Women and Child Development. Supplementary Nutrition Programme

¹² Robison, S. Time, May 2008. India's Medical Emergency.

¹³ ACF, 2014. NCA survey: Khaknar block, Burhanpur District, Madhya Pradesh.

1.2.4 Child Care Practices

Good care practices can prevent the occurrence of infectious diseases and nutritional deficiency. Similarly, nutritional status is highly related to good feeding practices.

The four optimal Infant and Young Child Feeding (IYCF) practices are: initiation of breastfeeding within one hour of birth, exclusive breastfeeding till six months of life, continued breastfeeding for a minimum of two years and introduction of complementary feeding at 6 months in adequate, safe and age appropriate quality and quantity manner.

According to 2011 NIN survey, early initiation of breastfeeding practice has been adopted for 42.6% of the children, 25.5% of children under 5 months were solely breast fed and complementary feeding was initiated at 6 months for 30.7% of the children of the district. No precision was given in the NIN survey to exactly know the definition used for “early initiation of breastfeeding”, such as “putting their child at breast for the first time” or “child being breastfed for the first time”. Indeed, an infant just after birth will usually be not really hungry and may not eat. Mothers could have understood the question as “when the infant eats properly for the very first time”. Even if this indicator has some limitation, it is a good manner to understand the first contact between a mother and her child.

The results shown by the NIN survey reflect an important lack of childcare practices knowledge. Based on the same survey, it is reported that almost three quarter of the children younger than 6 months already got complementary food, which is inappropriate for their age. When compared to the availability of safe drinking water in the area, it could also be assumed that children face higher risk of contracting water-related diseases. Weaning practices also represents an issue as food should be diversified after 6 months and results show that a large proportion of the children are still exclusively breastfed, with higher risk of improper and unbalanced diet.

1.2.5. Child Health

One of the most important immediate causes of undernutrition leading to children death is disease. The morbidity figures shown in the 2011 NIN survey is characterized by a peak of morbidity for the age group from 6 to 11 months (22%). This result coincides with the lack of proper weaning practices. At the same time, the result indicates that diseases related to food are not major causes of morbidity. Indeed for this given age group, the prevalence of diarrhoea is of 1.3% while fever prevalence is between 10 and 13%.

The most common morbidities reported by the 2011 NIN survey are fever (10.2%), ARI (6.9%) and diarrhoea (2.6%). As Khaknar is considered as malaria-prone area, it could contribute to the high fever rates. Unfortunately, lack of specific data on malaria prevalence could not confirm this assumption, fever being related to a range of different diseases.

Khaknar block being largely tribal, one may think that traditional beliefs toward health seeking behaviour could be one of the reason of high rate of morbidity. Indeed, population often refers to local traditional healers. 2011 NIN survey results reported that 92.5% of the mothers consult a private practitioner when their children fall sick. As no definition of private practitioner is given by the NIN report and no other survey specifically on spiritual practitioners exists in Khaknar, traditional beliefs could still be

considered as a potential underlying cause of diseases, which in turn affects child nutrition.

2011 NIN survey reflects good vaccination coverage of 94.1% of children fully immunized (12-24 months). Immunization is a good indicator to control health access and the government of Madhya Pradesh implements a monthly immunization day in each Anganwadi centre.

Antenatal care is considered as a main health issue as only 39.1% of the women are reported registered for antenatal consultation before 16 weeks of gestation. Despite this, women observed good behaviour regarding the place of delivery as nearly 73% said delivering in a private health centre, a community health centre or a public hospital. An ambulance system allowed women to easily reach health centres and hospitals and government provides cash indemnities to encourage women to deliver in institution¹⁴.

1.2.6 Status of women

Women empowerment and women's social status are closely linked to their own nutritional status and care. This is also having an impact on their ability to provide adequate care to children¹⁵.

Traditionally, married women leave their family to live with their family-in-law. Practice of *ghoonghat* – also known as *jbund* - is common in villages of Burhanpur district. In northern India, *ghoonghat* practice is commonly used to limit women interactions with older men. Women should cover their face with a *pallu* (loose end of a sari) or with their *dupatta* (long scarf) in front of men to whom they are related by marriage or senior to their husband¹⁶. In Burhanpur district, women also practice the *ghoonghat* system in front of their mother-in-law and their elder sisters-in-law.

In the traditional family conception, the elder persons of the family will take all the decision and literally dominated young wives. Mothers do not have decision power among their family, especially regarding expenses. Traditionally, women do not inherit land or houses in their own name¹⁷. Fathers do have more decision power but may also have to refer to their parents for high decision taking.

Literacy status is lower among women than among men (52.9% according to NIN). Even if this situation seems to positively evolve, access to school is often prioritized for boys while girls should stop their education for house chores.

In terms of workload, women are in charge of all the household work in addition to their livelihood occupation. Often, they have heavier workloads than men.

Gender segregation, low decision power and heavy workload represent aspects of rural Indian women lives and have an impact on nutritional statuses. These indirect causes can affect the mental health status of women and thus, the quality of decision taken for their children.

¹⁴ Chandrakant, L, January 2009. *Cash Incentives for Institutional Delivery: Linking with Antenatal and Post Natal Care May Ensure 'Continuum of Care' in India*. Indian J Community Med.

¹⁵ Smith, L, 2003. *The Importance of Women's Status for Child Nutrition in Developing Countries*. Washington, DC: IFPRI.

¹⁶ Guindi, F, 2003. *Veil: modesty, privacy and resistance*. Oxford: Berg. pp. 109–111

¹⁷ Gross, S. Rojas, M, 1989. *Contemporary issues for women in South Asia*. St Louis Park, MN, Glenhurst

Moreover, heavy workload is impacting directly the quality of psychosocial care of children, as caregivers would have less time spent with them.

Ghoonghat system, Shankarpura Khaman village



1. NCA objectives

1.1 Main study objective

The main objective of the NCA is to identify the most important causes of child undernutrition, in particular wasting of children age 0-59 months, in Khaknar block of Burhanpur district, Madhya Pradesh. Indeed, severe wasting is associated with more than nine times higher risk of death¹⁸. The NCA is considering vulnerable nutritional groups identified as children less than 23 months and tribes.

2.2 Specific study objectives

The NCA study specific objectives include:

- To estimate the prevalence of known risk factors for under-nutrition among the population and key “nutrition vulnerable groups”
- To identify main causes of wasting in order to inform the technical strategy and programs for the prevention of the same at a local level
- To determine which causal pathways of malnourishment are likely to explain most undernutrition cases in the target area
- To develop an “emic” definition and understanding of good nutrition, malnutrition and believed causes of undernutrition within the target population
- To understand the local seasonal and historical pathways to wasting
- To support technical advocacy on causes of wasting so as to support technical strategy.

¹⁸ Joint statement WHO – UNICEF, 2009. “Child growth Standards and the identification of severe acute malnutrition in infants and children”

2. NCA Methodology

3.1 Overview of the NCA approach

An NCA is a structured, participatory, holistic, multi-sectorial study, based on the UNICEF causal framework, to build a case for nutrition causality in a local context.

- **Structured** – the steps of the methodology are precisely defined and have all been tested in the field.
- **Participatory** – the study is giving a real opportunity to national technical experts as well as caregivers in the community to express their opinion on the causes of undernutrition, and to discuss, review and finally validate the conclusions of the study.
- **Holistic** – undernutrition is here studied globally to avoid a sectorial approach, and to highlight the inter-relations between risk factors.
- **Multi-sectorial** - a nutrition causal analysis (NCA) investigates and presents a “multi-sectorial” overview of the contributing factors affecting nutritional status within a given community.
- **Building a case for nutrition causality** – the core exercise of an NCA is to identify and rank causal hypotheses by order of importance.
- **Specific to a local context** - causes of under-nutrition are often different from one location to another. The purpose of the methodology is to go beyond generic interventions by identifying context specific causes in order to propose adequate solutions.

3.2 Study design

The NCA methodology involves four key steps:

1. Preparatory Phase: The preparatory phase is to ensure timely recruitment process; objectives are clear and the choice of NCA methodology (comprehensive, qualitative, quick) is selected.

2. Development of causal hypotheses: a literature review, data review and stakeholders interviews (Community Health and Nutrition Workers (CHNW) and NRC staff) were undertaken to generate an overall understanding of the local context of undernutrition and design a set of local causal hypothesis of undernutrition. These hypotheses have been validated to be field tested by Technical Experts during a workshop held on the 9th May 2014 in New Delhi.

3. Data Collection: Both quantitative and qualitative data were collected to provide more evidence on levels of undernutrition, key risk factors and community perceptions, practices and constraints.

4. Identification of highest priority causes of undernutrition: Based on the evidence gathered during the data collection, the causal hypotheses were then ranked by order of importance with particular attention to seasonal differences and vulnerable groups. The results were then validated with the local community before being presented at a final workshop on the 18th July 2014, where technical and NCA experts tried to reach a consensus on the most important risk factors and priorities for action.

3.3 Sample

3.3.1. Selected method and sample size calculation

The method selected was random cluster sampling and followed the recommendations provided by the NCA guidelines. Clusters have been defined as the smallest administrative unit, i.e. clusters refer to villages. A sample size has been calculated for a list of key indicators present on the NCA indicators guide. This list was a sufficient basis to calculate the sample to be surveyed.

Table 1 - Indicators to be measured and population targeted for each indicators

Type of indicator	Indicator	Targeted population
Measurement of risk factors	HDDS	Household
	HFIAS	Household
	MAHFP	Household
	Early initiation of breastfeeding	0-24 months
	Exclusive breastfeeding under 6 months	0-6 months
	Continued breastfeeding at 1 year	12-15 months
	Introduction of solid, semi-solid or soft foods	6-8 months
	Minimum dietary diversity or IDDS	6-23 months
	Meal frequency	6-23 months
	Reported responsive feeding	6-59 months
	Mother's food intake evolution during pregnancy and/or lactation	Mother
	Caregiver's completed years of education	Caregiver
	Perceived social capital	Mother
	Caregiver's perceived workload	Caregiver
	WHO5 and MDI if WHO5≤13	Caregiver
	Caregiver-child interactions scale	Caregiver
	ARI past 14 days	0-59 months
	Diarrhoea past 14 days	0-59 months
	DPT3 immunization status	12-23 months
	ANC/PNC attendance	Mother
	Barriers from going to the health centre	Caregiver
	Access to a safe water source	Household
	Water management score	Household
Quantity of water per capita per day	Household	
Use of hygienic and safe sanitation facilities	Household	
Presence of soap or ashes in the house	Household	

The Household¹⁹ (HoH) average size has been identified as 5.8 members/HoH²⁰. The number of children from each group/HoH has been deduced from the SMART 2013 data according to the total number of children from following age group: 0-59 months, 0-6 months, 0-23 months, 6-8 months, 6-23 months, 6-59 months, 12-15 months, 12-23 months²¹.

Table 2 - Calculation of household sample to be surveyed

Targeted population	D ¹	d ²	p ³	Sample size ⁴	Average population/household ⁵	Target population/household ⁶	Number of Household to be surveyed
Household	2.0	0.10	0.50	209	1.0	1.0	209
Caregiver	2.0	0.10	0.50	209	1.0	1.0	209
0-59 months	2.0	0.10	0.50	209	0.75	1.0	209
0-23 months	2.0	0.10	0.50	209	0.3	0.4	523
0-6 months	2.0	0.10	0.50	209	0.08	0.107	1954
12-15 months	2.0	0.10	0.50	209	0.06	0.08	2613
12-23 months	2.0	0.10	0.50	209	0.15	0.2	1045
6-23 months	2.0	0.10	0.50	209	0.23	0.307	681
6-59 months	2.0	0.10	0.50	209	0.68	0.907	231
6-8 months	2.0	0.10	0.50	209	0.04	0.053	3944

¹Design effect

²Precision

³Estimated prevalence: a conservative estimated prevalence of 50% was chosen, as data regarding these indicators are not available and/or not relevant

⁴Calculated from ENA Software

⁵The age groups have been defined from the SMART-2013 survey. As the average household is 5.8 members, the average of children per age group per household have been found. For example, there are approximately 0.75 children from the age group 0-59 months per household.

⁶The risk factor survey considering only the families with at least one child aged from 0 to 59 months, the target population by household has been found. Then, the number of household to be surveyed has been defined.

¹⁹ Household as been defined according to the Indian definition used for census as “All the members who eat all together under one roof from same cuisine process and sleep together at night at the same place” http://censusindia.gov.in/Data_Products/Library/Indian_perceptive_link/Census_Terms_link/censusterms.html

²⁰ ACF, 2013. SMART survey: Khaknar block, Burhanpur District, Madhya Pradesh

²¹ *ibid*

3.3.2 Number of household to be surveyed

In the table 2, only the blue rows have been considered at the last stage of selection. The sample sizes calculated on the orange rows were too big to be surveyed within the human resources, budget and time available for this NCA.

The highest sample size within the blue rows has been selected, i.e. 681 HoH.

A margin of 10% considered (data loss, data entry errors), the risk factors survey has been planned to survey a total of 749 HoH.

3.3.3 Selection of number of clusters to be surveyed

To calculate the number of interviews conducted per day, the following elements were considered: each interview would last for approximately 45 minutes and each team would effectively work 5h30 per day.

A low hypothesis gave an estimate of 6 interviews/day/team that could be conducted while a higher hypothesis was to conduct 7 interviews/day/team. Ultimately, the lowest hypothesis has been considered, when taking into consideration potential issues (field conditions, high temperatures, etc.).

By considering 2 teams in each village and 2 to 3 days of investigation / village, the combination shown in table 3 had been obtained.

Table 3 - Combinations number of clusters and survey duration

N. team	N. team/ cluster	N. survey/ day/team	N. survey days/cluster	Total investigation days	N. HoH/ cluster	N. Cluster	Total N. families
8	2	6	2	16	24	32	768
8	2	6	2	15.5	24	31	744
8	2	6	2	15	24	30	720
8	2	6	3	16	35	22 (21,33)	768
8	2	6	3	15	36	20	720

The first option considers 8 teams of 2 surveyors. 2 teams would visit one cluster for 2 days and 24 families would be surveyed in each cluster ($2*6*2=24$). 32 clusters would be considered to survey 768 HoH (approx. 235 children 6-23 months).

The initial objective was to assess 749 HoH (approx. 209 children 0-23 months). The first option gives a higher sample than the initial one. With this option, 87 HoH will be in extra, i.e. approximately 3.62 clusters. Each team surveyed 8 clusters in 16 days.

Among these clusters, 4 have been randomly selected for the qualitative survey.

3.3.4. List of Khaknar Block villages and random selection of clusters

An exhaustive list of villages was established using official data. This list follows the official administrative cutting-up. The list of villages was entered in ENA software that randomly selected 32 administrative villages (here clusters), according to the Proportion Population Size (PPS) method.

Table 4 - List of the selected villages for the Risk Factors Survey (RFS)

Geographical unit	Population size ²²	Cluster
Doiphodiya	6285	1
Nand Kheda Ryt	2491	2
Saikheda kalan	917	3
Matapur	1864	4
Bhauraghat	1404	5
Nimdhad Ryt	2117	6
Shekhapur Ryt	1513	7
Gulai	2650	8
Nimapur	944	9
Sitapur	1739	10
Dasghat	926	11
Mondra	2209	12
Tukaithad	3922	13
Basali Ryt	1384	14
Jamuniya	3089	15
Khaknar Khurd	2783	16
Chokhanda	940	17
Pipri Borban Ryt.	2088	18
Dudhiya Ryt	1811	19
Saikheda Khurd	2006	20
Haidarpur	2704	21
Bakadi	5834	22
Ratagad Ryt	1135	23
Palasur	1148	24
Mandwa	6057	25
Nawtha	1643	26
Paretha	2574	27
Dawali Ryt	2167	28
Bada Jainabad	2689	29
Dawali Kalan	2262	30
Ambada Ryt	3517	31
Shankarpura Khalan	1377	32
Khadki	1424	RC ²³
Dahinda	2037	RC
Ramankheda Kalan	1631	RC
Majhgaon	1573	RC

²² According to the local data of the block provided by Revenue department

²³ "Reserve cluster", in case of some of the 32 selected clusters were not reachable due to strong external constraints

Once the selection of clusters done, it appeared that all the villages were reachable and at the end of the survey, none of the replacement clusters used.

The population being considered as homogeneous, 4 clusters, among the list of 32 clusters, were randomly selected for the qualitative survey. The random selection was made using a “random selection” formula in Excel.

Table 5 - List of the selected villages for the qualitative survey

Village name	Population	RFS Cluster number	Qualitative Cluster number
Palasur	1148	24	Village 1
Dudhiya Ryt	1811	19	Village 2
Shankarpura Khalan	1377	32	Village 3
Bhauraghat	1404	5	Village 4

3.4 Data collection methods

To assess the causes of undernutrition in Khaknar block, the NCA methodology applied a mixed-methods study design. A quantitative component was designed to objectively assess malnutrition status and the prevalence of known risk factors, while the qualitative component aimed to uncover the community’s own conceptualization of malnutrition, the degree to which they perceive it as a problem, and what are observed to be the causes. Thus, the qualitative and quantitative components are intended to generate complementary data.

3.4.1 Risk Factors Survey

Data collection took place between the 9th and the 28th June 2014 after 6 training days. On average each field team completed 5 to 6 questionnaires per day. 767 households were surveyed within 32 clusters²⁴.

3.4.1.1 Training of surveyors and supervisors

Surveyors and supervisors were trained during six days. Data entry operators attended the training too. Five days were dedicated to the RFS and one day to the MUAC.

Everyone learnt how to take MUAC, and the most efficient surveyors went to an Anganwadi centre in Burhanpur to take the MUAC of some children. The candidates who took most accurate measurements were selected as supervisors. Only those candidates received extensive training on MUAC, as the supervisors only were responsible to detect and refer SAM and MAM children during the survey.

Sixteen surveyors and seven supervisors were selected.

3.4.1.2 Random selection of Households

Depending on the configuration of the block, the selection of households was done following a two-stage cluster sampling or three-stage cluster sampling methodology. For both of the ways, the first stage is the cluster selection using ENA and according to the PPS.

²⁴ Cf. Annex 1: Map of selected clusters for the NCA survey, p94

For villages with a population exceeding 1400 persons, a geographical segmentation was done inside the village and one segment randomly selected. Each segment contains approximately the same number of household. Then a simple random sampling was done to determine the households to survey. This configuration follows a three-stage cluster sampling.

For villages with a population not exceeding 1400 persons, a simple random sampling was done to determine the households to survey. This configuration follows a two-stage cluster sampling.

A number was prior attributed to each household in the village, and then households to be surveyed have been randomly selected using a random number table.

3.4.1.3 Information collected within selected households

A quantitative RFS questionnaire was designed to collect information on key risk factors related to the following domains:

- Food security and livelihoods (FSL)
- WASH
- Health
- IYCF practices
- Mental health

The questionnaire was translated into Hindi and back translated into English. The household questionnaire was pretested during the training of the RFS program manager. Following pre-testing, it was adapted and finalised.

The RFS questionnaire was divided into 4 sections, each section being addressed at different levels: one member of the household, the caretaker, the child under five and observations.

The RFS questionnaire was built as followed:

Household questionnaire:

This section had been addressed to the primary caregivers as they are in charge of meal preparation and water collection.

Child questionnaire 0-23 and 0-59 months:

This section had been addressed to the primary caregivers for each child <59 months present in the household.

Caregiver questionnaire:

This section had been addressed to the primary caregivers.

Observation questionnaire:

Regarding the water source observations, most of the villagers were using the same source of water. For each cluster, the surveyors had to draw a map of the locations of the different water points. The surveyors then showed the map to the interviewee, asking her/him what were the principal and alternative sources of water her/his household was using. Then the surveyors went to this specific water points and filled the “water source observations” section.

3.4.1.4 Severe Acute Malnourished children identification

The NCA done in Khaknar block did not include a specific nutrition survey. Yet, a large part of the villages surveyed was located in the area already covered by ACF on-going nutrition programmes, and where a separate SMART survey took place at the same time as the NCA.

In Khaknar block, Anganwadi workers are used to screen children less than 59 months using MUAC tape, and refer detected SAM to the nearest NRC. All Anganwadi workers present in Khaknar block were trained by ACF on how to use the MUAC tape.

As some children may not visit the Anganwadi Centre or some parents may refuse the visit of Anganwadi workers or CHNW, the surveyors asked at the end of each interview to the principal caretaker if she/he was interested in checking the MUAC of their children. In every household, the answer was positive.

MUAC measurements were reported in a document along with the cluster name and number, household number, name of the child, mother's and father's name and sex of the child.

In villages where ACF and CECOEDECON work, the list was communicated to the program team, to know if the child was enrolled in the nutrition program or not, and act accordingly.

In villages where ACF/CECOEDECON are not present, the list was communicated to the Anganwadi workers to encourage home visits to the SAM house.

In both cases CHNW and Anganwadi workers were in charge of referring children to the nearest NRC.

3.4.2 Qualitative survey

Qualitative survey took place between the 19th and the 30th May 2014. Focus Group Discussion (FGD) and in-depth interviews were organized in 4 clusters²⁵.

3.4.2.1 Research instruments and methods

To understand and collect rich contextual data on community perceptions, practices and constraints with regards to child undernutrition, the NCA used Focus Group Discussions (FGD) and interviews methods. FGDs and individual interview guidelines were developed and pre-tested, with a particular emphasis placed on well-being issues.

FGD guidelines were developed covering 9 key sessions:

- Good nutrition and malnutrition
- Food Security and Livelihoods
- Child Health
- WASH
- Child Care Practices
- Mental Health
- Perception of fathers and grandfathers
- Seasonal and historical trends
- Rating risk factors

²⁵ Cf. Annexe 1: Map of selected clusters for the NCA survey, p94

The method chosen for interview was semi-structured interview as it allows new ideas to be brought up during the interview and make the interviewer able to follow topical trajectories in the conversation.

3.4.2.2 Data collection

In total, five days were spent in each village where FGDs were organised with mothers, fathers, grandmothers and grandfathers of children under five. Semi-structured individual interviews were held with mothers of SAM, MAM and positive deviant children as well as key stakeholders including CHNW, ASHA²⁶, Anganwadi workers, doctors, community leaders, teachers and high-school principal.

Following the analysis, the NCA expert and/or the RFS program manager returned to each of the four villages to present and validate results of the qualitative inquiry. This “reporting-back” process was included to the qualitative research process and provided an opportunity for the communities to give recommendations on programming.

In total, 45 FGDs and 28 interviews were held in four villages. The participation is detailed in the table below:

Table 6 - Summary of qualitative data collection

	Palasur	Dudhiya Ryt	Shankarpura Khalan	Bhauraghat	Total
Day 1 Stakeholders Interviews	9	5	2	4	20 interviews
Day 2 Malnutrition, FSL (women)	45 women (4 FGD)	35 women (4 FGD)	40 women (4 FGD)	34 women (4 FGD)	154 women (16 FGD)
Day 3 WASH, Health, Care Practices (women)	25 women (4 FGD)	29 women (4 FGD)	25 women (3 FGD)	26 women (3 FGD)	105 women (14 FGD)
Day 4 Mental Health, rating exercise (women)	24 women (3 FGD)	25 women (3FGD)	24 women (3 FGD)	20 women (3 FGD)	93 women (12 FGD)
Day 5 Malnutrition and its causes, rating exercise, seasonal calendar (men)	9 men (1 FGD)	8 men (1 FGD)	7 men (1 FGD)	0 ²⁷	24 men (3FGD)
Day 5 Life story	2	2	2	2	8
Total FGD	12 FGD	12 FGD	11 FGD	10 FGD	45 FGD

²⁶ Accredited social health activists (ASHA) are community health workers. ASHA mission began in 2005 as part of the National Rural Health Mission (NRHM), under the Ministry of Health and Family Welfare. The program target is having one ASHA in each village. ASHA are volunteer women trained to educate and promote health in their communities. They receive outcome-based remuneration and financial compensation for training days

²⁷ Due to field work, it was impossible to organize a men FGD in Bhauraghat

3.4.2.3 Stakeholder consultations

Involvement of stakeholders (NGO, technical agencies, academic institution, community members, frontline workers) is a key aspect of the NCA methodology.

To contribute to the development of causal hypotheses, key stakeholders were interviewed in the preliminary stages of the survey. In addition, two technical experts' workshops were organized. The initial workshop aimed to validate causal hypotheses to be field-tested and final workshop to rank causal hypotheses based on evidence gathered by the NCA study and to validate results by providing a confidence note for each result.

3.4.3 NCA team composition

The NCA expert led the qualitative data collection with the assistance of two translators (one man for general questions, one woman for sensitive questions) and a community facilitator, who all received an induction to the survey and qualitative methods. In addition, in each village a CHNW, Anganwadi worker or village leader were engaged as “community mobilizers” to help gathering the community.

A total of eight field teams conducted the risk factors survey under the supervision of seven supervisors with in addition, four data entry operators recruited for the assessment. The risk factor survey was under the supervision of a RFS Program Manager (PM).

The following diagram displays the NCA field team composition.

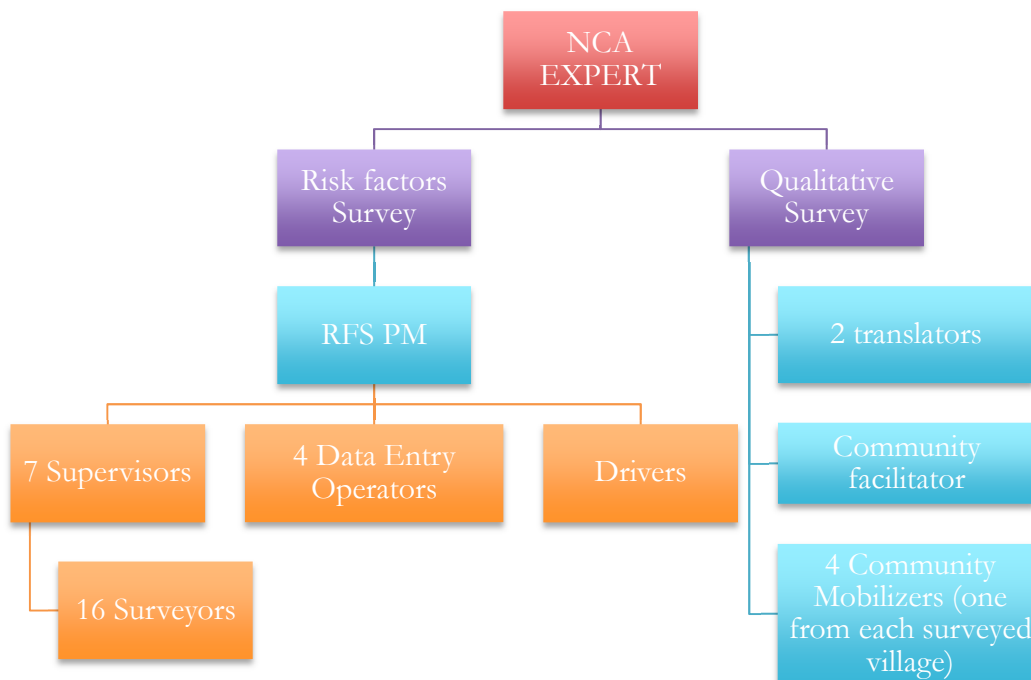


Figure 1 – NCA team composition

3.5 Data Management and Analysis

3.5.1 Quantitative data management and analysis

A data entry system was developed in Excel 2011. Data from completed household questionnaires were entered every day into the database by two teams of trained data entry operators. Each questionnaire and databases were crosschecked.

Quantitative data analysis was conducted using Excel then Epi Info v.3.5.3.

3.5.2 Qualitative data management and analysis

The process of qualitative data analysis was on going and iterative. Every evening, transcripts were written down and a weekly summary of key themes developed.

Data were coded on a weekly basis according to the selected key themes and in order to address the main study questions. Lastly, the data were analysed using content analysis methods.

3.5.3 Rating Causal Hypotheses

Based on the results of the NCA, the NCA expert then rated the causal hypotheses by order of importance and through triangulation of:

- The prevalence of risk factor from secondary data;
- The prevalence of risk factor from the quantitative survey;
- The strength of association between the risk factor and under-nutrition;
- The seasonality of causal hypothesis related to seasonality of undernutrition;
- The participatory rating exercise with communities. □

Causal hypotheses were rated based on the following classification:

Table 7 - Classification of causal hypotheses

Category	Definition
Major causal pathway to child undernutrition	The causal pathway is interpreted as a major contributor to child undernutrition prevalence in the study area.
Important causal pathway to child undernutrition	The causal pathway is interpreted as an important contributor to child undernutrition prevalence in the study area.
Minor causal pathway to child undernutrition	The causal pathway is interpreted as a limited contributor to child undernutrition prevalence in the study area.
Rejected causal hypothesis	The causal hypothesis is interpreted as a not relevant or significant contributor to child undernutrition in the study area.
Untested causal hypothesis	Information gathered is not sufficient to reach a plausible conclusion.

3.5.4 Final Stakeholder Workshop

The results of the rating exercise were presented and validated by several stakeholders during the final technical expert workshop held on the 18th July 2014. Technical experts

were invited to inform the level of confidence they had in each result through a confidence note for each of the findings.

The confidence note provides an evaluation of how reliable technical experts think the rating is, based on the strength of the information gathered for each result.

3.6 Research Ethics

Prior ethical approval was sought from the District Collector. Additionally, informed voluntary consent was obtained from all NCA participants.

Children who were found as severely malnourished were referred for medical attention and appropriate treatment as per the protocol defined at section 3.4.1.4 of the presented NCA survey report²⁸.

3.7 Limitations

The methodology used is indeed a causal analysis although causality is not demonstrated from an epidemiological point-of-view. A low confidence note for certain results would mean that the information gathered is not convincing enough and advocate for complementary research to be conducted.

The NCA presented is valid only for the population studied in Khaknar Block of Burhanpur District, Madhya Pradesh. All the results should be considered at this geographic level and not beyond without complementary analysis.

Since ACF is an NGO active in nutrition and mental health and care practices' activities in the intervention area, a possible bias in the results may be considered. Participants from the communities may have perceived some benefit from taking part of the survey. This potential threat to the research was mitigated as far as possible by providing detailed information to study participants on the objectives of the NCA, and that the participation would be independent to any NGO or Government support. Furthermore, this potential bias was mitigated in the analysis stage.

²⁸ Section 3.4.1.4 *Severe Acute Malnourished children identification*, pp. 23-24

4. NCA Findings

4.1 Preliminary technical expert workshop

4.1.1 Validated and ranked Causal hypotheses

Based on the results of a secondary data review and literature review of risk factors to undernutrition, 20 causal hypotheses along with causal pathways to undernutrition in Khaknar block were developed and presented to technical experts²⁹ during a preliminary workshop on the 9th May 2014. These 20 causal hypotheses were then debated and consensually rated using a scale from 1 (minor risk factor) to 5 (major risk factor). The following table shows the results of the rating exercise and the rank of each hypothesis³⁰.

Table 8 – Causal Hypotheses rating and ranking

Causal hypothesis	Average rating	Rank
Hypothesis 1 – Inappropriate breastfeeding practices	4.72	1
Hypothesis 2 – Inadequate complementary feeding practices	4.72	1
Hypothesis 3 – Low birth weight (LBW)	4.27	3
Hypothesis 15 – Low agricultural production	4.18	4
Hypothesis 12 – Lack of hygiene	4.09	5
Hypothesis 17 – Poor diet diversity	4	6
Hypothesis 18 – Poor access to food	4	6
Hypothesis 6 – Maternal well being	3.9	8
Hypothesis 14 – Lack of health care regarding the treatment of Undernutrition	3.9	8
Hypothesis 10– Inadequate sanitation	3.64	10
Hypothesis 11 – Inadequate access to drinking water	3.64	10
Hypothesis 5 – Caregivers’ workload	3.55	12
Hypothesis 9 – Inappropriate reproductive health	3.55	12
Hypothesis 8 – Poor psychosocial care of children	3.45	14
Hypothesis 13 – Poor health seeking behaviour	3.18	15
Hypothesis 4 – Caregivers’ level of education	3	16
Hypothesis 19 – Low income	3	17
Hypothesis 7 - Inadequate family income management	2.81	18
Hypothesis 16 - Lack of field ownership	2.36	19
Hypothesis 20 – Fragile Resilience toward external shocks	2.09	20

In regard to the average note, the hypothesis 1 and 2 are considered as major hypothesis and the hypothesis 20 as a minor. All hypotheses were reviewed by the technical experts.

²⁹ Cf. Annex 2: list of participants to initial technical workshop, pp.96-98

³⁰ The ranking was made according to the average rating note

4.1.2 Identification of nutrition vulnerable groups and causal hypotheses by the technical experts

The following groups were identified as nutrition vulnerable groups: children under 59 months (with a particular emphasis on children under 24 months), migrants, tribes, pregnant mother and landless people. The NCA study emphasised the following groups: children under 59 months with a focus on children under 24 months, migrants and tribes.

The following table represents the hypothesized risk factors and pathways to undernutrition identified by the technical experts during the working group sessions.

Table 9 – Hypothesized risk factors and pathway identified by the technical experts

FSL	Health	MHCP	WASH
<ul style="list-style-type: none"> -Unbalance of the food basket -Indigenous food habits -Accessibility of food -Less productivity per person -Governmental distribution system (PDS) -Local conception of decision-making process toward household food purchase -Balance family food intakes -Lack of natural vegetation due to deforestation, lead to lack of availability of forest vegetables -Lack of livestock -Diet during migration -Food taboo -Low agriculture production -Inappropriate breastfeeding and complementary feeding practices -Land 	<ul style="list-style-type: none"> -Difficulties to reach health centres -Capacity building of the frontline workers -Communication gap due to local languages -Communication and transport issues -Ineffective implementation of health system -Energy lost after pregnancy -Relationship between traditional healer and community -Poor health seeking behaviour -Diarrheal diseases -Low awareness of malnutrition issues due to high prevalence and multigenerational problem -Lack of awareness from family regarding ICDS services -Lack of health care regarding the treatment of undernutrition 	<ul style="list-style-type: none"> -Beliefs regarding colostrum -Position of women among the communities -Gender inequality -Poor psychosocial care regarding children -Inadequate complementary feeding practices -Postpartum depression -Women empowerment -Decision power -Literacy -Social support (family and community level) -Caregiver workload 	<ul style="list-style-type: none"> -Distance to the water source -Seasonal lack of water -Open water source -Deficient knowledge toward hand washing -Presence of fluorine -Unsafe drinking water -Open defecation

size/ownership -Access to credit/debts -Low agriculture due to lack of water availability -Poor access to irrigation	-Lack of NRC		
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4.1.3 Hypothesis reviewed and validation by the technical experts

The debate helped to reach a consensus on the hypothesis to be field-tested. The hypothesis were validated, reviewed or cancelled as followed:

Validated	1, 2, 3, 4, 5, 7, 8, 9, 10, 12, 13, 14, 15, 18
Reviewed	6, 11, 16, 17, 19
Added	New 20, New 21
Cancelled	20

- Hypothesis 11 “inadequate access to drinking water” was reviewed to include the quality of the water (presence of fluorine) and the distance to the water point.
- Hypothesis 16 “Lack of field ownership” became “Land size and ownership”.
- Hypothesis 17 “Poor diet diversity” was revised to include the absence of livestock.
- Hypothesis 19 “Low income” was modified to include the implementation of the MNREGA.
- Hypothesis 20 “fragile resilience toward external shocks” was cancelled to become a pathway to hypothesis 19.

In the initial causal model proposed by the NCA expert, “women empowerment” was a pathway to hypothesis 6 “maternal well-being”. “Traditional beliefs” was a pathway to hypothesis 1 and 13.

After the revision of the technical expert, they became singular hypothesis (new 21 “women empowerment” and new 20 “traditional beliefs”)

A new pathway to hypothesis 8 was defined: “child temperament”.

Hypotheses validated to be field-tested are presented on the annex 3 “Hypothesis as reviewed and validated by the preliminary technical experts’ workshop”³¹.

4.1.4 Nutrition Vulnerable Groups

Technical experts identified the following groups as nutrition vulnerable groups:

- Children under 59 months (0-23 months, 24-59 months)
- Migrants
- Tribes
- Pregnant mothers
- Landless people

³¹ Cf. Annex 3 “Hypothesis as reviewed and validated by the preliminary technical experts workshop”, pp.96-98

4.2 NCA Quantitative Survey Results

This section of the report presents results from the risk factors survey. The risk factors survey was addressed only to households with at least one child under 59 months.

4.2.1 Household Composition

In total, 767 households were surveyed and child level indicators collected from 971 children aged 0-59 months, including 418 children aged 0-23 months. The mean number of members in each household was 6.39. In almost all cases, the main caretaker was the mother. Average age of the caretaker was around 25 years old (25.15 years).

Table 10 - Household Composition Indicators

Indicators	Sample	Mean or proportion	Lower confidence interval (LCI) -95%	Upper confidence interval (UCI) -95%
Household size	766	6.39	6.12	6.65
Age caregiver	743	25.15	24.75	25.54

4.2.2 Composition of the population

The population interviewed was mainly tribal (69%) with a majority of Korku (40%). The following scheduled tribes (ST) were represented in the sample interviewed: Barela, Bhilala, Bhil, Gond. In addition, 4% of endemic tribes were represented in the sample. 41% of the sample belongs to other categories as the Indian Constitution defines them: Schedule Castes (SC)³², Other Backward Castes (OBC), and General Castes. Among them, the majority belong to OBC (32% of the entire sample).

Respondents were asked to indicate the name of their caste or tribe and the category to which they belong. Then, verification was done according to the caste name. General category verification was done by deduction, i.e. if the respondent answered “general caste” and the name her/his caste did not belong to a SC, ST or OBC list.

Amendments to Part X – Madhya Pradesh [Part III – Rules And Orders under the Constitution] of the constitution (Scheduled Castes) order, 1950 and to Part XIII – Madhya Pradesh [Part III – Rules And Orders under the Constitution] of the constitution (Scheduled Tribes) order, 1950 were used to verify if the families surveyed belong to SC or ST³³ categories.

The Central List of OBCs for the state of Madhya Pradesh from the National commission for Backward Classes was used to verify if the families belong to OBC category.

The RFS results are given for the entire block and include a cut-off between ST and other categories for some of the results.

³² SC and ST are two groups of historically disadvantaged people recognised in the Constitution of India

³³ Amendments as per published by the Indian Ministry of Law & Justice

The figure below shows the population distribution among the block according to the survey sampled:

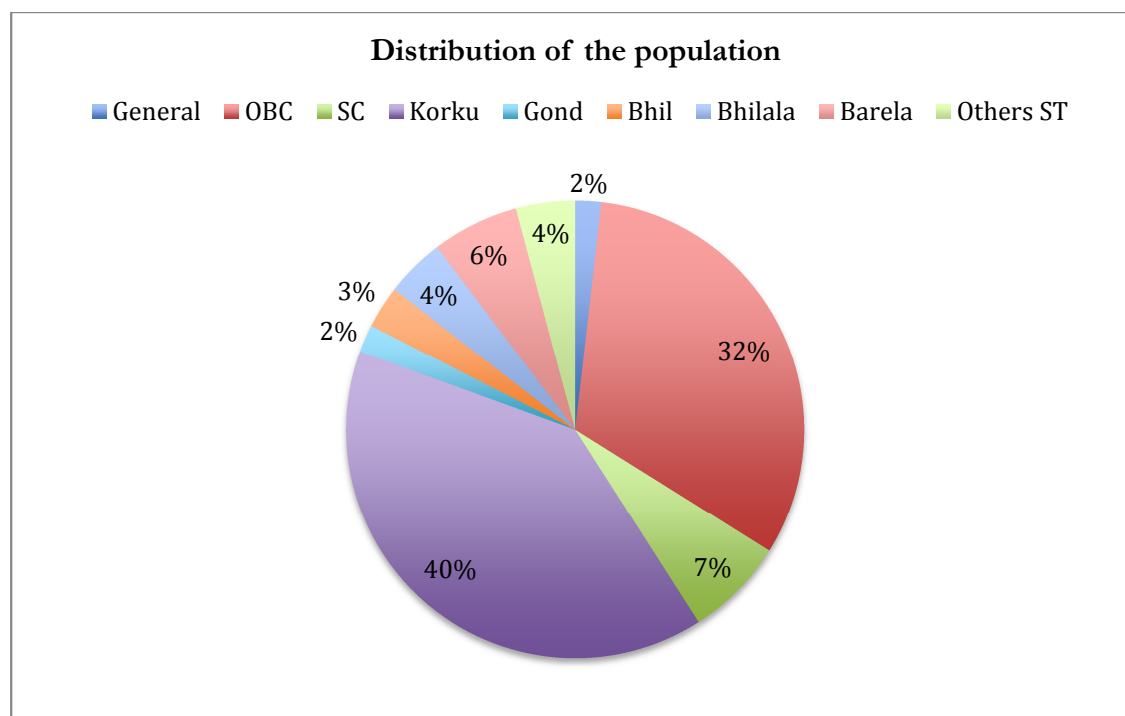


Figure 2 – Distribution of the population

4.2.3 NCA Risk Factor Results by Causal Hypotheses

In total 44 indicators were addressed by the risk factor survey questionnaire. The complete results of the survey are given in annex 4 “NCA Risk Factors indicators figures”³⁴ and annex 5 “NCA Risk Factors diagrams”³⁵.

The following section presents the quantitative results of the NCA risk factors survey triangulated with relevant qualitative data, by causal hypothesis.

4.2.3.1 Causal Hypothesis 1: Inappropriate breastfeeding practices

Adequate initiation of breastfeeding was tested by asking when, after birth, the baby was first put at breast. This indicator helps to understand the first contact between a mother and her child as well as the attachment reflex between them.

The level of adequate initiation of breastfeeding is acceptable. Indeed, qualitative results show that most of the mothers do know the correct timing to initiate breastfeeding, although some of them said waiting for more than one hour as they were taking rest after a long and exhausting delivery. Evidence from the qualitative enquiry suggests that late initiation of breastfeeding may also be due to lack of breast milk. Indeed, young mothers commonly refer not having enough breast milk to feed their infant properly. Nevertheless, the lack of milk production is rare amongst young mothers. The problem

³⁴ Cf. annex 4 “NCA Risk Factors indicators figures”, pp.99-104

³⁵ Cf. annex 5 “NCA Risk Factors diagrams”, pp. 105-109

could rather be linked with the distribution of milk and not the production. Indeed, babies may not have the reflex to take breast and efficiently suck, and mothers are not aware of the practices to better guide their babies.

Breastfeeding rate found by the RFS (67.4% [57.9% - 76.9% - 95%CI]) is significantly higher than the preliminary results of June 2014-SMART survey conducted by ACF (35.5% [CI 95% 28.5% - 42.6%]). The SMART questionnaire asked “when the baby was breastfed for the first time”. It could be assumed that mothers made a difference between “putting their infant at breast”, and “first real breast milk intake”. Results can also be biased as caregivers may know the appropriate time and may answer accordingly to please the interviewer.

RFS result is correlated to the place of delivery. Indeed, governmental policies are promoting breastfeeding, and mothers should be helped to breastfeed their infant in delivery institutions. According to the RFS, 74.2% of the caregivers declared having given birth to their last child at a hospital or a health centre. Qualitative findings reflected that awareness sessions on early breastfeeding and appropriate practices were delivered within the health institutions.

Mothers also used to return to their native place for delivery and sometimes have to leave the district. The quality of the sessions on promotion and counselling on breastfeeding performed inside the health institutions could not be assessed, but given the result from the SMART and the NCA studies, figures for early initiation of breastfeeding should be cautiously interpreted.

The proportion of late breastfeeding initiation can be explained by a lack of knowledge on breastfeeding practices, along with a lack of awareness. Indeed, mothers who do not have institutional deliveries may not receive further awareness either.

Rate of exclusive breastfeeding is really low with nearly 36% of the children (0-6 months) exclusively breastfed. The peak of exclusive breastfeeding happens during the first three months of life with a proportion of 49.0% of children being exclusive breastfed, while the proportion between 4 to 5 months decreases to 17.7%. Given the low number of children of this age group in the sample, the confidence interval is very high and results should be taken with caution (95% CI 29.5%-68.3% and 5.2%-30.1%).

Qualitative results showed that most of the mothers give water to their infant very early, even just after birth. Mothers believe that their baby can be thirsty, especially during the summer season, and that milk would not be sufficient. FGD demonstrated that mothers do not know the dangerousness related to consumption of unsafe water, either the benefit from breast milk. FGD also showed that mothers do not link consumption of water to waterborne diseases as diarrhoea.

Both qualitative and quantitative results show that almost all the children continued to be breastfed after one year. Rate is higher for ST than for other categories. During FGD few non-tribal mothers explained that they might stop breastfeeding after one year as their child starts to eat alone, and it is assumed that the child’s diet should be adapted. Meanwhile, tribal mothers explained that they do not change the diet, as the cost of other food cannot be afforded. Commonly, the main reason to stop breastfeeding was the workload. Mothers stopped breastfeeding as soon as their child’s response to complementary feeding is fine, and the child will be given same food than adults. Finally,

some of the mothers choose to give cow milk instead of breast milk by supposing that it could be an alternative.

Table 11 – Breastfeeding Indicators

Breastfeeding Indicators	Sample	Mean or proportion (%)	LCI - 95%	UCI - 95%
Adequate initiation of breastfeeding (<1 hour)	387	67.44	57.91	76.98
Exclusive breastfeeding (0-6 months)	81	35.80	21.42	50.18
0-3 months	47	48.94	29.53	68.34
4-5 months	34	17.65	5.19	30.10
Continued breastfed after 1 year	82	93.90	85.51	99.29
ST	49	95.92	90.16	100
Others	33	90.91	80.21	100

4.2.3.2 Causal Hypothesis 2: Inadequate complementary feeding practices

The transition between exclusive breastfeeding and complementary feeding is a crucial period for the infant as inappropriate and/or inadequate feeding practices is a common cause of malnutrition. According to WHO, introduction of complementary feeding should begin around 6 months when breast milk is no longer sufficient to maintain optimal growth. Furthermore, early or late introduction of complementary feeding could contribute to undernutrition. Caregivers need to give a special attention to meal frequency and better understand how to balance their infant diet.

Half of children aged 6-8 months (50%) are reported receiving timely introduction of complementary foods. However the sample of this age group is small and the CI large, therefore this result should be taken with caution (34.2-65.8% - 95% CI).

Individual dietary diversity score (IDDS) was used to measure dietary diversity of age group 6-23 months. Dietary diversity was found to be very low. The mean IDDS of children age 6-23 months was 1.35 and just 3.8% of these children are reported having received foods from a minimum of four food groups the previous day (1.1– 6.6% - 95% CI). The proportion of children with minimum IDDS is really low, but the general diet of the population should be taken into account. Indeed, IDDS refers to seven food groups and traditionally the population of Khaknar block is vegetarian. Consumption of meat (under any form) or fish is really rare and so, rate of respecting food groups was consequently very low. As IDDS was designed to be used in a non-vegetarian population, the results should be interpreted with consideration for this local specification and using 5 groups (all groups excluding meat and fish categories). A score superior to 3 food groups may be considered as more appropriate for minimum IDDS. In this case, the results remain very low (14.7%) but more than 3.8 times higher than minimum IDDS considered in its standardized form.

Responsive feeding is reported as extremely low for both breastfed and non-breastfed children. The qualitative results show that most of the caregivers resume their work

shortly after delivery and most of them will breastfeed their child only when at home. Indeed, caregivers commonly referred breastfeeding their child only early in the morning before going to work and once they are back. Also, qualitative inquiry shows that feeding practices are adapted to the caregivers' daily schedule and not to the child hunger. In addition and during daytime, young children are often under surveillance of elder siblings or left alone. When answering to the questionnaire, caregivers may have considered only the meals given while they are present or may not know some of the meal taken by the child. Result for meal frequency of non-breastfed children is higher, but the sample size being very small (n=22), it cannot be considered as representative of the population. Even if the results for this indicator should be taken with attention, qualitative and quantitative results still show that meal frequencies are not adapted to children.

Responsive feeding is reportedly not appropriate, with only 37.9% of children age 9-36 months being supported during their meal. At the same time, the general behaviour reported when the child refuses to eat is mainly positive, as 57.2% of the caregivers said helping their child to eat by playing or coaxing.

Findings from the qualitative inquiry show that common diet for children aged 6 to 12 months are breast milk, dhal-water, rice-water³⁶, kichdi³⁷ and dalia³⁸. Children are fed directly from their mother's hand. Mothers believe that most of the time if a child refuses to eat, it means that she/he is not hungry. They believe that food for young babies should be thin in consistency, soft, not spicy and non-salty. When children are one year of age and beyond, they typically begin to give the same diet as for adults, i.e. rice, dhal and vegetable when available. Chapattis may also be given but in a small quantity as the children cannot chew it properly. Around two years of age, mothers believe that the child is able to eat by him/herself. Qualitative findings show that less support is provided during the meals from 24 months and beyond.

Table 12 – Complementary Feeding Indicators

Complementary Feeding Indicators	Sample	Mean or proportion	LCI -95%	UCI -95%
Complementary feeding (6-8 months) ³⁹ Proportion of children with IDDS>1	48	50	34.2	65.8
IDDS 6-23 months	313	1.35	1.16	1.54
Proportion of children with minimum IDDS (>4)	313	3.83	1.10	6.56
Proportion of children	313	14.70	10.28	19.12

³⁶ Dhal and rice water is made from the cooking water mixed with a small quantity of rice or dhal

³⁷ Kichdi can be made from rice or sago and can contain lentils. It is a soft and easy to eat food commonly seen as comfort food

³⁸ Dalia is a kind of broken wheat, recipe served to young child may contain a small quantity of vegetable

³⁹ The question, addressed as per the guidelines recommendations, gave extremely low score for the age group 6-23 months. As the indicator contained only one question, it seems that the way of addressing it was not clear to the caregivers. In addition, during FGD mothers referred giving complementary feeding after 6 months of age. IDDS>1 group was considered to understand complementary feeding practices in the age group 6-8 months.

with IDDS >3				
Proportion of children with correct meal frequency (BF children)	231	2.16	0.30	4.02
Child feeding behaviour	816			
Caregivers helping their child to eat (>9 months)		37.87	32.63	43.10
Behaviour adopted by the caregiver when the child doesn't want to eat				
Other (play. coax etc.)		57.23	48.34	66.12

4.2.3.3 Causal Hypothesis 3: Low Birth Weight

Low birth weight (LBW) is defined as a weight at birth of less than 2,5kg. Common risk factors that may contribute to LBW are known as multiple pregnancies, short birth spacing, early pregnancies, insufficient prenatal care and poor maternal nutrition. Infants with LBW are considered to be disadvantaged, more likely at risk of diseases and at risk of stunting. LBW is also affecting long-term development with more important risk of neurodevelopmental problems⁴⁰.

The proportion of children with LBW is high in Khaknar block (28.8%). The sample size of children with LBW according to the survey record being small (n=111), observations on perceived LBW data were also collected. Even if the result is lower, they are still high and a difference between ST and other categories have been recorded.

Quantitative and qualitative results show that pregnant women are not changing their diet but do eat it the same as usual (65%). The women interviewed explained that they could eat less because of tiredness or sensation of sickness. Antenatal care could also be an important cause leading to LBW as only 37.6% of the mothers consult a health professional during their pregnancy and among them, only 32.3% consult at least four times. Results among ST are low and this may be an explanation on the LBW rates difference found by the RFS.

Qualitative results and interviews of mothers of SAM/MAM children report that mothers are not aware that their own diet could have an impact on the birth weight of their infants. As well, most of the mothers explained that they did not know the correct health behaviour to adopt while they were pregnant for the first time.

Results gathered from the NCA survey show that the major pathways to LBW could be:

- High workload
- Inappropriate reproductive health practices related to short birth spacing
- Lack of knowledge regarding care for pregnant women/adolescent
- And inappropriate food intake.

⁴⁰ Hack, M. Klein, NK. Taylor, HG. 1995. *Long-term developmental outcomes of low birth weight infants*. The Future of Children, vol 5, no1. Princeton University. pp 176-196

Table 13 – LBW Indicators

LBW Indicators	Sample	Mean or proportion	LCI -95%	UCI -95%
Food intake during last pregnancy	763			
Less as usual		23.98	18.98	28.98
Same as usual		65.00	59.50	70.51
Children with LBW (health record)	111	28.83	19.88	37.78
ST	53	32.07	19.66	44.49
Others	58	25.86	12.87	38.85
Children with perceived LBW	958	21.61	15.35	27.86
ST	562	22.77	14.00	31.55
Others	396	19.95	14.10	25.80
Current use of family planning	726	35.67	30.91	40.44
Short birth spacing	196	51.02	43.81	58.23

4.2.3.4 Causal Hypothesis 4: Caregivers' level of education

Caregiver's level of education, particularly for the women, has an impact on nutrition and child health and is an important influencing factor for child undernutrition. It is also viewed as a proxy for socioeconomic status and improved care practices.

The RFS shows a high rate of illiteracy among the caregivers (59.68%) and more particularly among ST (71.8%). The average level of education is less than 8 years (7.4 years).

Qualitative data showed that communication between mothers in their community and involvement of frontline workers have a positive impact on knowledge of the mothers. Indeed, they explained being able to find information when needed, by meeting with an Anganwadi worker. At the same time, an important proportion of mothers said not being sure to properly understand some information, maybe due to the lack of education. As well, they explained that some information regarding adequate care practices and appropriate reproduction health may be missed or misunderstood, and that they do not have the keys to find it by themselves. In this case they will refer to Anganwadi workers, mothers-in-law or neighbours. Qualitative survey shows that mothers are used to consult other women having attended high school when looking for some specific information, specifically regarding contraception.

Table 14 – Education Indicators

Education Indicators	Sample	Mean or proportion	LCI -95%	UCI -95%
Average level of education	306	7.36	6.92	7.8

Illiteracy	759	59.68	51.92	67.44
ST	447	71.81	65.26	78.36
Others	312	42.31	30.53	54.09

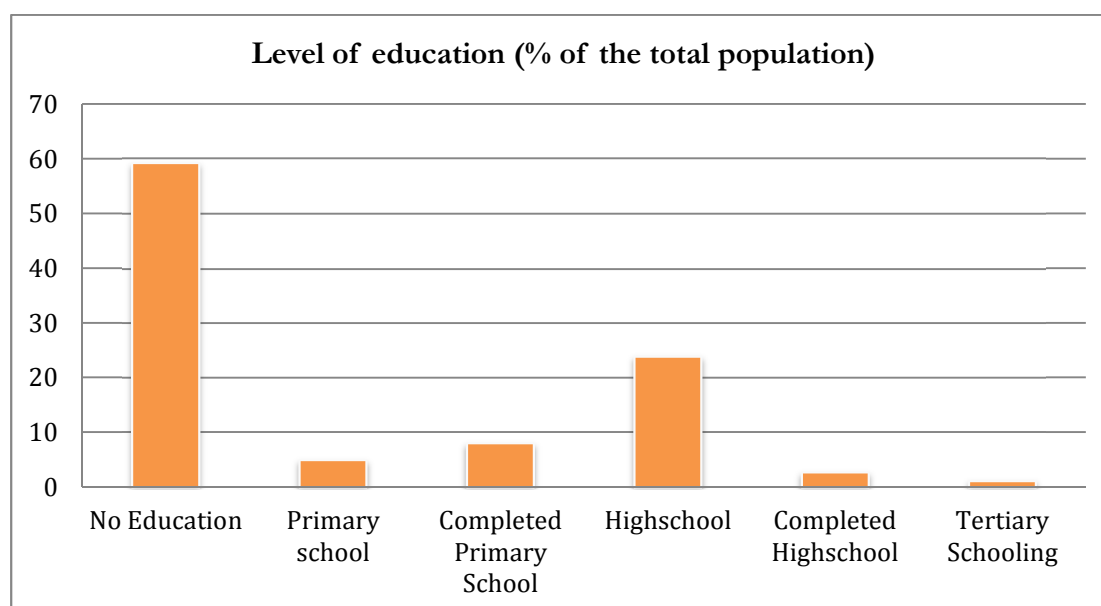


Figure 3 – Level of education

4.2.3.5 Causal Hypothesis 5: Caregivers’ workload

Caregivers’ heavy workload is an important underlying factor of child undernutrition. Indeed, due to lack of time and tiredness, mothers may pay less attention to their children. This may impact the child health, psychosocial cares and food intake.

RFS shows that 48.6% of the caregivers’ considered having too much work to take care of their children; average rest after birth is reported less than 40 days for 61.5% of them.

Qualitative data results showed that low income is the main reason of short rest after birth, since mothers have to go back to fieldwork quickly after birth to avoid important gaps in the family income. Likewise, mothers being in charge of water collection and other house chores, they quickly have to resume their daily activities, without being able to properly take care of their children. Indeed, daily schedule showed that mother would wake up early to prepare tea and breakfast, clean the house, collect the water and then go to field work for the entire day. Once back, they will complete other house tasks (cloth washing, meal preparation etc.). Most of them refer being permanently exhausted. Working mothers explained that some tasks are divided among all the women of the family. Housewives are generally the only one in charge of the main household work. Heavy workload is also having an important impact on feeding practices as children’ meals are be prioritised among other tasks. In some situation grandparents, neighbours or elder siblings can be in charge of the young child during the day.

Migrant mothers explained being aware of the important impact on their children’ health of their workload during migration. Indeed, their workload being even heavier, they have fewer times than usual to feed their babies and are too tired to be totally aware of the health situation of their children. Finally, if they notice a health complication, even finding time to consult is a challenge.

Table 15 – Workload Indicators

Workload Indicators	Sample	Mean or proportion	LCI -95%	UCI -95%
Mothers who feel they have too much work to take care of their child	765	48.63	42.06	55.20
ST	452	50.66	42.29	59.09
Others	313	45.69	37.73	53.64
Average rest after birth (in days)	747	40.34	37.99	42.70
Rest after delivery <40 days	747	61.45	56.22	66.67
ST	442	64.48	57.62	71.33
Others	305	57.05	50.36	63.74

4.2.3.6 Causal Hypothesis 6: Maternal wellbeing

Mother psychological distress was considered as an important causal hypothesis to undernutrition in the preliminary stage of the NCA. Indeed, living conditions during migration (habitat, isolation), low decision power, high workload and sometimes domestic violence are frequently having a significant impact on the women. They are considered important underlying causes to undernutrition.

Qualitative survey reflected that the situation is not optimal for the mothers. 45% said having a low decision power added to a high workload. Migrant mothers explained living in small huts made from sugar cane leaves and bamboos, being isolated from their family and worrying for their children. At the same time, they said not being distress by the situation as they don't allow themselves to "feel bad". Indeed, most of the mothers seems resigned to their situation and explained that this would affect their capacity to work.

Men alcoholism, gambling and domestic violence were deeply discussed in FGD and participants admitted that this can happen in their community, acknowledging an important problem. However, women also reported that such situation rarely happens. Coping mechanism explained by mother facing violent situation was to involve their parents-in-law for solution finding, or even to leave the household and return to their family until the situation changed.

RFS showed a low level of depression and 7.6% of mothers at "risk of depression" according to WHO 5⁴¹. Regarding decision power, the percentage of adequate decision power is acceptable regarding child education (63.8%), child health (60.8%) and reproductive health decision (76.5%). Nonetheless, mothers have a really low decision power regarding money expenses (30.3%). Qualitative data explained these differences by the fact that decision on money expenditures are traditionally taken by elder persons of the family and mainly by the mother-in-law. Most of the workingwomen explained giving almost all their earning to their family-in-law or to their husband. Family expenses are decided at family level.

⁴¹ <http://www.psykiatri-regionh.dk/who5/menu/>

Table 16 – Maternal wellbeing Indicators

Maternal wellbeing Indicators	Sample	Mean or proportion	LCI - 95%	UCI - 95%
Perceived social capital - Mothers who feel supported	765	73.02	66.62	79.53
Mothers at risk of depression WHO 5<13	764	7.59	4.36	10.82
Mothers at risk of depression MDI 10	764			
Mild		1.31	0	3.08
Moderate		1.68	0	1.68

4.2.3.7 Causal Hypothesis 7: Inadequate family income management

Inadequate family income management due to men gambling and alcoholism was considered as a major underlying cause to child undernutrition in the listing of causal hypothesis. Indeed, it could have an important impact to maternal well-being and lead to inappropriate ways to care, cure and educate children.

As explained earlier, qualitative survey shows this situation as low among the communities. As men' alcoholism and gambling were impossible to test in a quantitative way and answers given during the qualitative survey surely biased, the present report cannot deeply explore this cause. But it seems that gambling and alcoholism can be ruled out.

Qualitative survey showed that in terms of inadequate family income management, the main issue was debt contracted for social events such as wedding or traditional festival. Indeed, families overspend money in those events and debts are mainly contracted at these occasions (food, health and other daily needs).

4.2.3.8 Causal Hypothesis 8: Poor psychosocial care of children

Poor psychosocial care of children was considered to be the result of caregiver's workload, inadequate family income management, maternal well-being and child's characteristics.

RFS shows that for 72.4% of the households interviewed, child/caregiver interaction was appropriate. Even if this result is quite high, poor psychosocial care remain an important factor to malnutrition as it is fluctuating over the year. Indeed, even if mothers are responsive with their children, most of the mothers are not able to take care of their children for the entire day and qualitative information showed that a considerable part of the children remains under the supervision of elder siblings during the day or left alone. Unfortunately, with absence of data and longer-term analysis, it is impossible to confirm the impact on undernutrition. Nevertheless, it is assumed that such situation can have an important impact on children well-being and absence of care can affect the behaviour of a child and the mother/child bonding.

Table 17 – Children psychosocial care Indicators

Children psychosocial care indicators	Sample	Mean or proportion	LCI -95%	UCI -95%
Child-caregiver interaction score	866	4.63	4.24	5.02
Children with appropriate child-caregiver interaction (>4)	866	72.40	64.82	79.99

4.2.3.9 Causal Hypothesis 9: Inappropriate reproductive health

Inappropriate reproductive health practices can result to short birth spacing and early childbearing, which in turn can contribute to LBW and affect household resources and ability to provide adequate care.

Early first pregnancy rate (<18 years old) is high (9.0%). RFS shows that this rate is higher among ST (13.2%).

Traditionally, a couple plan their first baby in the first year following their wedding. In India, wedding before the age of 18 is illegal and huge communication followed this law. Thus, it may be conceivable that caregivers' answers do not reflect the exact reality. Also, a large proportion of population interviewed did not know their exact age. Qualitative inquiry found that a large proportion of the participants got pregnant before 18 years old. In another hand, participants related that this situation seems to evolve and observation during the qualitative survey showed that new mothers seem to be older than 18 years old.

Massive communication made by the government on the appropriate size of a family also had an impact on family planning. Indeed, the ideal family is seen as a couple with two children. Mothers still think that having a boy and a girl will be ideal but most of them agree that having more than two children has an important impact on care and household resources. Consequently, a lot of families plan not to have more than two children.

Regarding contraception, families tend to have all their children during a short period and afterwards to get a tubal ligation. Indeed, this practice is common for Indian women, when the family agrees not to have more children. Tubal ligation is a surgical procedure for women sterilization and is irreversible for women. Even if it is seen in Western Countries as an important act that may have psychological impacts on women, tubal ligation in India is well accepted. During FGD, women explained that it was the best and easiest way for birth control and a large part of them even repeated communication slogan as "Operation! No tension!". Among the 35.67% women using a contraceptive method, 54% of them already performed a tubal ligation. Besides this information, it is important to mention that a governmental scheme has been developed, and public health policies encourage tubal ligation practices for women. Each woman who will undergo surgery will also receive a financial compensation; this is worthwhile to mention that this could bias the decision taken by the most vulnerable families.

The way of understanding adequate contraception methods seems to have an impact on short birth spacing. Also, Anganwadi workers have to promote contraception and inform women on the different methods available. Key stakeholders interviews showed that Anganwadi workers are often facing a lack of knowledge regarding contraceptive pills and intrauterine disposal (IUD). While use of contraceptive pills is well known, side effects are not properly understood. Discussion about contraception methods was important during FGD, women explaining that pills and condoms are good tools but may be discovered by their in-laws, leading to some discussions. Indeed, mothers and grandmothers agreed that they were facing a generational gap regarding contraception. Grandmothers are not well informed and think that pills, as medicine, can be dangerous, while the use of condoms is totally misunderstood.

Use of contraceptives is not a real issue among families as communities agree that short birth spacing is a real problem. But mothers and fathers explained that sexuality is an important taboo, and the subject cannot be discussed within the family.

Regarding contraceptive pills, women explained the difficulty to carry them and take them on a daily basis. As women and Anganwadi workers asked to the NCA team what were the main contraceptive methods existing, it appears that most of them did not know what an IUD was. Women explained having heard about it, but only a few numbers of women does use an IUD in the community. Women were generally looking for more information.

RFS shows that only 1% of the women using a contraceptive method were using IUD and only 2% were using a double contraceptive method (pills and condom). Condoms are seen as a contraceptive way but not a manner to avoid sexually transmitted diseases⁴² (STDs).

Finally, qualitative inquiries reflected that undesired pregnancy was mainly due to unused or incorrect use of contraceptive.

Table 18 – Reproduction health Indicators

Reproduction health indicators	Sample	Mean or proportion	LCI -95%	UCI -95%
Current use of family planning	726	35.67	30.91	40.44
Undesired pregnancy	960	5.10	2.60	7.60
Early first pregnancy (<18)	723	8.99	6.21	11.77
ST	423	13.24	9.57	16.91
Others	300	3.00	0.68	5.32

⁴² Knowledge on risk of STDs was not deeply explored by the NCA, but it seems that women are not properly aware about it

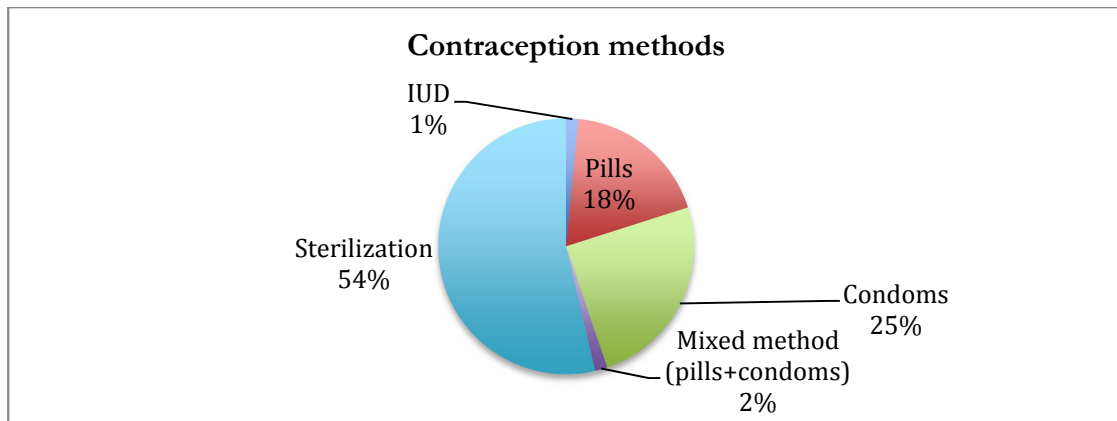


Figure 4 – Contraceptive methods

4.2.3.10 Causal Hypothesis 10: Inadequate sanitation

Unhealthy environment due to inadequate sanitation negatively impacts child nutritional status. Indeed, exposure to pathogen elements may cause illnesses including diarrheal diseases. If the outlet of faeces is not well isolated from the environment by the use of appropriate sanitation facilities, it can contaminate water, food and insects, which can in turn contaminate food and water. This circle of contamination is commonly called the F-diagram, as shown as below⁴³:

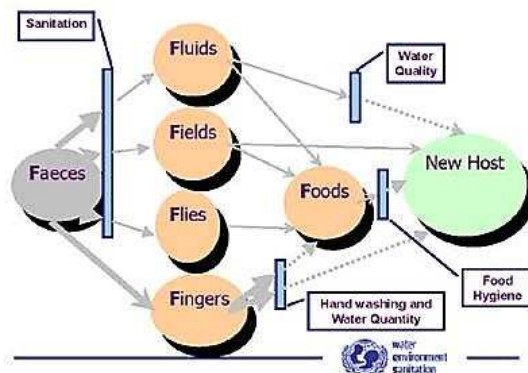


Figure 5 – F-Diagram, disease transmission routes

Open defecation in India is a burning issue. A recent jointly report from WHO and UNICEF showed that 597 million people practice it in the country and India still has the largest rate of open defecation practice in the world⁴⁴. Research also shows that open defecation habit leads to higher child mortality rated and stunting⁴⁵.

The use of latrines in Khaknar block is reported low (20.5%) while the use of safe latrines is even less (8.5%). Child faeces disposal is alarming with only 2.6% of caregivers of children aged 0-23 months reportedly having safe practices. This finding constitutes a high risk factor and is supported by the NCA expert observations. Indeed, mothers

⁴³ Figure from UNICEF, 1999. *Towards better programming: A manual on hygiene promotion*. Water, Environment and Sanitation Technical guidelines series – No6

⁴⁴ The Hindu, May 9 2014. *India tops in Open defecation*.

⁴⁵ Spears D. Ghosh, A. Cumming, O. 2013. *Open Defecation and Childhood Stunting in India: An Ecological Analysis of New Data from 112 Districts*.

reported adopting a good behaviour toward child faeces disposal by simply moving it out of their courtyard or cleaning it with water. Qualitative enquiry suggests that mothers consider that removing or cleaning child faeces from their home environment is sufficient and do not take into account the dangerousness of child faeces for the surrounded environment.

However, during the qualitative enquiry, it is reported that open defecation is considered as one of the main issues of health hazards in the communities. Respondents also explained that to reduce the dissemination of diseases, open defecation area should be as far as possible the village. Children aged 2-4/5 years use to join their parents, while older children will go altogether in small groups.

A large part of respondents described going into the nearby forest or close to the river. This situation is far to be optimal as cooking wood is collected from the same forest, and the proximity with water source could lead to pathogenic contamination; additionally, people also uses the river for laundry, fishing or simply bathing in it. Finally, it leads to safety issues with the presence of wild animals (bears, snakes and probably cheetahs), reported risks of aggression for women, and left alone young age children. Safety would not directly relate to undernutrition, but it needs to be taken into account for its impact on mother mental health.

The area for open defecation may change depending on the season also. Indeed, participants reported that during the monsoon and post-monsoon season, these areas tend to be closer to the village due to higher lack of access.

Table 19 – Sanitation indicators

Hygiene, sanitation and health indicators	Sample	Mean or proportion	LCI -95%	UCI -95%
Latrines	756			
Use of latrines		20.5	12.15	28.86
Use of safe latrines		8.47	4.25	12.68
Safe disposal of child faeces	418	2.63	0.94	4.32

4.2.3.11 Causal Hypothesis 11: Inadequate access to drinking water

Inadequate access to drinking water covers access, quantity, risk management and safety of the water source.

Use of unsafe water can negatively impact general health situation of the community, as well as child nutritional status. Indeed, exposure to pathogens may cause illnesses, including water-related diseases as diarrhoea. Water source may be contaminated due to maintenance issues, general aspects of the source (open well, close to animal faeces, broken apron etc.) and environmental contamination.

The amount of water available may also negatively affect hygiene practices and women domestic workload.

Domestic water supplies; including main and alternative sources, distance to these sources, water management and requirements were explored as potential unhygienic environment factors. Fluoride contamination of groundwater was raised as a major pathway to water contamination during the initial workshop. Unfortunately, and even if India is possibly affected by this contamination, the NCA survey did not explored this

pathway. Indeed, fluoride contamination needs to be tested in laboratory and this could not be explored within the framework of the NCA.

The RFS shows that groundwater and pipeline supplies are respectively used by 46.6% and 53.5% of the households (n=763)⁴⁶. While facing a lack of water, especially during summer season, 41.3% of the households are using ground water, while 57.9% do not need to use an alternative source (n=758). Observation performed during the RFS data collection brought alarming rates; 48.2% of the main water source is considered to be at severe risk of contamination (n=763), while 63.5% of alternative source are at moderate risk of contamination (n=318)⁴⁷.

Qualitative findings show that most of the villagers considered pipeline supplied water as safe, with some explaining that the government occasionally treats the water and one time treatment in a year is considered as sufficient. Groundwater is assumed as being safe. Participants of the qualitative survey explained not being able to know if the water is actually safe or not, but assume it is because the water is clear and not smelling. Qualitative findings also showed that communities seem more suspicious about the quality of the water during the summer and the beginning of the monsoon. Indeed, the water collected during the summer is considered as old water while the water collected at the beginning of the monsoon may be dirtied.

Finally, qualitative findings showed that communities associate quality of water and incidence of diarrhoea. As well, participants made a correlation between damaged water source and open well and possibility of being affected by malaria. Moreover, inadequate access to safe drinking water appears to be a major pathway to diarrhoea. Quantitative findings reflect a high rate of diarrhoea in the past 14 days (14.6%)⁴⁸ and a very high rate of fever in the past 14 days (33.3%). This last indicator should be taken with caution as fever can reflect a large scope of diseases. But the area being malaria-prone and the use of mosquito nets being rare, it could be considered as an indicator of mosquitoes-borne diseases.

The time to collect water, including distance, is indicated to be less than 30 minutes for 65.7% of the households. As a large proportion of the population does have tap water in front of the home, this result could be mainly explained by the large queue during summer time and by the fact that mothers may collect water several times a day. Indeed, qualitative enquiries show that mothers may collect water from one to four times a day.

According to Sphere Project recommendation, basic water needs per households should average 29.3 litres per capita (lcd) per day. Drinking water needs are correct as they are close to FANTA⁴⁹ recommendation⁵⁰ (4.44 lcd) and hygiene and sanitation water needs (4.39 lcd) meet Sphere Project criteria⁵¹. However, food water needs⁵² are not met

⁴⁶ All the WASH indicators related to safety of water source should be taken with caution. Indeed, CI are very high, probably due to design effect as most of the villagers are using the same source of water

⁴⁷ Safety of main and alternative source with “groundwater” and “pipeline supplies” cut-off are presented in Annex 4 “NCA RFS indicators figures”, pp.99-104

⁴⁸ Diarrheal symptoms may be not well known by the participants, the RFS survey considered more than 3 loose or watery stools in 24-hour period other the last past two weeks as a probable diarrheal episode

⁴⁹ Food and Nutrition Technical Assistance, USAID

⁵⁰ Fanta recommendations: 5 lcd for drinking water

⁵¹ Sphere Project recommendations: 2-6 lcd for basic hygiene practices. Sphere recommendations was chosen to analysis hygiene and sanitation water needs as most of the people do not use water for latrines as they practice open defecation

(1.75lcd) but this result should be analysed by taking into account the food diet. Indeed, food diet contains mainly rice and chapatti. The water used for cooking is low, but households can still prepare some other meals. Also, the qualitative survey shows that households are prioritizing their drinking water and bathing needs (9.98 lcd) in the summer and do not complain about a shortage in water regarding their cooking needs. The results of RFS regarding specific water needs (drinking, bathing, food, hygiene and sanitation water) should be taken with caution. Indeed, even if the qualitative findings are in favour of these results, respondents may have biased it by overestimation or lower estimation.

Table 20 – Water and health Indicators

Water and health indicators	Sample	Mean or proportion	LCI -95%	UCI -95%
Main source of water	763			
Groundwater		46.53	30.35	62.71
Pipeline supplies		53.47	37.29	69.65
Safety of main water source	763			
Mild risk		7.34	0	14.72
Moderate risk		44.43	29.81	59.05
Severe risk		48.23	33.36	63.10
Alternative source of water	758			
Groundwater		41.29	28.78	53.80
Pipeline supplies		0.79	0	1.92
No alternative source		57.9	45.22	70.61
Safety of alternative source	318			
Mild risk		10.69	0	21.79
Moderate risk		63.52	48.57	78.48
Severe risk		25.79	12.34	39.23
Water needs	579			
Basic water needs		29.29	26.95	31.63
Drinking water needs		4.44	4.10	4.79
Bathing water needs		9.98	9.14	10.83
Food water needs		1.75	1.61	1.89
Hygiene/sanitation water needs		4.39	3.97	4.80
Water collection and distance to water point <30 minutes	759	65.74	55.03	76.46
Diarrhoea in the past 14 days	969	14.65	11.51	17.8
Fever in the past 14 days	962	33.37	28.63	38.11

⁵² Sphere Project recommendations: 3-6 lcd for cooking needs

4.2.3.12 Causal Hypothesis 12: Lack of hygiene

Regarding personal hygiene, RFS shows that 74.9% of the respondents use soap but only 45.9% of the caregivers adopt a good hand-washing behaviour. The last result is confirmed by the qualitative survey, as most of the mothers seem to not washing their hand before breastfeeding their child, or after defecation. This last point should be taken into account to analyse the results found for the use of soap. Indeed, qualitative survey shows that respondents do wash their hands after defecation but the time between both is not specified. And it has been reported that hand washing does not occurred just after defecation. The use of soap's rate should also be balanced with the availability of soap through the year. Indeed, qualitative enquiry showed that commonly, people can afford soap but poorest family could use only water or mud to wash their hands.

Finally a correlation can be made between Acute Respiratory Infections (ARI) and hand washing. Indeed, hand washing is known to have a positive impact on lower spreading of ARI⁵³.

Water management score is also showing a high rate of severe risk (53.1%). This indicator based on the water source observation scores and household handling water scores is mainly explained by the way villagers treat water. Indeed, qualitative and quantitative findings reflect that most of the respondents filter their water using pieces of cloth only. Unsafe handling of drinking water and unhygienic cooking practices were also considered as important pathways to lack of hygiene during the initial workshop, but qualitative enquiries show that mothers use to cover water at home and bring a special attention to the way they clean their cooking utensils as it is one of the important household task they are handling.

Table 21 – Hygiene, sanitation and health indicators

Hygiene, sanitation and health indicators	Sample	Mean or proportion	LCI -95%	UCI -95%
Water management score	514	4.46	4.23	4.69
Mild risk		0.97	0	1.97
Moderate risk		45.91	38.30	53.53
Severe risk		53.11	45.12	61.11
Caregiver hand-washing good behaviour	766	45.95	37.51	54.40
Use of soap	730	74.93	68.63	81.23
ARI in the past 14 days (0-59 months)	969	26.11	20.40	26.11

Causal hypothesis 10, 11 and 12 are the main causes of unhealthy environment and are believed to be underlying causes of disease prevalence such as mosquito-borne diseases, diarrhoea and ARI.

⁵³ Rabie, T. Curtis, V. 2006. *Handwashing and risk of respiratory infections: a quantitative systematic review*. Tropical Medicine & International Health.

4.2.3.13 Causal Hypothesis 13: Poor health seeking behaviour

Poor health-seeking behaviour is one of the main underlying causes of disease, which in turn affects child nutrition. One of the major pathways to this hypothesis was understood to be traditional beliefs related to health practices, also considered as a proper causal hypothesis to undernutrition⁵⁴ that will be later explored in this report.

Immunization rates are high, as reflected in DPT3 and measles rates among children 12-23 months with immunization cards available (91.4% and 85.7%, n=105). Availability of health record was found as 48.6% (n=216). Among ST, rates are also high (DPT3 = 85.4% and measles = 77.1%, n=48) with a similar level of immunization cards available (41.4%, n=116). Immunization is helping to avoid some diseases and is also a good proxy indicator for access to health services.

The qualitative survey reflected that immunization is well seen by the communities as they consider it as the better way to protect children health.

Antenatal care rate are very low as only 37.6% of the caregivers (n=733) consulted a health professional for ANC during their pregnancy and among them only 32.3% received the minimum of four recommended visits (n=276). Among ST, the situation is worse than the average rate: only 30.9% of the caregivers consulted a health professional and among them only 25.6% only for a minimum of four times (n=430 and n=133). Qualitative enquiries reflect that mothers who do not consult a health professional do not consult elsewhere either. Indeed, most of the women explained that no consultations were required during their pregnancy as they were not feeling sick, which demonstrate a lack of awareness on the importance of antenatal care. Furthermore, participants do not link the lack of ANC with undernutrition status of their children. The difference between global rate and rate among ST can be correlated with the caregivers' level of education.

A quarter of the caregivers reported not having faced barriers accessing health services, while 37% reported having faced economic constraints. Qualitative findings show that a lack of knowledge exists regarding access to health services, because the caregivers do not exactly know the locations of the health centres, and a large proportion believes that public health services are expensive. Also, a large part of the participants explained facing a lack of access to health centres due to the distance, the complexity to reach them and the waiting time once in the centre; therefore, consultations to private doctors⁵⁵ are preferred.

⁵⁴ Cf. "Hypothesis 20: traditional beliefs", pp.59-60

⁵⁵ Private doctors according to participants are homeopathic, ayurvedic and allopathic doctors and not traditional healers.

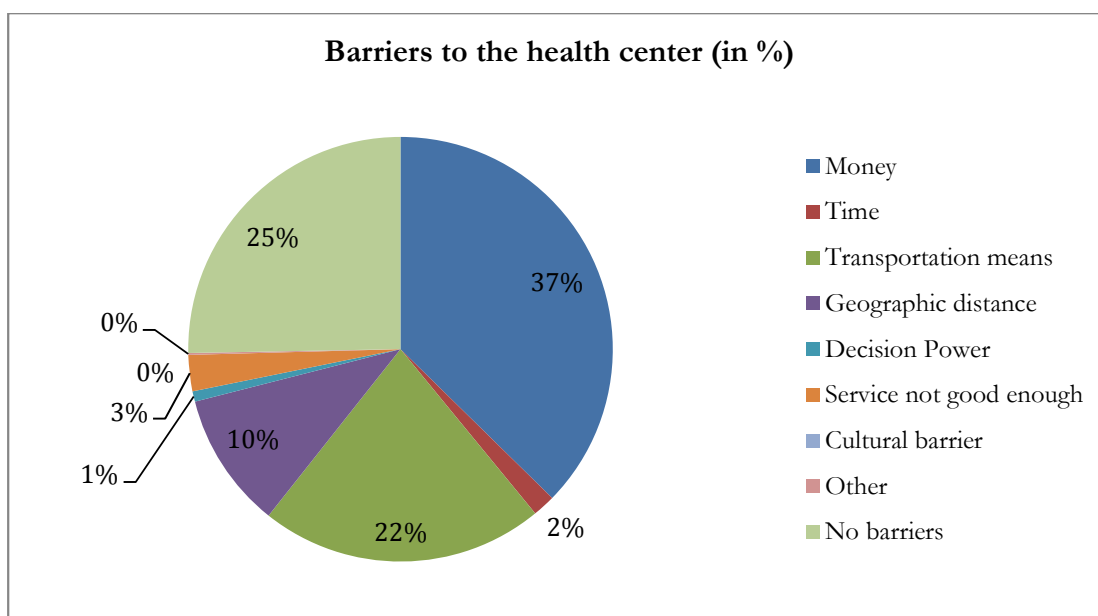


Figure 6 – Barriers to health center

The rates of most recent delivery at hospital or health centre are high: 74.2% of the mothers have given birth at a delivery institution. Rates are far higher among the other categories (92.3%) than among the tribes (61.6%). The global rate is correlated with governmental facilities as mothers can reach the hospital in ambulance and get incentivised when they deliver in an institution. Qualitative enquiries showed that ST women mostly work till the very last day before delivery and rarely call and use the ambulance system. Some of them also explained that their home is too far from the main road and the ambulance may arrive too late. Generally migrants, whether they are ST or not, explained that the ambulance is not called during their migration period due to lack of knowledge of the service.

Traditionally, mothers go back to their native place to deliver. Therefore, it is complicated to understand the exact reason why mothers deliver at hospital/health centre or not. Indeed, it can be due to a lack of health access in the area, because of the location of their village or because of a lack of knowledge regarding the services available in the native place.

Table 22 – Access to health services indicators

Access to health services indicators	Sample	Mean or proportion	LCI -95%	UCI - 95%
Immunization coverage at one year Health record	216	48.61	38.56	58.67
Proportion of children with health record who are immunized DPT3 Measles	105	91.43 85.71	85.65 76.07	97.20 95.35
Immunization coverage at one year ST Health record	116	41.38	27.68	55.08

Proportion of ST children with health record who are immunized	48			
DPT3		85.42	73.81	97.03
Measles		77.08	61.83	92.34
ANC				
Caregivers who saw a health professional	733	37.65	27.41	47.89
At least for 4 times	276	32.25	22.85	41.64
ANC ST				
Caregivers who saw a health professional	430	30.93	21.90	39.96
At least for 4 times	133	25.56	12.25	38.88
Distance to health centre <60 minutes	765	75.82	67.11	84.52
Last delivery at hospital or health centre				
ST	766	74.15	66.18	82.12
Other	453	61.59	52.69	70.49
	313	92.33	88.49	96.17

4.2.3.14 Causal Hypothesis 14: Lack of health care regarding the treatment of acute undernutrition

Treatment of acute undernutrition is a burning issue in India. Since the CMAM scheme is not approved, SAM children are treated at NRC level while Anganwadi workers are in charge of growth monitoring and particularly underweight issues, through the provision to the parents of counselling and child's supplementation (under the ICDS service). As well, there is no real prioritisation of acute malnutrition at national level, and the release of the national CMAM guidelines is still pending.

The main way of treating acute malnutrition in India relies on the hospitalisation of the SAM child, within a health-specific structure. Although this scheme may give some good results, it could also raise many problems when compared to a CMAM approach, essentially implemented at community level. Qualitative enquiries reflected that caregivers may not be able to stay for the entire 14-day period at the NRC for various reasons (financial compensation may be lesser than their daily earning, housework to handle, numerous siblings to take care of...). As well, they may not come for follow-up after their children being discharged. This situation may lead on no proper recovery and children may become SAM again, if not discharged uncured.

As it was not possible to address this hypothesis in a quantitative way and proportion of mothers with children treated at NRC was very low regarding other participants who attended FGD, the NCA did not gather enough proof to address this hypothesis as a strong evidence of malnutrition.

The main output gathered through qualitative enquiries was a lack of knowledge regarding the use of NRCs, their aim and their exact location. Also a large part of caregivers reported consulting a doctor when their children become too thin. Caregivers who get their children treated at a NRC reported a good institution, but found the follow-up program difficult to attend. Meanwhile, frontline workers as ASHA, Anganwadi workers and doctors interviewed agreed on the importance of the NRC, but

figured out some weaknesses as the lack of structures, their localisation, the lack of beds and finally the lack of treatment of health complications. During the interviews, doctors reported that they should be two levels into these NRC: one for children without medical complications and one for children with medical complication, and the presence of a doctor in a daily basis should be compulsory.

4.2.3.15 Causal Hypothesis 15: Low agricultural production

Poor agricultural knowledge and challenging physical conditions are known to contribute to food availability and low income related to cash crops availability.

In Khaknar block, the majority of the population is landless and it appears that most of the food is bought from the market or coming through the Public Distribution System (PDS).

Qualitative enquiries reflected that landowners prefer selling their crops for financial resources to support other daily expenses, than using it for their own consumption. Indeed, they will sell the maximum and only consume the remaining crops.

Regarding the ownership situation, low agriculture production cannot be addressed as a main cause of malnutrition as it did not concerned the majority of the population.

Also, Months of Adequate Household Food Provisioning (MAHFP) indicator shows that households have access to food 11.5 months of the year (11.4 months of the year among ST household).

This is mainly explained by the global availability of food at national level. Indeed, India reached food security, in terms of quantity, decades ago and basic foods can be supplied in the target area through markets. Finally, PDS system makes people able to get grains and pulses in specific quantities all over the year.

By taking into account only the population possessing a field, qualitative enquiries show that population mainly grow cash crops with as principal cultures cotton and soya beans (respectively 37% and 28% of the total land size owned). Also, RFS shows that there are fewer lands without irrigation than land with irrigation. Qualitative survey reflects that population do not irrigate their land because of a lack of financial resources. Absence of irrigation is having an impact on agriculture production in the summer season and results on less production at this period of the year.

Table 23 – Agriculture production indicators

Agriculture production indicators	Sample	Mean or proportion	LCI -95%	UCI -95%
Landholding size	301	5.78	4.02	7.54
Landholding size (ST)	169	3.96	3.50	4.41
Irrigated Size	21	4.86	2.44	7.28
Non irrigated Size	148	3.74	3.27	4.21
Landholding size (Others)	132	8.11	4.82	11.41
Irrigated	68	6.83	4.17	9.5
Non irrigated	64	3.93	3.05	4.82
MAHFP	766	11.49	11.39	11.59
MAHFP ST	452	11.42	11.29	11.55

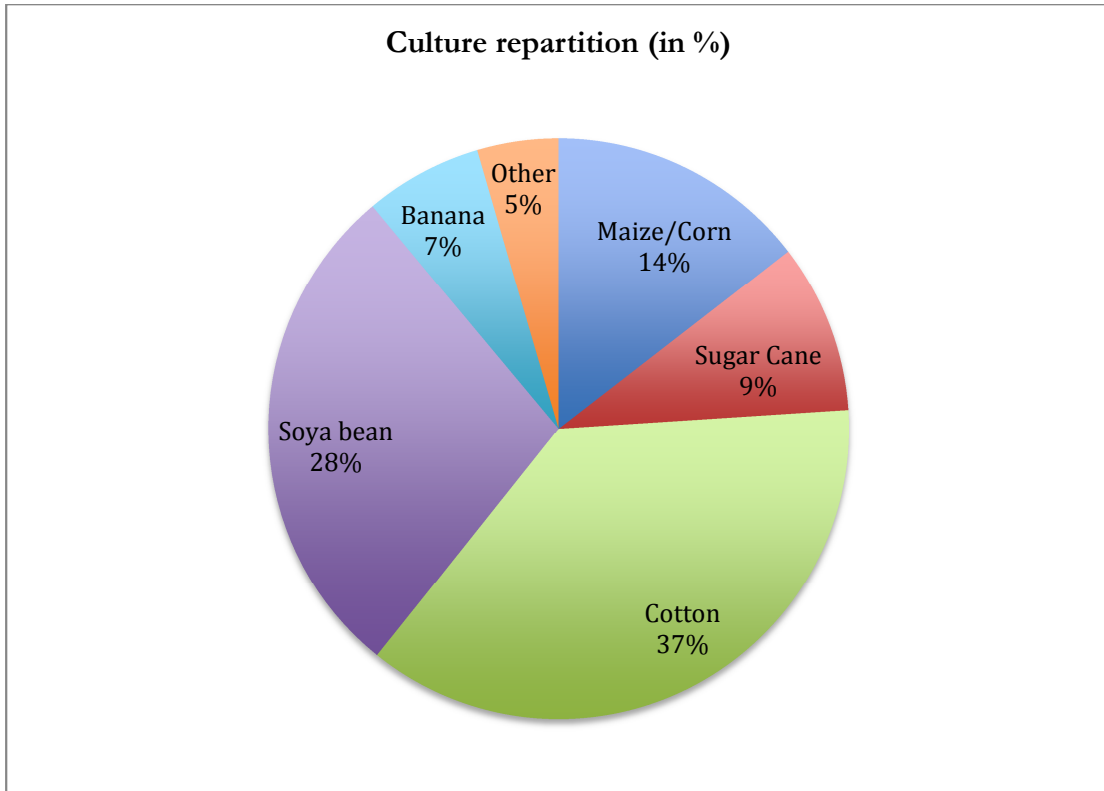


Figure 7 – Culture repartition

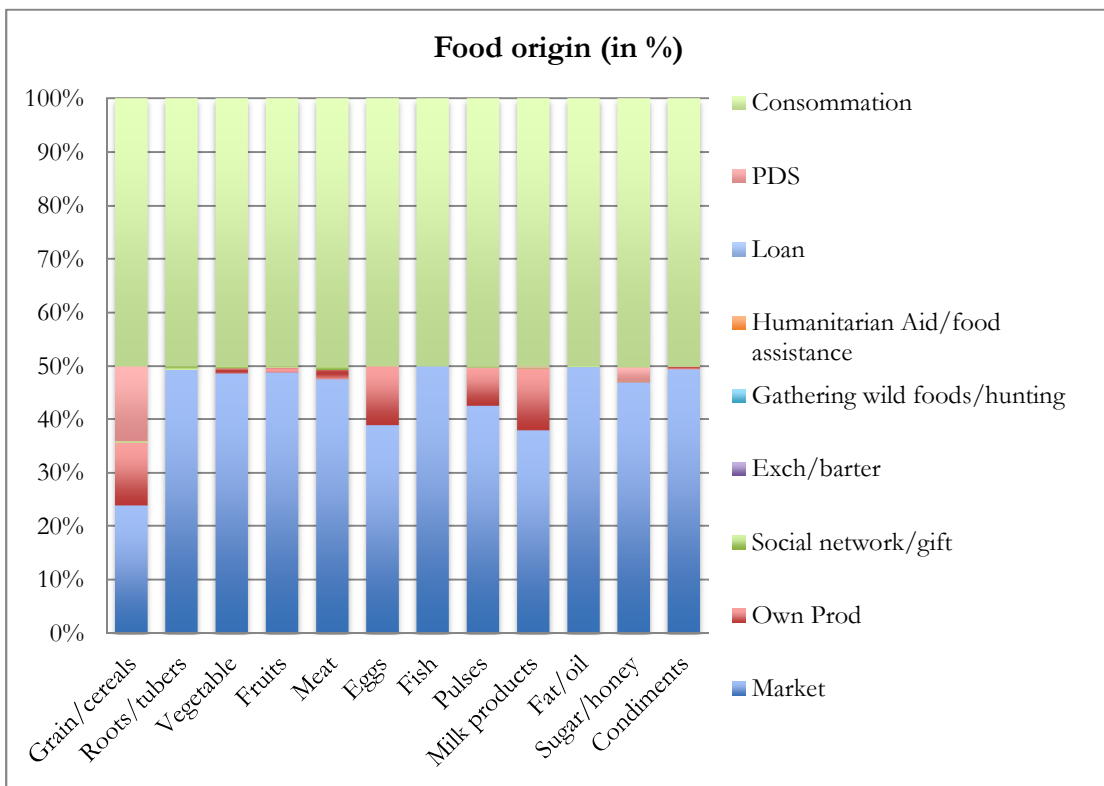


Figure 8 – Food origin

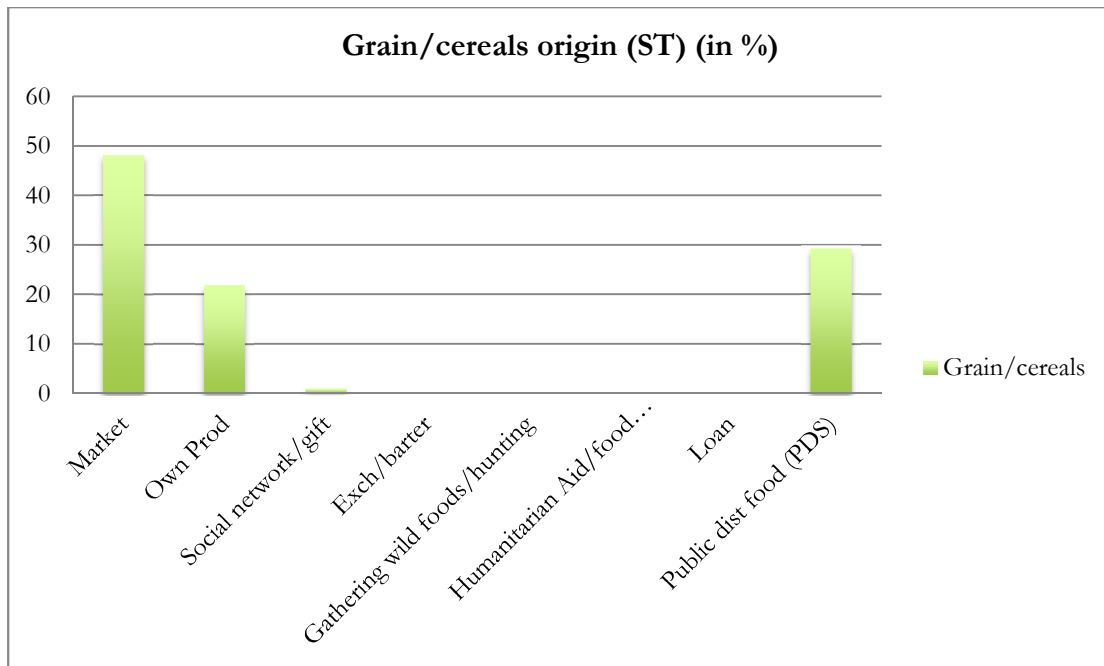


Figure 9 – Food origin (ST)

4.2.3.16 Causal Hypothesis 16: Land size v/s ownership

One important causal hypothesis defined by the initial workshop was land size versus ownership of land. Indeed, landholding size when insufficient to meet farming households' needs and to generate enough cash is having an impact on the ability to meet with basic needs. As shown in the analysis of causal hypothesis 15, the landholding size seems adequate enough to meet basic needs and most of the crops are used as cash crops. Meanwhile, population may get less production during the summer because of lack of irrigation.

According to the RFS findings, 60% of the population of the block is landless, the situation being worst amongst the ST (62% v/s 57% for the other categories). Qualitative enquiries reflected that almost all the migrants are landless. Absence of land is considered as a major underlying cause of malnutrition. Indeed, being landless and regarding working opportunities in the area, the population relies on casual labour work. Lack of labour employment during summer season is having a huge impact on family income and qualitative enquiries reflect that people need to save their money during full employment season that begin with the monsoon.

Lack of application of the Forest Right Act⁵⁶ on forest areas was initially considered as a main pathway to landless configuration. Qualitative research shows that due to huge deforestation in the block, the Forest Right Act cannot be applied properly in the entire block. On the same time, this pathway cannot be rejected as the NCA survey within its design cannot go deeper on this question and specific extra research should be considered to understand the situation in its global form.

⁵⁶ The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 include several rights as the right to hold and live in the forest land for self-cultivation for livelihood and right to ownership, access to collect, use, and dispose of minor forest produce

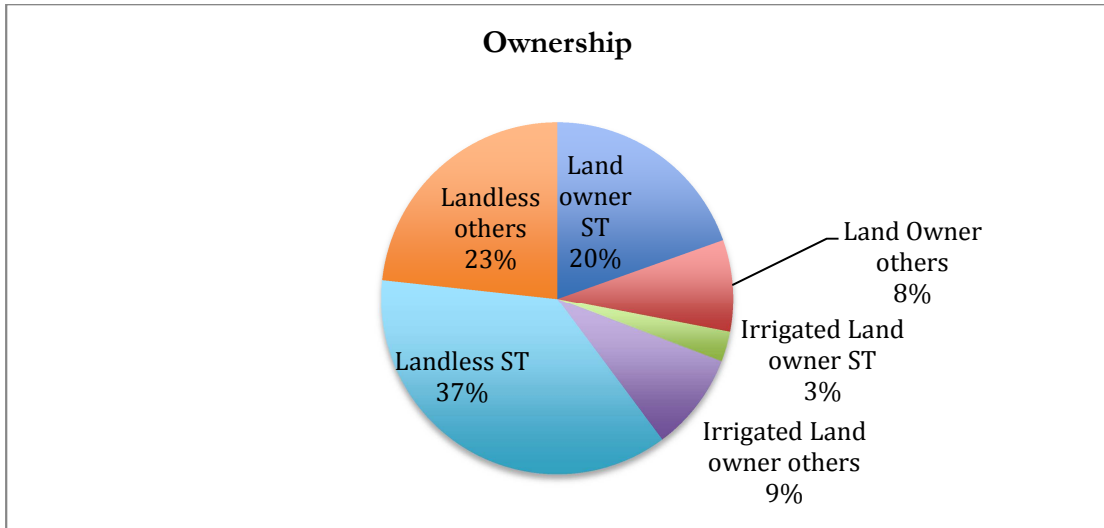


Figure 10 – Ownership

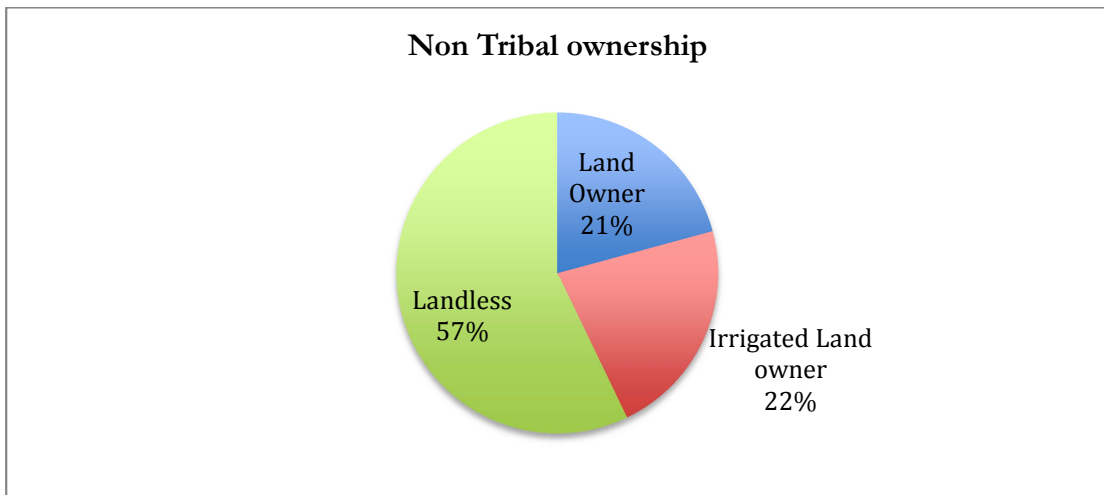


Figure 11 – Non Tribal Ownership

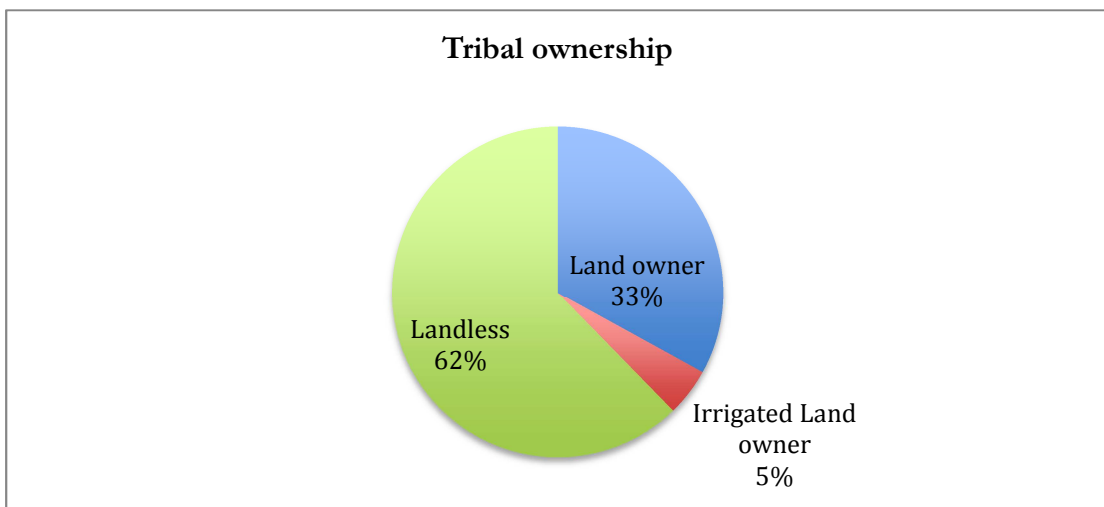


Figure 12 – Tribal Ownership

4.2.3.17 Causal Hypothesis 17: Poor diet diversity

The risk factor survey measured the household dietary diversity score (HDDS) of sampled households to assess food access. The results found that the mean HDDS score was 5.9 for the block with a lower score for ST (5.7) and a higher score for the other categories (6.3). Qualitative enquiries reflected that most of the household depends on grain, cereals, pulses and leguminous, which is the basis of vegetarian diet. This profile is confirmed by RFS findings. Even if Food Consumption Score (FCS) reflects an acceptable situation for around 75% of the households, with same kind of rate for ST, result should be taken with cautious as high consumption of cereals, leguminous and pulses are biasing the results. Indeed, qualitative survey reflected that the majority of the households could not consume vegetables and fruits on a daily basis due to lack of accessibility (few market days), and families are not able to conserve them for more than 2-3 days because of the high temperatures. Also, during summer the availability of fruits and vegetables is lower and prices increased.

Main pathways to poor diet diversity identified are seasonality and market unavailability.

Table 24 – Diet diversity indicators

Agriculture production indicators	Sample	Mean or proportion	LCI -95%	UCI -95%
HDDS	763	5.94	5.76	6.12
HDDS ST	452	5.69	5.53	5.85
HDDS Other categories	311	6.30	5.99	6.62
FCS	766			
Acceptable		75.46	67.97	82.94
Borderline		23.11	16.00	30.21
Poor		1.44	0.38	2.49
FCS ST	452			
Acceptable		74.56	67.06	82.05
Borderline		24.34	17.27	31.40
Poor		1.11	0	2.26

Group 1 HDDS<3 4 Hoh (0.52%)	Group 2 HDDS 3-4 61 Hoh (7.99%)	Group 3 HDDS 5-6 470 Hoh (61.6%)	Group 4 HDDS>6 228 Hoh (29.88%)
Grain, cereals	Grain, cereals	Grain, cereals	Grain, cereals
	Oil, fat, butter	Oil, fat, butter	Oil, fat, butter
	Coffee, tea, other	Coffee, tea, other	Coffee, tea, other
		Sugar	Sugar
		Pulses, leguminous	Pulses, leguminous
			Vegetables
			Fruits
			Milk or milk products

Are included in the table food categories eaten by at least 50% of the HoH in each group

Figure 13 – Khaknar block food diversity profile

Group 1 HDDS<3 2 Hoh (0.44%)	Group 2 HDDS 3-4 39 Hoh (8.6%)	Group 3 HDDS 5-6 316 Hoh (69.91%)	Group 4 HDDS>6 95 Hoh (21.02%)
Grain, cereals	Grain, cereals	Grain, cereals	Grain, cereals
	Oil, fat, butter	Oil, fat, butter	Oil, fat, butter
	Coffee, tea, other	Coffee, tea, other	Coffee, tea, other
	Pulses, leguminous	Pulses, leguminous	Pulses, leguminous
	Sugar	Sugar	Sugar
			Vegetables
			Fruits
			Milk or milk products

Are included in the table food categories eaten by at least 50% of the HoH in each group

Figure 14 – Khaknar block, ST food diversity profile

4.2.3.18 Causal Hypothesis 18: Poor access to food

The instability of food access during migration period was considered to be a major cause to malnutrition among migrants. Qualitative enquiries' results reflect that food availability remains the same in migrating location, with even better access to market and better food diversity reported by populations migrating to Gujarat.

Absence of Below Poverty Line (BPL) ration card was also considered as an important part of poor access to food: population with low income and who do not possess this BPL ration card cannot ask for “fair price” grains from the PDS, and would pay the highest price. The qualitative survey showed that most of the population uses this ration card. Enquiries also showed that among these people, a large proportion “bought” the ration card. At the time of the survey, a local governmental survey conducted on this issue was just completed and some BPL ration cards cancelled. This bridling system seems to have an important impact on the possibility to obtain BPL card for the neediest households. Indeed, the process to get the card could be either heavy for some villagers (list of document required), or just unknown. While they are trying to obtain it, huge bribe is also asked. Qualitative survey reflected that a BPL card could cost up to 1500-2000INR⁵⁷. This situation is not generalized among the block but should be considered as an important issue related to poor access to food.

Low income is also considered as another important pathway to poor access to food as market prices increase during the summer season. Absence of BPL cards among people with low income affects their availability to buy grains and pulses to the market, items that are the base of the diet of the targeted population.

RFS survey shows that even if the situation is not optimistic, the prevalence of household food insecurity access (HFIAP) shows that more than half of the household remains secure. HFIAP rate amongst ST are still low and can be correlated to low income.

⁵⁷ 18.42-24.55 euros [31/07/14, 1€=81,45 INR]

Table 25 – Access to food indicators

Access to food indicators	Sample	Mean or proportion	LCI -95%	UCI -95%
HFIAS	756	2.74	2.00	3.48
HFIAP Secure	460	60.85	54.03	67.67
HFIAS ST	446	3.12	2.13	4.11
HFIAP Secure	245	54.93	46.61	63.25

4.2.3.19 Causal Hypothesis 19: Low Income

Low income is, in this given situation, a contextual underlying cause of children undernutrition. It is affecting all the aspects of the life: from the ability to diversify the food to the high workload of women.

Population being in its majority casual labour workers, qualitative enquiry shows that they are also highly dependent on seasonality. Indeed, peak of employment appears at the monsoon season and families generally save money at this time of the year.

Summer season is the hardest time of the year with less employment opportunities and families mainly rely on their savings. At this period, resources management should be carefully monitored, as the household have to wait till the monsoon to be fully employed. According to qualitative survey, this period is particularly hard to manage as it is also the weddings' season and family spent a lot of money on such social events. Debts are mainly contracted at this time to cope with social events expenses and shortage of money regarding basic needs (food and health).

Lack of efficient implementation of the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) is considered being a pathway to low income. MNREGA aims to guarantee a right to work and ensure livelihood security in rural areas by providing at least 100 days guaranteed wage employment in a financial year to every household. In the given area, qualitative enquiries show that even if the MNREGA is implemented, household are mainly reticent to enter in the scheme as long delay of payment have been reported. Some of the participants explained that they had to wait from one week to three months to get their salary and was not able to cope during this period. Therefore, community does not seem motivated to volunteer for job opportunities provided within the MNREGA and remains in a difficult situation during the summer.

Regarding migration, respondents reported that some families use to seasonally migrate every year, while some will occasionally migrate only; reasons for migration are different for every family.

Traditional migrants mainly considered migration as a strategy for the improvement of the household wellbeing, while occasional migrants seem to move to cope with economic external shocks. Impact of migration for traditional migrants seems to be positive as migration is following old and established routes towards less dependence on contractors and stronger social networks. Therefore, traditional migrants know what will be their living condition and wages during migration, and can plan their yearly expenses accordingly. Qualitative survey also shows a correlation between land ownership and migration, as migrants are most likely landless and pushed into migration by lack of employment and then, lack of income. Qualitative enquiries reflect that landowners in

their majority do not need to migrate as they can manage throughout the year mainly thanks to the saving they earn from cash crops.

Qualitative survey also shows that migration is higher amongst ST and landless, as well as in villages located in dry areas with poor irrigation system. Therefore, a correlation can be made between the RFS findings regarding access to land and low income.

Still, a part of the migrant does not benefit from the positive aspect of old and organized migration routines and relies on contractors only. This is primarily impacting the casual migrants who contracted advance on wages to face exceptional debts and lack of saving during low employment period. Economical and external shocks are highly related to the quality of the monsoon. Indeed, if rainfalls are low or if monsoon is late, employment opportunities will be less and families may not be able to save enough to overcome the dry season. Historically, natural external shocks did not use to have an important impact on the community as the entire strategy of migrants is related to seasonal migration and employment. Circle of migration is mainly organised between states, to work in brick factories or farms during the dry season, and employment in soya/sugarcane/cotton fieldwork in their village during the monsoon season.

A small proportion of migrant families told being in a negative circle of migration and highly dependent on contractors. As they are not able to reimburse the advances they got from contractor, this amount will increase and families will begin to migrate year after year to reimburse increasing debts. Therefore, those families entered in a descending circle of poverty.

Main pathways to migration are believed to be exceptional debts, lack of saving and lack of employment. All this pathways can be seen as the result of low income that can be seen as the root cause of many of the other risk factors.

4.2.3.20 Causal Hypothesis 20: Traditional beliefs

Traditional beliefs toward health habits and breastfeeding practices have been explored by triangulating access to health indicators from the RFS and qualitative enquiries.

Analysis of the causal hypothesis 13 “Poor health seeking behaviour”⁵⁸ reflected that household are favourable to child immunization, mainly not facing traditional barriers and mainly delivered in delivery institution.

Qualitative enquiries show that population may refer to traditional healers in specific circumstances, as Bagath or Moltani⁵⁹. Indeed, qualitative findings reflect that the majority of the caregivers will first consult a private doctor or go to a health centre in case of illness for them and their children. Traditional spiritual practitioners are considered as “magic persons” who may help recovery by providing protection or enchanted water to the sick person. Meanwhile, population do not see them as traditional healers or practitioners, and mainly do not believe that they could cure diseases. For example, the community explained that children affected by *sookbarog*⁶⁰ disease, a traditional disease with the same symptoms as marasmus, are considered at higher risk of death if they consult a traditional spiritual practitioner only.

Discussion with an important Bagath of Burhanpur reflects that they do not consider themselves able to cure diseases either, but their practices can have an impact on the efficiency of the recovery.

⁵⁸ Cf. 4.2.3.13 Causal hypothesis 13 “Poor health seeking behaviour”, pp. 48-50

⁵⁹ See glossary, p8

⁶⁰ *ibid.*

A large part of the population continues to consult them, believing that this would give them better chance to be cured. Traditionally, they will be consulted whether a medical visit is impossible (late in the evening or lack of road access). Afterwards, a doctor will be consulted as soon as possible. They will be consulted in a second position whether the medical treatment provided is not working. In this case, qualitative enquiries reflect that community will continue the initial treatment but will ask for spiritual protections as a security belt. Additionally, some families said consulting a traditional spiritual healer only if the cost of health treatments cannot be afforded. Indeed, as seen in hypothesis 13, a part of the respondents faces barriers to access to health centre and then consult a private doctor. These barriers, added to the financial restrictions would push families to consult a traditional spiritual practitioner. Finally, a small number of caregivers believed that traditional spiritual practitioners could cure health problems. Therefore, traditional beliefs toward health habits have been rejected as a causal hypothesis to undernutrition⁶¹.

Regarding place of delivery, as seen in the hypothesis 13, RFS shows that the majority of the women delivered their last infant in a delivery institution. Qualitative enquiries reflected that *daima*⁶², known as traditional birth attendants, are called only if the mothers cannot reach the hospital or the health centre on time. Findings also show a change in their functions: mothers use to refer to them for traditional massages related to muscular pain and after delivery, or for traditional massages for their babies, rather than ante-natal consultations.

Finally, quantitative survey did not find any specific traditional beliefs regarding colostrum or breastfeeding. According to the NCA, the strongest beliefs regarding IYCF practices concerned the absence of knowledge regarding dangerousness of water intake before 6-month of age.

4.2.3.21 Causal Hypothesis 21: Women Empowerment

The status of women is thought to be low in Khaknar block, and more generally at India level. Low status of women may contribute to poor maternal nutritional status as well as less ability to provide adequate care. Therefore, these factors would have an impact on the nutritional status of the child.

As seen in the analysis of causal hypothesis 6 “maternal wellbeing”⁶³, WHO-5 wellbeing index and MDI 10 (Major Depression Inventory) rate are low and qualitative findings demonstrated that mothers seems to be resigned to their situation and handle it by denying it.

The risk factor survey aimed to assess perceived social capital by asking to mothers whether they feel supported enough or not. Result from the qualitative and RFS surveys demonstrated that the situation seems to be acceptable. Indeed, 73.0% (n=765) of the mothers felt supported by their family/community and findings from the FGD correlate these results.

⁶¹ This information should be taken with caution and the lector should remember that it is concerning only traditional health beliefs toward malnutrition and common diseases. Indeed, some combination of symptoms is still seen as related to evil spirits. For example, a person suffering suddenly from high fever, vomiting, shivers, weakness, abnormal speech when all the symptom are combined is seen as being affected by evil spirits. As well, epilepsies are also often seen as related to possession.

⁶² See glossary, p8

⁶³ Cf. 4.2.3.6 Causal hypothesis 6: Maternal wellbeing, pp.40-41

Women decision power remains very weak with 45% of the caregivers with a low decision power (n=760). A close look to the different components of decision power indicator shows that it particularly concerns economical decisions, with only 30.3% of the caregivers able to take decision by their own or with their husband. Qualitative enquiries reflect that decisions on money expense are traditionally taken by oldest persons of the family and mainly by the mother-in-law. Most of the workingwomen explained giving almost all their earnings to their family-in-law or to their husband and that expenses are decided at family level. Caregivers explained that this situation is not optimal as they consider it as discrimination. However, they do not mention any specific expenses that would need individual access to money (surely by lack of habit).

Also, most of them explained being able to ask the authorisation of having a small amount of money for their personal expenses. This point demonstrates a really low women empowerment, as women do not have access to any financial resources. Meanwhile, it should be analysed within the framework of traditional rural Indian conception of the family. This may explained why women do not seem so affected by the situation.

Finally, caregivers explained that even if they do not have a high decision power regarding money expenses, they are still able to take decision concerning children' education and health issues, being the most important decision for them regarding their family.

Qualitative enquiries reflect that women empowerment seems to be appropriate. Even if RFS results corroborate these findings, qualitative enquiries should be taken with caution. Indeed, a very small proportion of the caregivers explained belonging to very traditional families and suffering from this situation, as they are not able to discuss with their family in-law. As the qualitative survey was performed in only four clusters among the block, the findings may not reflect the global situation.

Table 26 – Women empowerment indicators

Women empowerment indicators	Sample	Mean or proportion	LCI - 95%	UCI - 95%
Perceived social capital Mothers who feel supported	765	73.02	66.62	79.53
Women with low decision power	760	45.00	40.18	49.82
Proportion of women who take decision alone or with their husband for	760			
Child education				
Child health		63.82	57.19	70.44
Money expenses		60.79	54.76	66.82
When to have another child		30.26	24.35	36.18
		76.45	71.14	81.76

4.3 NCA Qualitative Results

The following section presents results of the qualitative inquiry examining community perceptions and practices and constraints regarding child undernutrition. The qualitative survey took place in four villages among Khaknar block. In total, 45 FGD and 28 interviews were organized. In addition, few hours were spent with a Bagath to further understand traditional spiritual practitioner implication regarding health and malnutrition.

4.3.1. Background characteristic of participants in qualitative study

The qualitative survey took place during 5 days and a half per village. One day was dedicated to interview of key informants (ASHA, Anganwadi workers, doctors, teachers, high school principle and community leaders); three days and half to focus group discussion; half a day for in-depth interview of mothers of positive deviant, MAM and SAM children, and interviews among the communities; and half a day for restitution of the results to the communities. The relation between women and men, mothers and their families-in-law being extremely codified, mothers and grandmothers of children under 5 years old attended different Focus Groups Discussion (FGD), as well as fathers and grandfathers of the same children. It was decided not to separate fathers and grandfathers, as this configuration was not problematic. The inclusion of grandfathers and grandmothers has been made, based on their large implication on the life of their grandchildren. Also, grandmothers have a major position among the family and are often in charge of the main decisions.

The population of the four villages being mixed (adivasi⁶⁴ and other categories), groups have been mainly designed depending the economic status of the families; participants have been purposively selected. As most of the contributors were working during the day, each FGD lasted for almost 1h30 with 2 or 3 themes discussed in 20-30 minutes session. It allowed participants to come by group and not to wait the entire day.

Although the majority of participants did not know their age, the estimated age of mothers and fathers was between 19 and 40. In majority, mothers seemed being aged less than 25 years old. The estimated age of grandparents was between 50 and 75. The number of children ranged from 1 to 4, with number of children correlated with the age of the mother. Mothers with 3-4 children were really rare. Most of the families are organized as joint family.

The level of education ranged from no formal education and illiteracy to classes X-XII, with most of the mothers reporting having left school around classes V-VI. Youngest mothers and fathers appeared to be more educated.

Almost all the mothers and fathers describe themselves as field labourers, then farmers. Majority of grandparents are still working. Migrants are mostly labourers but can change their activities when in migration. Indeed, some of them reported working in brick industries. Migration destinations are various (Gujarat, MP, Maharashtra) and mainly depending on social connexion.

Migrants are not necessarily adivasi (tribal) and migrate during the summer season, as the employment opportunities are lower in Khaknar block at this time of the year. In each

⁶⁴ Cf. Glossary, p8

village, 3 to 10 families were reported as traditional migrant families. 2 to 4 migrant caregivers attended FGD in each village.

Palasur and Dudhiya Ryt are under the area covered by ACF and CECOEDECON program, with a CHNW working to identify and refer SAM children; the community worker also organise awareness activities regarding malnutrition. Shankarpura Khalan is considered as a pilot village with regular visit from a community mobilizer and the organisation of some nutrition activities. Finally, Bhauraghat is not covered by ACF or CECOEDECON.

The population of the four villages is mainly tribal, and participants from the following ST: Bhil, Bhilala, Korku, Gond and Rathya, with a majority of Korku. Participants belonging to SC, OBC and also attended FGD, while only few participants of General Castes were represented as they are very few among the block according to the RFS (2%). As the relationship between ST and other categories was found adequate, mix-groups were rather organised and agreed by all participants. The population was mainly Hindu with more Muslims among OBC.

4.3.2 Key Stakeholders consultation and community consultation

The first day in each village was dedicated to interview of key informants. In addition, an influent Bagath from Burhanpur was interviewed. ASHAs, Anganwadi workers, CHNW, an Ayurvedic⁶⁵, a homeopathic and an allopathic doctor and the staff of the primary and high school of Palasur were also questioned. Few hours were dedicated for a street interview of the villagers using open-ended question. This last exercise was organised to get an overview of the malnutrition knowledge, along with villagers' point-of-view on girls' education, NRC, MNREGA and the ability to gather information toward governmental policies related to development issues.

The key informants identified as main causes of malnutrition the workload of mothers, short child spacing, and no insufficient number of market days.

In addition, the teachers identified as an important cause the distance to the NRC, the lack of centres and the lack of support to SAM children. They explained having a lot of students suffering from stunting condition and they believe that absence of proper care for SAM and complication to treat SAM can lead to stunting situation. As the difference between wasting and stunting is not well define by the communities, this information reflected that a particularly high awareness among teachers of this high school.

Key informants identified poor, adivasi and migrant families as mainly at risk of malnutrition.

Frontline workers (ASHA, Anganwadi workers)

Anganwadi workers defined their involvement in nutrition field as follow: visiting the family to explain what undernutrition is and explaining the benefit of bringing the child to the Anganwadi centre or to the NRC if she/he is SAM. Benefits of NRC are identified as free treatment cost, food for the mother, food basket and cash.

⁶⁵ Ayurvedic medicine is an integrated medical degree in India conferred to those who have studied the integrated system of modern medicine and traditional Ayurveda.

Almost all the frontline workers were able to identify main causes of malnutrition and to provide a good definition. Still, some Anganwadi workers were not sure whether adult could be affected by malnutrition. Symptoms of marasmus are well identified but stunting is not really understood. None of them heard about kwashiorkor. At this point, it is important to notice that kwashiorkor is not common in India.

Interviews reflected a lack of general knowledge toward malnutrition, as only marasmus is really known while the main malnutrition issue of the country is its alarming level of stunting. Frontline workers are using MUAC and weight for age to identify a child suffering from malnutrition.

Frontline workers are considering that lack of care related to field workload is one of the main causes of malnutrition. This was also considered having a main impact on malnutrition during migration, due to parents' unavailability when the child is sick. They pointed out the importance of the presence of grandfathers and grandmothers, as they take care of children when they have the chance to. However, this seems to be rare since grandparents also use to be field workers.

Related to MHCP aspects, the following causes were identified: weaning practices (exclusive breastfeeding for more than six months), improper diet and way of feeding adapted to the age (children are not helped to eat), and illiteracy.

Related to WASH aspects, health workers have identified hygiene, cleanliness of the environment and sanitation as causes of malnutrition.

Related to Health aspects, the repetition of diseases affecting children was identified as one of the main causes. One ASHA considered also health and nutrition statuses of pregnant mothers as a direct cause of malnutrition. Short birth spacing and early pregnancies was also considered as major causes. They all agreed that nowadays, community rarely refers to traditional spiritual practitioners for common diseases. Also, they indicated that mothers deliver more and more in delivery institution thanks to the ambulance system.

Related to food security, they recognised unhygienic care of food as a cause of malnutrition amongst tribal family. Another cause identified could affect all villages over the year: the non-availability of food due to insufficient market days and distance to the market.

Frontline workers considered that poor families and children under 24 months are mostly at risk of malnutrition. Among them, they consider adivasi communities, at higher risk and noticed that birth spacing is shorter than in the other communities. They also consider children of migrant families as more at risk, the families' workload being increased during migration.

In one of the village, the Anganwadi worker explained that in 2011-2012, the *Atal Bal Mission*⁶⁶ provided her funds to buy groundnuts and jiggery. From that, she used to make a paste to feed undernourished children. She considered it as a good method that helps to prevent the deterioration of the nutritional statuses of these children. Also, she explained that some mothers could not go to the NRC because of the 14-day of hospitalisation. She was strongly considering that a treatment at Anganwadi level would be more appropriate.

ASHA and Anganwadi workers indicated getting their salary payment late, sometimes with three months of delay.

⁶⁶ Atal Bal Mission was established to strengthen and fill the gaps in the existing ICDS with the objective of bringing an improvement in nutrition and health status of children of Madhya Pradesh

Health professionals

The ayurvedic doctor does not consider himself as a malnutrition specialist, as his speciality mainly focuses on chronic health issues. According to him, a child is not suffering from malnutrition if her/his weight, height and way of growing are “ideal” when compared to the child development common status. On the contrary, a child suffering from malnutrition will show a difference regarding weight, body and appearance structure.

All the doctors interviewed considered that acute malnutrition is an important issue, however decreasing since few years. They explained that nowadays, its severe form less affects children. For them, this evolution is due to the work and awareness provided by frontline workers (ASHA and Anganwadi workers) and to the treatment provided at NRC level.

As main causes of malnutrition, they identified: birth spacing, workloads (leading on lack of time for care) and number of siblings.

As secondary causes of malnutrition, were identified: the amount of food cooked, lack of fresh food and time for food preparation, as well as the lack of access to food due to frequency of weekly market.

Regarding the food preparation, ayurvedic doctor indicated two problems related to food being prepared in advance; firstly, if all the food has been eaten, no extra food will be cook even if the child is hungry. Secondly, bacteria naturally present in the environment can affect food.

Regarding the weekly market, the main issue is related to fresh items. Due to the high temperatures, vegetables and fruits are quickly getting spoiled, within two to three days. Indeed, community do not have fridge or adapted storage. This situation has an important impact on the food diet, fruits and vegetables cannot be consumed on a daily basis, and only pulses and chapatti would be the solution.

Doctors considered children and adults among poor families at risk of malnutrition. Among them, adivasi and migrants were considered even more vulnerable. Regarding adivasi, the main reason perceived was poverty, having an impact on the ability to purchase sufficient food for the entire household. Regarding the migrants, the main reason identified was the workload during migration, having an impact on the possibility of care provided to children, especially to babies. Homeopathic doctor considered that 0–1 year children are at high risk of undernutrition. He identified inadequate breastfeeding and weaning practices as the main causes for children of this group age.

NRCs are considered as adequate services, but the allopathic doctor highlighted the lack of attention given to SAM children with medical complications. According to him, a doctor should be daily available in each NRC centre.

All of the health professionals interviewed considered that malnutrition is decreasing thanks to the work of frontline workers, immunization, use of medicine and family planning. They indicated that while malnutrition seems to decrease, it still represents a huge issue for the country.

Teachers and principal (Palasur)

Teachers and principal work in a school welcoming scholars from standard I to VIII. They identified children suffering from malnutrition by their appearance and behaviour (weak and thinner than other children and less active).

They noticed that some children had difficulties to learn because they were affected by malnutrition. For them, the adivasi are mostly at risk as they face a poor access to education. This is related to migration and to the fact that eldest children have to stay at home for other tasks such as taking care of younger sibling. For them, this problem does not affect only girls, as more adivasi girls frequent the school than boys.

By lack of education, they did not specifically mean “level of education” but “level of knowledge”.

The main causes of malnutrition according to them are unbalanced diet, lack of education, lack of awareness among tribal regarding childcares, lack of supplement food for malnourished children, distance and number of NRC.

Teachers and principal exactly knew what was stunting and considered it as an alarming issue.

Community leader (Bhauraghat)

Community leaders explained that malnutrition is slowly decreasing in their village thanks to the help of Anganwadi workers. They also considered the situation moving as villagers have access to more facilities (electricity, better road), to better income and better access to education.

They pointed out that the lack of health centre in their area and the difficulty to reach them are the main reasons for people to consult traditional spiritual practitioner. Indeed, they explained that ten years ago, severely affected villagers were only referred to them and mostly treated for possession, and absence of proper health care sometimes led to death. Nowadays, as the access to health centre has improved, cases of possession are considered decreasing in the village, and with first referral to health professionals rather than traditional healers.

Bagath

The bagath explained that the main causes of malnutrition were LBW, nutritional status of the mothers including insufficient intake of vitamin A, and common diseases as diarrhoea. While the NCA team asked what the relation between sookharog and spirits was, the bagath explained that none exists, and that *sookharog*⁶⁷ was a medical condition and not related to possession.

The bagath, who was working as a traditional spiritual practitioner since almost 40 years, explained that over his career, hardly 2% of the person he has seen was affected by evil spirit requiring an exorcism. According to him, use of traditional treatments with traditional herbs or with protection tools such as enchanted water is decreasing over the past years, since medical treatments are more available and the only appropriate treatment. On a regular basis, bagath still provides protection items as it is considered as

⁶⁷ Cf. Glossary, p.8

an extra security belt that could reinforce the effect of a treatment. He also considered that such kind of protection would work better if the bagath is dedicated to some gods who provide additional protection.

In his point of view, the main reason why villagers still refer only to traditional spiritual practitioner is the lack of choices. For example, the lack of access to health centres, the lack of income for private consultation and the impossibility to reach a health professional for an emergency situation are said being the main reasons. He also explained that nowadays, people mainly use to consult ASHA and health professional in the first place. He considered that he has the same function as a moltani, just referring to another god (he is Hindu and they are Muslims).

Finally, the bagath explained that in few remote locations, villagers continue to only consult traditional spiritual healers. For him, such situations are due to a lack of information to the community and to difficulties to reach health centres. Such configuration enables the presence of “fake” bagath and moltani, who take advantage of the lack of knowledge of the community to provide inefficient treatment.

Community point of views

Villagers know malnutrition as *sookharog*⁶⁸. Regarding specific treatment of malnutrition, very few know about the NRC, and even a large proportion has never heard about it. The ones who were aware have a family member or a neighbour who had children treated at NRC.

Anganwadi centres are considered being important services that benefit to children's health and development. As well, girls' education is considered as a positive input for the community.

MNREGA is well known, but villagers explained having less confidence on this system as delay of payment are common.

Almost all the villagers interviewed admitted that the food provided by the PDS is available but quality rarely fine.

Access to water in the summer is considered to be an issue. Other issues identified are related to the difficulty to cope with climate change (e.g. late monsoon), and to take care of their livestock, due to expensive treatments. Nevertheless, most of them vaccinated their livestock.

Finally, villagers' answers reflected a difficulty to be informed on governmental policies related to development; all agreed that when they are looking for specific information regarding their rights, they do not find any representative to provide them communication.

4.3.3 Local definition and understanding of malnutrition

The initial focus group discussion with community members explored the perception and understanding of malnutrition.

Pictures of healthy children, children affected by marasmus and kwashiorkor were used to introduce these FGD.

Local perception of good nutrition

In general, communities describe good nutrition as “proper food” with “no spices” and “diverse diet”.

⁶⁸ Cf. Glossary, p.8

According to the discussion, a child older than 23 months is getting a good diet if she/he eats the same food as her/his parents, but in smaller proportions. Families rarely cook specific food for their children once they start eating alone. A minority of the participants consider that *kichdi*⁶⁹ is a suitable food for very small children as it is not spicy and easy to eat. Otherwise they use to give dhal, rice and chapatti and when available fruits, vegetables and non-vegetarian items whether adapted. Proportion of non-vegetarians among the participants is very low, mainly including Muslim communities.

Most of the participants consider spicy food as dangerous for children and think that this can provoke diarrhoea. They also think that food as chips or local biscuits are too oily to be given to children, even if they will buy it when they can afford it, as they believe their children love this kind of food.

Women assume that pregnant and lactating women should not change considerably their diet, but just need to increase a little bit their fruits and vegetable' consumption. Only few respondents consider that food diet should be differently balanced and increased for pregnant and lactating women. When asked, those participants explained they learn this information from health professional during ANC visit.

Local definition of malnutrition

Mainly, the respondent related malnutrition to sookharog disease⁷⁰. Majority of the participants defined it as a non-contagious disease that can affect mothers. Children suffering from malnutrition are considered being weak and having a small weight. A small proportion of the participants think that undernutrition can affect only adult if they were malnourished during childhood. A minor part of the participants also consider that malnutrition may be contagious.

Causes and consequences of malnutrition

Mothers and grandmother easily identified some causes of malnutrition; most of them related to diseases and food intake.

According to them, a child born with a low weight will be considered as highly at risk of malnutrition. They recognized the correlation between the birth weight and the health status of children. A low birth weight child will be considered as weaker and sick than a child born with a normal weight.

The communities also identified some links between diseases and undernutrition. Indeed, a child who regularly faces problems of diarrhea, vomiting and fever will gradually become weaker, and will not be able to recover easily. It will have an impact on the food intake and the child can become malnourished.

Food habits are also acknowledged as a cause of malnutrition. It is worthwhile to note that even if communities could not clearly define chronic malnutrition, they were able to notice that food habits can have an impact on acute malnutrition and growth development. Indeed, they were able to express that if the food intake is irregular or poor, this can affect the actual situation of the child, but also his general development.

General hygiene was also identified as a cause of malnutrition as diseases can be disseminated because of unhygienic environment at home.

⁶⁹ *ibid.*

⁷⁰ *ibid.*

As main consequence of malnutrition the communities identified acute weakness and death.

Recognition and attitudes toward malnutrition

The majority of participants are able to recognize acute malnutrition. At this point it is important to note that they were not able to recognize chronic malnutrition though. In one hand, they are able to see that some causes as food intake can have a link with child development, but in another hand, they do not think a link between malnutrition and child development exists.

Even if kwashiorkor is uncommon in India, few grandmothers identified it as a form of malnutrition and notified three symptoms: swelling in the legs, size of the stomach and white spots on the skin. They also know that kwashiorkor can lead to death. The grandmothers explained that they frequently faced this kind of disease in their lives. Regarding kwashiorkor, most of the mothers identified it as a disease but not necessarily related to malnutrition. Mothers from higher economic status got more difficulties to identify kwashiorkor as a disease, thinking that the swelling and the size of the stomach were sign of good health.

Mothers and grandmothers identify children suffering from undernutrition as weak and thin. They also notice a modification in the behaviour as “not eating and drinking regularly”. Most of them described the child as “dried-up”, with less blood in his flesh, less muscles and less fat. This description is related to *sookharog*⁷¹, a traditional disease that is related to superstitious causes. To confirm that a child is suffering from malnutrition or from *sookharog*, they use to refer to the CHNW or to the Anganwadi worker whether present in the village, as they are able to verify if the child is suffering from malnutrition/*sookharog* and refer her/him to the NRC.

Women with a good economic status will refer to a doctor and change the diet after having received appropriate advices.

Women of the villages are more aware than men, who generally do not know what a NRC is. Most of them know what the MUAC is for, but do not know how it is used.

4.3.4 Description of Livelihoods and Food Security Situation

This focus group discussion aims to understand the food security situation and to get a description of the livelihoods of the communities.

A large part of the villagers, including grandmothers and grandfathers, are casual workers in farm, cotton and sugarcane fields and brick factories. They are mainly employed in a weekly basis. Few mothers describe themselves as housewives. Migrants worked as laborers when present in Khaknar block, while they work in bricks industries or sugar cane field when they are migrating. Main migration destinations are Gujarat, Maharashtra and other districts of Madhya Pradesh. Two women explained migrating significantly far from their villages of origin (Kerala, Chennai, Tamil Nadu).

MNREGA is not well used among the villagers as the work proposition is not adapted to women (digging roads) and the community notices that the payment is taking a long time (more than a month). This situation does not incite them to apply, as they cannot manage daily expenses while waiting for the payment.

Another point raised during the discussion is related to debts. Indeed, most of the participants are contracting debts for specific occasions such as weddings or in case of

⁷¹ *ibid.*

occasional and heavy health expenses. They will take loan if possible from the bank or from anyone able to lend them money. The situation is surprisingly different in Shankarpura Khalan. Indeed, villagers are well organized and use to contract debt among their community. Villagers explained if they have difficulties to reimburse, the topic could be discussed at village level to find a solution. This situation is very context-specific and should be taken with caution, as it is not reflecting the reality of the rest of the block.

Depending on the economic status of the households, possessing livestock (cows and buffalos) is common. Family uses to keep the milk for their needs and uses the buffaloes for fieldwork, even if only few people own important lands. Livestock is mainly vaccinated but villagers face two main problems: firstly during summer, they get difficulties to feed and water them. The second issue is related to treatment, due to costly governmental and private veterinaries.

Some non-vegetarian families own also chicken and eggs for their own consumption, and sometimes for selling.

For the ones who own lands, they use to grow cotton and sell it, and sugar canes and soya bean for their own use.

Communities reported facing an important issue in terms of access to food and more specifically fresh food (vegetables and fruits), as there is only one market day per week. Most of the families are not able to reach other markets. Some itinerant sellers use to visit villages, but participants noted that the prices are higher hence not affordable.

Regarding access to quality food during migration, they did not face particular problems even though the same food cannot be found.

Good hygienic practices regarding food conservation are mainly well known. Indeed, non-vegetarian families reported immediately cooking and eating fish and meat, without leftovers.

Vegetables and fruits, pulses and wheat, are safely kept in covered baskets. However, women cook early on the morning and in the middle of the afternoon and food can still be spoiled by external temperature in the summer and environmental pathogens at that moment.

4.3.5 Description of health situation and practices

FGD focusing on health aimed at understanding the general behaviour of the community regarding health issues and their perception of “good health”.

Mothers described as healthy an active child who is playing and eating normally. Loss of appetite and fever are identified as symptoms of sickness. Communities are able to recognize diarrhoea, symptoms of malaria and chicken pox, as they are common child diseases. Children often suffer from vomiting, stomach pain, headache, fever, cough and common cold depending on the season. Caregivers also explained that children might suffer from sunstrokes in the summer as they play outside. Isolation is commonly affecting villagers in summer time as most of them are still working in the field at this period even in the middle of the day.

When a child is sick, parents primarily consult the ASHA or the Anganwadi worker. If the situation of the child seems beyond their competences, they would bring the child first to the health centre or to the private doctor. If the situation deteriorates, the child is

brought to the hospital. An ayurvedic doctor lives in Palasur, and families use to refer to him. A homeopathic doctor uses to visit Dudhiya Ryt and another allopathic doctor uses to visit Bhauraghat; both of them are official doctors. The NCA team met them for the purpose of the study.

Bagath and moltani⁷² are commonly not consulted for disease treatments, but mainly by superstition. Hindus will consult Bagath, while Muslims will consult Moltani. This practice cannot be generalised to the whole village and villagers will consult these doctors for specific cases. For example, if the child have seen a doctor and is not cured after 2 or 3 days, the parents may consult a bagath while continuing the treatment. Then the bagath will provide some superstitious ornaments to protect the child. In some case, parents are going directly to the bagath if they think that their child is possessed. Symptoms of possession are various, but common signs are described as follow: sudden high fever, important diarrhoea episode, vomiting and unremitting tears. Based on these symptoms, the bagath will confirm if the child is possessed or sick, and if a medical consultation is necessary. Bagath uses to blow on the body of the child to stop the possession and to provide protection threads, tied around the legs, arms and/or waist of the child. Rarely, he can also provide some traditional herbs called “*jadi butti*”⁷³. Villagers rarely go to the bagath only in case of suspected possession. They also refer to a medical doctor. For the ones who believe in possession, they use to continue medical treatments for 2 to 3 days after seeing the bagath.

Villagers will only refer to a traditional spiritual practitioner in case of financial issues and unavailability of the medical doctor. Indeed, the bagath or the moltani will provide a protection that may or may not work. When they cannot see a doctor, villagers consider that going to the bagath would be a minimum.

Adivasi refers more to bagath than other communities. It can be explain by the lack of income. Indeed, other communities explain that whether they can afford a medical treatment, the bagath will not be consulted. For them, seeing only the bagath could even worsen the situation.

Grandparents are explaining that people lost interest for bagath, as doctors are seen more efficient to treat diseases. They explain that bagath have lost their powers and traditional herbs do not work anymore.

In Shankarpura Khalan, among all the participants of the FGD, no one used to consult a traditional spiritual practitioner. In Dudhiya Ryt, the Muslim community explained that the last Moltani of the village passed away and no other one replaced him due to absence of patients.

Immunization is provided in the village by the government. Villagers consider it as a positive service, as it helps children to remain healthy. The Anganwadi centre is considered as an important governmental tool. Indeed, meals are provided to children under 6 years old, and villagers see these as an important help to maintain the normal physical development of their children.

Mothers consider that short birth spacing is a major challenge to keep their children healthy. The second challenge identified by the communities is related to the transport costs to reach the nearest health centre. They also face a concern regarding the lack of child specialist as the closest one is in Burhanpur, taking 45 minutes to 2 hours to reach

⁷² *ibid.*

⁷³ *ibid.*

the city from the different villages. Private transports and public buses would be the means to reach Burhanpur.

Communities do not have specific knowledge about the importance of the diet for pregnant and lactating women. Indeed, most of them will not change their diet at this time and will not consider if their diet is well balanced or not. Most of them will change the quantity of their food intakes according to their hunger. A large proportion of the women explained eating less during their pregnancy because they were feeling sick and vomiting.

A large proportion of the mothers got pregnant for the first time when they were younger than 18. According to them, they were too young and they are considering that a woman should not be pregnant before 20 to 21 years old. They observe that the situation is slowly changing as more and more women now get their first pregnancy after 18.

Regarding reproductive health, some women are aware about contraceptive pills. Contraceptive pills and condom can be easily found at the Anganwadi centres. Most of the women who are informed about the existence and the use of contraceptive pills got the information from Anganwadi workers, doctors, nurses and neighbours. In Palasur, women got information from the ayurvedic doctor present in the village. Indeed, he organized some awareness session regarding contraception in the village and used to give personal advices to the women.

Most of the women performed a tubal ligation when they do not want more children.

4.3.6 Description of Child Care Practices

This FGD aimed at understanding the global behaviour of the community regarding childcare practices.

Primary caregivers of young children are in general mothers. Grandparents, especially the grandmothers have a central place in the family. Most of the families are joint families. In general, when the mother is not able to take care of her children, the grandmother would be in charge. In case if no one is available to take care of the children considered too small to stay alone, mothers will bring their children to the field while they are working. Grandfathers and fathers are used to take care of the child in the evening only. Most of the time, they just watch on them when mothers are busy, go for a walk with them and occasionally feed them.

The majority of the mothers will breastfeed their child from their birth. In some cases, mothers give jiggery water and/or small quantity of cow milk during the first days of life. Mothers and grandmothers explain that this happens when the mother do not have breast milk or insufficient breast milk to feed their infant. Otherwise, the mothers said that the baby would be fed three to six times a day. A large proportion of the respondents also gives water to their infant. Indeed, they believe that babies can be thirsty and breast milk would not be enough. Caregivers do not measure the important negative impact of giving water to their infants.

The importance of giving colostrum is well known among the community. Mothers reported getting advices from awareness campaigns, doctors and Anganwadi workers.

In Palasur, discussion showed a gap between generations. Indeed, grandmothers and mothers do know that giving colostrum is essential, and that this impacts the baby

health. When the mother is not able to breastfeed, they recommend asking to another lactating mother to breastfeed the baby. But most of the mothers disagreed with this solution, considering that it can be dangerous to leave a small infant with someone else than his mother.

Complementary feeding usually begins when the child is aged between six to seven months. The first food given depends on the family. It could be dhal water, rice water⁷⁴, *dalia*⁷⁵, *kichdi*⁷⁶, *kebeer*⁷⁷ etc. Majority of the women will gradually increase the quantity of semi-solid and solid food while decreasing breastfeeding. Generally, breastfeeding is totally stopped between two and two and half years. Then, the child will eat the exact same food as adults do.

Grandparents and parents, provided that income is sufficient, may sometimes buy junk food for their children. Most of the time, they will buy *pepsi*, *ponga*, and *gola*. *Pepsi* is locally made water-based drink with a cola flavour. *Ponga* is a kind of very cheap chips deeply fried in oil. *Gola* is made from crashed ice flavoured with syrup. Even if this kind of food is rarely given to small children, they present an important risk for them. Indeed, the water used to make *pepsi* and *gola* is not necessarily safe while the oil used to fried *ponga* can be improper to consumption.

Mothers who are migrating and/or are overwhelmed with work have difficulty to take care of their children. Their main challenge is to find enough time to feed them. When they are exclusively breastfeeding⁷⁸ their children, most of them will take them on the field or try to come back at lunchtime to feed them. An important point was raised during the discussion: the mothers in this situation do know that it is having an important impact on the development of their child but do not know how to find other solution as they have to work.

4.3.7 Description of Psycho-social situation of women

Workload

Most of the women work in the field every day in any season. In addition to this work, they have to perform their regular household tasks: they are in charge of collecting the water, preparation of the meals, cleaning their house and take care of their children. They explained having an over-workload, affecting their quality of life as well as the way they take care of their children. Indeed, they face difficulties to find time for them. Most of them cannot take rest even when they feel tired, fearing that this will have a direct impact on the family income. Regarding household work, in case of joint families, they can get support from the rest of the family when they really feel exhausted. In such condition, they can decide by themselves to have less housework but still need to inform their family. Pregnant and lactating mothers will do the same work as other women but will get more support from their families and be able to less work.

Mothers have difficulties to imagine working less or even being unable to work. Indeed, caregivers explained that if they had the possibility to work less they will focus their free time on their house by taking more time to clean it.

⁷⁴ Water of cooked rice or dhal mixed with a small amount of it

⁷⁵ *ibid*

⁷⁶ Cf. Glossary, p.8

⁷⁷ Traditional desert made from cow milk, rice. It can contain dry fruits as cashew nuts or almonds.

⁷⁸ Children are rarely exclusively breastfed as water is often given

Regarding children cares, they reported not feeling supported by their husband. Indeed, women think that their husbands do not understand how much time and care children would need to receive. In that case, mother-in-law or sister-in-law' support seem more important. In another hand, even if men seem not to be involved in the education of the children, they will react if children cry and if the situation goes beyond control for the mother. All the communities agreed that being rude with a child does not helping. While few women explained that they could slap or yell at their children when they feel too annoyed, the rest of the mothers reacted by explaining them that the solution is not adapted.

Migration

Mothers who migrate are aware about the impact of their way of living on their children. They feel isolated from the rest of their family, suffering of the lack of time dedicated to their children. They also feel less comfortable, as they do not have permanent house. During migration, most of the families leave under tent or hut made from sugar cane leaves and bamboos. As this situation can have a high impact on mental health status and could lead to psychological distress, mothers seem resigned. Indeed, families seasonally migrate when job opportunities lessen in their village. Mothers explained that even though migration is difficult, no other solution exists; they have to manage with the situation and avoid sad or depressing feelings by denying.

Impact of level of education

Most of the mothers did not complete their education or did not go to school. This aspect does not have a direct impact on malnutrition as mothers get a lot of knowledge from different means. They ask advices to their families, neighbours, to the ASHA and Anganwadi workers. Most of them quitted school when their parents decided to. Mothers explained that this was considered hard, and that nowadays situation is evolving, since more and more girls are sent to school. This situation had affected their wellbeing, as they were considered as being “just a girl” and not allowed to same advantages as boys. For them, it is considered as a traumatism and gender segregation. One of the mothers emotionally remembered this time: “He [my dad] took all my books, I could not say anything. He told me that I was just a girl and just need to make chapatti”.

Reproductive health

Regarding reproductive health, women can get advices on contraception from the ASHA and the Anganwadi workers. Most of them knew the existence of condom and contraceptive pills. Some of them heard about IUD. Even if they heard about temporary contraception, it is not really used by the community, as they lack information on it. Mothers and grandmothers are interested to get more communication on contraception. Sterilisation has benefitted from a huge communication campaign along with public schemes, and is well accepted by the community. Most of the mothers are performing it when they do not want more children. Contraception is often discussed at family level. Most of the mothers feel free to initiate the debate and feel supported on their choice. Regarding the temporary contraception, they will prefer to discuss with their husband, as their mother-in-law may not understand.

Decision Power

Decisions on money expense are traditionally taken by elder persons of the family and mainly by the mother-in-law. Caregivers explained that this situation is not optimal and considered it as status discrimination. At the same time most of them explained being able to ask the authorisation of having an amount of money for their monthly personal expenses. This point demonstrates a really low women empowerment, as women do not have access to any financial resource. At the same time, mothers explained not suffering from this situation as they considered it as normal. Some of them even explained that it was better this way: “My mother-in-law is like my mother. She has more experience and knows things better than me. If I was taking all the decision by myself, I may do some mistake. I will be responsible for this. So, I prefer to ask to my mother-in-law”.

Grandparents are also considering that situation normal, as their daughters-in-law do not have enough experience. Although they notice a change on behaviour, with women taking more decisions nowadays. A grandmother said: “Before, my mother-in-law took all the decision, now it is my time. One day, she will know everything and it will be her time [to take decision]. But now it is not like before. They take more decision and less listen to us. But they are tougher and work more than we did”.

Fathers do not give a specific reason regarding decision power but explained that contraceptive health should remain at couple level as they are not feeling comfortable discussing about it with their parents. Indeed, sexuality is a huge taboo in India.

A very small proportion of the participants explained belonging to very traditional families, and suffering from low decision power; they are not able to discuss with their family in-law. This situation concerned 2-3 participants belonging to OBC category. One of them expressed herself in this way: “I cannot even imagine giving my opinion to them; it is simpler for me not to have opinion”.

4.3.8 Description of WASH environment

This FGD explored the WASH situation among the four selected villages and the perception of good hygiene by the communities.

Most of the villagers have a regular access to water. Majority of them have access to water through pipeline supplies while the rest of the population will collect groundwater. In the summer, water availability lessens, and only a part of the population will have their basic needs covered (for cooking and drinking). Another issue is related to power-cut. Indeed, some water-pumps are electrical and water unavailable in case of power-cuts. In both situations (summer and power-cuts), women have to take the water from a borehole with a hand-pump. This is time consuming for them and large queue can happen.

Tap water is affordable, the cost being between 30 to 60 rupees per month, depending on the households' consumption. Water from the borehole is free of charge.

Basic rules regarding safe water practices are observed. Mothers use to keep drinking water in separate pots; all water collected is kept in covered mud pots.

They do not have specific knowledge regarding the quality of the water and will assume that it is drinkable based on its colour and smell. Some of them filter the water with a piece of cloth for more security, as it is known by the communities that drinking unsafe water would lead to sickness. This practice shows a lack of knowledge regarding water management, as filtering through a cloth is not enough to make water potable.

Basic hygiene practices seem also well observed: cleaning of kitchen utensils, taking bath, and washing their hands before eating and after going to the toilets. Although, regarding the distance between the place of defecation and their home, the time before hand washing is not appropriate. Villagers reported not being able to afford soap time to time, because high price and lack of income. Therefore, they use to replace soap by ashes or just wash their hands with water.

There are only few individual toilets in each village and since 2/3 years, the government has built common toilets; they are now in improper condition hence unusable. Small children will go in front of their house while children from 2 to 4/5 years old will go with adults, mostly with their mother. Children older than 4/5 years will go in groups to open defecation sites. Letting children going alone is considered as unsafe as they can fall down somewhere and hurt themselves.

Women and men use different location for open defecation/urinating. Depending on the place where they live in the village, during summer time, villagers are used to go deeper into the forest. In Palasur, they have to cross the river. In other seasons, the river is too high to reach the first location and villagers will go closer but also in the forest. Change of location during rainy season happened in every village. Indeed, some places are unreachable during this season. But, commonly villagers try to go far outside of their village.

In some area, people who live too far from the forest will merely go outside of the village. As the location is still close to the houses, women do not feel comfortable. Fathers and grandfathers consider that the lack of toilets is one of the main causes of some diseases such as diarrhoea and malaria. They also consider that this situation leads to an important problem of security. Indeed, women have to go alone out of the village, which is considered to be unsafe. According to communities, government did provide funds to build toilets, but fathers and grandfathers considered that the toilets built were unusable. Mainly villagers consider that the Panchayat may have built improper toilets to save money and misappropriate unspent amount. The NCA team does not have enough information to conclude in this, but it could be a reason of absence of proper common toilets in the village while the funds seem to be allocated to Gram Panchayat.

An important issue related to hygiene was reported by adivasi. To cook food, tea and boil water, they collect and cut wood from the forest. This wood is often collected from same places where people use to go for open defecation.

4.3.9 Seasonality of risk factors

Seasonal calendars were developed together with focus group participants of each village, to demonstrate the seasonality of some risk factors over the past years. The following section summarizes findings on the seasonality⁷⁹ and historical trends of risk factors identified across the four villages.

Migration

Migrant mainly leaves the area in November, with a starting date at Diwali festival. They mainly migrate to Gujarat, Maharashtra and in other areas of Madhya Pradesh. They

⁷⁹ Cf. Annex 9: Seasonal calendar, pp.115-118

begin to come back from March (Holi festival) to June that corresponds to the full employment period in Khaknar block.

Hunger gap

As seen earlier, there is no real hunger gap in the area. Months with less food availability change from one village to another, but generally correspond to the monsoon period.

Income and expenses

Income is lowest during the period of social events (March-May). Indeed, families use to overspend for gifts or to organize important celebrations at this time. It is also the period where most of the families are contracting exceptional debts. Income is also lower during the summer, linked with the lack of employment. Incomes are highest during monsoon period as it is the period of full labor employment

Food Prices

Market prices are higher depending of the location and availability. Mainly, this will occur during summer with less availability of fruits and vegetables.

Harvests

Harvest depends on the area. Harvest of banana happens all the year, while soya, bean and cotton will be collected from September to November.

Weather

Three seasons are identified: summer, winter and monsoon season. Summer begins in February-March and ends in May, with highest temperatures in April and May. Monsoon lasts from June-July to September, and winter from September to January. Dry season begins around September and ends with the first rain of June. By dry season, villagers refer to period without rainfalls. From March to June, the season is the driest and communities face a lack of water. In May and June, if the monsoon is late, rivers are almost empty and villagers have to be careful with water consumption. The situation is problematic while basic water needs still seem to be met.

Beginning of the monsoon season is particularly awaited, as communities rely on it to start seeding. A delay of monsoon will lead to a longer and unexpected period of unemployment. Villagers will also face related issues to collect safe water. Meanwhile, communities do not face real drought period. Years after years, the monsoon seems to begin with 2 weeks to one month late. Also, over the past years rainfalls from the monsoon seem to be less and less important.

Delay of monsoon also has an impact on community's employment and makes the situation worse for the migrants. Indeed, they use to go back to their village when monsoon should start, usually by beginning to mid-June. At this period they should work in nearby fields. When they come back and face a delayed monsoon arrival, they consequently face an unexpected period of unemployment and with difficulties to cope with this situation.

Child illness

Khaknar district is located in an area at risk of mosquitoes-borne disease. Malaria is highest between June-July to September when stagnant water is common. Villagers consider that malaria is an issue throughout the year, especially in summer when stagnant water would replace dried rivers.

ARI is higher in winter season because of cold temperatures and during monsoon season because of weather changes.

Diarrhea seems to be higher at the beginning of the monsoon. Villagers explained that at this time of the year the “old” water is getting mixed with rainfalls water, being more at risk of contamination. Open water is also believed to be contaminated by rainfalls. Finally, water can be mixed with mud drained by heavy rainfalls.

4.3.10 Risk factor historical trends

Historical trends were identified with the participants of the focus group discussions, to understand how they have evolved over the past years.

Due to the young age of most of the mothers, the exercise was adapted. It was mainly conducted with grandparents and none recall period was prior fixed up. The participants were asked to answer by recalling information as far as they could. Unfortunately, results from Dudhiya Ryt and Bhauraghat were not precise and clear enough to build an historical calendar. The following calendars show the main changed that happened in the communities.

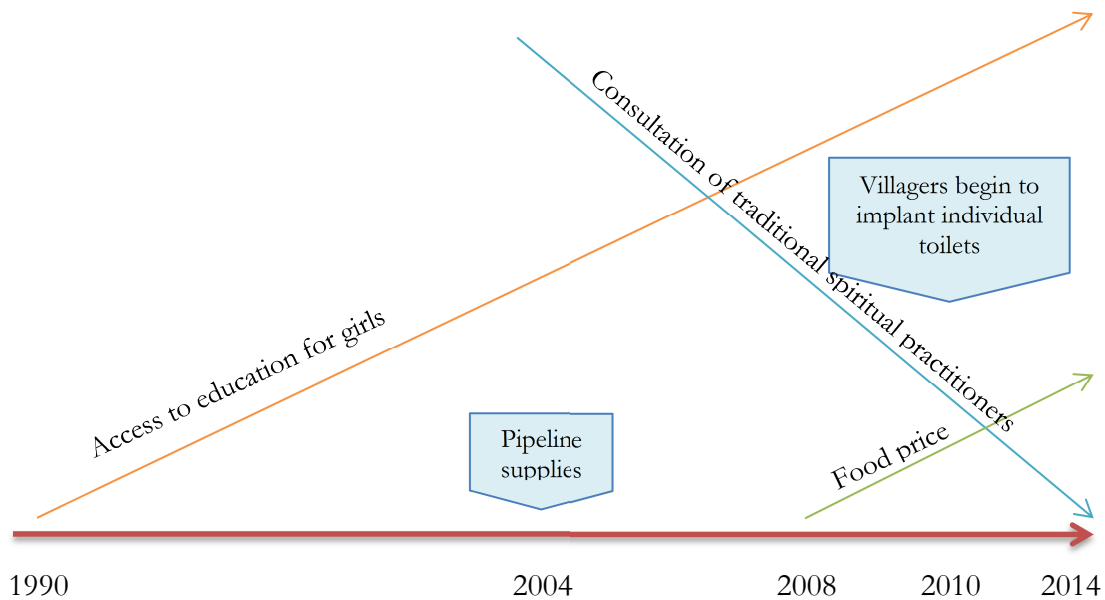


Figure 15 – Palasur, historical trends

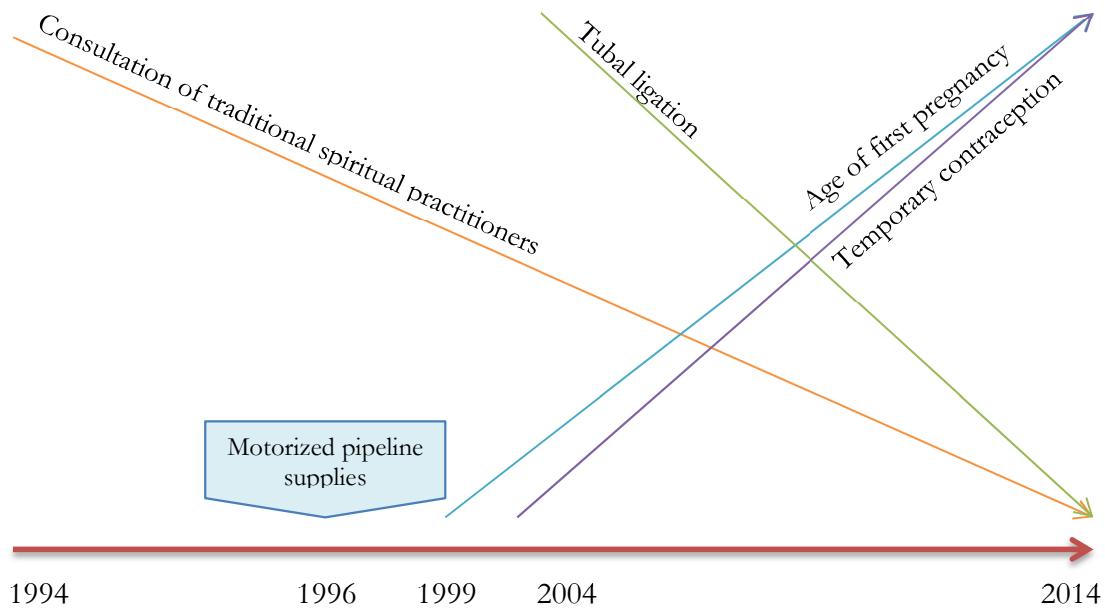


Figure 16 – Shankarpura Khalan, historical trends

4.3.11 Positive Deviant Behaviours

In addition to looking at causes of under-nutrition, an objective of the qualitative inquiry was to highlight potential ‘positive deviant’ behaviors within the community. Common positive deviance’s definition is based on that *“in every community or organization, there are a few individuals who have found uncommon practices and behaviors that enable them to achieve better solutions to problems than their neighbors who face the same challenges and barriers”*⁸⁰.

In order to identify positive deviant behaviors, in-depth interviews were conducted with mothers of well-nourished children, who face the similar constraints than mothers of malnourished children.

The following case studies of poor mothers with well-nourished children highlight some of these potential positive deviant behaviors.

Case Study 1

As most of the women in her community, the mother does not know her exact age. She thinks she is between 30 to 35 years old. She and her husband belong to Gond tribe (ST). They had two girls and a boy. The first girl is 14 years and her son is 4 years. Unfortunately, her second girl died 2-3 years ago, when she was 7. She got very sick and the family was unable to see a doctor as heavy rainfalls cut the road. The family has four members (her, her husband, one girl, one boy) as her in laws are living in another state.

She planned to have a third baby few years ago because she already had two girls and wanted a baby boy. She reported that they were no specific reason for that and would have been also happy if finally her third baby was a girl. After her son’s birth, she decided with her family to undergo tubal ligation, as she did not want to have more children.

⁸⁰ ACF, 2014. NCA Guidelines

Her son is going regularly to the Anganwadi Centre where he gets some meals.

During her pregnancy she did not consult any doctor or Auxiliary Midwife Nurse (ANM). She did not consult a daima or a bagath⁸¹ either. Finally, she did not take any supplementation tablets for her last pregnancy or for any of her pregnancies. She went to the Anganwadi centre on the Village Health Nutrition Day (VHND)⁸² to be immunized.

She worked till her first contractions. Indeed, as her family is very poor, she was not able to stop working without putting her family at risk. She delivered at the Government Hospital and stayed there for three days before returning to her village. She went back to the field when her last child was able to walk.

Since her last delivery, she reduced her amount of fieldwork and she now works only 8 to 15 days a month. Her husband lost a leg in an accident and gets a governmental rate; he begins a small business of alcohol through black market. Since, the income of the family has increased, enabling decrease her work in the field.

The mother breastfed her son two hours after his birth and stopped to breastfeed him when he was 3 years. She began complementary feeding when he was approximately 10 months and gave at this time rice, dhal and small pieces of chapatti. While she was increasing complementary food, she began to decrease breastfeeding.

Now, he eats the same as the other members of the family. She cooks different food every day, but they rarely have vegetables and fruits due to few number of market days.

Her son is rarely sick, but when needed, she consults a doctor. She never goes with him to the bagath. Her son has sometime small fever but never diarrhoea. He is fully immunized. She does not know how he avoids being sick as she said not doing any specific things to avoid this.

With her husband they were using condom from the Anganwadi centres between pregnancies. She heard about the existence of condoms from other women in the village and discussed about it with her friends; then she asked to the Anganwadi worker who explained to her and her husband how to use it.

Case Study 2

The mother is 24 years old and is a housewife. She and her husband belong to Korku tribe (ST). They have two girls and a boy. The first boy is 5 years, first girl is 3 years and last girl is 7 months. The family is a joint family.

After her second child, she planned to have a third baby because she wanted another baby boy. Finally, her third baby was a girl but she was anyway happy. After her daughter's birth, she decided with her family to undergo tubal ligation, as she did not want to have more children.

During her pregnancies she consulted a gynaecologist in Burhanpur city and went to the Anganwadi centre to register her pregnancy and be immunized. In normal time, she uses

⁸¹ Cf. Glossary, p.8

⁸² During VHND, communities should be able to interact directly with health workers and learn about prevention and main aspects of health care. Health services should also be provided during this day through ASHA, Anganwadi workers and ANM

to leave her village every six months to attend a religious festival, but this was cancelled when she was pregnant. She also took iron tablets and some syrup because she was vomiting and feeling sick. She did not work during her pregnancy.

She delivered at the government hospital where her baby saw a doctor. She breastfed her daughter⁸³ on the first day, and began complementary feeding when she was 6-7 months. The first complementary food she gave was dhal water, rice, oil and chicken broth. She stopped breastfeeding when her daughter was one year and half. From 6 months to 1 year and half she progressively increased complementary feeding and decreased breastfeeding. Now her daughter eats as adults do, but without chilly.

When she takes care of her housework, her mother-in-law takes care of her children. Sometimes, she feels tired because she has to take care of her three small children at the same time.

When one of her children falls sick, she goes to the doctor but never to the bagath. If one of them is getting fever she puts a ball of humid cloth on her/his forehead to make the temperature decrease, and will go to the doctor if no improvement. Sometimes they have to go to the health centre, easily accessible for her and her husband by using their motorbike, even if it is 25km far from her village.

She can take decision in her home if she asks and discusses about it, firstly with her-in-laws. For her tubal ligation, she discussed it with her husband's mother, as she felt more comfortable to have her informed about the situation.

Between each pregnancy she took MELA-D contraceptive pills. She took this decision alone and only informed her husband. She was able to get contraceptive pills from the ANM during two pregnancies.

Case Study 3

The mother thinks she is 25-26 years old. She and her husband belong to Barela tribe (ST). They have one girl age 2 and half year and a boy aged 9 months. The family is a joint family.

During her pregnancies she did not consult a doctor but saw the ANM every month at the sub-health centre. The ANM gave her some advices and iron tablets. During her pregnancies, sometimes she ate less than usual, as she was not feeling well.

She worked in the field and in the farm till the end of her pregnancies. She delivered at home for both of her children, supported by her mother and grandmother-in-law. For both children, she initially called an ambulance which arrived too late each time. At the time of birth, she gave one drop of jiggery water, believing it was good for her babies' stomach. She breastfed them in the first hour of life. Her second child is still breastfed and she stopped breastfeeding the first one when she was 2 years old. She began to give her biscuits when she was 9 months and dalia when she was 1 year old.

Now she eats three times a day. Her meals are made from dalia, chapatti, dhal and rice. They infrequently eat vegetables and fruits because their house is in the jungle and it is too complicated to get them with only one weekly market. Most of the time, her

⁸³ As her third child is still breastfed and details regarding her first one need a recall period of few years, these questions concerned her second child only.

daughter eats the same food as the rest of the family, except dalia that is specifically cooked for her.

She resumed her work in the field when her daughter was able to walk. Then, her mother-in-law was in charge to take care of the children, and fed her with milk cow and dalia⁸⁴.

When one of her children is sick, she goes to the health centre located very far. She needs to walk and to take the bus. She is going with her husband and it cost them approximately 150 INR⁸⁵.

Sometimes, she does not have time to eat because she is overwhelmed with the household activities, especially collecting water.

She is able to take her own decisions, sometimes also asking to her mother-in-law.

Between her pregnancies she did not take any contraception, as she immediately wanted another child. Today, she plans to have a tubal ligation, as she does not want more children. For the moment, they use condom with her husband. Nobody knows it in the family, as she considers it as her private decision. They chose this contraception with the help of the ASHA.

Case Study 4

The mother thinks she is 22-24 years old. She got married at 18. She and her husband belong to Korku tribe (ST). They have one boy aged 4 years and 10 months and a girl age 19 months. Her son does not live with her but with her mother. She lives in a joint family. She attended high school till class XII but did not finish it. She is the ASHA of the village.

When she got pregnant the first time she was surprised. Indeed, she did not know how women get pregnant. She spoke with her mother who explained her. She felt very happy, as she wanted a baby. She was also happy for the second one.

For her first pregnancy, she saw a doctor at the Anganwadi centre, present on the VHND for immunization. For her second pregnancy, she saw the AMN. She took iron and calcium pills for both pregnancies.

During her first pregnancy she performed farm work till 8th month, and for her second one she stopped at the 5th month. She halted working when she felt too exhausted. She went back to work when her children were 5-6 months. Then her mother-in-law was in charge to take care of them.

Her first baby was born at hospital and her second at home. She called the doctor, but the ambulance was not available. The ASHA and Anganwadi worker helped her to deliver. She was in Maharashtra where her parents live. After 3 days a doctor came to check the weight of her baby (2,5kg), her tension and her respiratory system. She had to wait for 3 days because the doctor was coming from outside of the village.

⁸⁴ Cf. Glossary, p.8

⁸⁵ 1,84 euros [31/07/14, 1€=81,45INR]

She was not sure when she breastfed the first time her baby, but thought it was around one hour after delivery. When her daughter was seven months she began to give her complementary food. She still breastfeeds her second child one time in the morning and one time in the evening. On the daytime, her mother-in-law gives her dhal and chapatti. She also cooks specific food for her daughter as dalia, kichdi, and dhal without spice. As her child is 7 months and that she has begun to increase complementary feeding and decreased breastfeeding, she is thinking to stopping breastfeeding soon.

When her child is sick, she is going first to the doctor and after 2-3 days, if the treatment does not work, she will continue to give it but will go to visit the bagath. She explained that the doctor would check the health of her baby and give treatment while bagath will give magic threads. As it is not the same thing, she needs to go to both.

Her daughter got pneumonia. She noticed that she was sick on the evening. She went to the doctor the next morning and he made her an injection. She sent her mother-in-law to the doctor with her daughter, as she was too afraid to see him giving an injection to her small baby. Sometimes, her baby has loose motion and it is probably due to the food. In such case, she gave ORS powder to her child.

Her son is living with her mother in her native place. When she was 6 months she believed he was possessed, so she saw a bagath who told her that it was because of the village, reasons why he now lives with his grandmother. The syndrome the mother described appears to be a tetanisation syndrome. As her son is fine since months, she is considering bringing him back and consulting a doctor if this is happening again.

At home, she is not able to take any decision and she does not feel supported. However, she can take all the decisions regarding her baby health.

Between her two pregnancies, she took contraceptive pills. She is planning to have another baby in 3 or 4 years. She wishes to have a boy, as it seems better within her community and expected from her family-in-law.

Today, she does not take any contraception; she has decided with her husband that it was better not to have intercourses. The mother explained that she is engaged in a love wedding and deeply loves her husband, but the relationship with her family-in-law makes her feel uncomfortable.

Summary

Positive deviant approach typically involves in-depth observation of potential positive deviant mothers for one day, in order to identify positive deviant behaviors, which was not included within the scope of this NCA.

However, from the interviews with these mothers, it was found that many of the same constraints were shared; inappropriate weaning practices, inappropriate diet during pregnancy, heavy workload and difficulties to reach the health center.

The potential positive deviant behaviors identified through the individual interviews could be:

- ANC consultation
- Use of contraceptive methods between two pregnancies
- Breastfeeding initiation within the first hours of life (even if a correct early initiation begins in the first hours of life, the mothers' behavior still show that colostrum was given to their baby)
- Early consultation of a health professional in case of child illness
- Children under surveillance and fed while the mother works.

In addition, the case studies potentially highlight the importance of use of contraceptive method, being directly linked with short birth spacing and having an impact on psychosocial care of the children.

The findings from these individual interviews gathered existing positive behaviors that exist in a same area. This could give indication for the MHCP program currently ran by ACF and CECOEDECON in Khaknar block. A “positive deviance approach” might not be adopted however the mechanisms of information sharing, possible solutions to cope with same difficulties and advices from one mother to another could be optimized for the operation on the field. It seems that communities use proper channels to get informed about maternal and child health related questions, and are interested to get more information whether they do not know.

4.3.12 Risk Factor Rating Exercise

In order to understand how the community prioritizes the risk factors, a final rating exercise was conducted with the participants of the FGD. The following table shows the results of this exercise, and the perceived top 14 biggest risk factors for each village. Most significant risk factors are depicted in green, with deep green for the ones common to all the villages. In the table below, minor risk factors are colored in pink, and red when common to all the villages. The table shows the result of risk factors’ rating exercise of women and men. For Bhauraghat, men were not able to attend the rating exercise, as they were all busy with fieldwork.

Table 27 – Community risk factor rating exercise

Palasur		Dudhiya Ryt		Shankarpura Khalan		Bhauraghat
Women	Men	Women	Men	Women	Men	Women
Low income	Low income	Poor diet diversity	Low income	Low income	Low income	Poor diet diversity
Access to food	Small land size	Access to food	LBW	Access to food	Access to food	Access to food
Lack of toilet	Lack of toilet	Lack of toilet	Lack of toilet	Lack of toilet	Lack of toilet	Lack of toilet
Poor access to water in the summer	Poor diet diversity	Poor access to water in the summer	Access to reproductive health	Poor access to water in the summer	Poor access to water in the summer	Poor access to water in the summer
Early initiation of breastfeeding	Early initiation of breastfeeding	Early initiation of breastfeeding	Early initiation of breastfeeding	Early initiation of breastfeeding	Early initiation of breastfeeding	Early initiation of breastfeeding
Inadequate complementary feeding	Inadequate complementary feeding	Inadequate complementary feeding	Inadequate complementary feeding	Inadequate complementary feeding	Inadequate complementary feeding	Inadequate complementary feeding
Lack of transport to health center	Access to reproductive health	Lack of transport to health center	Lack of transport to health center	Decision Power	Small land size	Lack of transport to health center
LBW	LBW	LBW	Poor access to water in the summer	Poor diet diversity	Poor diet diversity	LBW
Women workload	Women workload	Women workload	Women workload	Women workload	Women workload	Women workload
Access to reproductive health	Access to food	Access to reproductive health	Access to food	Access to reproductive health	Access to reproductive health	Access to reproductive health
Small land size	Poor access to water in the summer	Small land size	Small land size	Small land size	Lack of transport to health center	Small land size
Decision Power	Lack of transport to health center	Decision Power	Decision Power	Lack of transport to health center	Decision Power	Decision Power
Poor diet diversity	Poor diet diversity	Low income	Poor diet diversity	LBW	LBW	Low income
Traditional healer	Traditional healer	Traditional healer	Traditional healer	Traditional healer	Traditional healer	Traditional healer

4.4 Local causal model

A major output of the NCA survey is the design of a local causal model to explain the main causes and pathways to undernutrition in the target area.

A key component of the qualitative inquiry was the exploration of community perceptions causal pathways to undernutrition. By triangulating the results from the preliminary research, the result of the risk factors survey and the findings of the qualitative survey, a local causal model were designed.

It shows how risk factors are seen by the communities to cause undernutrition and how they are interlinked.

In the following figure, direct causes are highlighted in green and underlying causes in purple and black squares.

Main pathways are circled in black and their relations with underlying causes are shown in orange. Most of the underlying causes are interrelated, relation between them are shown in blue.

This causal model is only valid for Khaknar block, Burhanpur district, Madhya Pradesh. It should be interpreted with attention since causes and pathways may change over years.

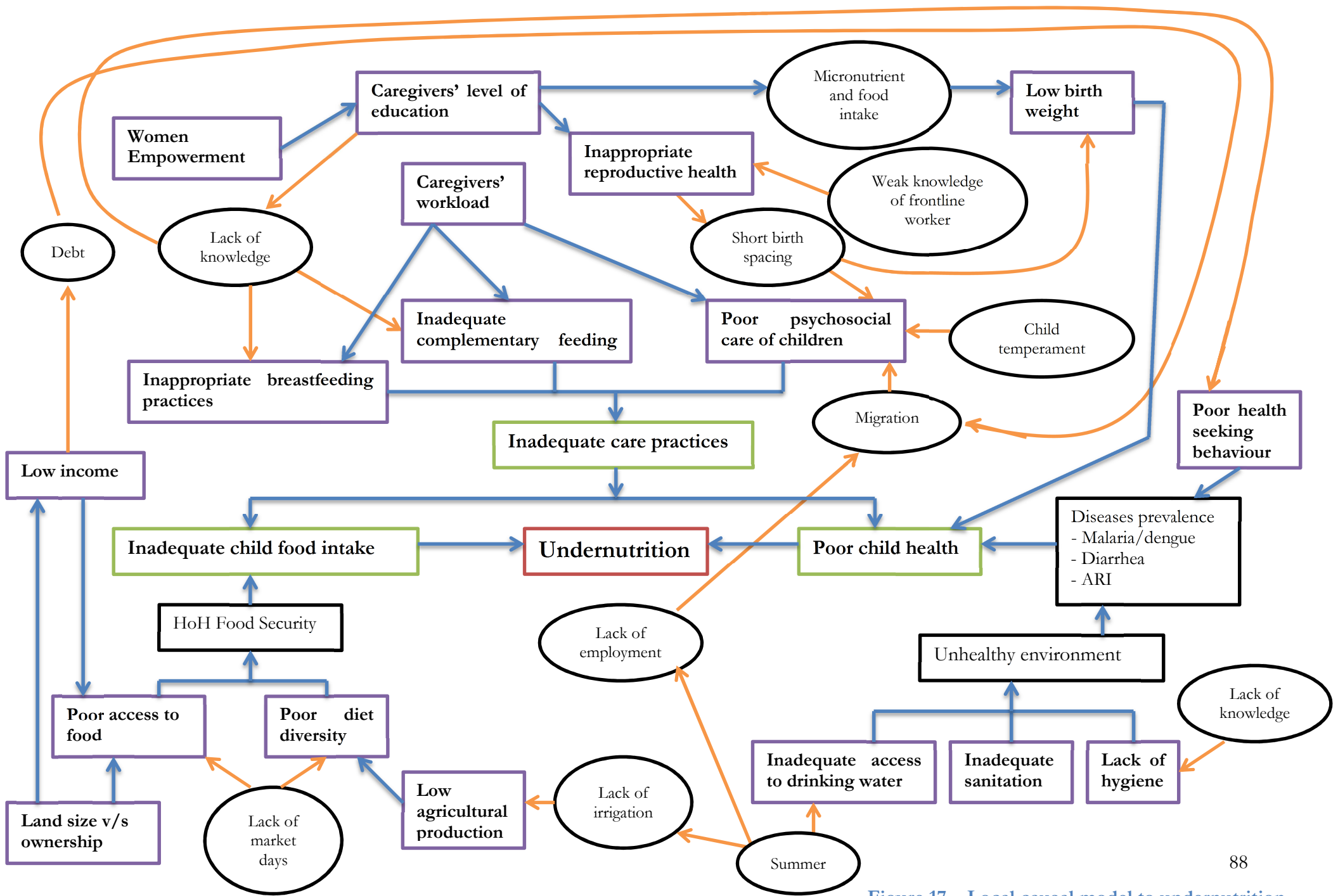


Figure 17 – Local causal model to undernutrition

5. Ranking causal hypothesis

Based on the NCA findings, causal hypothesis were ranked by the NCA expert as major, important, minor, untested or rejected causal pathways⁸⁶.

From the initial ranking exercise, 4 causal hypothesis were ranked as major causal pathways to undernutrition in the study area (dark green), 9 causal hypotheses as important (light green); 4 causal hypotheses as minor (light pink), 2 causal hypotheses were rejected (dark pink) and 2 were considered as untested due to lack of evidences (grey).

At the final technical experts' workshop, results of the preliminary ranking exercise were presented to technical experts⁸⁷. Following the presentation, participants were split into three multi-sectorial working groups and each group was given information regarding all causal hypothesis including NCA results and rating. Each group was asked to review the evidence and for each result, to provide a confidence note (low=1, medium=2, high=3). NCA expert rating with technical expert average confidence notes are presented in the following table:

Table 28 – NCA expert rating and expert confidence note

Hypothesis risk factors	Rating proposed by NCA Expert	Average confidence note
2 Inadequate complementary feeding practices	Major	3
5 Caregiver workload	Major	2,67
8 Poor psychosocial care of children	Major	2,67
4 Caregivers' level of education	Major	2
11 Inadequate access to water	Important	3
19 Low income	Important	3
9 Inappropriate reproductive health	Important	2,67
10 Inadequate sanitation	Important	2,67
17 Poor diet diversity	Important	2,67
3 Low birth weight	Important	2,33
15 Low agricultural production	Important	2
18 Poor access to food	Important	2
1 Inappropriate breastfeeding practices	Important	1,33
16 Land size v/s ownership	Minor	2,67
13 Poor health seeking behaviour	Minor	2,33
21 Women empowerment	Minor	1,67
12 Lack of hygiene	Minor	1,33
20 Traditional beliefs	Rejected	2,33
6 Maternal well being	Rejected	1
7 Inadequate family income management	Untested	/
14 Lack of health care regarding the treatment of undernutrition	Untested	/

⁸⁶ For detailed results, cf. Annex 7: "Criteria of NCA ranking exercise", pp.111-112

⁸⁷ For detailed results, cf. Annex 8: "Preliminary ranking by the NCA Expert", pp.113-114

Technical experts were also asked to suggest a rating (rejected, minor, important, major) and to share any specific comment they have on the results.

The results of this exercise were then presented back to the group and any suggested modifications were debated.

Rating from technical experts, comment from working group and result of the discussion are presented in the following table:

Table 29 – Technical experts rating and discussion

Hypothesis risk factors	Working group rating	Comment from working group and result of discussion
1 Inappropriate breastfeeding practices	Major	- Because of the colour and the quantity of the colostrum, mothers may not give it enough. Mothers are not enough available to feed their children in an appropriate way. - All group rated it as major. NCA expert agreed as mothers include water very early.
2 Inadequate complementary feeding practices	Major	- Focus should be on timing of initiation and meal frequency. - All group rated it as major
3 Low birth weight	Major	- LBW can be balanced by adequate complementary feeding practices and good care practices. LBW has a high importance but can have diverse reasons. One group recommended targeting care of mothers and supplementation of nutriment from adolescence. - All group rated it as major
5 Caregiver workload	Major	- State responsibility: Anganwadi centre should be able to take better care of children. - All group rated it as major
8 Poor psychosocial care of children	Major	- All group rated it as major
11 Inadequate access to water	Major	- NCA expert initially rated it as important regarding the CP risk factors but agreed that it is also a major risk. - All group rated it as major. NCA expert agreed
15 Low agricultural production	Major	- Most of the surveyed families are landless and most of the food is bought from the market. But low agricultural production results on insufficient cash crop and may result in low income for a part of the block.
17 Poor diet diversity	Major	- All group agreed to rate it as major
18 Poor access to food	Major	- All group agreed to rate it as major
21 Women empowerment	Major	- All group rated it as major. NCA expert still considered it as minor as mothers-in-law have a lot of power and NCA findings shows that

		most of the major decisions are taken at family level without excluding the mothers.
4 Caregivers' level of education	Important	<ul style="list-style-type: none"> - Knowledge is not necessarily related to school level. Studies show a strong link between malnutrition and level of education. But it is more related to application of knowledge. - Each group has initially rated it as minor, important, major. All groups and NCA expert agreed to rate it as important.
6 Maternal well being	Important	<ul style="list-style-type: none"> - Mental Health expert: mother can have low wellbeing but not be depressed. WHO5 is not enough to have a correct view of the situation. Methodology should be reviewed to use other indicators and in-depth study needs to be conducted - All group agreed to rate it as important. NCA expert agreed on the methodology aspects but do not agree on the rating as all the results show the opposite situation
7 Inadequate family income management	Important	<ul style="list-style-type: none"> - Tested only in FGD not enough info to give a proper rate. Groups considered it as important regarding the global situation. - All groups rate it as important. NCA expert is not able to rate it, as she doesn't have enough information.
9 Inappropriate reproductive health	Important	<ul style="list-style-type: none"> - Access to contraception will definitely have an impact on short birth spacing - All group agreed to rate it as important
10 Inadequate sanitation	Important	<ul style="list-style-type: none"> - Inadequate sanitation is a main issue. The findings show that the surveyed population use to go for open defecation outside of their village. It is explaining a rating as important and not as major - All group agreed to rate it as important
12 Lack of hygiene	Important	<ul style="list-style-type: none"> - All group agreed to rate it as important
19 Low income	Important	<ul style="list-style-type: none"> - All group agreed to rate it as important
13 Poor health seeking behaviour	Minor	<ul style="list-style-type: none"> - All group agreed to rate it as minor
16 Land size v/s ownership	Minor	<ul style="list-style-type: none"> - All group agreed to rate it as minor
20 Traditional beliefs	Minor	<ul style="list-style-type: none"> - Debate took place, as there are no signs of traditional beliefs regarding breastfeeding practices and health behaviour. Indeed, neither ACF experience among the block nor the findings from the NCA survey showed a correlation with malnutrition. Despite this information, the hypothesis was rated as minor as it may exist some rooted traditional beliefs that ACF / NCA expert did not notice - All group agreed to rate it as minor.

<p>14 Lack of health care regarding the treatment of undernutrition</p>	<p>/</p>	<p>An important debate took place regarding this question. Indeed, lack of care regarding treatment of undernutrition is an important issue in India. It may be a link from a state of malnutrition to another and children may not recover enough to avoid again malnutrition. But the NCA survey did not gather enough information to prove a link. Indeed, this hypothesis was tested only in FGD. To get a clearest picture, more investigation needs to be done among children affect by undernutrition.</p>
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6. Conclusions and Recommendations

The results of the NCA show that causes of undernutrition (in terms of stunting and wasting) in Khaknar Block, Burhanpur District, M.P, are multi-sectorial and highly interrelated. Therefore, addressing each of these factors is vital to ensure healthy outcomes for mothers and children.

The timing of the NCA field survey, end of the summer and period of low employment, has aggravating some of the risk factors and the situation should be considered as particularly serious at this period of the year.

Given the fact that ACF has been responding to nutrition and care practices issues in the area since 2012, there is a clear need to strengthen preventative efforts; the NCA provides more contextualized data on major causal pathways to child undernutrition. Each of these causal risk factors and pathways should be addressed in order to prevent seasonal nutrition status aggravation, and general alarming situation throughout the year.

As explained previously, the purpose of the NCA is not to design programs, though the results can be used to inform programs' design and adjustments. Moreover, the results and recommendations can constitute a basis for advocacy. Indeed, a number of recommendations require specific effort from the government and local actors present in the same area.

Based on the results of the NCA, the following recommendations should be taken into account to tackle the major causes of undernutrition. Recommendations are arranged by sector but must interact for a better improvement of the situation in Khaknar block:

Food, security and livelihood

- Advocate for a better diversification of cereals and leguminous provided by Public System Distribution shops
- Work with policy makers to improve access to irrigation system
- Additional research on local allocation of below poverty line ration card to advocate on risk of corruption toward BPL ration card allocation
- Advocacy for a better implementation of the MNREGA, especially to reduce delays of payment
- Connect with NGO working on landless issues to advocate on an improvement on land distribution⁸⁸
- Reduce price of livestock immunization and treatment, and improve access to governmental veterinary

Health and nutrition

- Improve knowledge of frontline workers on contraceptive methods and capacity building on maternal and child nutrition/care programs delivered at Anganwadi center

⁸⁸ Several Indian NGO and popular movement are world known for their impact on land distribution, especially regarding tribal population. ACF should connect with such organisation as Ekta Parishad to a better impact on this issue

- Awareness through FGD and campaign on appropriate adolescent and maternal nutrition to reduce low-birth weight
- Promote dietary diversification and improve nutrition knowledge at community level with a specific target on adolescents, pregnant mothers and children under 5
- Strengthen knowledge of communities and frontline workers (ANM, ASHA...) on the importance of ANC in order to improve health condition and nutritional status of mothers and pregnant women
- Involve healers for an improvement of adequate health seeking behavior
- Improve nutrient women supplementation, including beginning of iron supplementation at puberty
- Awareness on danger related to early child bearing and short birth spacing
- Improve knowledge of diarrhea and mosquitoes-borne diseases determinants through community education
- Improve efforts on acute malnutrition recognition (MAM and SAM), knowledge on stunting and treatment of undernutrition, including CMAM programs
- Strengthen health system to improve access to NRC and health center

Mental Health and Care Practices

- Implementation of an Assisting Behavior Change (ABC) strategy to better support mothers and pregnant women on issues related to inadequate child and maternal care practices
- In addition to the first recommendation, reinforcement of awareness program about weaning practices
- Additional research and understanding on mother wellbeing to understand how mothers resigned attitude impact on child care practices
- Promote income-generating activities for women to somewhat improve their decision making power with regards to financial decisions, paying special attention not to increase women's workload with such activities

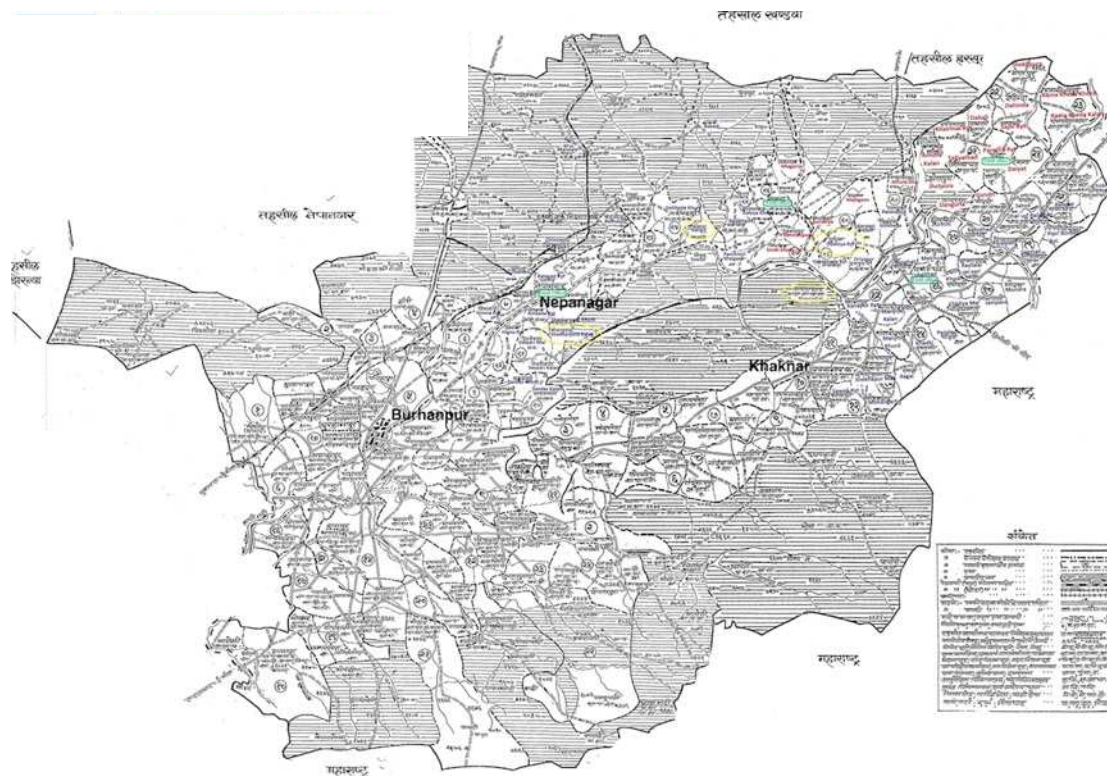
WASH

- Advocate for a better implementation of safe toilets in each villages
- Awareness on hand washing, specifically before breastfeeding
- Reduce risk of water contamination through providing practical education on water management at household level, with an emphasis on the importance of boiling drinking water before human consumption
- Improve access to safe drinking water sources locally
- Improve safe water distribution in the summer

Crossed-issues recommendation

- Identify positive coping mechanisms of traditional migrants to promote better information sharing between the two groups of migrants (traditional and new migrants)
- Additional research and understanding on castes discrimination.

Annex 1: Map of selected clusters for the NCA survey



Map of selected village for the qualitative survey (circled in yellow)



Map of selected village for the RFS (circled in black)

Annex 2: List of participants to the initial technical workshop

Organisation	Participant name	Position
ACF - India	Thital Parmar	Emergency coordinator
ACF - India	Abhishek Singh	MHCP PM
CECOEDECON	Manish Singh	Director
CSH (Delhi) / CIRAD (France)	Dr. Bruno Dorin	Senior Researcher
French Institute of Pondicherry	Dr. Brigitte Sébastia	Senior Researcher
Independent Consultant	Ms. Dimple Save	Senior Nutrition Consultant
Indian Institute of Technology Patna	Dr. Jyotsna Agrawal	Assistant Professor
Indian Institute of Technology Kharagpur	Dr. Banhi Chakraborty.	Assistant Professor
Jawaharlal Nehru University - Centre of Social Medicine and Community Health School of Social Sciences (JNU-CHSS)	Ms Shalini Ahuja	Junior Research Fellow
JNU-CHSS	Dr Rajib Dasgupta	Associate Professor and Project Director
JNU-CHSS	Ms Veda Yumnam	Junior Research Fellow
Médecins Sans Frontières, OCBA	Pujya Jennifer Pascal	Advocacy Coordinator
Naandi Foundation	Manish Raikar	Program Manager
Naandi Foundation	Dr. JC Reddy	Program Officer
Real Medicine Foundation	Michael Matheke-Ficher	Country Director
Sangath	Dr. Ameya P. Bondre	Research Fellow
Save the Children	Dr. Laxmikant Palo	Senior Nutrition Advisor
Save The Children	Asad Umar	Project Manager-WASH
WaterAid	Sweta Patnaik	Health, WASH & Nutrition Lead

Annex 3: Hypothesis (Reviewed and validated by the initial technical workshop)

Hypothesis 1 – Inappropriate breastfeeding practices

- Late initiation of breastfeeding due to a lack of information
- Non-exclusive breastfeeding under 6 months
- Non-appropriate age of exclusive-breastfeeding

Pathways: lack of information, traditional beliefs regarding breastfeeding practices, caregivers' level of education, caregivers' workload

Hypothesis 2 – Inadequate complementary feeding practices

- Lack of weaning practices: introduction of complementary food on inappropriate time
- Non-appropriate meal frequency
- Inappropriate food regarding the age of the child
- Food preparation knowledge

Pathways: Caregivers' level of education, caregivers' workload

Hypothesis 3 – Low birth weight

- Food intake during pregnancy/lactation not appropriate

Pathways: Caregivers' level of education, caregiver's workload, inappropriate reproductive health

Hypothesis 4 – Caregivers' level of education

- Years of education

Pathway: Women empowerment

Hypothesis 5 – Caregivers' workload

- At home, in the field, during pregnancy, short period of rest after delivery, environment not supportive

Pathway: Women empowerment

Hypothesis 6 – Maternal well being

- Mother psychological distress: living conditions in migration (habitat, isolation), environment not supportive, and violence against women due to alcoholism

Pathways: Child temperament, caregivers' workload, inadequate family income management, inappropriate reproductive health, women empowerment

Hypothesis 7 - Inadequate family income management

- Lead to inappropriate ways to care/cure/educate children

Pathway: addictions (men gaming, alcoholism)

Hypothesis 8 – Poor psychosocial care of children

- Mother child bonding

Pathways: child temperament, maternal wellbeing, inadequate family income management, caregivers' workload

Hypothesis 9 – Inappropriate reproductive health

- Early childbearing
- Short birth spacing
- Access to family planning

Pathways: Women empowerment, caregivers' level of education

Hypothesis 10– Inadequate sanitation

- Absence of treatment and/or of proper disposal of wastewater.
- Open defecation

Hypothesis 11 – Inadequate access to drinking water⁸⁹

- Not available or/and lack of water point
- Damage water point
- Quality of the water (fluorine)
- Distance to the water point

Hypothesis 12 – Lack of hygiene

- Personal (hand washing) and household hygiene
- Unhygienic cooking practices
- Unsafe handling of drinking water

Pathways: Inadequate access to drinking water, lack of time/ knowledge to use water properly

Hypothesis 13 – Poor health seeking behaviour

- Population refers to traditional healers first

Pathway: traditional beliefs regarding health practices

Hypothesis 14 – Lack of health care regarding the treatment of Undernutrition (MAM/SAM)

- Not enough NRC
- Anganwadi centre difficulties to supply adequate supplementary food

Hypothesis 15 – Low agricultural production

- Poor agricultural knowledge
- Challenging physical conditions (land not suitable for cultivation, flooded from time to time)

Hypothesis 16 - Land size v/s ownership⁹⁰

- Landless situation of the migrants
- Lack of application of the Forest Right Act on forest area

Hypothesis 17 – Poor diet diversity

- Not able to buy diversify food from the market
- Lack of lands or too small lands
- Low agricultural production

Pathways: absence of livestock, low agricultural production, land size v/s ownership, low income

Hypothesis 18 – Poor access to food

- Food access instability
- Absence of ration card

Pathways: absence of livestock, low agricultural production, land size v/s ownership, low income

Hypothesis 19 – Low income⁹¹

- Migrants are daily labour workers and don't have regular job

⁸⁹ Hypothesis as reviewed by the technical experts

⁹⁰ *ibid.*

⁹¹ *ibid.*

- Non-efficient implementation of the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) toward tribes.
- Access to credit/exceptional debts contracted for specific occasion
- Fragile Resilience toward external shocks: Few alternate sources of income to help the household through difficult time⁹²

Pathways: Inadequate family management, absence of livestock

Hypothesis 20 – Traditional beliefs⁹³

Health habits and breastfeeding practices⁹⁴

Hypothesis 21 – Women Empowerment

Decision power to the mother/father in law, decision maker⁹⁵

⁹² Former H20, included on H19 by the technical experts

⁹³ Hypothesis as reviewed by the technical experts

⁹⁴ H20 was included on H1 and H13, technical experts considered it as a proper hypothesis

⁹⁵ H21 was included on H6, technical experts considered it as a proper hypothesis

Annex 4: NCA risk factor indicators figures

Indicators	Sample	Mean or proportion	Lower confidence interval - 95%	Upper confidence interval - 95%
Household size	766	6.39	6.12	6.65
Age caregiver	743	25.15	24.75	25.54
Age of first delivery	723	19.78	19.52	20.04
ST	423	19.35	19.14	19.55
Others	300	20.39	19.99	20.8
<i>Food Security and Livelihoods (FSL)</i>				
HDDS	763	5.94	5.76	6.12
HDDS ST	452	5.69	5.53	5.85
HDDS Other castes	311	6.30	5.99	6.62
HFIAS	756	2.74	2.00	3.48
HFIAP Secure	460	60.85	54.03	67.67
HFIAP Mildly	73	9.66	6.54	12.77
HFIAP Moderately	131	17.33	12.36	22.30
HFIAP Severely	92	12.17	8.34	16.00
HFIAS ST	446	3.12	2.13	4.11
HFIAP Secure	245	54.93	46.61	63.25
HFIAP Mildly	49	10.99	6.49	15.49
HFIAP Moderately	89	19.95	12.58	27.33
HFIAP Severely	63	14.13	9.04	19.21
MAHFP	766	11.49	11.39	11.59
MAHFP ST	452	11.42	11.29	11.55
AFS	758	Cf. Diagrams		
AFS ST	435			
FCS	766			
Acceptable		75.46	67.97	82.94
Borderline		23.11	16.00	30.21
Poor		1.44	0.38	2.49
FCS ST	452			
Acceptable		74.56	67.06	82.05
Borderline		24.34	17.27	31.40
Poor		1.11	0	2.26
Ownership	756	Cf. Diagrams		
ST	448			
Others	308			
Culture	301			
Livestock	756			
Own land Size	301	5.78	4.02	7.54
Own land Size ST	169	3.96	3.50	4.41
Irrigated Size	21	4.86	2.44	7.28
Non irrigated Size	148	3.74	3.27	4.21
Own land size Others	132	8.11	4.82	11.41
Irrigated	68	6.83	4.17	9.5
Non irrigated	64	3.93	3.05	4.82

WASH				
Main source of water	763			
Groundwater		46.53	30.35	62.71
Pipeline supplies		53.47	37.29	69.65
Safety of main water source	763			
Mild risk		7.34	0	14.72
Moderate risk		44.43	29.81	59.05
Severe risk		48.23	33.36	63.10
Safety of main groundwater source	355			
Mild risk		8.45	0	18.09
Moderate risk		40.84	20.09	61.60
Severe risk		50.70	30.10	71.31
Safety of main pipeline supplies source	408			
Mild risk		6.37	0	14.29
Moderate risk		47.55	26.66	68.44
Severe risk		46.08	24.56	67.60
Alternative source of water	758			
Groundwater		41.29	28.78	53.80
Pipeline supplies		0.79	0	1.92
No alternative source		57.9	45.22	70.61
Safety of alternative source	318			
Mild risk		10.69	0	21.79
Moderate risk		63.52	48.57	78.48
Severe risk		25.79	12.34	39.23
Water management score	514	4.46	4.23	4.69
Mild risk		0.97	0	1.97
Moderate risk		45.91	38.30	53.53
Severe risk		53.11	45.12	61.11
Water needs	579			
Basic water needs		29.29	26.95	31.63
Drinking water needs		4.44	4.10	4.79
Bathing water needs		9.98	9.14	10.83
Food water needs		1.75	1.61	1.89
Hygiene/sanitation water needs		4.39	3.97	4.80
Latrines	756			
Use of latrines		20.5	12.15	28.86
Use of safe latrines		8.47	4.25	12.68
Safe disposal of child feces	418	2.63	0.94	4.32
Caregiver hand-washing good behavior	766	45.95	37.51	54.40
Use of soap	730	74.93	68.63	81.23
Water collection and	759	65.74	55.03	76.46

distance to water point <30 minutes				
Children health (0-59 months)				
ARI in the past 14 days	969	26.11	20.40	26.11
Diarrhea in the past 14 days	969	14.65	11.51	17.8
Fever in the past 14 days	962	33.37	28.63	38.11
Access to health services				
Immunization coverage at one year	216			
DPT3		91.67	87.75	95.58
Measles		87.96	82.51	93.41
Health record		48.61	38.56	58.67
Proportion of children with health record who are immunized	105			
DPT3		91.43	85.65	97.20
Measles		85.71	76.07	95.35
Immunization coverage at one year ST	116			
DPT3		88.79	82.40	95.19
Measles		84.48	77.02	91.95
Health record		41.38	27.68	55.08
Proportion of health record among immunized children ST	48			
DPT3		85.42	73.81	97.03
Measles		77.08	61.83	92.34
ANC				
Caregivers who saw a health professional	733	37.65	27.41	47.89
At least for 4 times	276	32.25	22.85	41.64
ANC ST				
Caregivers who saw a health professional	430	30.93	21.90	39.96
At least for 4 times	133	25.56	12.25	38.88
Main barriers to the health center	763	Cf. Diagrams		
Distance to health center <60 minutes	765	75.82	67.11	84.52
Last delivery at hospital or health center	766	74.15	66.18	82.12
ST	453	61.59	52.69	70.49
Other	313	92.33	88.49	96.17
IYCF				
Adequate initiation of breastfeeding (<1 hour)	387	67.44	57.91	76.98
ST	167	65.27	52.69	77.84
Others	220	69.09	58.17	80.01

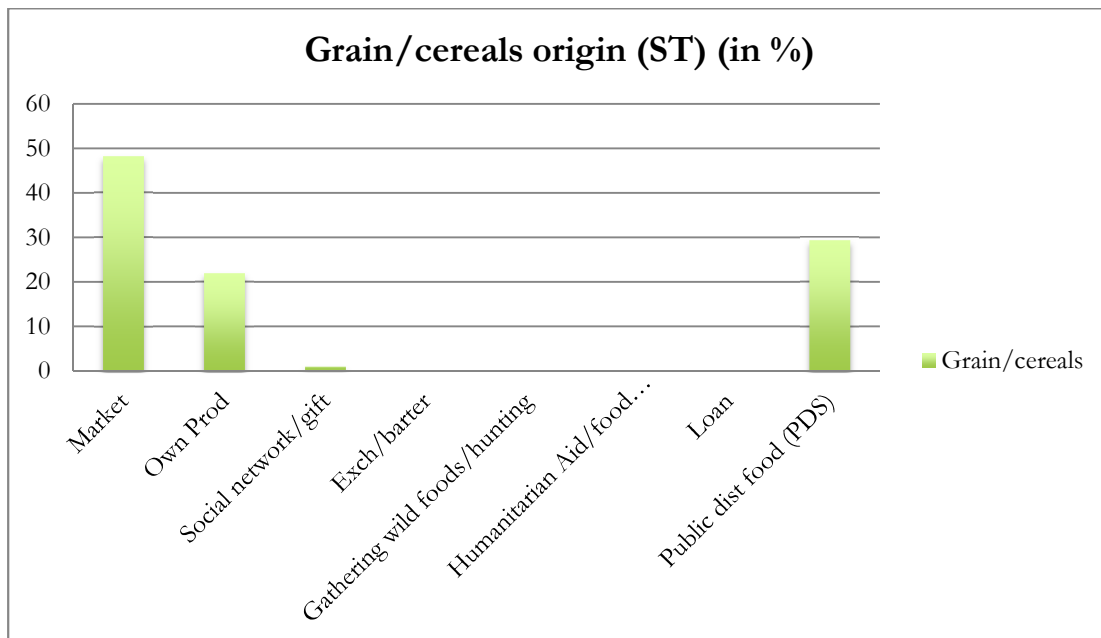
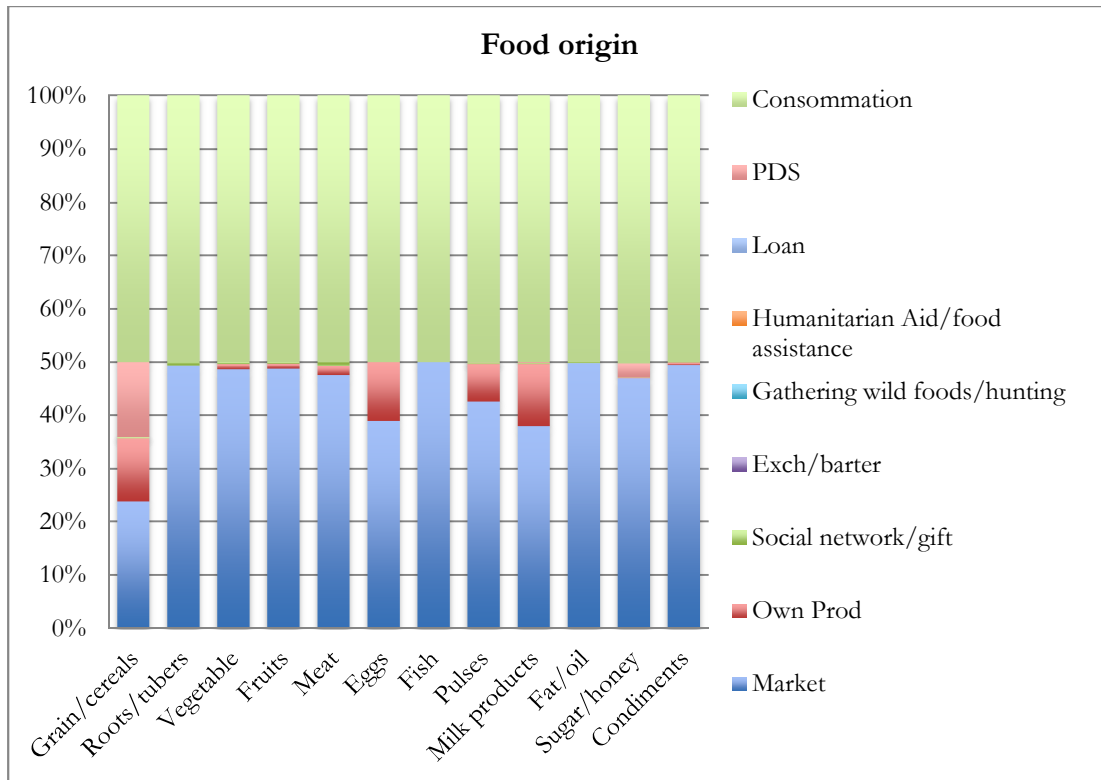
Exclusive breastfeeding (0-6 months)	81	35.80	21.42	50.18
ST	46	34.78	15.63	53.94
Others	35	37.14	14.16	60.13
0-1 month	9	77.78	41.65	100
2-3 months	38	42.10	23.63	60.56
4-5 months	34	17.65	5.19	30.10
0-3 months	47	48.94	29.53	68.34
Continued breastfed after 1 year	82	93.90	85.51	99.29
ST	49	95.92	90.16	100
Others	33	90.91	80.21	100
Complementary feeding (6-8 months)⁹⁶				
Correct introduction of complementary feeding	34	5.88	0	14.56
Proportion of children with IDDS>1	48	50	34.2	65.8
IDDS 6-23 months	313	1.35	1.16	1.54
ST	177	1.25	1.25	1.25
Others	136	1.48	1.15	1.82
6-11 months	105	0.78	0.58	0.98
12-17 months	97	1.35	1.07	1.63
18-23 months	111	1.89	1.68	2.10
Proportion of children with minimum IDDS (>4)	313	3.83	1.10	6.56
Proportion of children with IDDS >3	313	14.70	10.28	19.12
Proportion of children with correct meal frequency (BF children)	231	2.16	0.30	4.02
6-23 months	77	1.3	0	3.96
6-11 months	75	1.33	0	4.07
12-17 months	79	3.8	0	8.17
18-23 months				
Proportion of children with correct meal frequency (Non BF children)				
6-23 months	22	18.18	0	36.89
18-23 months	19	15.79	0	34.89
Child feeding behavior	816			
Caregivers helping their child to eat (>9 months)		37.87	32.63	43.10

⁹⁶ The proportion of children with IDDS>1 is far higher than the proportion of children who ate solid food the day before the survey. IDDS being more precise regarding the number of question asked, it is possible that the caregiver did not understand correctly the question for complementary feeding practices. According to this observation. IDDS figures were considered for complementary feeding practices.

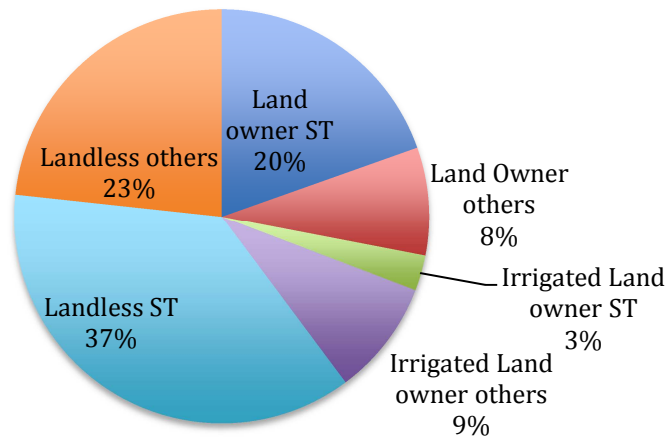
Behavior adopted by the caregiver when the child doesn't want to eat	816			
Forcing		15.20	8.65	21.74
Other (play, coax etc.)		57.23	48.34	66.12
Nothing		27.57	21.11	34.03
<i>Children psychosocial care</i>				
Child-caregiver interaction score	866	4.63	4.24	5.02
Children with appropriate child-caregiver interaction (>4)	866	72.40	64.82	79.99
<i>Care of women</i>				
Food intake during last pregnancy	763			
Less as usual		23.98	18.98	28.98
Same as usual		65.00	59.50	70.51
Average level of education	306	7.36	6.92	7.8
Illiteracy	759	59.68	51.92	67.44
ST	447	71.81	65.26	78.36
Others	312	42.31	30.53	54.09
Level of education	Cf. Diaphragm			
Perceived social capital. Mothers who feel supported	765	73.02	66.62	79.53
Mothers who feel they have too much work to take care of their child	765	48.63	42.06	55.20
ST	452	50.66	42.29	59.09
Others	313	45.69	37.73	53.64
Mothers at risk of depression WHO 5<13	764	7.59	4.36	10.82
Mothers at risk of depression MID 10	764			
Mild		1.31	0	3.08
Moderate		1.68	0	1.68
Children with LBW (health record)	111	28.83	19.88	37.78
ST	53	32.07	19.66	44.49
Others	58	25.86	12.87	38.85
Children with perceived LBW	958	21.61	15.35	27.86
ST	562	22.77	14.00	31.55
Others	396	19.95	14.10	25.80
Current use of family planning	726	35.67	30.91	40.44
Contraceptive means	Cf. Diagrams			

Undesired pregnancy	960	5.10	2.60	7.60
Early first pregnancy (<18)	723	8.99	6.21	11.77
ST	423	13.24	9.57	16.91
Others	300	3.00	0.68	5.32
Short birth spacing	196	51.02	43.81	58.23
Average rest after birth (in days)	747	40.34	37.99	42.70
Rest after delivery <40 days	747	61.45	56.22	66.67
ST	442	64.48	57.62	71.33
Others	305	57.05	50.36	63.74
Women with low decision power	760	45.00	40.18	49.82
Proportion of women who take decision alone or with their husband for	760			
Child education		63.82	57.19	70.44
Child health		60.79	54.76	66.82
Money expenses		30.26	24.35	36.18
When to have another child		76.45	71.14	81.76

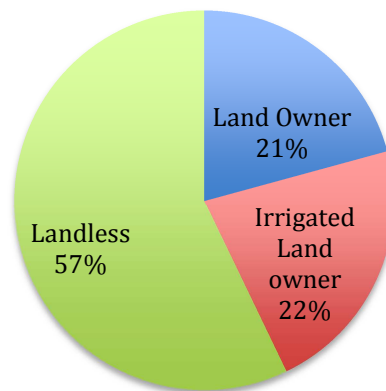
Annex 5: NCA risk factor indicators diagrams



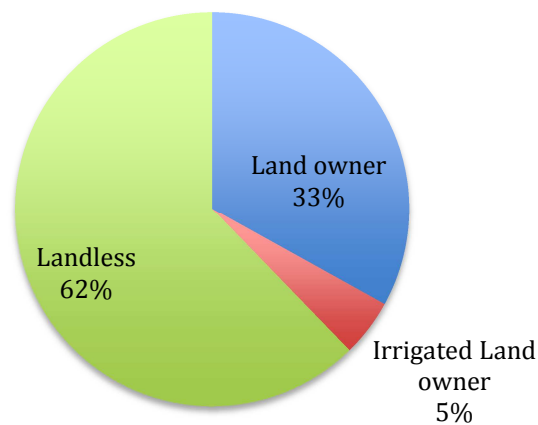
Ownership

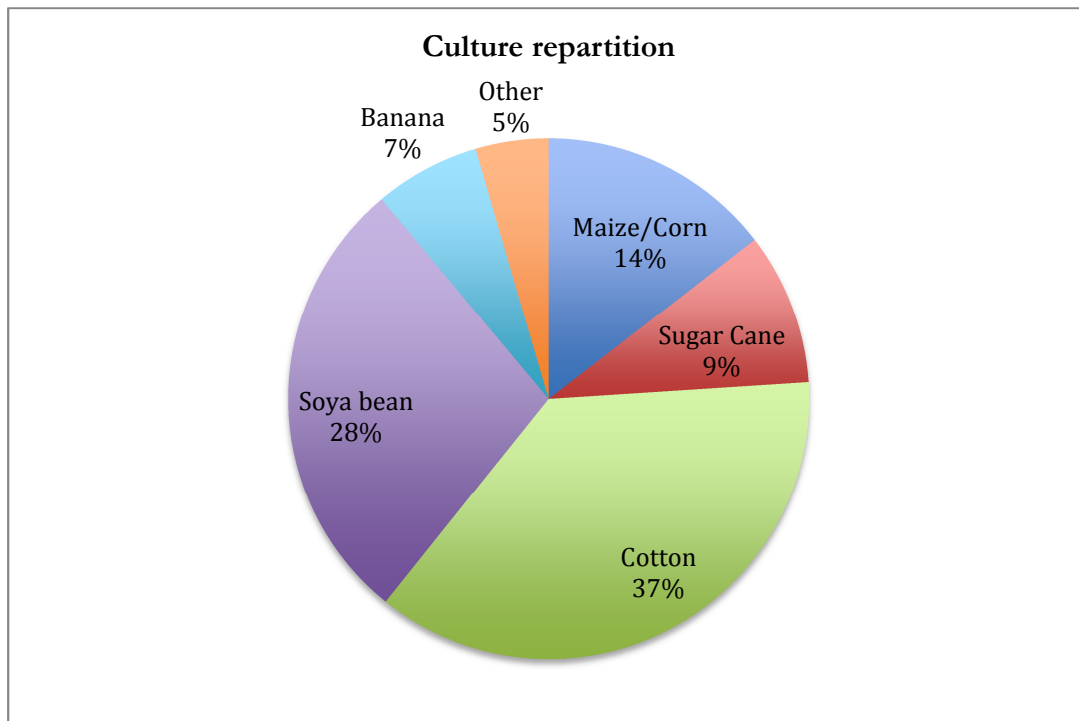
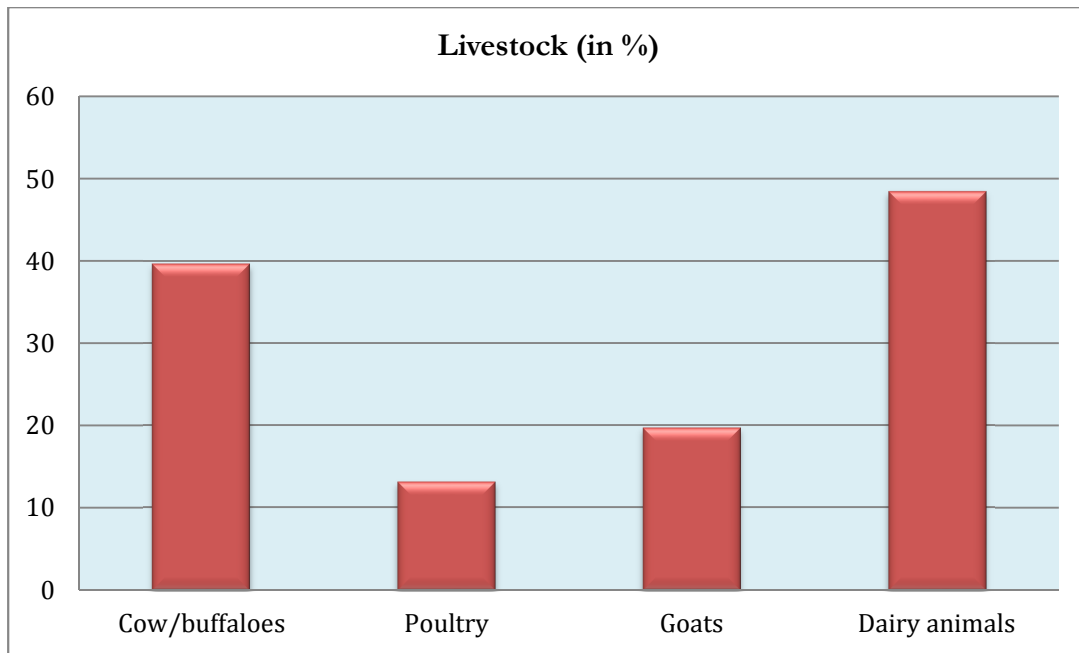


Non Tribal ownership

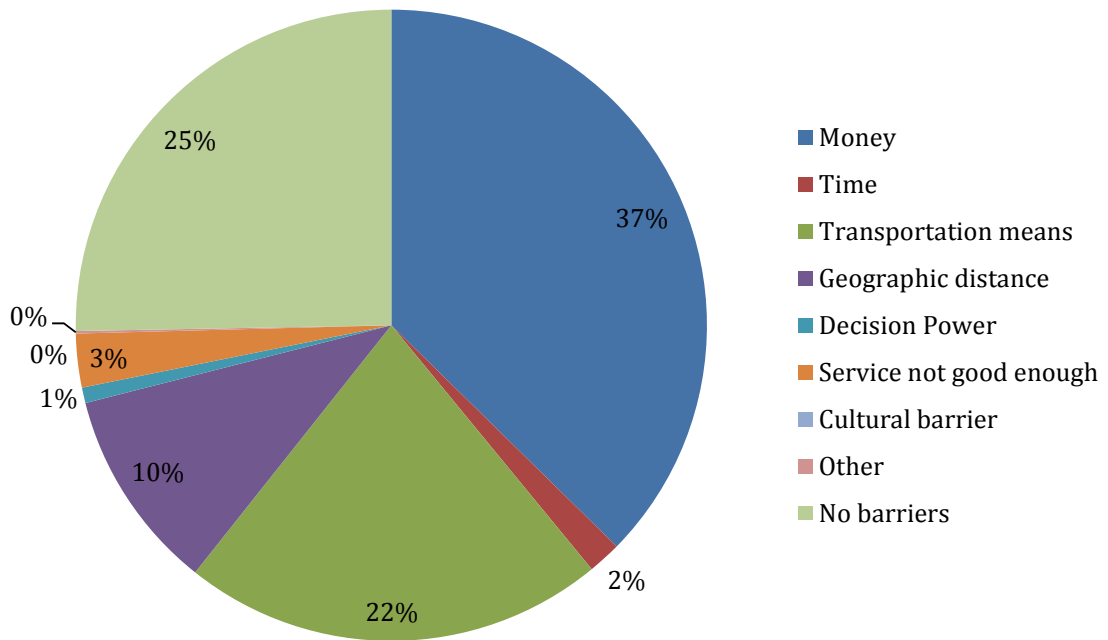


Tribal ownership

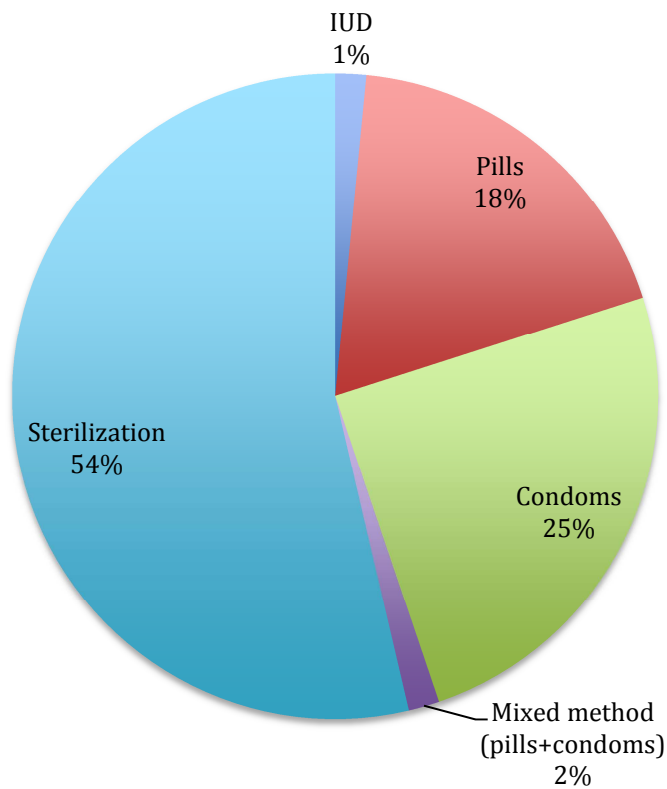


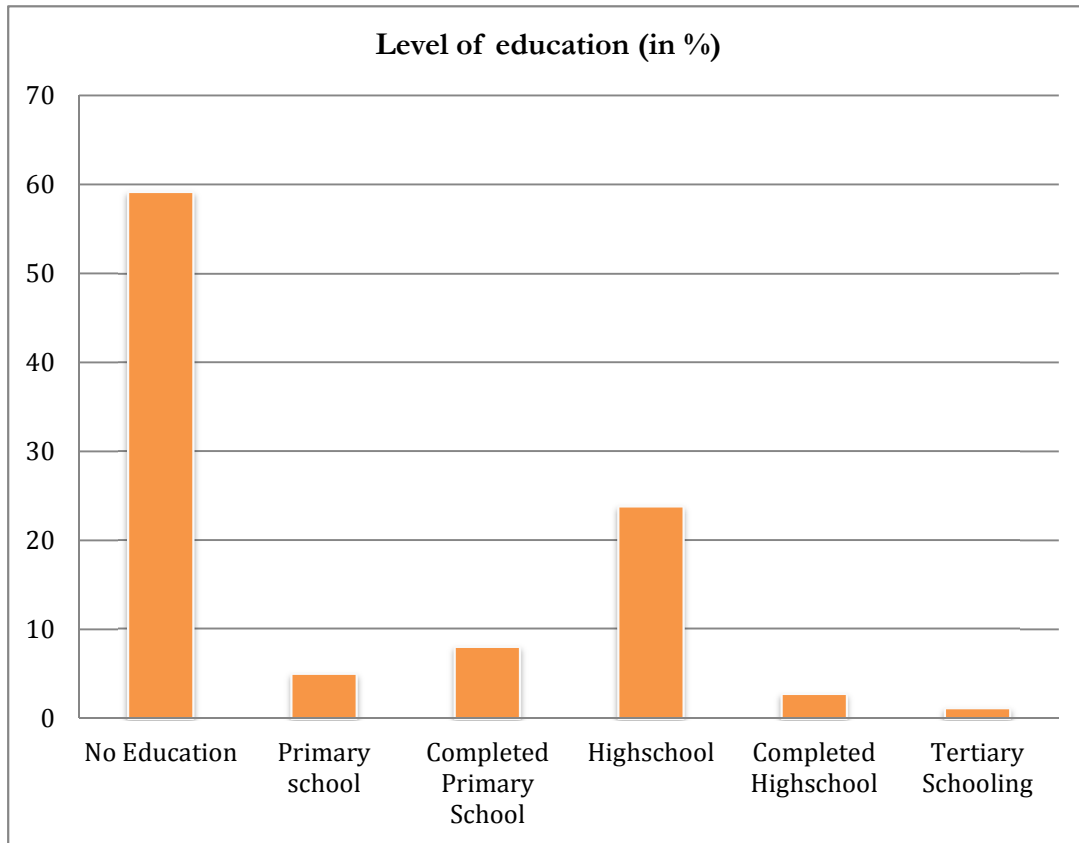


Barriers to the health center



Contraception means





Annex 6: List of participants to the final technical workshop

Organisation	Participant name	Position
ACF - India	Abhishek Singh	MHCP PM
CECOEDECON	Sandeep Dewal	Program coordinator
Child Rights Observatory	Dr. Sheela Bhambal	Emeritus Professor – Gandhi Medical College Member technical group, NRHM
French Institute of Pondicherry	Dr. Brigitte Sébastia	Senior Researcher
INCLEN	Neha Gupta	Research scholar
Independent Consultant	Ms. Dimple Save	Senior Nutrition Consultant
Indian Institute of Technology Patna	Dr. Jyotsna Agrawal	Assistant Professor
Indian Institute of Technology Kharagpur	Dr. Banhi Chakraborty.	Assistant Professor
Médecins Sans Frontières, OCBA	Pujya Jennifer Pascal	Advocacy Coordinator
MP Institute of Social Science Research	Yashwant Govind Joshi	Professor Emeritus
Naandi Foundation	Manish Raikar	Program Manager
Real Medicine Foundation	Prabhakar Sinha	Director of Programs
Valid	Rita Bhatia	Program director
Vikas Samvad	Sachin Kumar Jain	Director
World Food Program	Dr. Shariqua Yunus	Program officer nutrition

Annex 7: Criteria of NCA ranking exercise

Source of information	Notes
Strength and consistency across contexts of association between the risk factor and under-nutrition (from the Pathways to Under-nutrition Module)	<p>[-] NA: only risk factors having a demonstrated association with undernutrition are considered in the Pathways to Undernutrition Module</p> <p>[-] Weak association has been demonstrated in many or few contexts</p> <p>[+] Medium strength association has been demonstrated in few contexts</p> <p>[++] Medium strength association demonstrated in many contexts OR strong association demonstrated in few contexts</p> <p>[+++] Strong associations demonstrated in most contexts or an association demonstrated in the particular context of the NCA</p>
Seasonality and medium-term trends of risk factor related to seasonality and medium-term trends of under-nutrition (applies mainly for wasting)	<p>[-] the seasonal variation and medium-term trends of the prevalence of the risk factor does not correspond to the seasonal variation and medium-term trends of the under-nutrition outcome considered.</p> <p>[+] No seasonal variation of the risk factor OR No contradiction observed.</p> <p>[++] The seasonal variations of risk factor and under-nutrition are as expected.</p> <p>[+++] The seasonal peak(s) of prevalence of the risk factor matches with the seasonal peak(s) of the under-nutrition outcome considered.</p>
Participatory rating exercise with community	<p>[-] The risk factor is rarely or never mentioned in the rating exercise</p> <p>[+] The risk factor is irregularly mentioned as one of the top 5 risk factors</p> <p>[++] The risk factor is regularly mentioned as one of the top 5 risk factors</p> <p>[+++] The risk factor is consistently mentioned as one of the top 3 risk factors</p>

Category	Criteria
Major risk factor	No contradictory information AND strength of association from literature review is classified as [++] or [+++] AND majority of [++] or [+++] for all other sources of information
Important risk factor	A minor amount of contradictory information exists AND strength of association from literature review is classified as [++] or [+++] AND majority of [++] or [+++] for all other sources of information
Minor risk factor	A moderate level of contradictory information is permitted AND strength of association from literature review is classified as [+] or [++] AND majority of [+] for all other sources of information
Rejected risk factor	No contradictory information AND Majority of [-] or [+] for all sources of information
Untested risk factor	Contradictory information AND / OR Information gathered not complete or not available

Annex 8: Preliminary Ranking by the NCA Expert

Risk factors	Prev. from secondary data	Prev. from quantitative survey	Strength of association with under-nutrition from literature review	Seasonality of risk factor	Participatory raking exercise with key informants	Interpretation
Hypothesis 1 Inappropriate breastfeeding practices	+++	++	+++	+	++	Important pathway to malnutrition
Hypothesis 2 Inadequate complementary feeding practices	+++	+++	+++	+	+++	Major pathway to malnutrition
Hypothesis 3 Low birth weight	++	++	+++	+(NA)	++	Important pathway to malnutrition
Hypothesis 4 Caregivers' level of education	++	+++	+++	+(NA)	-	Major pathway to malnutrition
Hypothesis 5 Caregivers' workload	NF	+++	+++	+++	++	Major pathway to malnutrition
Hypothesis 6 Maternal well being	+++	-	++	+(NA)	-	Rejected
Hypothesis 7 Inadequate family income management	NF	Untested	-	Untested	-	Untested
Hypothesis 8 Poor psychosocial care of children	++	+	++	++	-	Major pathway to malnutrition (Minor in period of non-employment, important in period of full-employment)
Hypothesis 9 Inappropriate reproductive health	+++	++	+++	+(NA)	++	Important pathway to malnutrition
Hypothesis 10 Inadequate sanitation	+++	+++	+++	+	++	Important pathway to malnutrition

Hypothesis 11 Inadequate access to drinking water	++	+++	+++	+++	+++	Major pathway to malnutrition
Hypothesis 12 Lack of hygiene	++	+	+++	++	-	Minor pathway to malnutrition
Hypothesis 13 Poor health seeking behavior	++	-	++	+	- (NA addressed in a non-similar form)	Minor pathway to malnutrition
Hypothesis 14 Lack of health care regarding treatment of Undernutrition (MAM/SAM)	++	+(Health centre)	-	+++	+(Health centre)	Untested
Hypothesis 15 Low agricultural production	+++	++	++	+++	-	Important pathway to malnutrition
Hypothesis 16 Land size v/s ownership	+++	+++	++	+	+	Major pathway to malnutrition
Hypothesis 17 Poor diet diversity	++	-	+++	+	++	Important pathway to malnutrition
Hypothesis 18 Poor access to food	+	-	++	++	++	Important pathway to malnutrition
Hypothesis 19 Low income	++	+++	+++	+++	++	Important pathway to malnutrition
Hypothesis 20 Traditional beliefs	-	-	-	+(NA)	-	Rejected
Hypothesis 21 Women Empowerment	NF	++	++	+(NA)	+	Minor pathway to malnutrition

Annex 9: Seasonal Calendars

The following seasonal calendars were developed together with focus group participants in each village, to demonstrate how risk factors change at different time of the year.

Village 1: Palasur

Risk Factor	J	F	M	A	M	J	J	A	S	O	N	D	
Harvest local fruit	Banana												
Harvest local veg													
Harvest of staple food													
Migration													
Labour field employment													
Farm work													
Livestock trade	Upon requirement of money												
Trade of grains													
Trade of cotton													
Social events			Weddings									Diwali	
High market price													
Less availability of food													
Water availability			-	-	-	-							
Malaria/dengue									+				
Diarrhoea													
ARI													
Summer													
Rainy season													
Winter													
Dry season			+	+	+	+							

Village 2: Dudhiya Ryt

Risk Factor	J	F	M	A	M	J	J	A	S	O	N	D
Harvest local fruit			Mango									
Harvest local veg									Ladies finger, guard, bitter guard			
Harvest of staple food			Wheat								Soya bean Maize	
Harvest of cotton												
Migration												
Labour field employment												
Farm work												
Livestock trade	Upon requirement of money											
Trade of grains and cotton												
Social events			Wedding Eid/Holi									
High market price												
Less availability of food												
Water availability												
Malaria												
Diarrhoea												
ARI												Due to winter
Most costly months												
High seeds price												
Summer												
Rainy season												
Winter												
Dry season			+	+	+							

Village 3: Shankarpura Khalan

Risk Factor	J	F	M	A	M	J	J	A	S	O	N	D	
Harvest local fruit	Banana												
Harvest local veg													
Harvest of staple food	Wheat									Maize, soya bean			
Banana seeding													
Migration													
Labour field employment													
Farm work													
Livestock trade	Upon requirement of money												
Trade of grains	Wheat									Soya bean			
Trade of cotton													
Social events			Holi	Weddings									
High market price	Depend on food availability, price can increase at any moment of the year												
Less availability of food							Heavy rain, less person at the market						
Water availability													
Malaria													
Diarrhoea													
ARI													
Most costly months				Weddings									
Summer													
Rainy season													
Winter													
Dry season				+	+								

Village 4: Bhouraghat

This seasonal calendar should be taken with caution. Indeed, the exercise was complicated to understand for the participants, and a lot of them disagree in few points. Therefore, it represents a version validated by all the participants.

Risk Factor	J	F	M	A	M	J	J	A	S	O	N	D
Migration												
Labour field employment												
Social events			Holi	Weddings								
Less availability of food												
Water availability												
Diarrhoea												
ARI												
Most costly months				Weddings								
Summer												
Rainy season												
Winter												
Dry season				+	+							

Annex 10: Risk Factors Survey Questionnaire

The following questionnaire had been translated Hindi for the data collection

I. Identification

To be filled before the interview, before entering in the household

ID.10 - Date of the survey (day/month/year) ___/___/___

ID.20 - Name of the village:

ID.30 - Number of the cluster (1 to 32):

ID.40 - Team ID number (N° 1 to 8):

ID.50 - Household number:

ID. 51 – Name of the head of the HoH

ID. 52 – Castes/Tribes:

ID.53 – General/OBC/SC/ST:

ID.60 - Starting time of the interview:

ID.70 – Comments

ID. 80 - Does a child from 0 to 59 months is present in the household?

Yes 1

No 0

If no, go to the next household

If yes, read the consent form

CONSENT FORM

Our names are,and We would like to invite you to participate in a study carried out by “Action Contre la Faim”, an organisation that is “fighting against hunger and in India aim to increase the access to healthcare and to improve the management of acute malnutrition. I will first explain the study, and then ask if you would like to participate. If you want to ask any questions, please ask at any time.

“ECHO” funds this study. The purpose of this research project is to learn more about the causes of child malnutrition in communities of Khaknar. We expect that this study will help to improve the understanding of under-nutrition for you, your community, local authorities and other agencies in order to reduce under-nutrition in the future. As a community member, you are in a position to provide us with insight into the situation, and I would appreciate it if we could interview you during several focus group discussions.

If you decide to participate in the study, we will ask you some questions about different possible causes of malnutrition, including about your household’s health, water access, sanitation, and food-related practices.

If you agree to participate in this research, we will take notes on your responses to our questions. We will record your father’s name; however your answers will not be connected to you or your family. Your name or your father’s name will not be reported in any publication; only information that does not identify you will be used for this study. We do not expect any foreseeable risk or harm to come to you from your participation in this study – in no way will your responses affect your eligibility for benefits from current or future programs.

The decision whether to be in this study is entirely up to you. You are free to refuse to participate. If any question I ask makes you uncomfortable, you do not need to answer. You can stop participating in this study at any moment you want. Your decision to stop will not affect your relationship with any institution, either now or in the future. Your decision to participate or not to participate in this study does not affect your eligibility for any current or future program benefits from any agency.

If you have additional questions or concerns about this research at any point after you participate in this study, you can contact my fellow researcher or me.

Do you have any questions about this study including about what I’ve just described to you?

Are you willing to participate in this study?

ID.90 -Does the household accept the interview?

Yes (1) /No (0)

ID.100 - If no, what is the reason?

Signature of the surveyor assuring the consent form have been read and understood by the participant:

ID. 110 - Name of the Surveyor:

Signature:

II. Introduction

Code	Question	Answer
IN.10	Is the head of household present?	1= Yes 0= No
IN.20	Does the mother or the caregiver of the 0-59months child is present?	1=Yes 0=No
IN.30	Size of the Household	_ _ _

III. Food Security and Livelihood (FSL)

- Household Dietary Diversity Score (HDDS) and HDDS-associated food sources (AFS)**

Food sources (DO NOT PROBE)

Market = 1

Own production = 2

Social networks/gift = 3

Exchange/barter = 4

Gathering wild foods and hunting = 5

Humanitarian aid/Food assistance = 6

Loan = 7

Public Distribution Shop (PDS) = 8

Now I would like to ask you about the types of foods that you or anyone else in your household ate yesterday during the day and at night. Since yesterday morning till this morning what are the food eaten in your household?		Yes	No
HDDS.10	Any roti, chapatti, naan, rice, noodles, biscuits, halwa, darabba, papad or any other foods made from millet, sorghum, maize, rice, wheat, sago?	1	0
AFS.10	Where did you find this food?		
HDDS.20	Any potatoes, yams, cassava or any other foods made from roots or tubers?	1	0
AFS.20	Where did you find this food?		
HDDS.30	Any vegetables?	1	0
AFS.30	Where did you find this food?		
HDDS.40	Any fruits?	1	0
AFS.40	Where did you find this food?		
HDDS.50	Any goat, chicken, or other birds, or any other meat or liver, kidney, heart, or other organ meats?	1	0
AFS.50	Where did you find this food?		
HDDS.60	Any eggs?	1	0
AFS.60	Where did you find this food?		
HDDS.70	Any fresh or dried fish or shellfish?	1	0
AFS.70	Where did you find this food?		
HDDS.80	Any foods made from beans, peas, dhal, cashew nuts or groundnuts, charoli?	1	0
AFS.80	Where did you find this food?		
HDDS.90	Any paneer, curd, yogurt, milk, buttermilk or other milk products?	1	0
AFS.90	Where did you find this food?		
HDDS.100	Any foods made with oil, fat, ghee or butter?	1	0
AFS.100	Where did you find this food?		
HDDS.110	Any sugar, jiggery or honey?	1	0
AFS.110	Where did you find this food?		
HDDS.120	Any other foods, such as condiments, chatni, coffee, tea?	1	0
AFS.120	Where did you find this food?		

- Food Consumption Score (FCS)**

If 0 to 7, write 0 to 7. If more than 7, write 7

Now I would like to ask you about how many time that you or anyone else in your household ate during the last 7 days		0-7	>7
FCS.10	Maize, rice, millet, wheat, sago /naan/roti/ Puri/ Bhakari of any floor?		

	Potatoes, sweet potatoes, cassava, other tubers		
FCS.20	Beans, peas, dhal, groundnuts, cashew nuts, any nuts as charoli		
FCS.30	Vegetables, leaves		
FCS.40	Fruits		
FCS.50	Goat, poultry, eggs and fish or any meat?		
FCS.60	Paneer, curd, yogurt, milk, buttermilk or other milk products		
FCS.70	Sugar, jiggery or honey		
FCS.80	Oil, fat or butter, ghee		
FCS.90	Spices, tea, coffee, salt, fish powder, chatni small amounts of milk for tea		

- **Household Food Insecurity Access Scale (HFIAS)**

In the following questions, the frequency code is the following:

1 = Rarely (once or twice in the past 4 weeks)

2 = Sometimes (3 to 10 in the past 4 weeks)

3 = Often (more than 10 times in the past 4 weeks)

I would like to ask you what was the food available to your household for the past four weeks. To answer this question, please think about the last four weeks.			
<u>If the answer is no pass to the next question (ex. HFIAS.10 no, pass to HFIAS.20)</u>			
HFIAS.10	1. Did you worry that your household would not have enough food?	Yes 1	No 0
HFIAS.11	How often did this happen in the past four weeks?	1	2 3
HFIAS.20	2. Were you or any household member not able to eat the kinds of foods you preferred because of a lack of resources?	Yes 1	No 0
HFIAS.21	How often did this happen in the past four weeks?	1	2 3
HFIAS.30	3. Did you or any household member have to eat a limited variety of foods due to a lack of resources?	Yes 1	No 0
HFIAS.31	How often did this happen in the past four weeks?	1	2 3
HFIAS.40	4. Did you or any household member have to eat some foods that you really did not want to eat because of a lack of resources to obtain other types of food?	Yes 1	No 0
HFIAS.41	How often did this happen in the past four weeks?	1	2 3
HFIAS.50	5. Did you or any household member have to eat a smaller meal than you felt you needed because there was not enough food?	Yes 1	No 0
HFIAS.51	How often did this happen in the past four weeks?	1	2 3
HFIAS.60	6. Did you or any household member have to eat fewer meals in a day because there was not enough food?	Yes 1	No 0
HFIAS.61	How often did this happen in the past four weeks?	1	2 3
HFIAS.70	7. Was there ever no food to eat of any kind in your household because of lack of resources to get food?	Yes 1	No 0
HFIAS.71	How often did this happen in the past four weeks?	1	2 3
HFIAS.80	8. In the past four weeks, did you or any household member go to sleep at night hungry because there was not enough food?	Yes 1	No 0
HFIAS.81	How often did this happen in the past four weeks?	1	2 3
HFIAS.90	9. In the past four weeks, did you or any household member go a whole day and night without eating anything because there was not enough food?	Yes 1	No 0
HFIAS.91	How often did this happen in the past four weeks?	1	2 3

- **Months of Adequate Food Provisioning (MAHFP)**

DO NOT READ THE LIST OF MONTHS ALOUD.

Use a seasonal calendar if needed to help respondent remember the different months.

Probe to make sure the respondent has thought about the entire past 12 months.

If MAHFP.10 answer is No, then No to MAHFP.20 to MAHFP.130

MAHFP.10	Now I would like to ask you about your household's food supply during different months of the year. When responding to these questions, please think back over the last 12 months, from now to the	Yes	No
----------	---	-----	----

	same time last year. Were there months, in the past 12 months, in which you did not have enough food to meet your family's needs?	1	0
If yes, which were the months in the past 12 months during which you did not have enough food to meet your family's needs? This includes any kind of food from any source, such as own production, purchase or exchange, food aid or borrowing.			
MAHFP.20	June	1	0
MAHFP.30	May	1	0
MAHFP.40	April	1	0
MAHFP.50	March	1	0
MAHFP.60	February	1	0
MAHFP.70	January	1	0
MAHFP.80	December	1	0
MAHFP.90	November	1	0
MAHFP.100	October	1	0
MAHFP.110	September	1	0
MAHFP.120	August	1	0
MAHFP.130	July	1	0

- Assets, land and livestock

Now, I would like to ask you which livestock/land do you own and how many of each		Number
ALL.10	Cows/bulls	--
ALL.20	Poultry	--
ALL.30	Horses/Donkeys	--
ALL.40	Other (specify) _____	--
ALL.50	Small plot garden	--
ALL.60	Subsistence crops	--
ALL.70	Cash crops	--

Now, I would like to ask you if your HoH own a land. If yes, what is the total surface area of the land that you are farming for (<i>probe</i>)? If one land is used for different farming, write the surface area accordingly to what is farmed. If no land, then 0		
LAND.10	Surface area MAIZE/CORN	_____ (Acres)
LAND.11	Surface area SUGAR CANE	_____ (Acres)
LAND.12	Surface area COTTON	_____ (Acres)
LAND.13	Surface area SOYA BEAN	_____ (Acres)
LAND.14	Surface area BANANA	_____ (Acres)
LAND.15	Surface area OTHER	_____ (Acres)

LAND.20	Among all this farming, does anyone use an irrigation system as drip irrigation?	Yes 1	No 0
LAND.21	If yes, what is the total surface area using this system?	_____ (Acres)	

IV. Unhealthy environment

All these questions are for domestic use of water and do not include water for animals

UE.10	What is the main source of drinking water for members of your household? (Present a map with the different water points that have been assessed) Coding key: to be determined according to the setting and map. Circle 1 to 5 and write the letter code	1 - Groundwater: open well, well/borehole with hand-pump, well/borehole with motorized pump system /_ / 2 - Protected spring /_ / 3 - Roof rainwater /_ / 4 - Water trucking /_ / 5 - Piped supply /_ /
UE.11	What is the main alternative source of drinking water for members of your household? (present a map with the different water points that have been assessed)	1 - Groundwater: open well, well/borehole with hand-pump, well/borehole with motorized pump system /_ / 2 - Protected spring /_ /

	Coding key: to be determined according to the setting and map	3 - Roof rainwater /_/ 4 - Water trucking /_/ 5 - Piped supply /_/ 6 - No alternative source	
UE.20	What do you usually do to make the water safer to drink? <u>Probe: Anything else? (record all items mentioned)</u>	Boil.....1 Add bleach/chlorine.....2 Strain it through a cloth.....3 Use water filter (ceramic, sand, composite, etc.).....4 Solar disinfection.....5 Let it stand and settle.....6 Other (specify).....7 Don't know.....8	
UE.30	How many litre of water do you collect every day? <u>If not able to answer write 00 and ask UE.31, UE.32 and UE.33. Otherwise, go to UE.40</u>	Number of litre _ _	
UE.31	How many buckets like this do you collect every day?	Number of bucket _ _	
UE.32	Capacity of the bucket	__ Litres	
UE.33	How many big pots like this do you collect every day?	Number of big pot _ _	
UE.34	Capacity of the big pot	__ Litres	
UE.35	How many small pots like this do you collect every day?	Number of small pot _ _	
UE.36	Capacity of the small pot	__ Litres	
UE.40	What do you and other household members use that water for drinking?	__ Litres	
UE.41	What do you and other household members use that water for food preparation?	__ Litres	
UE.42	What do you and other household members use that water for bathing/showering?	__ Litres	
UE.43	What do you and other household members use that water for hygiene and sanitation?	__ Litres	
UE.44	What do you and other household members use that water for other purposes?	__ Litres	
Now I would like to ask some questions about sanitation.			
UE.50	Is there a toilet or latrine in the household? <u>May I see it please? (refer to the observation items)</u>	Yes 1 No 0	
UE.60	Do you use the toilet/latrine?	Yes 1 No 0 Not applicable 8	
UE.70	How many people in the HoH use the toilet/latrine?	-- Not applicable 8	
Now I would like to know when and how you usually wash your hands.			
UE.100	When do you wash your hands? (DO NOT PROBE) <u>If quote = 1</u> <u>If not quote = 0</u> <u>Calculate immediately by summing the answers</u>	After defecation	
		After cleaning babies' bottom	
		Before food preparation	
		Before eating	
		Before feeding children (including breastfeeding)	
		TOTAL	
UE.110	Would you explain and show me what you do when you wash your hands? <u>Ask the participant to show how he/she wash his/her hands</u> <u>If do = 1</u> <u>If don't = 0</u> <u>Calculate immediately by summing the answers</u>	Uses water	
		Uses soap or ashes	
		Washes both hands	
		Rubs hands together at least three times	
		Dries hands hygienically by air-drying or using a clean cloth	
		TOTAL	

UE.120	Do you have any soap in your household for washing hands?	Yes 1 No 0
UE.130	If yes: Can you please show it to me?	1 - Not able to show 2 - Bar soap 3 - Detergent (powder/liquid/paste) 4 - Liquid soap
UE.140	How much time does it take on average to go to the drinking water source, get water, and come back? <u>If the participant gets water at home, then 8</u>	30 minutes or less..... 1 31 to 60 minutes..... 2 61 to 180 minutes..... 3 More than 3 hours..... 4 Does not know.....5 Not applicable.....8

V. Child Questionnaire

Fill this part for each child under 5 years old in the HoH. To find the age, use the event calendar.
If the child is 0-23 months, fill the “Child 0-23 months” and “Child 0-59 months” questionnaires.
If the child is more than 23 months (24 to 59 months), fill only the “Child 0-59 months” questionnaire.

Code	Question	Answer
ID.200	Name of selected child	
ID.210	Id of the selected child (Cluster No/HoH No/Child No)	
ID.220	Age of selected child <u>Calculate immediately in months</u>	Birth date ___/___/___ ___ months
ID.221	Source for obtaining age	1- Birth certificate 2 - Event Calendar
ID.230	Sex of selected child	Male 1 Female 2

A. Child 0-23 months

Now I would like to ask some question about your child.				
CP.10	Has (name) ever been breastfed?	Yes 1	No 0	Don't know 8
CP.11	How long after birth did you first put (name) to the breast? <i>If respondent reports she put the infant to the breast immediately after birth, circle '000' for 'immediately'.</i> <i>If less than one hour, circle '1' for hours and record '00' hours.</i> <i>If less than 24 hours, circle '1' and record number of completed hours, from 1 to 23.</i> <i>Otherwise, circle '2' and record number of completed days.</i>	Immediately.....000 Or: Hours:.....1 _ _ _ Or: Days.....2 _ _ _		
CP.20	Was (name) breastfed yesterday during the day or at night?	Yes 1	No 0	Don't know 8
CP.21	Sometimes babies are fed breast milk in different ways, for example by spoon, cup or bottle. This can happen when the mother cannot always be with her baby. Sometimes babies are breastfed by another woman, or given breast milk from another woman by spoon, cup or bottle or some other way. This can happen if a mother cannot breastfeed her own baby. Did (name) consume breast milk in any of these ways yesterday during the day or at night?	Yes 1	No 0	Don't know 8

Next, I would like to ask you about some liquids that (name) may have had yesterday during the day or at night. Did (name) have any:		Yes	No	Don't know
CP.50	Plain water?	1	0	8
CP.51	Infant formula such as Cerelac?	1	0	8
CP.52	Milk such as tinned, powdered, or fresh animal milk?	1	0	8
CP.53	Juice or juice drinks as example raw mango juice?	1	0	8
CP.54	Clear broth Dal water or rice water (mand)?	1	0	8
CP.55	Yogurt/Curd?	1	0	8
CP.56	Thin porridge? (Sweet or Salty)	1	0	8
CP.57	Any other liquids such as Nimboo Pani or Sharbbate?	1	0	8

CP.58	Any other liquids?	1	0	8
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How many times yesterday during the day or at night did (name) consume any (item from list)?				
CP.60	Infant formula such as cerelac?	Times B: _ _		
CP.61	Milk such as tinned, powdered, or fresh animal milk?	Times C: _ _		
CP.62	Thin porridge? (May be sweet or salty?)	Times F: _ _		

CP.70	Did (name) eat any solid, semi-solid, or soft foods yesterday during the day or at night?	Yes 1	No 0	Don't know 8
CP.71	How many times did (name) eat solid, semi-solid, or soft foods other than liquids yesterday during the day or at night?	Number of times: _ _ Don't know.....8		

H.10	Has (name) received DPT3 immunization before his/her first birthday?	Yes 1	No 0	Don't know 8
H.20	Has (name) received measles immunization before his/her first birthday?"	Yes 1	No 0	Don't know 8
H.21	Specify the source	On statement: 1	Checked on health record: 2	

UE.80	The last time (name) passed stool, where did he/she defecate?	Used potty1 Used washable diaper2 Used disposable diapers3 Went in his/her clothes4 Went in house/yard5 Went outside the premises ...6 Used own sanitation facility .7 Used public latrine8 Other (specify)9 Don't know10
UE.90	The last time (name) passed stool, where were his/her faeces disposed?	Dropped into toilet facility...1 Buried2 Solid waste/trash3 In yard4 Outside premises5 Public latrine6 Into sink or tub7 Thrown into waterway8 At the well.....9 Thrown elsewhere (specify).....10 Washed/rinsed away (specify).....11 Not applicable.....12

B. Child 0-59 months

<p>Now I would like to ask some question about your child.</p> <p>Please describe everything that (name) ate yesterday during the day or at night, whether at home or outside the home.</p> <p>Please, think about when (name) eat yesterday from the time he/she woke up yesterday morning, till the time he/she woke up this morning, at home or outside.</p> <p>Think about the time he/she woke up yesterday. Did (name) eat anything when he/she woke up?</p> <p>IF YES: Tell me everything (name) ate at this time.</p> <p>What did (name) after that? Did he/she eat something at this time?</p> <p>IF YES: What did (name) eat at this time?</p> <p>Anything else?</p> <p><u>Continue till the person answer "nothing else". Repeat the question till this morning weak up.</u></p> <p><u>If the participants answer a mix dishes, ask: "what were the ingredient of this dish?"</u></p> <p><u>Tick all the food category related to the mix dishes</u></p> <p><u>Each time one is telling what the child ate, tick "yes" in the food category</u></p>
--

HDSD.210	Porridge, bread, rice, noodles, or other foods made from grains	Yes 1	No 0	Don't know 8
HDSD.220	Pumpkin, carrots, squash, or sweet potatoes that are yellow or orange inside	Yes 1	No 0	Don't know 8
HDSD.230	White potatoes, white yams, cassava, or any other foods made from roots	Yes 1	No 0	Don't know 8
HDSD.240	Any dark green leafy vegetables	Yes 1	No 0	Don't know 8
HDSD.250	Any other vegetables?	Yes 1	No 0	Don't know 8
HDSD.260	Ripe mangoes, musk-melon, ripe papayas?	Yes 1	No 0	Don't know 8
HDSD.270	Any other fruits?	Yes 1	No 0	Don't know 8
HDSD.280	Any meat, such as goat, chicken, or duck? Liver, kidney, heart or other organ meats?	Yes 1	No 0	Don't know 8
HDSD.290	Eggs?	Yes 1	No 0	Don't know 8
HDSD.300	Fresh or dried fish, shellfish, or seafood	Yes 1	No 0	Don't know 8
HDSD.310	Any foods made from beans, peas, dhal, nuts, or seeds	Yes 1	No 0	Don't know 8
HDSD.320	Paneer, curd, yogurt, buttermilk or other milk products	Yes 1	No 0	Don't know 8
HDSD.330	Any oil, fats, or butter, ghee or foods made with any of these	Yes 1	No 0	Don't know 8
HDSD.340	Any sugary foods such as chocolates, sweets, candies, pastries, cakes, or biscuits, Barf Gola made from sugar, jiggery or honey?	Yes 1	No 0	Don't know 8
HDSD.350	Condiments for flavour, such as chillies, spices, herbs, fish powder. Tea and coffee?	Yes 1	No 0	Don't know 8
CP.100	Does anyone help (name) to eat?	Yes 1	No 0	Don't know 8
CP.110	What do you do when (name) refuses to eat? <u>Categorize answer into the positive, negative or no reaction</u>	Nothing (the child is left alone)..1 Other (coax, play with, change food)....2 Force.....3		

H.30	Has (name) had fever in the past 14 days?	Yes 1	No 0	Don't know 8
H.40	Has (name) had diarrhoea (more than 3 loose or watery stools in a 24-hour period) in the past two weeks?	Yes 1	No 0	Don't know 8
H.50	Has (name) had an illness with a cough (trouble breathing or breathe faster than usual with short, quick breaths) in the past two weeks?	Yes 1	No 0	Don't know 8

Now I would like to ask you some question regarding your relation with (name)				
MC.10	In the past 3 days, did you or any household member over 15 years of age engage in story-telling, singing or playing with (name)?	Yes 1	No 0	Don't know 8
MC.20	Do you leave (name) alone or in the care of other children younger than 12 years of age?	Yes 1		No 0
MC.30	If yes, how often?	Every day.....1 Several times a week....2 Less than once a week...3 Not applicable.....8		
Observations of child-caregiver relationship must complete this section.				

Now, I would like to ask you some question about (name) when she/he born		
LBW.10	How much did (name) weigh at birth?	_____ kg Don't know.....8
LBW.11	Specify the source	Caregiver's statement only.....1 Health record.....2 Don't know.....8
LBW.20	When (name) was born, was he/she very large, larger than average, average, smaller than average, or very small?	1 – Very Large 2 – Larger than average 3 – Smaller than average 4 – Very Small 5 – Average size 8 – Don't know 0 – Don't remember
RH.30	At the time you became pregnant with (name), did you want to become pregnant then, did you want to wait until later, or did you want no (more) children at all?	At that time.....1 Later.....2 Not at all.....3

RH.60	Does (name) have a younger sibling?	Yes 1	No 0
RH.61	If yes, what is the age difference between (name) and his/her direct younger sibling? <u>Use the event calendar</u>	__ months	Don't know 8 Not applicable 99
RH.62	If don't know, what is the age of his/her direct younger sibling? <u>Use the event calendar</u>	__ months Not applicable 99	

OBSERVATIONS Child 0-59 months



Caregiver-child interaction observation:		Yes	No
OC.10	Caregiver tends to keep the child within visual range and looks at the child quite often	0	1
OC.20	Caregiver talks to the child during the course of the visit	0	1
OC.30	Caregiver interacts with child to promote development and learning	0	1
OC.40	Caregiver smiles at the child, laughs with the child, caresses, kisses or hugs the child	0	1
OC.50	Caregiver spanked or hit the child during the visit, or shouted or yelled at him/her.	1	0
TOTAL 0 to 5			

VI. Caregiver Questionnaire

Now I would like to ask you questions about yourself		
CG.10	How old are you?	_____ years
CG.11	Source	Caregiver's statement.....1 Birth certificate.....2
CG.20	Did you eat more/less/same amount as usual when you were pregnant or breastfeeding?	More.....1 Less.....2 Same.....3
CG.30	Did you go to school?	Yes 1 No 0
CG.40	If yes: How many years have you completed?	Number of years: _ _ Not applicable 99
CG.50	Do you feel supported? (include all kind of support)	Extremely.....1 Somewhat.....2 Not very.....3 Not at all.....4
CG.60	Do you feel you have too much work to take care of your child?	Yes 1 No 0

Please indicate for each of the five statements, which is closest to how you have been feeling over the last two weeks.

Example: If you have felt cheerful and in good spirits more than half of the time during the last two weeks, put a tick in the box with the number 3.

Over the last two weeks:		All of the time	Most of the time	More than half of the time	Less than half of the time	Some of the time	At no time
WHO5.10	I have felt cheerful and in good spirits	5	4	3	2	1	0
WHO5.20	I have felt calm and relaxed	5	4	3	2	1	0
WHO5.30	I have felt active and vigorous	5	4	3	2	1	0
WHO5.40	I woke up feeling fresh and rested	5	4	3	2	1	0
WHO5.50	My daily life has been filled with things that interest me	5	4	3	2	1	0
TOTAL (calculate immediately by summing up all answers)							

If WHO5 total is below 13, ask the following question MDI10

MDI10	How much of the time in the last two weeks:	All the time	Most of the time	Slightly more than half the time	Slightly less than half the time	Some of the time	At no time
WB.10	Have you felt low in spirits or sad?	5	4	3	2	1	0
WB.20	Have you lost interest in your daily activities?	5	4	3	2	1	0
WB.30	Have you felt lacking in energy and strength?	5	4	3	2	1	0
WB.40	Have you felt less self-confident?	5	4	3	2	1	0
WB.50	Have you had a bad conscience or feelings of guilt?	5	4	3	2	1	0
WB.60	Have you felt that life wasn't worth living?	5	4	3	2	1	0
WB.70	Have you felt difficulty in concentrating, e.g. when reading the newspaper?	5	4	3	2	1	0
WB.80	Have you felt very restless?	5	4	3	2	1	0
	Have you felt subdued or slowed down?	5	4	3	2	1	0
<u>For the calculation of the MDI, keep the highest number answered.</u>							
WB.90	Have you had trouble sleeping at night?	5	4	3	2	1	0
WB.100	Have you suffered from reduced appetite?	5	4	3	2	1	0
	Have you suffered	5	4	3	2	1	0

	from increased appetite?						
For the calculation of the MDI, keep the highest number answered.							
TOTAL 0-50 (calculate immediately by summing up all answers)							

Now, I would like to ask you some questions related to family planning
For women from 15 to 49 years old married or in an union

RH.10	Couples use various ways or methods to delay or avoid a pregnancy. Are you currently doing something or using any method to delay or avoid getting pregnant?	Yes 1	No 0
RH.20	<u>If yes</u> , What are you doing to delay or avoid a pregnancy? <u>Do not probe</u>	Female/male sterilization.....1 IUD.....2 Injectable.....3 Implants.....4 Foam/jelly.....5 Pill.....6 Male/female condom.....7 Diaphragm.....8 Lactational amenorrhea method.....9 Other (specify).....10	
RH.40	How old were you when you gave birth for the first time?	_ _ years	
RH.50	Did you take some time to rest after your most recent delivery?	Yes 1	No 0
RH.51	If yes, how many days? <u>Use the event calendar</u>	_ _ days	

H.60	Did you see anyone for Antenatal care for your last pregnancy? If yes, "Whom did you see? Probe for the type of person seen and circle all answers given. "Anyone else?"	Health professional (Doctor, nurse/midwife, auxiliary midwife) 1 Other person (Traditional birth attendant Community health worker, Relative/friend) 2 Other (specify)_____3 No one_____4
H.70	How many times did you see someone for Antenatal care?	Number of times : _ _
H.80	What are your main barriers from going to the health centre when someone is sick?	Money/cost 1 Time 2 Transportation means 3 Geographical distance 4 Decision power 5 The service is not good enough 6 Culture, specify: _____ 7 Other, specify: _____ 8 No barriers 9
H.90	How long does it take you to go to the nearest health center?	_ _ minutes
H.100	Where did you go for your last delivery?	Health center or hospital_____1 Home (Your home/Other home) 2 Other public (<i>specify</i>)_____3

DP.10	Who decides whether children should go to school?	Mother 1 Father 2 Both 3 Other 4
DP.20	Who decides when the child has to consult medical services?	Mother 1 Father 2 Both 3 Other 4
DP.30	Who decides how to spend the household's money?	Mother 1 Father 2

		Both 3 Other 4
DP.40	Who decides if or when to have other children?	Mother 1 Father 2 Both 3 Other 4

ID.120: Ending time of the interview:

VII. Water point observation 1/2



Refer to question UE.10 “What is the main source of drinking water for members of your household?” and fill accordingly (1 to 5).

According to question UE.10, go to the correspondent water point and answer to the correct questionnaire (if UE.10 answer is 1, then fill the questionnaire 1, if answer is 2 fill questionnaire 2, if answer is 3 fill questionnaire 3, if answer is 4 fill questionnaire 4, if answer is 5, fill questionnaire 5)

1. Groundwater: open well, well/borehole with hand pump, well/borehole with motorized pump system:		No	Yes
G.10	Is there a latrine or any source of pollution within 30 m of the well?	0	1
G.20	Does the fence around the well allow animals in? <u>If there is no fence, answer is yes</u>	0	1
G.30	Is the drainage channel less than 2 m long, broken or dirty?	0	1
G.40	Is there stagnant water close to the well?	0	1
G.50	Is the apron less than 1 m wide all around the well?	0	1
G.60	Are there any cracks in the well apron and headwall?	0	1
G.70	Is the cover of the well unsanitary and closed?	0	1
G.80	Is the well poorly sealed for 3 m below ground level?	0	1
G.90	Is the water point dirty?	0	1
G.100	Is the lift system in a bad condition / are ropes and buckets dirty? <u>If it is a borehole, then no</u>	0	1
TOTAL SCORE OF RISK (number of “yes” points)			

2. Protected spring		No	Yes
S.10	Is there a latrine or any source of pollution within 30m uphill of the spring?	0	1
S.20	Does the fence around the spring allow animals in?	0	1
S.30	Is the drainage channel blocking the flow and allowing stagnant water?	0	1
S.40	Is the spring open to surface water contamination?	0	1
S.50	Is the spring box cracked?	0	1
S.60	Is the inspection cover cracked or unsanitary?	0	1
S.70	Is the cut-off ditch above the spring blocked or non-existent?	0	1
S.80	Is the water point dirty?	0	1
S.90	Is there standing water at the collection point?	0	1
S.100	Is the gutter disposed upstream of the site is missing or improperly maintained?	0	1
TOTAL SCORE OF RISK (number of “yes” points)			

3. Roof rainwater harvesting sanitary inspection form		No	Yes
RW.10	Is the roof area dirty?	0	1
RW.20	Are the gutters that collect water dirty?	0	1
RW.30	Is there absence of a filter box at the tank inlet or is it not working well?	0	1
RW.40	Is there any other point of entry to the tank that is not properly covered?	0	1
RW.50	Are there cracks in the wall of the tank?	0	1
RW.60	Is the inside of the tank dirty or not periodically cleaned and disinfected?	0	1
RW.70	Are the taps leaking?	0	1
RW.80	Is the concrete apron near the tank absent or broken or dirty?	0	1
RW.90	Is the drainage in bad condition and the water inadequately drained?	0	1
RW.100	Is there any source of pollution around the tank or water collection area?	0	1
TOTAL SCORE OF RISK (number of “yes” points)			

4. Water trucking sanitary inspection form		No	Yes
WT.10	Is the water point where the truck collects the water unsanitary?	0	1
WT.20	Is there no, or inadequate, chlorination of the water during the trucking process?	0	1
WT.30	Is the pipe used to fill and empty the water in the truck unsanitary or dirty?	0	1
WT.40	Is the tanker ever used for transporting other liquids besides drinking water?	0	1
WT.50	In the filler hole of the truck unsanitary or is the lid missing?	0	1
WT.60	Are any parts of the system (water tank of the truck, storage tank in the community, distribution point) not periodically cleaned and disinfected?	0	1
WT.70	Is the storage tank / distribution point unsanitary and dirty?	0	1
WT.80	Is there no chlorination of the water at the storage tank / distribution point?	0	1
WT.90	Is the storage tank at the distribution point badly covered?	0	1
WT.100	Is there stagnant water around the water tank / distribution point?	0	1
TOTAL SCORE OF RISK (number of “yes” points)			

5. Piped supply sanitary inspection form		No	Yes
PS.10	Is the source badly protected?	0	1
PS.20	Is there any point of leakage between the source and the reservoir?	0	1
PS.30	If break-pressure tanks, are they covers unsanitary? (If no break-pressure tanks, answer is no)	0	1
PS.40	Is the storage tank cracked or leaking and the inspection cover or the air vent unsanitary?	0	1
PS.50	Is the storage tank dirty or not regularly cleaned?	0	1
PS.60	Are there any leaks in the distribution system?	0	1
PS.70	Are the areas around the taps unfenced or allowing access to animals?	0	1
PS.80	Is there inadequate drainage and standing water around the taps?	0	1
PS.90	Are the surroundings of the taps dirty and with possible contamination source (excreta refuse, etc.)?	0	1
PS.100	Is the water not chlorinated?	0	1
TOTAL SCORE OF RISK (number of “yes” points)			

VIII. Water point observation 2/2



Refer to question UE.11 “What is the main alternative source of drinking water for members of your household?” and fill accordingly (1 to 5)

If no alternative source of water, go to observation part IX

1. Groundwater: open well, well/borehole with hand pump, well/borehole with motorized pump system:		No	Yes
G.110	Is there a latrine or any source of pollution within 30 m of the well?	0	1
G.120	Does the fence around the well allow animals in? <u>If there is no fence, answer is yes</u>	0	1
G.130	Is the drainage channel less than 2 m long, broken or dirty?	0	1
G.140	Is there stagnant water close to the well?	0	1
G.150	Is the apron less than 1 m wide all around the well?	0	1
G.160	Are there any cracks in the well apron and headwall?	0	1
G.170	Is the cover of the well unsanitary and closed?	0	1
G.180	Is the well poorly sealed for 3 m below ground level?	0	1
G.190	Is the water point dirty?	0	1
G.200	Is the lift system in a bad condition / are ropes and buckets dirty? <u>If it is a borehole, then no</u>	0	1
TOTAL SCORE OF RISK (number of “yes” points)			

2. Protected spring		No	Yes
S.110	Is there a latrine or any source of pollution within 30m uphill of the spring?	0	1
S.120	Does the fence around the spring allow animals in?	0	1
S.130	Is the drainage channel blocking the flow and allowing stagnant water?	0	1
S.140	Is the spring open to surface water contamination?	0	1

S.150	Is the spring box cracked?	0	1
S.160	Is the inspection cover cracked or unsanitary?	0	1
S.170	Is the cut-off ditch above the spring blocked or non-existent?	0	1
S.180	Is the water point dirty?	0	1
S.190	Is there standing water at the collection point?	0	1
S.200	Is the gutter disposed upstream of the site is missing or improperly maintained?	0	1
TOTAL SCORE OF RISK (number of “yes” points)			

3. Roof rainwater harvesting sanitary inspection form		No	Yes
RW.110	Is the roof area dirty?	0	1
RW.120	Are the gutters that collect water dirty?	0	1
RW.130	Is there absence of a filter box at the tank inlet or is it not working well?	0	1
RW.140	Is there any other point of entry to the tank that is not properly covered?	0	1
RW.150	Are there cracks in the wall of the tank?	0	1
RW.160	Is the inside of the tank dirty or not periodically cleaned and disinfected?	0	1
RW.170	Are the taps leaking?	0	1
RW.180	Is the concrete apron near the tank absent or broken or dirty?	0	1
RW.190	Is the drainage in bad condition and the water inadequately drained?	0	1
RW.200	Is there any source of pollution around the tank or water collection area?	0	1
TOTAL SCORE OF RISK (number of “yes” points)			

4. Water trucking sanitary inspection form		No	Yes
WT.110	Is the water point where the truck collects the water unsanitary?	0	1
WT.120	Is there no, or inadequate, chlorination of the water during the trucking process?	0	1
WT.130	Is the pipe used to fill and empty the water in the truck unsanitary or dirty?	0	1
WT.140	Is the tanker ever used for transporting other liquids besides drinking water?	0	1
WT.150	In the filler hole of the truck unsanitary or is the lid missing?	0	1
WT.160	Are any parts of the system (water tank of the truck, storage tank in the community, distribution point) not periodically cleaned and disinfected?	0	1
WT.170	Is the storage tank / distribution point unsanitary and dirty?	0	1
WT.180	Is there no chlorination of the water at the storage tank / distribution point?	0	1
WT.190	Is the storage tank at the distribution point badly covered?	0	1
WT.200	Is there stagnant water around the water tank / distribution point?	0	1
5. TOTAL SCORE OF RISK (number of “yes” points)			

5. Piped supply sanitary inspection form		No	Yes
PS.110	Is the source badly protected?	0	1
PS.120	Is there any point of leakage between the source and the reservoir?	0	1
PS.130	If break-pressure tanks, are they covers unsanitary? (If no break-pressure tanks, answer is no)	0	1
PS.140	Is the storage tank cracked or leaking and the inspection cover or the air vent unsanitary?	0	1
PS.150	Is the storage tank dirty or not regularly cleaned?	0	1
PS.160	Are there any leaks in the distribution system?	0	1
PS.170	Are the areas around the taps unfenced or allowing access to animals?	0	1
PS.180	Is there inadequate drainage and standing water around the taps?	0	1
PS.190	Are the surroundings of the taps dirty and with possible contamination source (excreta, refuse, etc.)?	0	1
PS.200	Is the water not chlorinated?	0	1
TOTAL SCORE OF RISK (number of “yes” points)			

IX. Observations sanitation facilities



Individual sanitation Observation		Yes	No
SAN.10	Are the feces well isolated from the environment? (Leak, crack) *	1	0
SAN.20	Is the outlet safe? (Leading to open sewer, river, nullah) *	1	0
SAN.30	Presence of any anal cleaning item/material (, water...)	1	0
SAN.40	Is there a hand washing station inside the latrine or within 10 paces of the latrine?	1	0
SAN.50	Is there a cleansing agent at this hand washing station inside/near the latrine? (yes	1	0

	includes soap, detergent and ash, whereas no include mud, sand and other)		
SAN.60	Presence of flies or other insects entering or exiting the pit	1	0
SAN.70	Presence of excreta on the ground or around the pit or seat	1	0

Water management Observation		Yes	No
WAT.10	Is the container used to carry water left uncovered during transportation?	1	0
WAT.20	Is the container used to carry water dirty?	1	0
WAT.30	Is the water storage left open/uncovered?	1	0
WAT.40	Is there a water cleaning system visible (filter, boiling container, chlorine tablets...)?	0	1
WAT.50	While serving water to drink, is there a risk of water contamination? (do the fingers touch the water? Or is the scooping container used dirty?)	1	0

Annex 11: Qualitative enquiry discussion guide

Meeting with stakeholders: community leaders, NGO staff, government representatives, local leaders, health workers, teachers...

1 - Our names are xxxxx and xxxxx.. We are working for Fight Against Hunger/Action Contre la Faim, an organisation that is fighting against hunger and in India aim to increase the access to healthcare and to improve the management of acute malnutrition. ACF is working in Burhanpur district since 2012.

We are doing a research project to learn more about the causes of child malnutrition in communities of Khaknar. This study is funded by ECHO.

To learn more about Undernutrition we would like to ask you some question.

I will explain the study and if you want to ask any questions, please ask at any time. We would like to ask you some question to obtain an “orientation” to key facets of the culture: beliefs, norms concerning gender roles, motherhood, fatherhood, and life cycle. And we also would like to ask for your help to identify mothers of malnourished and positive deviant children.

We have 3 objectives: develop a local definition of malnutrition, characterize food security, health and care in your community, understand your perceptions of the causes and consequences of poor food security, health and care in relation to malnutrition.

Do you agree to discuss a while about those subjects with us?

2 – Local definition/understanding of malnutrition

What means for you undernutrition?

Do you know different form of undernutrition? If yes, what are they?
How do you recognize a children suffering of undernutrition? How would you describe this child?

How do you define malnutrition?

What are the causes of malnutrition? Any behaviour, practices?

Are there any children that can more likely suffer of malnutrition? Who are they? And why?

Are all the children you know growth equality? If no, what do you think? Why do not they growth in the same way?

Is anyone can be affected by malnutrition? Who can?

Is malnutrition a disease? If yes, it is contagious?

Do some mothers suffer of malnutrition? Most likely which one? There is any link with their age? If yes, what is it?

Is malnutrition a big problem in you village?

What do you do if you see a malnourished child? And how can you avoid that?

Are all the children/mothers malnourished? If no, how they manage to be healthy?

What is your definition of food security?

What are the livelihoods in your village?

Do you know if people get easily their ration card? Do they have it? Do they use it? If they don't, do you know why?

Is it easy to go to the market? What can you buy from the market? Are people coming inside to the village to sell food? If yes, what kind of food?

Is there any shop in the village? What does it sell?

How people get their food?

Are there any special items you eat from the forest area?

Do people have livestock here? (which animals?)
Do families migrate from here? The entire village? Why? Is the entire household migrating?
Where do they go?
Do you know what they do there? Where they live? If they can find food easily?
Do you know who prepares the food at home? Who is choosing the food to buy and go to buy it?
Do all the family eat together or there is any kind of order? If yes, who eat first?
Do you think the family give more food to boys/girls/both same?
What kind of food the children are eating?
Does anyone give advice on child's diet?
Is there any special items given only to the children?

Do any one give advice to the father and the mother regarding the children, who?
What is the role of the mother in law regarding the new baby?
At what age the mother/father use to get married? First baby? How many children per family? It is better to have many children or to have few children? Why?

Do you think mother are working too much?
Do they come back to work soon after delivery? Why?

If a child is sick, what the family do first?
Where do they go?
Who take care of the sick child?
Is some child sick because of bad spirits? If yes, what do you do?
How do we recognize a healthy child?
What the family do if the sick child doesn't get better?
Are some traditional treatments available at the village? What kind? Who gives advice to use this kind of treatments?
Is immunization done ate the health centre? Is it a good or a bad thing?
Who get more sick girls or boys, or same? Why girls/boys get sicker?

Who is taking care of the babies?
Do the fathers take care of the children?
When a baby born, what does she/he eat first? And during the first 6 months? And after?
Do mothers breastfeed their children? Do some mothers don't breastfeed there child? Why? Is breastfeeding a good thing?
When a baby is born, does the mother stay with his husband or does she come back to her family?
Is it same to have a baby girl or a baby boy?
Is there any believing regarding breastfeeding?
Is all the year the children eating the same food?

FGD Malnutrition

1 - TOOL PHOTO

I will show you some pictures; can you identify the children suffering from malnutrition? How did you see that this child is suffering from malnutrition? (One marasmus child/one kwashiorkor child). For you, are there any other sign? You told me this baby is fine, why?

2 - Is malnutrition a big problem in your community?

3 - Do you think an adult can suffer from malnutrition?

4 - TOOL PHOTO (one healthy and one SAM child)

In your village, there are some mothers/children affected by malnutrition and some are not. What do you think they do differently?

5 - For you, what are the causes of malnutrition? (if no answer: compoment/practices?)

6 - TOOL PHOTO (one SAM child)

If you think you child is malnourished, what do you do?

FGD Food Security

1 - What are your livelihoods?

Some of you told that you are daily labor workers. Are you doing this job all the year?

2 - How many of you are seasonally migrating for work? When do you use to quit your village and to come back? Do you migrate with your all family? Where?

What job are you doing there? And when you are in your village?

Identify who are the migrants if mix group

3 - Do you have livestock?

If yes, do you use it for you or do you sell them? Do you keep their product or do you keep them (eggs, milk...)?

Do you vaccinate your livestock?

Sometimes, some of your livestock can be sick? It is happening often? Do some of them die from diseases? Often?

4 - We heard in other villages that villagers get some problem with the MGNREGA.

Does some of you were involved in a MGNREGA project? If yes, did you get pay on time? If no, how long did you have to wait? If never been involved, why (no proposition?/not interested?)? *Last question only for very poor and migrants*

5 - Do you have a blue (BPL) or a yellow (AAY) card? If yes, do you use it? If no, why?

Question only for very poor and migrants. If no ration card, why?

6 - Sometimes, you can face a lack of income. What do you do if you need extra money?

If credits/debts, to who do you ask them? Do you ask for it often?

7 - *Question only for migrants*

When you are in migration, do you have food every day? Enough for the entire family?

How did you get this food? What kind of food? Do you like it?

8 - What are market day in your village? Do you get enough food for the week? (probe veg/fruit, pulse, rice, non veg items)

If you need to buy something else during the other days, where do you get/buy it?

Do you think it easy to buy food? If no, why?

9 - TOOL FOOD ITEMS

Can you put some stones on the items you usually buy?

Can you now put some stones on the items you prefer to it?

10 - Do you have a land? It is enough big for you?

Forest areas you told us, you have a land, how did you get it?

Legally yours or not? /What issue are you facing regarding ownership?

11 – *If yes at Q10*

Does your land is a good land? Do you grow food easily? If no, why?

What do you grow? Did you try something else?

Do you keep the production or do you sell it? Do you get enough production?

How do you grow your food? Do you get problem to make it grow? What kind of?

What months do you use to get more crops?

What months do you work in your land?

What months do you sell your grains?

12 - Do you eat any food from the forest? If yes, what/when/how?

13 - Are you facing long drought period/flood often?

This week you just have little money, what do you buy from the market first? (*if answer is "grocery", precise the items*)

14 – At home, how do you preserve the food you bought and the leftover? When do you cook?

15 - Do you know any bad food for kid? Do you cook specially for your children?

Who give you advice regarding your baby diet? /Who told you what to give to your baby?

What do you give to your child?

Everyone is giving regular meal (dhal/rice/veg/non-veg) to her baby. Does someone give a different meal? If yes, why?

16 - *Pregnant women*

Do you change your food habit? Can you tell us a usual meal you take?

Seasonal calendar

1 - Can you put two stones when you get enough.... /one stone when you get a small amount/ nothing when it is not available *Use a different kind of stone by item*

- Vegetables
- Fruits
- (non veg) eggs/meat

2 – *Open question*

When do you get not enough food?

When the market price is higher?

Annual calendar

Grandmothers FGD only (mothers are too young)

In the past years, when did you get a big problem to grow food? Why?

When did you get a big problem to get food? Why?
When did you get difficulty to find daily labor occupation/migration job?
Did one year the market prices went very high?

FGD WASH

1 - What are the different sources of water you use?

2 - Calendar

What are the seasons you get enough/less water?

3 - Source of water: Are you using the same source for drinking/animal/hygiene?

4 - How long per day do you need to collect water? (go/queue/take/back)
Is it all the year the same? Do you go with your kids? When do you use to collect water?

5 - Is the water free?

6 - Is the water good? How do you know?

7 - What is going to happen if you drink “not good” water?

8 - Do you drink directly the water? Do you do something before? What? (if confusion probe “filter” as a starter)

9 - How do you keep the water? If unable to answer, use a tool: one pot + one plate. Show the items and ask: this is your pot of water, how do you keep it safe all the day? If plate is mentioned, then ask: do you do that at your home?

10 - Does everyone is able to drink the quantity of water one wants?

11 - Where do you go for toilet?

Note: People will often answer for defecation. Ask then, and for urinate? For women, it is not always at the same location.

12 - Do you bring water with you? (if yes, we can assume it is for cleaning). What do you do after? (accordingly to the group ask, what for do you use the water?). Do you wash your hand? When? Where?

13 - Do you use the same place as the man? Where the children go? At what age? What is the distance for you/children?

14 - There are any common latrines on your village? Are they used? By who?

15 - What do you consider as good/bad hygiene practices for your child?

16 - What are the major hygiene/water constraints you are facing? (example: price of soap, security in the open defecation location...)

NOTE: we are not asking if the participants have private latrines, as most of them don't. If someone has, one uses to tell it at question 11 (most of the time as it is a good social criterion).

FGD HEALTH

- 1 - What is a healthy child? How do you know your child is healthy?
- 2 - Do girl and boy growth on the same way? (size/weight)
- 3 - What are the challenges to maintain your child healthy? What are the practices to do so?
- 4 - What are the most common child illnesses in your village? At what season? If the disease is not clear or if there is no English translation, we may think it is coming for superstition, then ask the symptoms/treatment to clear out.
Migrants: Do you find your child more/same/less healthy in migration? Do you know why?
- 5 - What do you do if your child is sick? Who give you advice? And what do you do if your child health gets worst?
- 6 - **TOOL**: picture of the SAM child with superstition items around his neck (picture from Kawa district, MP)
I notice some child with this kind of red string around the neck, the legs, and the arms. I don't know what it is for. Can you please explain me?
Last time, you told me this kid was suffering from “sookharog”⁹⁷. What do you think of the use of this red string?
Do you use the same practices? If no, why? If yes, do you use only this practice? If no, in what order do you go to the superstition healer and the doctor? Why?
Do you think it is fine to use only this practice? What do you do if your kid is not getting better?
- 7 - Do you use auto-medication? What kind? Do you use any herbs? What kind? Where and when do you find it? What do you do if your kid is crying too much/get fever?
- 8 - Grand-mothers. In the past years, did you notice any change regarding child treatment? What kind? Why does it change?
- 9 - What kind of treatment can you get from ASHA workers? Advices from ASHA and Anganwadi workers?
- 10 - What do you think about immunization? It is a good/bad thing? Why? Do your kids are vaccinated?
- 11 - Did you go to the NRC? If no, do you heard about what is the NRC? Is it good/bad? Enough? Far/Expensive to go and stay?
What do you think about Anganwadi centers? Do your children get food all the time there?

⁹⁷ Refers to «dried up» disease. It is in fact marasmus. Believes say that it is “catch” and cannot be cured. Superstition practices may help. Today, most of the villagers do know that it “may be” and use to see real doctor as well as superstition healers. This question is made to understand in what order and why.

12 - Lactating/Pregnant women. Do you eat less/more/different food? Why? Who gave you advices? Do you have time to eat? If no, why?

13 - According to you, what is the better age to get a first baby?

14 - Do you think you get your baby too young? How many children do you have?

15⁹⁸ - If you want no more children, what do you do? If you want to wait before two children, what do you do?

You told me: “operation”, “tablets”, “IUD”. Did you do it? Do you use any of these items?

You told me, you did the operation. Can you explain me what is it for? How it works? Are you happy by performing it?

I am not sure to understand what you mean by tablets/IUD⁹⁹. Is your tablet look like that (show or draw)? If matching with contraceptive pills, ask: when do you take it?

Can you explain me what is an IUD? If explanations are matching, draw the dispositive to confirm.

Did you take this decision by yourself? Does your husband knows/your in-laws?¹⁰⁰

FGD Care Practices

1 - At home, who is taking care of your child? And when you are on the field? It is the same when you are migrating?

2 - Remember when your baby just born? How did you feed her/him the first time? Or what was his/her food? When? Why?

If not breastfeed on the first hour, what did you give? For how long? Why?

Did you get any problem to breastfeed your child? What solution did you find?

3 - Up to 6 months, what your baby ate? Anything else?

4 - When did you give her/him a different food the first time? What (chapatti, dhal, water dhal, rice, water rice). When did you give her/him the first time a solid food? What? What frequency?

5 - When do you stop breastfeeding? What food did you give at this time? How your child reacts? If not good response ask: then what did you do?/what did you give?

6 - When do you feed your child? Who feed your child? In migration, when do you feed and who do you feed your child?

⁹⁸ Precise, and repeat several times during this discussion that if they are not feeling comfortable with the question, we can move to the next topic. Women do not have to feel uncomfortable during the FGD, otherwise they may stop to participate.

⁹⁹ Women will use another word for IUD

¹⁰⁰ Most of the time the husband knows and the women ask why he will not know, prepare a short brief about why you are asking this question. Most of the time, women will ask a lot of precision regarding contraception, be ready to answer on the technical common aspects. Do not forget to repeat that you are not a doctor and they have to ask advices to a doctor and do not take anything without a medical legal prescription.

7 - When do you think a baby is able to eat alone?

8 - When baby is able to eat the exact same food as her/his parents? Do you cook specially for your baby? Is it the exact same food? Your baby is eating spicy food?¹⁰¹

9 - At what age did you change the quantity of the food that your child is eating?

10 - Who give you advice regarding your child diet? Who decide what your child will eat? You? Someone else?

11 - What do you consider as a good/bad care practices? If not able to answer, give some example of situation: baby is crying too much, baby is disturbing me....
Are you facing any constraint to take care of your child? (focus on migration and field labor workers)

13 - Do older siblings are feeding your child? What age?

14 - Do you give the same quantity of food to boys and girls?

15 - Do the teenagers go to school? If not, what do they do?

16 - How much time do you spend with your kid each day? It is same all the year? What are your constraints regarding the time you spend? Do you think you spend enough time? What are the consequences of this lack of time?

Grand-mothers

Ask 1, 3, 4, 6, 7, 8, 9, 11 (first part), 13, 14, 15

2 - How did your daughter-in-law first feed her baby? What do you think about it? Did you give her any advice? What kind of?

5 - What was the first solid food your grand-daughter/son ate? How did she/he react? What did you do?

10 - Did you give any advice to your daughter-in-law regarding her baby diet? What kind of advices?

16 - Do you think your daughter-in-law is spending enough time with her child? If no, what are the reason and consequences?

17 - Did you notice any change regarding the care practices and the breastfeeding practices these past years? What kind of? Why did it change?

¹⁰¹ Usually the mothers will start to say if they are cooking with salt and spice and why

FGD Mental Health (mothers)

- 1 - How would you describe the workload of women? At home/on the field?
- 2 - Do you think you have too much work to do? If you need to stop working for a while, how do you manage? Who take the decision (you/someone else)? Do you feel supported on your work? By who?
- 3 - Are lactating/pregnant women given different responsibilities?
- 4 - If you were able to work less, what will be your first priority? (rest, take more care of children...)
- 5 - Are you sometimes feeling tired because you have too much work with your different children?
- 6 - How do you feel if your child is too much active/too much crying? Do you feel supported?
- 7 - Migrants: how will you describe your living condition in migration? More work? Less time for you? Housing same, worst, better? Isolate from your family? Less supported? Most of you come back for Holi, how do you feel at this time?
- 8 - Did you go to school? If no, why? If yes, up to what class? Why did you stop? Who took this decision? How did you feel at this moment?
- 9 - Last time we discussed about contraception (pills, I.U.D., sterilization). Who take the decision? Are you feeling supported on this decision? Who disagreed and what did you do then? Who decides when to have another child? You alone? With your husband? Someone else?
- 10 - When you got pregnant, did you see a health worker? A doctor? A superstition person? If yes to the last question, how did he help you?
- 11 - What types of resources women have an independent access to?
- 12 - How responsibilities are shared within the household? Who is taking the majority of the decision? How do you feel?
- 13 - Do you feel free to take your own decision? If yes, do you feel supported? By who? If no, why?
- 14 - What are your relationships with your in-laws? Do you feel supported by them? If you disagree with them, what is happening?
- 15 - In every couple, fight can occur. What kind of conflicts can occur between a wife and her husband? And what are the reasons (child education, contraception, interference of in-laws, consumption of alcohol/drugs, gambling...)? How this conflict used to be resolved?
- 16 - There are men who treat their wives well and men who don't. There are women who treat their husband well and women who don't. Can you give me some examples?

What type of physical and emotional abuse can happen? For the bad treatment examples, why it is happening?

Do you think it is happening too much in your community? Why? How do you feel regarding that?

Who do you think will be the right person(s) to help women who are in abusive relationships?

FGD Mental Health (grand-mothers)

1 - How would you describe the workload of women? At home/on the field?

2 - Do you think your daughter-in-law has too much work to do? If she needs to stop working for a while, is it possible? If no, why? Who take the decision (you/someone else)?

3 - Are lactating/pregnant women given different responsibilities?

4 - If your daughter-in-law is feeling too much tired or a bit depress, what do you do?

5 - You have many grandchildren, some of them are girls, and some of them are boys. Do you think both of them should go to school? Do you think it is a good thing for girls to complete their studies? Why? Who will decide if they can complete their education? In the past years, did you notice any modification on the access to education?

6¹⁰² - If a woman wants to take any contraception, is she able to take her decision by herself?

Do you know who will decide when to have another child? Is it discussed at family level?

7- When your daughter-in-law got pregnant, did she see a health worker? A doctor? A superstition person? Did you give her any advices? What type of?

8 - What types of resources women have an independent access to?

9 - How responsibilities are shared within the household? Who is taking the majority of the decision? What do you think about it?

In the past years, did you notice any change regarding decision making at house level?

10 - What are your relationships with your daughter-in-laws? If you disagree with them, what is happening?

11 - In every couple, fights can occur. What kind of conflicts can occur between a wife and her husband? And what are the reasons (child education, contraception, interference of in-laws, consumption of alcohol/drugs, gaming...)? How this conflict used to be resolved?

Do you think it is happening too much in your communities? Why? What do you think about this kind of fight?

¹⁰² According to the group, this question will be asked or will not. Some of the grandmothers can find this question to much inappropriate. Some of them can also think that her daughter-in-laws say something against them and it can be a problem for the mother. Ask this question, only if the discussion is favourable to it.

Rating exercise

Remember to the participants a short, easy-understandable and correct definition of undernutrition: disease resulting from not getting the correct nutrients regarding what the body needs.

Propose a definition of undernutrition designed accordingly to the communities' thoughts:

It is a non-contagious disease; the child is weak and does not act as normal child. He/She is not eating properly anymore and not playing and interacted as he/she does. It can affect child as well as mother. It is like sookharog but can be cured. Child can easily die if nothing is done.

Do you agree with this definition? (Debate. If group disagree with the definition design together a definition closer to their perception of the problem).

Present the most relevant hypothesis related to undernutrition raised during the FGD. Provide black board to the participants, explain the exercise and ask "if you agree that it is one of the main and major causes of undernutrition in your community, please draw a cross; otherwise draw a single line"¹⁰³.

- 1 – Low income
- 2 – Small land
- 3 – Poor diet diversity
- 4 – Access to food
- 5 – Lack of toilets
- 6 – Shortage of good water in summer/raining season
- 7 – Introduction of BF (not in the 1st day and/or not exclusive BF up to 6 months: child is feed with jiggery water/dhal water/roti/any other food)
- 8 – Complementary Feeding (frequency and item not appropriate regarding the age of the child)
- 9 – Lack of transport to the nearest health center (too expensive to go/stay and too complicate)
- 10 – LBW
- 11 – Workload
- 12 – Reproduction Health (undesired pregnancy, too many child, early first pregnancy)
- 13 – Decision Power (lack of decision power for the mother)
- 14 – Going to traditional healer (use local names) instead of going to the doctor¹⁰⁴

¹⁰³ In a perfect rating exercise, the participants will rate from 0 to 10 the hypothesis. In this context, the population is illiterate and not able to understand enough quickly the exercise. For this reason, a more simple exercise was designed. This exercise is also quite difficult to understand for them (average of 15 minutes), but easier for them. The "yes" answer will count for one, "no" for 0. Answers getting the maximum scores will be considered as relevant for the communities, answers with less than half of respondents will be considered as rejected by the participants.

¹⁰⁴ Take note of all the debate raised during the exercise, especially for the point 14. Indeed, most of the participants can reject it as they don't go only too the traditional healer meanwhile some will reject it as they think traditional healer helps more.

Villagers randomly interviews¹⁰⁵

What do you understand by malnutrition?
What are the differences between a sick and a healthy child?
Where are you getting clean water?
Do you have livestock? What kind of? For what kind of use?
What do you understand by MNREGA?
Do you heard about NRC?
Is there sufficient food available for your family?
Do you know about the government skims like Ladli Laxmi Yojna¹⁰⁶?
Do you get some government facilities like education (i.e. scholarship)?
Is the PSD providing good quality food to the village?
Who makes you aware about government policies (beneficial skims)?
Do you find Anganwadi center as beneficial things for you?
Can you tell me what are the common diseases of the village?
Do you think girl education is a good thing for the village?

FGD fathers and grandfathers of child <5

Questions

Remember to the participants a short, easy-understandable and correct definition of undernutrition: disease resulting from not getting the correct nutrients regarding what the body needs.

Malnutrition: What do you understand by malnutrition? (TOOL: Picture of the SAM child from Madhya Pradesh who is wearing superstition threats supposed curing “sookharog”)

Is malnutrition a big problem in your community?
Do you think an adult can suffer from malnutrition?

FSL: What are your livelihoods?

Do you have livestock? Do you vaccinate your livestock? Sometimes, some of your livestock can be sick, is it happening often? What kind of diseases? How do you treat them? Do some of them die from diseases? What is the use of your livestock?
Do you have a land? What do you grow?
What do you understand by MNREGA?

WASH: Where do you go for toilet? What do you do after?

Health: Do you heard about NRC?

CP: Do you take care of your child? What kind of care (feeding, bathing)? What do you do before feeding and after feeding them?

¹⁰⁵ In order to gather more information about the community, two persons from the qualitative NCA team interview randomly villagers. There was no specific methodology to collect the information, the team interview people they met if they wanted and have time too.

¹⁰⁶ “Ladli Laxmi Yojana is a scheme introduced by government of Madhya Pradesh with the objective to lay a firm foundation of girls’ future through improvement in their educational and economic status and to bring about a positive change in social attitude towards birth of a girl.”

MH: How would you describe the workload of women/men (at home/on the field)? Do you think you have too much work to do? And your wife? Who is taking the majority of the decision? How do you feel regarding that? How does your wife feel regarding that?

Calendar

Ask to the participants to put stones in the seasonal tools for:
Period of migration

Daily field labor opportunities
Farming labor
Period with enough/less water. Water availability
Rainy season
Hunger season
Harvest staples food, fruits, and vegetables
Terms of trade (livestock/grain)
High food market prices
Malaria/Acute Respiratory infection/Diarrhea
Social events (expenses)

Rating exercise

Remember to the participants a short, easy-understandable and correct definition of undernutrition: disease resulting from not getting the correct nutrients regarding what the body needs.

Propose a definition of undernutrition designed accordingly to the communities' thoughts:

It is a non-contagious disease; the child is weak and does not act as normal child. He/She is not eating properly anymore and not playing and interacted as he/she does. It can affect child as well as mother. It is like sookharog but can be cured. Child can easily die if nothing is done.

Do you agree with this definition? (Debate. If group disagree with the definition design together a definition closer to their perception of the problem).

Present the most relevant hypothesis related to undernutrition raised during the FGD. Provide black board to the participants, explain the exercise and ask "if you agree that it is one of the main and major causes of undernutrition in your community, please draw a cross; otherwise draw a single line".¹⁰⁷

- 1 – Low income
- 2 – Small land
- 3 – Poor diet diversity
- 4 – Access to food

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- 5 – Lack of toilets
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- 11 – Workload
- 12 – Reproduction Health (undesired pregnancy, too many child, early first pregnancy)
- 13 – Decision Power (lack of decision power for the mother)
- 14 – Going to traditional healer (use local names) instead of going to the doctor¹⁰⁸

Life stories of positive deviant children and negative deviant children (SAM/MAM)

Introduction of the surveyors and of the NCA, short explanation of the aim of the interview and oral consent form.

How old is your baby and how old are you?

Did you plan to be pregnant of (name)?

When you discovered you were pregnant of (name), how did you feel (happy, sad, no special feeling)?

Did you consult a doctor, an Anganwadi worker and/or a bagath during your pregnancy? What kind of advices did you get from them? How many times did you see them? Did you get advices from someone else? What kind of advices?

Did you take any specific medicine during your pregnancy? Did you change your food intake?

Till when did you work before delivery? How did you feel regarding your pregnancy?

Where (name) was born?

Did (name) see a doctor when she/he born?

What was the first food she/he take and when? If no BF, why? Till when?

Many people have explained to us how difficult it is to go to health centre because of costs and distance. I was wondering what you do to overcome these barriers/challenges? Many people told us they consult a bagath when their child got sick. What do you do for your kid? What do you think about the results?

From what kind of sickness you child can suffer? How did you see your child get sick? What do you do when (name) get sick?

Many people told us their child is suffering from diarrhoea. Is it happening often to your child? Do you know why? What do you do when your child suffer from diarrhoea.

¹⁰⁸ Take note of all the debate raised during the exercise, especially for the point 14. Indeed, most of the participants can reject it as they don't go only too the traditional healer meanwhile some will reject it as they think traditional healer helps more.

After (name) born, when did you go back to work?
At this time, who took care of (name)? How did you manage to feed (name) at this time?
And now, what is your daily schedule? Who is taking care of (name)? How do you manage to feed her/him?
Do you feel sometime, too tired to take care of (name)? How do you manage at this time?
What are the main issues you are facing to raise (name)? How are you facing to these issues?
Migrants: same question in migration.

What kind of food do you give to your child? Are you cooking specially for her/him? How do you feed him/her? What do you do if she/he refuses to eat? How do you know what kind of food is good for him and her? Can you explain me when you change the diet of your child? For what kind of food?

Some mother told us that they couldn't take any decision at home. Are you able to take decision by yourself regarding the health and education of your child? What are the issues you are facing regarding that? How do you manage?

If the child is the last born: Do you want more children after (name)? If no, do you do something to avoid a new pregnancy? Did you take this decision by yourself? If yes, do you want another child now or later? If later, how do you manage to space pregnancies? Did you take this decision by yourself? Who give you advice on temporary contraception/sterilization? Between (name) and his elder sibling, did you do anything to space pregnancies?
If the child has younger sibling: did you do something special to space both pregnancies? Who gave you advice to do that? Did you take this decision by yourself?

Some women told us their husband was violent with them, it is happening to you? How do you feel? What do you do then? Do you know why it is happening?

Bibliography

Acts and lists

Indian Ministry of Law & Justice. *Amendments to Part X – Madhya Pradesh [Part III – Rules And Orders under the Constitution] of the constitution (Scheduled Castes) order, 1950*

Indian Ministry of Law & Justice. *Amendments to Part XIII – Madhya Pradesh [Part III – Rules And Orders under the Constitution] of the constitution (Scheduled Tribes) order, 1950*

National commission for Backward Classes, *Central List of OBCs for the state of Madhya Pradesh*

Press Information Bureau, Government of India, Ministry of Women and Child Development. *Supplementary Nutrition Programme*

The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006

Articles

Chandrakant, L, January 2009. *Cash Incentives for Institutional Delivery: Linking with Antenatal and Post Natal Care May Ensure ‘Continuum of Care’ in India*. Indian J Community Med.

Deshingkar, P. Sharma, P. Shushil, K. Shaheen, A. Farrington, J. 2008. *Circular migration in Madhya Pradesh: changing patterns and social protection needs*. The European Journal of Development Research. Volume 20, Issue 4, Special issue: India’s semi-arid rural Economy: livelihoods, seasonal migration and gender.

Rabie, T. Curtis, V. 2006. *Handwashing and risk of respiratory infections: a quantitative systematic review*. Tropical Medicine & International Health.

Robison, S, May 2008. India’s Medical Emergency. Times.

Spears D. Ghosh, A. Cumming, O. 2013. *Open Defecation and Childhood Stunting in India: An Ecological Analysis of New Data from 112 Districts*.

The Hindu, May 9th 2014. *India tops in Open defecation*.

Figure

UNICEF, 1999. *Towards better programming: A manual on hygiene promotion*. Water, Environment and Sanitation Technical guidelines series – No6

Publications

Dedhingkar, P. Start, D. 2003. *Seasonal migration for Livelihoods in India: Coping, accumulation and exclusion*. London: Overseas Development Institute of London.

Guindi, F, 2003. *Veil: modesty, privacy and resistance*. Oxford: Berg.

Gross, S. Rojas, M, 1989. *Contemporary issues for women in South Asia*. St Louis Park, MN, Glenhurst

Hack, M. Klein, NK. Taylor, HG. 1995. *Long-term developmental outcomes of low birth weight infants*. The Future of Children, vol 5, no1. Princeton university.

Smith, L, 2003. *The Importance of Women’s Status for Child Nutrition in Developing Countries*. Washington, DC: IFPRI.

Reports

ACF, 2013. SMART survey: Khaknar block, Burhanpur District, Madhya Pradesh
National Institute of Nutrition, Hyderabad, 2011. Assessment of Nutritional Status of under-five year rural children in the Districts of Madhya Pradesh State, District : Burhanpur.

Websites

National Health Mission, Ministry of Health and Family Welfare, Government of India.
About Accredited Social Health Activist (ASHA)
<http://nrhm.gov.in/communitisation/asha/about-asha.html> [Accessed on April 2nd, 2014]