

CINI-OMNI Project on Micronutrient Situation in West Bengal

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CINI-OMNI project is conceived in the early months of 1997 when Dr. Penelope Nestel was here in Calcutta for reviewing some of the Nutrition and Health programmes of CINI. The micronutrient situation in the CINI project area as a test case encouraged Dr. Nestel to propose CINI to undertake similar programmes for the whole of the state in coming years. However, for this purpose OMNI agreed to do a research project on Micronutrient situation in the state of West Bengal and develop a future strategy for programme implementation in the next phase. At the beginning two major deficiencies like Iron and Vitamin-A have been taken into consideration with major focus being given to IEC and Training outputs. The outcome of this phase of research will greatly help the policy planners to design their plan of action in future. We can not express our gratitude in words to Dr. Nestel in planning, developing and monitoring this phase of research, which has very successfully been completed by CINI against all odds of time and manpower.

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(Dr. S.N. Chaudhuri)
Director, CINI.

ABBREVIATIONS

| | |
|---------|--|
| ACMOH | Assistant Chief Medical Officer, Health |
| ADHS | Assistant Director, Health Services |
| ANM | Auxiliary Nurse & Midwife |
| AWC | Anganwadi Centre |
| AWTC | Anganwadi Training Centre |
| AWW | Anganwadi Worker |
| BMI | Body Mass Index |
| BMOH | Block Medical of Health |
| BPHC | Block Primary Health Centre |
| CCRC | Cini-Chetna Resource Centre |
| CDPO | Child Development Project Officer |
| CED | Chronic Energy Deficiency |
| CMC | Calcutta Municipal Corporation |
| CMOH | Chief Medical Officer of Health |
| CMS | Central Medical Store |
| DGHS | Director General , Health Services |
| FGD | Focus Group Discussion |
| GLV | Green Leaf Vegetables |
| HWF | Health worker Female |
| HWM | Health Worker Male |
| ICDS | Integrated Child Development Service |
| ICMR | Indian Council of Medical Research |
| IDA | Iron Deficiency Anaemia |
| IDD | Iron Deficiency Disorder |
| IEC | Information Education and Communication |
| IFA | Iron Folic Acid |
| IMR | Infant Mortality Rate |
| KAP | Knowledge Attitude and Practice |
| LBW | Low Birth Weight |
| MCH | Mother and Child Health |
| MDD | Micronutrient Deficiency Disorder |
| MIS | Management Information System |
| MMR | Maternal Mortality Rate |
| MN | Micro-Nutrient |
| MNS | Micro-Nutrient Supplements |
| MO | Medical Officer |
| MSD | Medical Store Department |
| MSG | Mono Sodium Glutamate |
| NGO | Non Government Organisation |
| NHED | Nutrition and Health Education Department |
| NIPCCDT | he National Institute of Public Co-operation and Child Development |
| NNAPP | The National Nutritional Anaemia Prophylaxis Programme |
| NNMB | The National Nutrition Monitoring Bureau |
| NTS I | Nursing Training Schoo |
| OMNI | Opportunities For Micro-Nutrients Intervention |
| ORS | Oral Re-hydration Solution |
| PEM | Protein Energy Malnutrition |
| PHC | Primary Health Centre |
| RCH | Re-productive and Child Health |

| | |
|-------|--|
| RDA | Recommended Dietary Allowances |
| RDI | Recommended Dietary Intake |
| SC | Sub Centre |
| SCOVA | State Council of Voluntary Association |
| SVP | Sishu Vikash Prachesta |
| VAD | Vitamin – A Deficiency |
| WHO | World Health Organisation |

CHAPTER – I

INTRODUCTION

Recent international reports on South Asia have presented a rather deplorable picture of the economic, social, and health / nutritional status of the seven countries in this region including India. However, it is important here to note that despite formidable challenges on all fronts these countries have achieved remarkable successes during the last few decades. All these countries had, practically, emerged from long colonial rule barely fifty years ago with an acute backlog of under development; indeed they are not, as yet, totally free from the legacies of their colonial past and from the effects of the inequitable world economic order of the present. In the process in spite of tremendous population growth over these years, they have been able to stave off the acute large-scale famines that devastated them at frequent intervals in the past. The development in the field of agriculture, which they had successfully designed and managed, had at least, ensured that food-grain availability kept pace with the so called population explosion- in any case a great achievement.

These South Asian countries, at the time of their political independence nearly fifty years ago, were a veritable museum of the most florid clinical forms of malnutrition. Classical kwashiorkor, keratomalacia, beri beri (cardiac, dry and peripheral neuropathies) and pellagra were widespread as major concern of public health. These florid nutritional deficiency diseases have now ceased to cause problems that they were doing in the past. Since the days of the Great Bengal Famine, a remarkable change has been effected in the clinical nutrition scene in this region and the manner, in which this remarkable change has been brought about, carries an important message. The control of these diseases was not brought about through narrow vertical programmes consisting of the distribution of synthetic vitamins, drugs, or special formulations, but through improvements in the traditional diets of the people, and through parallel improvements in their socio-economic and health status.

The Indian Situation:

In India, Iron deficiency Anaemia (IDA), Iodine deficiency Disorders (IDD) and Vitamin A Deficiency (VAD) are some of the major health and nutrition problems, which are not easily controllable at the present context. The National Plan of Action for children and National Nutrition Policy have explicitly stated that Government of India will ensure prevention and control of IDA, IDD and VAD in the country; so that the Micronutrients Deficiency Disorders (MDD) should not be causing any further menace to the Health and Nutrition status of the population by the year 2000 AD.

The National Nutrition Anaemia Prophylactic Programme provides iron supplement for prevention of iron deficiency anaemia in India. The National Programme for prevention of vitamin A deficiency provides massive dose of retinol for prevention of nutritional blindness to the beneficiaries belonging to vulnerable groups. Iodised salt is ensured under National Iodine Deficiency Disorders Control Programme for prevention of Iodine deficiency disorders.

Anaemia, a persisting threat to women and child health status in India, is due to iron deficiency. This micronutrient disorder is particularly common in women of the reproductive age group and young children of any rural, tribal or urban set up. Haemoglobin surveys of populations in different areas reveal that 88 % among pregnant women suffer from anaemia, and about 26 % have severe anaemia (> 7 g / dl).

Goitre, a condition resulting from iodine deficiency, which was hitherto endemic in the Himalayan and sub-Himalayan region, is now being identified even in areas south of Vindhyas. In fact, no state in India is free from the ill effects of iodine Deficiency Disorders (IDD) of which goitre is the simpler form and cretinism the severe manifestation. A survey conducted by the Indian Council of Medical Research (ICMR) in 14 districts of different states indicates that the prevalence of endemic cretinism in the country is very alarming. Among the 150 million people in the endemic regions of the country, more than 54 million suffer from goitre, and about 9 million from different grades of mental and motor handicaps. Presently, India is one of the major countries in the world where iodine deficiency is endemic. Iodine deficiency in the mother interferes with the development of the unborn child leading to abortions and still births. The most compelling aspect of IDD is neuromotor and intellectual

retardation. The major effect of iodine deficiency is endemic cretinism, which is characterised by growth failure, mental deficiency and deaf mutism. Children born to iodine deficient mothers have reduced IQ scores as compared to those of non-deficiency mothers.

Of all the micronutrients deficiencies, Vitamin A deficiency is perhaps the most serious of the lot for several reasons. First, it is the most important preventable cause of irreversible blindness in children of the developing third world countries. Children with vitamin A deficiency, particularly the severe forms, are at increased risk of dying from infections. Recent studies have shown that morbidity and mortality due to gastrointestinal and respiratory infections is greater in vitamin A deficient children. In India, milder forms like Bitot spots in the eyes are observed in about 15% of pre-school children. Longitudinal community studies indicate that in some pockets of the country the incidence of corneal xerophthalmia is between 0.5 and 1 per thousand pre-school children. The National Nutrition Monitoring Bureau (NNMB) data indicates a decline in the prevalence of Bitot spots from about 2 % in 1975 – 79 to about 0.7 % in 1988 – 90 in the ten states surveyed. The situation is still of public health significance by WHO criteria (> 0.5 of Bitot spots in children).

Montreal conference on ending of hidden hunger, world summit for children in Rome and international conference on nutrition in New York in early 90's, followed by national nutrition policy of India have categorically endorsed that the micro-nutrient malnutrition, namely vitamin A deficiency (VAD), because of their profound influence on physical and mental growth and development and in turn on productivity, should be virtually eliminated or significantly controlled by the year 2000 AD. Nutritional role of vitamin A and iron are interrelated as vitamin A helps iron mobilisation. Many studies have shown that haematopoiesis is supported better by vitamin A and iron supplementation than by iron alone. The department of women and child welfare, New Delhi under the Ministry of Human Resource Development, Govt. of India, New Delhi has formed a Task Force to take stock of vitamin A and iron deficiency situation in India and recommend strategies to eliminate them. Main strategies to virtually eliminate the above micronutrient malnutrition, as spelt out in the Montreal conference and also by the said Task Force were dietary diversifications, food fortifications, and Nutritional supplements. Food fortification and supplement should constitute important strategy for India poor as because food security is a perpetual problem for them.

Iodine deficiency disorder has been rightly taken care of by universal iodisation of common salt. Vitamin- A or iron fortification also needs similar universal or common vehicle. Guatemala has been trying double fortification (iron and vitamin A) of sugar as sugar stands out a common vehicle there. In India, there is fortification mandate for vanaspati by vitamin A limited centralised vitamin A fortification of milk in some milk dairies, and of Margarine, but none of them are common vehicles to reach the economically weaker sections of the people.

The economic rationale or the return from investment on food fortification or providing supplements has been estimated to be quite remarkable. It was estimated that iron supplements given to the anaemic workers resulted in 20 % higher work output. This is a calculated benefit/ cost ratio and is potentially as high as 260:1 according to World Bank analysis. Use of vitamin A capsules every 6 months yielded benefit of 2.4-3.4 times the cost, and fortification of MSG with vitamin A produced benefits of 6 to 21 times the cost. It has been claimed that " micronutrient programmes dramatically enhance productivity, education, overall health and child survival. The economic value of addressing micronutrient deficiencies in increasing returns from investments in sectors such as health, education and agriculture alone greatly exceeds their cost. There is consensus that the available solutions are cost effective and investing in nutrition can produce return in a short time".

The National Programmes for prevention of IDD was started in 1962, for prevention of nutritional anaemia in 1971 and for prevention of vitamin A deficiency in 1970. However, the studies conducted have revealed that these National programmes for the prevention and control of Micronutrients Deficiency Disorders have not made any impact on the magnitude of these MDDs due to following reasons:

- Low priority was accorded by the health team members at state; district and block level among various National Health Programmes implemented by them.
- Poor procurement and distribution system existed for the nutrients to be provided to the beneficiaries.

- The total procurement of nutrients was much less than required by the target beneficiaries.
- No / Inadequate IEC material was available with health functionaries at the peripheral / village level.
- Poor co-ordination existed between MCH functionaries of different Department like Health and ICDS in delivery of nutrients for prevention of MDDs.
- No/ Inadequate inservice training was provided to the MCH functionaries on MDDs.
- No / Inadequate monitoring system existed for these programmes.

The situation in West Bengal:

The food security is a challenging problem for the vast majority of the people in the state of West Bengal, living mostly in rural areas, urban slums and industrial labour dwellings. About 40 % of the people are below the poverty line in terms of energy intake as well as socio-economic status. Highly unbalanced cereals based food, deficient in a number of micro-nutrients, is consumed by them which affect their physical and mental development, reduce their working capacity and intellectual performance, and continually subject them to high degree of infections, and thus perpetually trap them into a vicious cycle of poverty, susceptibility to infection are more prevalent in the vulnerable groups of the population, namely, pre-school children (0-6 years), pregnant nursing mothers. To those groups, young girls should be added as another target audience, as most of them get married under age, become mother underweight (low body mass index), give birth of low birth weight (LBW) babies (LBW 27 % - in West Bengal), and live chronically energy deficient. The Integrated Child Development Services (ICDS) is therefore rightly going to include adolescents as another group of beneficiaries along with the existing groups- young children and mothers.

Some studies have shown that in West Bengal, 90 % or even more young children at any point of time in any place are anaemic. About 2/3 rd of the young children are malnourished in terms of weight for age. 50 % of mothers had chronic energy deficiency (CED) in terms of body mass index (BMI). The study also showed that 90 % of mothers were anaemic. A study in urban slums of Calcutta supported by IDRC indicated an equally bad Haematological picture in young children as well as women of childbearing ages. Recent scattered studies in West Bengal also indicated that 70 – 80 % of young children and women of child bearing age are anaemic in the rural areas, and out of them 7 – 12 % are severely anaemic (Hb gm % < 7).

The findings of a recent Diet Survey, conducted in a District of West Bengal, have indicated that there were about 12 % of the families in the rural areas who had deficiency of almost all macro as well as of micronutrients. These families may be called as the poorest of the poor. Around 40% of the families had dietary deficiencies of iron, vitamin A (pre-formed and pro-vitamin A), vitamin C, and Folic Acid due to low consumption rate (gm/day/acu as compacted to RDA) fresh greens, yellow ripe fruits and yellow roots, milk and milk-products and animal foods.

The KAP Studies in these scattered surveys revealed that a very high percentage of mothers in the rural areas were not aware of the food values, do not adopt good cooking practices (that could help retention of micronutrients in the cooked food), simple rules of personal hygiene. The people eat monotonous bulk of diets consisting mostly of cereals with little pulses and oil. They produce greens but they sell most of them for cash or often did not consider the greens important for health, or in many areas their traditional beliefs stand against using some greens and roots during pregnancy, and lactation or for the weaning foods. Moreover because of an utter lack of storage facility, as it was pointed out in a recent Seminar on Traditional Foods there is wanton wastage of greens and horticulture produces in West Bengal.

The above scenario of deficiency diseases and food intake call for strategies and interventions that can outreach the unreached disadvantaged population groups. The fortification of a common vehicle or well-accepted food could be the way out. And the nutritional supplements to the vulnerable groups as in ICDS continue so long as the food security remains a myth to a large section of the population.

Keeping in view of the constraints and poor impact of the existing National programmes for prevention and control of micronutrient malnutrition, the proposed CINI-OMNI project was designed to develop a need based service delivery intervention model through the existing health delivery system. As presently only three micronutrient deficiencies viz.-Iron, vitamin A, Iodine are given emphasis to be tackled with, CINI takes this opportunity to work with the first two as the last one is taken up by UNICEF in a big way. USAID through OMNI (Opportunities for Micronutrient Intervention) is helping CINI in its present endeavour.

CHAPTER-II

ABOUT THE PROJECT

Background:

CINI is

- The state level training centre for the ICDS's Anganwadi workers (AWW).
- Middle level training centre for West Bengal for the National Institute of Public Co-operation and Child Development (NIPCCD) to train supervisors of ICDS.
- Monitoring ICDS projects and organising short course training/workshop for the Child Development Project Officers (CDPO) of the state.
- Training NGOs of the state on Reproductive and Child Health (RCH) activities under the State Council of Voluntary Action (SCOVA) scheme of the Dept. of Health & Family Welfare, Govt. Of West Bengal.
- The leading institute of Sishu Vikas Prachesta (SVP), a GO-NGO consortium to train the AWW trainers of other training centres in West Bengal.
- Working with Panchyat functionaries in its project area to develop their skills in articulating their health needs in relation to RCH and facilitating improved access to health care.
- Involved in a number of Action/Operation Research projects on RCH in collaboration with different Govt. and non-Govt. agencies.

Objectives:

- To develop a micronutrient training strategy for the Integrated Child Development Services (ICDS) as well as for NGOs involved in SCOVA and RCH activities in rural, tribal and urban (both recognised and unrecognised) areas.
- To develop a micronutrient communication strategy for ICDS as well as for NGOs involved in SCOVA and RCH activities in rural, tribal and urban (both recognised and unrecognised) areas.
- To improve Programme management for micronutrient activities.

Geographic area and context:

Activities are being conducted in the state of West Bengal situated in Eastern India and composed of 19 districts with 68 million people of whom 73 per cent live in rural areas as per 1991 census. The literacy rate for females is 47 per cent that is higher than the national average of 39 per cent. The infant mortality rate is 61 per 1000 live births in 1991. Available data indicate that at least 70 per cent of pregnant women, 40 per cent of adolescents and 52 per cent of pre-school children are anaemic. Vitamin-A deficiency prevalence figures are 2.9 per cent including 0.4 per cent of Bitot spot among pre-school children.

Activity 1: Evaluate effectiveness of existing training and IEC materials

In order to determine the relevance of existing training and IEC materials on dietary issues related to Micronutrients, CINI is carrying out semi-quantitative and qualitative research to determine existing knowledge and practices on food consumption, food preparation and food preservation with focus on micronutrients. Concurrent with the above, CINI is reviewing the existing IEC and training strategies, after which they will evaluate the effectiveness of micronutrient training and IEC capacity of ICDS and SCOVA functionaries using the Lot Quality Assurance Sampling method.

Activity 2: Conduct situation analysis for supply of Micronutrient-related supplements

To better understand the constraints related to the delivery of micronutrient supplements, CINI is conducting a situation analysis on the supply of micronutrient-related supplements (vitamin - A, Iron, mebendazole, and anti-malarials) at the household and health facility level. Based on the above, CINI will identify alternative systems that can be used to ensure more effective delivery of micronutrient-related supplements at the community level, e.g. more involvement of Panchayats, Youth Clubs, Women's groups, or other Community Based Organisations.

Outcome:

CINI will have

- Evaluated the effectiveness of Anganwadi workers and supervisors' training and IEC activities related to increasing use of micronutrient supplements and micronutrient-rich foods
- Developed indicators for monitoring and evaluating the micronutrient component of training, IEC, and program management that can be used and incorporated within the existing Management Information System (MIS).
- Designed improved micronutrient training and IEC strategies for the existing programmes that incorporate the full participation of Panchayat and local bodies.

Sampling Design:

1. STATE - One - West Bengal

2. District - Three - One tribal, one rural, one urban

Viz: Midnapur, South 24-Parganas, Calcutta.

3. Block - Six - 2 BPHC + 2 ICDS projects in each district (one better performing & one poor performing)

4. Subcentres - Forty eight - Eight SCs under each BPHC

5. Anganwadi Centres - Forty eight - Eight AWCs under each ICDS project

6. Villages - Forty eight - (Twenty four villages will be covered for IDIs & Twentyfour for FGDs)

- 2 mothers will be selected for IDIs from each village
- 4 groups comprising of young parents of <2 children, grand mothers, opinion leaders and children in late adolescence will be taken up for FGDs

7. Households (with <2 child) - Six in each village under one AWC

(for 24-hour recall)

(2 children within 6-11 months, 2 children within 12-17 months,
2 children within 18 -23 months)
1 Pregnant woman (during last trimester)
from each village.

8. IEC Review and Evaluation - The same State, District Block and village level design as above was used for this purpose. Apart from it other national and international agencies have also been selected for the purpose. 9. Training Programme Review and Evaluation – Apart from CINI-CCRC, the mid-level ICDS training centre another three ICDS training centres of the state as well as three Nursing Training Schools have been studied for reviewing the current training programmes. Apart from it, the feedback from the field situation have also been tested using the same sample design at the state, district, block, centre and village levels. (A list of AWTCs and NTSs are enclosed in annexures)

Instruments :

1. Situation Analysis on Food related issues:

a.24-hour recalls format

- i. Guidelines
- ii. Food Preparation
- iii. Food Consumption
 - Appendices
 - Meal codes
 - Unit codes
 - Food models
 - Pot sizes & codes
 - Generic recipe code
 - Ingredient code
 - Food conversion table

b. In-depth interviews with Key-informants & mothers-respondents:

*About MDD

- i. Local terms for MDD
- ii. Awareness about MDD
 - *About food
- iii. Food habits
- iv. Food availability
- v. Food preference
- vi. Food avoidance
- vii. Food affordability
- viii. Seasonality
- ix. Digestibility
- x. Food frequency
- xi. Food preservation
- xii. Food storage
- xiii. Cooking utensils
- xiv. Kitchen gardens
 - *About Breast feeding practices
- xv. Time of initiation
- xvi. Colostrum intake
- xvii. Exclusive breastfeeding
- xviii. Weaning practice

c. Focus group discussion with the community members:

- i. Use of Green Leafy vegetables
- ii. Use of commercial food
- iii. Anna prasana/Mukhe-bhat ceremony
- iv. Food habits during sickness of the child
- v. Food taboos
- vi. Food Calendar (Through Food System Data Table)

2.Situation analysis of Micro-nutrient Supplements (MNS):

*** Structured interview formats:**

- i. General information from all levels (State, District, PHC, SC, AWC / Village)
 - ii. KAP of Health functionaries
 - iii. Information from Pharmacies
 - iv. KAP and Demands of MNS
-
- a. Pregnant women (During their last trimester)

3.Alternative Delivery systems for MNS:

(Through FGDs with the community members)

***Focus Group Discussions with**

- i. -Panchayat/local body members
- ii. -Health/ICDS functionaries
- iii. -Mahila Mandals/Youth clubs
- iv. -Parents/in-laws
- v. -Teachers

4.Review and evaluation of micro-nutrient IEC activities:

(Through 2 formats developed for study at all levels)

- i. Checklist of IEC / Training Materials on Micronutrients
(Available in any centre at any point of time)
- ii. Material review of IEC / Training aids on Micronutrients
(Available in any centre at any point of time)

5.Review and evaluation of micro-nutrient training activities:

- Evaluating Training Session / Lecture at the Training Institute
(Questionnaire to be Administered to the Trainees of a selected batch)
- Format for collecting information on the Training Institute
(Interview conducted with the head of the Institute)
- Format for collecting information on the training programmes on Nutrition
(Interview conducted with the faculty of Nutrition)
- Evaluating a health & nutrition education session conducted by ICDS / health workers
(Mother respondents interviewed after the session)
- Evaluating a health & nutrition education session conducted at the village level
(Interview conducted with the AWW / HW - M/F)
- Collecting data on training / IEC inputs from individual households at the village level
(Interview conducted with the mother respondents)
- Village data schedule
- Collecting data on individual participants at the village level
(With whom the in-depth interviews and focus group discussions are conducted)

6. Developing micro-nutrient IEC and Training strategies:

PROFILE OF INTERVIEWERS:

Interviewers were all University Graduates and a mixed group. While some had previous experience in data collection, others were new. All of them were given intensive field training for seven days at CINI before they were sent to the field. Average age of the interviewers was 24 years and all of them were fluent in the local language, Bengali, Hindi and English.

SUPERVISION AND QUALITY CONTROL OF DATA COLLECTION:

Before the supervisors moved to the field with their teams, tour programmes and their movements were finalised and made available to all. The project co-ordinator made it a point to visit each team for two days in a week in each district to check the methods and quality of data collection in the field and offering guidance and clarification of doubts, if any. Respective field officers from CINI, Calcutta Office, were also invariably present in the field during the survey work in most of the districts, to help and advise the field investigators.

DATA ENTRY:

The training for data entry was guided by OMNI in U.S.A. and conducted here in CINI by the bio-statistician in-charge of data entry operation of this project. OMNI also provided software for data validation and the data entry formats and programmes were made in EPI INFO version 6.

DATA ANALYSIS:

All completed questionnaires and recorded information sheets for the project were received at CINI office for data processing including editing, coding and data entry as per the tabulation plan and guidance offered by OMNI. One supervisor and two data entry operators were responsible for data entry and computer editing operations. Due to certain technical problems all the relevant tables of the tabulation plan could not be included in the present report. This may be submitted to OMNI at a later date.

CHAPTER-III

SITUATION ANALYSIS OF FOOD RELATED ISSUES

Dietary intake of micro-nutrients

This chapter deals with information on dietary intake of micronutrients. It includes the following:

- Case studies showing some typical cases of child feeding and the diet of pregnant women.
- Analysis of the micro-nutrient intake, factors enhancing or inhibiting their absorption for these cases
- Principal dietary sources of carotene / vitamin A and iron (blockwise).
- A report on focus group discussions on the following micro-nutrient related beliefs and practices :
 - Consumption of commercial foodstuffs
 - The 'anna- prasana' ceremony.
 - Feeding during illness
 - Taboos during illness and lactation
- A report on in-depth interviews on KAP regarding Vitamin A, iron, breast-feeding and food preparation and preservation.
- Community food systems data table for some selected carotene and iron rich vegetables.

Some typical case studies :

Case study # 1:

Name : Mallika Halder Age : 10 months

Village : Gopal Nagar Block : Mandir bazar.

Food intake

| Meal time | Food item | Amount | Ingredients |
|---------------|-------------|---------|---------------------|
| Early morning | Breast milk | ----- | ----- |
| Early morning | Biscuits | 5 small | ----- |
| Breakfast | Breast milk | ----- | ----- |
| Breakfast | Breast milk | ----- | ----- |
| Mid-morning | Breast milk | ----- | ----- |
| Mid-morning | Breast milk | ----- | ----- |
| Lunch | Rice | 5 ml. | Parboiled rice |
| Lunch | Fish curry | 5 ml. | 1. Fresh water fish |
| | | | 2. Potato |
| | | | 3. Parwar |
| | | | 4. Green chilli |
| | | | 5. Turmeric |
| | | | 6. Mustard oil |
| | | | 7. Onion |
| Lunch | Breast milk | ----- | ----- |
| Afternoon | Biscuits | 1 small | ----- |
| Afternoon | Breast milk | ----- | ----- |
| Early evening | Breast milk | ----- | ----- |
| Evening | Breast milk | ----- | ----- |

Observations :

The child is given mainly breast-milk throughout the day, supplemented by biscuits. Meagre amounts of homemade food viz. rice and fish curry has been given at lunchtime.

- Total food intake: The family consists of five family members including the child. A total of 1.2 kgs of raw rice was cooked for the family. The fish curry comprises of 150 gms of freshwater fish along with green vegetables such as parwar and green chillies. However, the mother probably does not appreciate the food requirements of the child since only two spoonfuls of the total amount cooked is given to her.
- Frequency of feeding: The child has been breast-fed once in the early morning, twice at breakfast time, once after lunch, once in the afternoon, early evening and evening. This implies that the mother is not satisfying the child's appetite each time.
- Home- made or commercial food: Home- made complementary food has been started but is highly inadequate comprising only 5 ml. of rice and 5 ml. of fish curry.

The mother shows a preference for biscuits since the child has been given six biscuits during the day. Moreover, in the evening, the child was first breast-fed hence suppressing its appetite and given a biscuit immediately after.

- Oil intake: Homemade food cooked for the rest of the family is fed to the child but the amount of oil intake is inadequate.
 - Vitamin A and iron content of diet: Breast-milk is the only Vitamin A rich food given to the child. Parwar has a high b - carotene content of 153 m g / 100 gms and an iron content of 1.7 mg/ 100 gms. However, only a miniscule amount of parwar is given to the child.
 - Dietary intake of carotene: 0.0009 m g. (excluding carotene)
 - Dietary intake of iron: 0.024 mg.
 - Dietary intake of Vitamin C: 0.0016 mg.
 - Dietary intake of protein: 0.328 gm.
 - Total energy intake: 0.058 Kcal. *
- Other observations: No separate food item is cooked for the child.

*All calculations exclude the dietary intake of breast-milk and commercial foods such as biscuits, formula and food items consumed outside the home.

Case study # 2:

Name : Sarathi Hembran Age : 17 months

Village : Churimara Block : Binpur II.

Food intake

| Meal time | Food item | Amount | Ingredients |
|---------------|-----------------|---------|-----------------------------|
| Early morning | Breast-milk | ----- | ----- |
| Mid-morning | Rice | 134 ml. | Parboiled rice |
| Mid morning | Fried saag | 20 ml. | 1. Pumpkin leaves 2. Oil |
| Lunch | Rice | 150 ml. | Parboiled rice |
| Lunch | Fried saag | 25 ml. | 1. Pumpkin leaves 2. Oil |
| Evening | Rice | 170 ml. | Parboiled rice |
| Evening | Vegetable curry | 85 ml. | 1. Pumpkin 2. Turmeric |

3. Green chilli
4. Cumin paste
5. Coriander paste
6. Oil

Evening Breast- milk -----

Observations:

- Total food intake: Rice is the staple food of the child. Vegetables supplement this. Since the mother goes out for work, food is prepared once in the morning and once in the evening. The same food has been given to the child for breakfast and lunch. Since the mother is absent during the day, the child is breast-fed only in the evening.
- Frequency of feeding: The child is given three principal meals.
- Home- made or commercial food: The child is given three feeds of home made complementary food comprising of the usual family diet. No commercial food is given.
- Oil intake: Oil intake is sufficient.
- Vitamin A and iron content of diet: The child's intake of carotene and iron is considerable since he has been fed 45 ml of pumpkin leaves and 85 ml. of pumpkin. The bioavailability of carotene is good since oil has been added to the pumpkin and pumpkin leaves. The intake as well as bioavailability of iron is low (RDA = 12 mg.) Firstly because of the intake of absorption inhibiting cereals and Secondly because of the absence of any absorption enhancing factors such as Vitamin C or animal protein.
- Dietary intake of carotene: 55.08 m g
- Dietary intake of iron: 1.81 mg.
- Dietary intake of vitamin C: 2.12 mg.
- Dietary intake of protein: 12.12 gm
- Dietary intake of energy: 488.21 Kcal.*
- Other observations: No separate food item is cooked for the child.

*All calculations exclude the dietary intake of breast-milk and commercial foods such as biscuits, formula and food items consumed outside the home.

Case study # 3:

Name : Geeta Singh Age : 28 yrs. (Pregnant woman in third trimester)

Village : Asui Block : Gopiballavpur II.

Food intake

| Meal time | Food item | Amount | Ingredients |
|-----------|-----------------|----------|---|
| Breakfast | Panta | 1400 ml. | 1. Parboiled rice 2. Water |
| Breakfast | Vegetable curry | 100 ml. | 1. Kundri 2. Brinjal 3. Cumin seeds 4. Mustard oil 5. Turmeric paste 6. Red chilli |
| Lunch | Panta | 1400 ml. | 1. Parboiled rice 2. Water |
| Lunch | Vegetable curry | 100 ml. | Same as above |
| Evening | Rice | 1400 ml. | Parboiled rice |

| | | | |
|---------|-----------------|---------|-------------------|
| Evening | Vegetable curry | 120 ml. | 1. Potato |
| | | | 2. Brinjal |
| | | | 3. Mustard oil |
| | | | 4. Turmeric paste |
| | | | 5. Cumin seeds |
| | | | 6. Red chilli |

Observations:

- Total food intake: Rice is the staple item consumed. Four kilos of rice has been cooked for four persons and each has consumed approximately one kilo during the day. While this meets the caloric requirement of a pregnant woman in her third trimester, vitamin and mineral requirements are not met.
- Dietary intake of carotene: 105.38 m g.
- Dietary intake of iron: 11.2 mg.
- Dietary intake of Vitamin C: 15.94 mg.
- Dietary intake of protein: 69.09 gm.

Total energy intake: 3734 Kcal. (* This is subject to some error as some of the ice was soaked in and hence absorbed water .)

- Meal pattern : Three large meals have been eaten.
- Nature of diet : The diet is predominantly carbohydrate- based. No separate food item is cooked for the pregnant woman and no separate attempt has been made to meet her dietary need for iron and the diet does not contain any green leafy or yellow vegetables . Kundri containing 156 m g / gm is a popular vegetable among tribals.

Case study # 4:

Name : Adhir Show Age : 21 months

Block : Khidirpur, Calcutta.

Food intake

| Meal time | Food item | Amount | Ingredients |
|---------------|---------------|---------|-----------------------------|
| Early morning | Breast-milk | | |
| Breakfast | Halwa | 40 ml. | Semolina Oil Sugar |
| Breakfast | Kachauri | 1 small | Flour Oil Bengal gram |
| Mid-morning | Breast-milk | | |
| Mid-morning | Breast-milk | | |
| Lunch | Breast-milk | | |
| Lunch | Rice | 50 ml. | Parboiled rice |
| Lunch | Boiled potato | 20 ml. | Potato Salt |
| Afternoon | Biscuit | 2 small | |
| Afternoon | Breast-milk | | |

| | | | |
|---------------|---------------|--------|----------------|
| Afternoon | Breast-milk | | |
| Early evening | Breast-milk | | |
| Evening | Rice | 40 ml. | Parboiled rice |
| Evening | Boiled potato | 20 ml. | Potato Salt |
| Evening | Breast-milk | | |

Observations :

- Total food intake: The child is predominantly breast-fed and given only three feeds of semi-solid complementary food. The amount of complementary feeding is insufficient vis-à-vis the age of the child. The child has been breast-fed twice in quick succession during the mid-morning, which implies that its appetite has not been satisfied. The child has been breast-fed and hence its appetite suppressed immediately before being given lunch.
- Frequency of feeding: The child is fed too frequently. In particular, he is breast-fed more frequently than he should be.
- Home- made or commercial food: Purchasing cooked food such as kachauri (a deep- fried flour preparation stuffed with pulses) and halwa (a semolina sweetmeat) and even the morning tea are typical of the residents of Khidirpur and Garden Reach of Calcutta.
- Oil intake: It is striking that the child has been given such oil-rich food items but the mother has not added any oil to the rice and boiled potato prepared specially for the child. She has also not served him any of the curries (typically beef curry) prepared for the other family members.
- Vitamin A and iron content of diet: The main source of dietary iron among members of the Muslim community in Khidirpur and Garden Reach is beef. The intake of green leafy vegetables is generally low.

Here, the child has not been started on the usual family diet. The chief source of Vitamin A in the child's diet is breast-milk. The only sources of dietary iron are semolina and parboiled rice- both poor sources of this nutrient. The amounts of raw rice (~25 gms) and semolina (~ 10 gms) are however negligible. However, a total of 3.5 kgs of raw rice has been cooked for a total of 8 family members, including the child.

- Dietary intake of carotene: 36 m g.
- Dietary intake of iron : 0.945 mg.
- Dietary intake of Vitamin C : 25.5 mg.
- Dietary intake of protein : 3.84 gm.
- Total energy intake :414.3 K cal.

*All calculations exclude the dietary intake of breast-milk and commercial foods such as biscuits, formula and food items consumed outside the home.

Nature of food intake:

One of the objectives of the CINI-OMNI project was to study the nature of food intake of the four target groups. The following tables show the principal sources of dietary iron and Vitamin A / carotene for each block.

Principal sources of dietary iron

The various food items have been classified as rich, moderate, low and trace sources of iron according to the following rating scale :

Rating value Iron content (mg / 100 g)

| | |
|----------|-------------------|
| Rich | > 40 |
| Moderate | 16-40 |
| Low | 3-16 |
| Trace | 0 ⁺ -3 |

Rural blocks

Block : Mandirbazar Dist : 24- Parganas (S)

| Category | Rich sources | Moderate source | Low source | Trace |
|---------------------------------------|--|---|--|---|
| Pregnant women (third trimester) | <ul style="list-style-type: none"> • Turmeric | <ul style="list-style-type: none"> • Beef | <ul style="list-style-type: none"> • Puffed rice • Jaggery • Cumin seed • Green chilli | <ul style="list-style-type: none"> • Parboiled rice • Onion • Parwar • Barley • Potato |
| Children 6-11 m | | <ul style="list-style-type: none"> • Formula | <ul style="list-style-type: none"> • Puffed rice • Wheat flour • Lentil | <ul style="list-style-type: none"> • Breast-milk • Potato • Egg • Parboiled rice |
| Children 18–23 m | <ul style="list-style-type: none"> • Turmeric | <ul style="list-style-type: none"> • Formula | <ul style="list-style-type: none"> • Lentil • Puffed rice • Green chilli | <ul style="list-style-type: none"> • Potato • Bread • Green plantain • Parboiled rice |

Block : Bishnupur Dist : Calcutta

| Category | Rich sources | Moderate source | Low source | Trace |
|---------------------------------------|--|-----------------|---|--|
| Pregnant women (third trimester) | <ul style="list-style-type: none"> • Turmeric | | <ul style="list-style-type: none"> • Wheat flour • Lentils • Green chilli • Amaranth • Cumin seed • Black pepper • Ginger • Whole Bengal gram dal | <ul style="list-style-type: none"> • Red chilli • Tomato • Beans • Garlic • Plantain • Snake gourd |
| Children 6-11 m | <ul style="list-style-type: none"> • Turmeric | | <ul style="list-style-type: none"> • Wheat flour • Cumin • Black pepper • Ginger • Lentils | <ul style="list-style-type: none"> • Plantain • Red chilli • Egg |
| Children 12-17 m | <ul style="list-style-type: none"> • Turmeric | | <ul style="list-style-type: none"> • Wheat flour • Lentils | <ul style="list-style-type: none"> • Snake gourd • Red chilli |

- Green chilli
- Amaranth
- Cumin seeds
- Black pepper
- Green gram dal
- Ginger
- Mayalu

| Category | Rich sources | Moderate source | Low source | Trace |
|------------------|--|-----------------|---|--|
| Children 18–23 m | <ul style="list-style-type: none"> • Turmeric | | <ul style="list-style-type: none"> • Wheat flour • Lentils • Green chilli • Cumin seeds • Ginger • amaranth | <ul style="list-style-type: none"> • Egg • Garlic • Refined flour • Tomato • Egg. • Red chilli |

Urban blocks

Block : Khidirpur Dist : Calcutta

| Category | Rich sources | Moderate source | Low source | Trace |
|---------------------------------------|--|---|--|---|
| Pregnant women (third trimester) | <ul style="list-style-type: none"> • Turmeric | <ul style="list-style-type: none"> • Lentil • Beef | Wheat flour | <ul style="list-style-type: none"> • Garlic • Beetroot • Parwar • Coriander • Mutton • Potato |
| Children 6-11 m | <ul style="list-style-type: none"> • Turmeric | <ul style="list-style-type: none"> • Formula • Lentil | <ul style="list-style-type: none"> • Green gram dal • Amaranth | <ul style="list-style-type: none"> • Breast-milk • Rice • Garlic • Beetroot |
| Children 12-17 m | | <ul style="list-style-type: none"> • Lentil • Formula • Beef | <ul style="list-style-type: none"> • Amaranth • Cow-pea • Wheat flour | <ul style="list-style-type: none"> • Semolina |
| Children 18–23 m | | <ul style="list-style-type: none"> • Lentil • Beef | <ul style="list-style-type: none"> • Potato • Wheat flour | <ul style="list-style-type: none"> • Cow's milk • Garlic • Parwar • Bread • Semolina |

Block : Garden Reach Dist : Calcutta

| Category | Rich sources | Moderate source | Low source | Trace |
|---------------------------------------|--|---|--|---|
| Pregnant women (third trimester) | <ul style="list-style-type: none"> • Turmeric | <ul style="list-style-type: none"> • Beef • Formula | <ul style="list-style-type: none"> • Wheat flour • Cumin seed • Green chilli • Lentils • Green mango • Amaranth • Soya bean | <ul style="list-style-type: none"> • Parboiled rice • Cow's milk • Breast-milk • Potato • Green plantain • Coriander leaves |

- Ginger
- Red chilli
- Drumstick
- Egg
- Parwar
- Ridge gourd
- Ladies finger

| Category | Rich sources | Moderate source | Low source | Trace |
|------------------|--|--|--|--|
| Children 6-11 m | <ul style="list-style-type: none"> • Turmeric | <ul style="list-style-type: none"> • Beef | <ul style="list-style-type: none"> • Cumin seed • Green chilli • Soya bean • Wheat flour • Green gram dal • Dates | <ul style="list-style-type: none"> • Breast-milk • Cow's milk • Egg • Parboiled rice • Potato • Parwar • Ladies finger • Onion |
| Children 12-17 m | <ul style="list-style-type: none"> • Turmeric | <ul style="list-style-type: none"> • Beef | <ul style="list-style-type: none"> • Lentil • Green chilli • Kheshari dal • Green gram dal • Ginger | <ul style="list-style-type: none"> • Breast-milk • Parboiled rice • Cow's milk • Egg • Red chilli • Red gram dal • Potato • Onion |
| Children 18–23 m | <ul style="list-style-type: none"> • Turmeric | | <ul style="list-style-type: none"> • Cumin seed • Black pepper • Green chilli • Soyabean • Ginger • Lentil • Wheat flour • Black gram dal. | <ul style="list-style-type: none"> • Breast-milk • Parboiled rice • Onion • Potato • Bitter gourd • Ladies finger • Brinjal • Green plantain |

Tribal blocks

Block : Gopiballavpur II Dist :Midnapur

| Category | Rich sources | Moderate source | Low source | Trace |
|------------------------------------|--|---|--|--|
| Pregnant women (third trimester) | <ul style="list-style-type: none"> • Turmeric | | <ul style="list-style-type: none"> • Cumin seed • Lentil • Puffed rice • Bengal gram dal • Green chilli • Red chilli • Ginger • Poppy seeds • Bengal gram dal | <ul style="list-style-type: none"> • Red chilli • Parboiled rice • Egg |
| Children 6-11 m | <ul style="list-style-type: none"> • Turmeric | <ul style="list-style-type: none"> • Formula | <ul style="list-style-type: none"> • Lentil • Green chilli | <ul style="list-style-type: none"> • Bread • Breast-milk • Parboiled rice • Garlic |
| Children 12-17 m | <ul style="list-style-type: none"> • Turmeric | <ul style="list-style-type: none"> • Formula | <ul style="list-style-type: none"> • Lentil | <ul style="list-style-type: none"> • Red chilli |

- Wheat flour
- Ipomoea leaves
- Ginger
- Breast-milk
- Parboiled rice

| Category | Rich sources | Moderate source | Low source | Trace |
|------------------|--|-----------------|--|---|
| Children 18–23 m | <ul style="list-style-type: none"> • Turmeric | | <ul style="list-style-type: none"> • Ginger • Green chilli • Lentil • Green gram dal • Wheat flour • Puffed rice • Cumin seed • Ginger | <ul style="list-style-type: none"> • Breast-milk • Parboiled rice |

Block : Binpur II Dist : Midnapur

| Category | Rich sources | Moderate source | Low source | Trace |
|---------------------------------------|--|-----------------|--|--|
| Pregnant women (third trimester) | <ul style="list-style-type: none"> • Turmeric | | <ul style="list-style-type: none"> • Lentils • Ginger • Cumin seeds • Amaranth • Poppy seeds • Black gram dal • Green chilli • Wheat flour • Mayalu | <ul style="list-style-type: none"> • Red chilli • Garlic • Jackfruit • Drumstick |
| Children 6-11 m | <ul style="list-style-type: none"> • Turmeric | | <ul style="list-style-type: none"> • Lentils • Wheat flour • Cumin seeds • Ginger • Ipomoea leaves | <ul style="list-style-type: none"> • Red chilli • Garlic • Plantain • Coriander |
| Children 12-17 m | <ul style="list-style-type: none"> • Turmeric | | <ul style="list-style-type: none"> • Lentils • Cumin seeds • Green chilli • Coriander • Amaranth • Mayalu • Ginger | <ul style="list-style-type: none"> • Garlic • Red chilli • Plantain • Egg |

| Category | Rich sources | Moderate source | Low source | Trace |
|------------------|--|--|---|--|
| Children 18–23 m | <ul style="list-style-type: none"> • Turmeric | <ul style="list-style-type: none"> • Kundri | <ul style="list-style-type: none"> • Lentils • Wheat flour • Cumin seeds • Green chilli • amaranth | <ul style="list-style-type: none"> • Red chilli • Garlic |

Principal dietary sources of Vitamin A / carotene

The various food items have been classified as rich, moderate , low and trace sources of vitamin A / carotene according to the following rating scale :

Rating value Vitamin A/ carotene content (m g / 100 g)

Rich > 500
 Moderate 100-500
 Low 10-100
 Trace 0⁺ -10
 Rural blocks

Block : Mandirbazar Dist : 24- Parganas (S)

| Category | Rich sources | Moderate source | Low source | Trace |
|---------------------------------------|---|---|---|--|
| Pregnant women (third trimester) | | <ul style="list-style-type: none"> • Egg • Lentil • Dried chilli • Bitter gourd • Green chilli • Parwar | <ul style="list-style-type: none"> • Ridge gourd • Ladies finger • Potato • Pumpkin | <ul style="list-style-type: none"> • Barley • Parboiled rice |
| Children 6-11 m | <ul style="list-style-type: none"> • Whole milk powder | <ul style="list-style-type: none"> • Egg • Breast-milk • Lentil • Cow's milk | <ul style="list-style-type: none"> • Potato • Wheat flour | <ul style="list-style-type: none"> • Parboiled rice |
| Children 12-17 m | | <ul style="list-style-type: none"> • Breast-milk • Parwar • Cow's milk • Egg • Lentil | <ul style="list-style-type: none"> ○ Potato ○ Banana | <ul style="list-style-type: none"> • Parboiled rice |
| Children 18-23 m | | <ul style="list-style-type: none"> • Breast-milk • Lentil • Parwar • Bitter gourd • Cow's milk | <ul style="list-style-type: none"> • Green plantain • Ladies finger • Banana | <ul style="list-style-type: none"> • Parboiled rice |

Block : Bishnupur Dist : Calcutta

| Category | Rich sources | Moderate source | Low source | Trace |
|---------------------------------------|---|---|---|-------|
| Pregnant women (third trimester) | <ul style="list-style-type: none"> • Mayalu • Amaranth • Cumin seeds • Black pepper | <ul style="list-style-type: none"> • Lentils • Green chilli • Red chilli • Drumstick • Bitter gourd • Tomato • Whole Bengal gram dal | <ul style="list-style-type: none"> • Wheat flour • Potato • Turmeric • Onion(small) • Brinjal • Pumpkin • Ridge-gourd • Beans • Ginger • Plantain • Ladies finger • Snake gourd | |

| Category | Rich sources | Moderate source | Low source | Trace |
|------------------|--|--|--|-------|
| Children 6-11 m | <ul style="list-style-type: none"> • Breast-milk • Cumin seeds • Black pepper | <ul style="list-style-type: none"> • Red chilli • Cow's milk • Parwar • Lentils • Egg | <ul style="list-style-type: none"> • Potato • Wheat flour • Plantain • Turmeric • Ginger • Pumpkin | |
| Children 12-17 m | <ul style="list-style-type: none"> • Breast-milk • Amaranth • Cumin seeds • Black pepper • Mayalu | <ul style="list-style-type: none"> • Red chilli • Lentils • Green chilli • Cow's milk • Egg | <ul style="list-style-type: none"> • Wheat flour • Potato • Pumpkin • Snake gourd • Onion • Turmeric • Green gram dal • Ginger | |

| Category | Rich sources | Moderate source | Low source | Trace |
|------------------|--|--|--|-------|
| Children 18–23 m | <ul style="list-style-type: none"> • Breast-milk • Cumin seeds • Black pepper • Amaranth | <ul style="list-style-type: none"> • Cow's milk • Lentils • Green chilli • Tomato • Red chilli • Egg | <ul style="list-style-type: none"> • Wheat flour • Potato • Pumpkin • Onion • Turmeric • Ladies finger • Ginger • Refined flour • Brinjal | |

Urban blocks

Block : Khidirpur Dist : Calcutta

| Category | Rich sources | Moderate source | Low source | Trace |
|---------------------------------------|--|--|---|--|
| Pregnant women (third trimester) | <ul style="list-style-type: none"> • Coriander leaves | <ul style="list-style-type: none"> • Lentil • Green chilli | <ul style="list-style-type: none"> • Wheat flour • Brinjal • Ladies finger • Turmeric • French beans • Potato | <ul style="list-style-type: none"> • Parboiled rice |

| Category | Rich sources | Moderate source | Low source | Trace |
|------------------|--|--|---|--|
| Children 6-11 m | <ul style="list-style-type: none"> • Carrot | <ul style="list-style-type: none"> • Breast-milk • Cow's milk • Formula • Toned milk | <ul style="list-style-type: none"> • Green gram dal • Green plantain • Potato • Wheat flour • Turmeric • Semolina | <ul style="list-style-type: none"> • Parboiled rice • Beetroot |
| Children 12-17 m | <ul style="list-style-type: none"> • Butter • Amaranth | <ul style="list-style-type: none"> • Red gram dal • Tomato • Lentil • Breast-milk • Cow's milk • Formula | <ul style="list-style-type: none"> • Wheat flour • Potato • Semolina • Brinjal • Turmeric • Cow-pea • Beef | <ul style="list-style-type: none"> • Parboiled rice |
| Children 18-23 m | | <ul style="list-style-type: none"> • Lentil • Cow's milk • Breast-milk • Parwar | <ul style="list-style-type: none"> • Potato • Wheat flour • Turmeric | <ul style="list-style-type: none"> • Parboiled rice |

Block : Garden Reach Dist : Calcutta

| Category | Rich sources | Moderate source | Low source | Trace |
|---------------------------------------|---|---|--|--|
| Pregnant women (third trimester) | <ul style="list-style-type: none"> • Cumin seeds • Amaranth • Coriander leaves | <ul style="list-style-type: none"> • Boiled egg • Cow's milk • Red chilli • Green chilli • Bitter gourd • Drumstick • Soyabean • Lentil • Parwar • Beef | <ul style="list-style-type: none"> • Wheat flour • Potato • Ginger • Turmeric • Onion • Green plantain • Green mango • Ladies finger | <ul style="list-style-type: none"> • Parboiled rice |
| Children 6-11 m | <ul style="list-style-type: none"> • Cumin seed | <ul style="list-style-type: none"> • Breast-milk • Formula • Cow's milk • Soya bean • Eggs • Parwar | <ul style="list-style-type: none"> • Potato • Ginger • Onion • Turmeric • Wheat flour • Ladies finger • Green gram dal • Dates • Beef | <ul style="list-style-type: none"> • Parboiled rice |
| Children 12-17 m | <ul style="list-style-type: none"> • Cumin seed | <ul style="list-style-type: none"> • Breast-milk • Cow's milk • Lentil • Kheshari dal • Red chilli • Green chilli • Tomato • Red gram dal | <ul style="list-style-type: none"> • Potato • Onion • Turmeric • Ginger • Green gram dal • Beef | <ul style="list-style-type: none"> • Parboiled rice |
| Category | Rich sources | Moderate source | Low source | Trace |
| Children 18-23 m | <ul style="list-style-type: none"> • Black pepper • Cumin seeds | <ul style="list-style-type: none"> • Green chilli • Cow's milk • Soya bean • Lentil • Tomato • Bitter gourd • Breast-milk | <ul style="list-style-type: none"> • Onion • Turmeric • Ginger • Potato • Wheat flour • Ladies finger • Brinjal • Black gram dal | <ul style="list-style-type: none"> • Mutton • Parboiled rice |

Tribal areas

Block : Gopiballavpur II Dist :Midnapur

| Category | Rich sources | Moderate source | Low source | Trace |
|---------------------------------------|--|--|--|--|
| Pregnant women (third trimester) | <ul style="list-style-type: none">• Cumin seed• Amaranth• Ipomoea leaves | <ul style="list-style-type: none">• Green chilli• Lentil• Red chilli• Kundri• Cow's milk | <ul style="list-style-type: none">• Potato• Ginger• Onion• Brinjal• Ladies finger• Green plantain• Bengal gram dal | <ul style="list-style-type: none">• Parboiled rice |
| Children 6-11 m | | <ul style="list-style-type: none">• Lentil• Green chilli• Breast-milk• Cow's milk• Formula | <ul style="list-style-type: none">• Turmeric• Potato | <ul style="list-style-type: none">• Parboiled rice |
| Children 12-17 m | <ul style="list-style-type: none">• Mayalu• Ipomoea leaves• Amaranth | <ul style="list-style-type: none">• Lentil• Red chilli• Breast-milk• Cow's milk | <ul style="list-style-type: none">• Turmeric• Pumpkin• Brinjal• Wheat flour• Potato | <ul style="list-style-type: none">• Parboiled rice |

| Category | Rich sources | Moderate source | Low source | Trace |
|------------------|--|--|---|--|
| Children 18–23 m | <ul style="list-style-type: none">• Drumstick leaves• Thankuni leaves• Cumin seeds | <ul style="list-style-type: none">• Breast-milk• Green chilli• Lentil• Cow's milk• Kundri• Red chilli | <ul style="list-style-type: none">• Ginger• Turmeric• Potato• Onion• Green gram dal• Brinjal• Wheat flour | <ul style="list-style-type: none">• Parboiled rice |

Block : Binpur II Dist : Midnapur

| Category | Rich sources | Moderate source | Low source | Trace |
|---------------------------------------|---|---|--|-------|
| Pregnant women (third trimester) | <ul style="list-style-type: none"> • Cumin seeds • Amaranth • Mayalu • Drumstick | <ul style="list-style-type: none"> • Red chilli • Lentils • Bitter gourd • Green chilli • Cow's milk | <ul style="list-style-type: none"> • Potato • Turmeric • Onion • Ginger • Ladies finger • Green mango • Brinjal • Ridge gourd • Wheat flour • Black gram dal | |
| Children 6-11 m | <ul style="list-style-type: none"> • Breast-milk • Ipomoea leaves • Coriander • Cumin seeds | <ul style="list-style-type: none"> • Lentils • Cow's milk • Red chilli • Green chilli | <ul style="list-style-type: none"> • Potato • Wheat flour • Onion • Ginger • Turmeric | |

| Category | Rich sources | Moderate source | Low source | Trace |
|------------------|---|--|---|--|
| Children 12-17 m | <ul style="list-style-type: none"> • Breast-milk • Cumin seeds • Coriander • Amaranth • Mayalu | <ul style="list-style-type: none"> • Lentils • Red chilli • Green chilli • Egg • Cow's milk | <ul style="list-style-type: none"> • Turmeric • Potato • Onion • Plantain • Brinjal • Wheat flour | |
| Children 18-23 m | <ul style="list-style-type: none"> • Cumin seeds • Breast-milk • Amaranth | <ul style="list-style-type: none"> • Lentils • Red chilli • Green chilli • Cow's milk • Garlic • Bitter gourd • Formula | <ul style="list-style-type: none"> • Onion • Turmeric • Potato • Wheat flour • Brinjal • Kundri • Plantain | <ul style="list-style-type: none"> • Parboiled rice |

Observations :

- The principal constituents of a child's diet are breast-milk, formula and rice.
- Quantitatively, the diet of a child is predominantly carbohydrate- based and no special attempt is made to address the micronutrient needs of a child. Frequently Vitamin A or iron rich foods are cooked at home but not given to the child e.g. the child may be given only a little rice and gravy even though curries containing locally available and affordable green leafy vegetables such as mayalu, amaranth or spinach or vegetables such as pumpkin have been prepared for other family members. An exception to this was found in tribal areas as detailed below.
- Among animal sources of vitamin A, in urban or rural areas, eggs are given to children from the age of 1 year but meat is not given before 1 ½ - 2 years. Fish is given from the age of 8-9 months but the amount is inadequate. Also, the preference is for fresh-water fish.
- Although the diet survey was conducted during the summer months when vitamin A- rich fruits such as mangoes, ripe papaya, chikoos and bananas are abundantly available, fruit intake among children has been observed in only a few isolated cases. Moreover, these fruits are the relatively more expensive ones such as apples and lichis.
- Quantitatively, the diet of a pregnant woman is carbohydrate- based. In rural or tribal areas, the largest constituent is rice or 'panta' (leftover rice soaked in water). In the urban areas selected, this is supplemented by a preparation of meat usually beef and commercial snack items. Vegetable intake is negligible in these urban areas.
- The main factor inhibiting the absorption of iron is the phytate content of cereals, which form the bulk of the diet of women as well as children. Tea drinking among children is minimal especially in tribal and rural areas and low in urban areas but biscuits dipped in tea are given as a weaning food. However, there is no recognition of the need for absorption enhancing factors which are important since the main dietary sources of iron are vegetables and cereals, except in the urban areas of Khidirpur and Garden Reach. In-depth interviews

(Discussed later) reveal taboos on giving sour food items to children.

- Home-made weaning foods are generally bland items from the family's usual diet such as rice, dal or dal water and boiled vegetables, specifically potato, green plantain and green papaya. The addition of oil is avoided.
- In tribal areas, infants are breast-fed well into the second year although this may occur during the evening after the mother has returned home from work.
- Tribal mothers introduce green leafy vegetables earlier than their rural and urban counterparts, sometimes as early as at 6 months of age.
- In the urban areas of Khidirpur and Garden Reach where it is common practice to purchase breakfast and snack foods such as kachauri (deep-fried refined flour and lentil savoury), halwa (a sweetmeat made from semolina, oil and sugar), jalebis (a deep-fried sweetmeat made of fermented refined flour), spiced puffed rice and other deep-fried savouries, the child is given these items from the age of 1 year. However, it is striking to note that homemade items given to the child are prepared without the addition of oil.
- A preference for biscuits as a weaning food was observed in all the blocks.
- In urban areas, other weaning food items include commercial as well as homemade whole-wheat flour bread. In tribal areas, 'pithe-pora' (a rice-flour dumpling roasted over charcoal) is given as a weaning food. Arrowroot and barley are also given.

Report on Focus Group Discussions

Tribal Area

(Binpur-II and Gopiballavpur-II Blocks)

Issue: Commercial food

- In the tribal area, except for biscuits, commercial food is not frequently purchased although there are local shops selling such food.
- The main reason for this is economic condition. Foods like biscuits and occasionally bread are popular but health drinks like Complan; Horlicks, Bonus etc. are not usually purchased.
- Affluent families or those having a steady source of income can afford to buy these high - priced health drinks. Mothers who perceive their breast-milk to be inadequate but cannot afford to purchase formula instead buy small amounts of skimmed milk meant for use as dairy whiteners in tea / coffee. Formula replaces traditional breast-milk supplements such as arrowroot and barley.
- Access to commercial food is limited in many of the more interior villages in this area. Markets where such food is available may be upto 20 kilometres away. However, biscuits have made inroads into the remotest of these villages.

Issue: Biscuit

- Irrespective of class, the most commonly purchased food item is the biscuit. The brand name and price may, however, differ among different groups.
- Biscuits are fed to the children below two years generally in the morning and evening and sometimes throughout the day. Water or tea softens them. Generally cheap arrowroot based biscuits ('seven for a rupee') are used but the perception is that the more expensive the brand, the higher the nutritive value.
- Biscuits being wheat-based are one of the few food items given even before the "anna-prasana" (rice-giving ceremony to initiate weaning) ceremony.
- The answer to the query as to why biscuits are given elicited the response that it allows the caregiver to concentrate on domestic chores, because they are filling and easily available i.e. the motivating factor is convenience for the caregiver. In one area (Kako) mothers answered that it is a necessity because it contains "vitamins". (With the advent of doctors, the term " vitamin" was found to be common knowledge but respondents perceive "vitamin" to be a synonym for all "good" and costly food such as apples, pomegranates, grapes, milk and eggs.)
- Biscuits replace traditional tribal weaning foods such as 'pithe-pora' (a dumpling made from rice-flour and roasted over charcoal), puffed and flaked rice, palm candy, porridge made from barley, sago or semolina.

Issue: Homemade food:

- No special food item is cooked for the child. Tribal mothers introduce green leafy vegetables cooked for other family members earlier than their rural and urban counterparts but the motivating factor is not the nutritive requirement of the child. Rather, the perception is that he who cannot afford anything else has to be content with eating 'saag' (green leafy vegetables) which is cheap and filling.
- There are noticeable differences among lifestyles and food patterns of tribal and non-tribal families' e.g. except for biscuits; tribal families rarely take commercial foods.

Issue:'Anna- prasana' ceremony *

- The local name of this ceremony is lokta or bhujnighar
- There is a lot of variation in the age of 'anna prasana'from village to village. The ceremony is held for boys between the ages of 7 to 9 months and for girls, between the ages of 9 to 11 months. This disparity in age, according to their information, is due to the fact that a girl should learn to endure hunger,

as she has to lead a harder life. Among some communities, however, no distinctions are made between girls and boys.

- The ceremony takes place at the parents' home. The child is to be fed fish or meat, which must be consecrated. The ritual is mostly based on traditional, but in some cases it is a plain case of imitation where the people did not have any corresponding ritual of their own. As the grand parents are the eldest of the family, they have the honour of feeding the child first.
- Though the tradition is maintained faithfully, participants frankly confessed that nobody knew the reason for the ceremony. Queries on the significance of the ceremony elicited the response that it was a tradition. None of the participants related the ceremony to the introduction of complementary food.
- Although tribal mothers introduce the usual family diet earlier than their rural and urban counterparts, their motivating factor is not the nutritional needs of the child but rather their own convenience as most of these mothers work outside the home during the day.
- Normally, the child is not allowed to take a rice-based diet before the ceremony but given a diet of breast milk, candy-water and softened semolina. Boiled lentils or strained lentil water and boiled potatoes, green bananas are given occasionally. However, biscuits can be given before the ceremony, as they are wheat – based.
- If the ceremony is delayed, the child is generally not allowed to take rice-based food items until the ceremony is completed. However for some of the less well to do families, guests are not invited to share a meal and the ceremony involves only sanctification of some food items such as sweetmeats and fruits from a nearby temple.

* Note: The 'Anna –prasana' ceremony is observed when the child is around six months old. It marks the introduction of rice in a child's diet.

Issue: Feeding practices of children during illness

- Community members recognised malaria, diarrhoea, fever, measles, cough and cold and stomachache to be the common ailments during childhood. Malaria is perceived to be a deadly disease for which there is no cure.
- In tribal families, it is taboo to consume or even cook fish or meat during an outbreak of measles. During an attack of measles, rice and boiled vegetables are eaten.
- The period of observing these practices differ in various area. In the tribal village of Kasma, family members are allowed to eat flesh-foods after one month has elapsed.
- Breast-milk is prohibited if the child has measles. Community members believe that eating bananas can aggravate a cold and cough.
- If the child has a temperature, rice or curries from the family diet are not given. Dry food items such as roasted rice flakes or biscuits are preferred. Barley and sago are believed to help the child to recoup.
- Children are not given sugar, jaggery or milk when they suffer from colds.
- In case of diarrhoea and other stomach ailments, boiled rice flakes and green bananas are of commonly given. Bread or other wheat-based foods are avoided.
- Mayalu leaves and pumpkin are especially avoided during illnesses as they are believed to be 'hot' foods. Such a belief was observed in rural, urban and tribal areas alike. However, in each case, further probing revealed that preparations made from pumpkin and mayalu are generally rich often involving shrimp and a variety of spices but it is the vegetables which are believed to cause indigestion.
- However, tribal mothers breast-feed sick infants, although as observed before, this may occur during the evening after the mother has returned from work.

- The use of home remedies is dying out among tribals, as doctors (government primary health centres and private practitioners) have become more accessible. Traditional home remedies include tulsi juice with honey as a cure for cough and cold, in areas like Balichua and Paikambi, sej or manasa leaf juices and boiled guava for curing severe cough and cold and the juice of babul leaves to cure stomach ailments. Cloves of garlic are tied around the child's neck. In case of severe cough and cold, boiled mango leaves with black cumin seeds are given. Talismans of medicinal herbs are tied around the child's arm when he is suffering from measles. Tribals administer a concoction of 'amruli' leaves, lemon juice and black pepper to children suffering from colds.
- Expensive brands of biscuits are purchased when the child is convalescing.
- Although doctors have become more popular, the community does not trust his advice to give the child rice during an attack of fever. In most of the tribal areas, the people reported that the mother in -law was the key decision-maker.

Issue: Taboos during pregnancy and lactation

- Respondents in Topsisia and Nota , Asui villages mentioned that there were no dietary restrictions for pregnant women
- During Lactation, boiled food such as eggs and vegetables are given. However, no saag (green leafy vegetables) is given in the belief that this may cause the child to suffer from diarrhoea or colds.
- Pumpkin is also considered taboo. Here, it must be mentioned that respondents in all the blocks consider mayalu and pumpkin to be 'hot' foods and too rich to be digested during lactation. However, further probing revealed that is the preparations made with pumpkin or mayalu that are rich, involving the addition of spices, oil and shrimp.
- At Asui, amaranth, 'susni' and ipomoea leaves are allowed during lactation but mayalu and pumpkin leaves as well as pumpkin are restricted.
- In general, green leafy vegetables are not given immediately and the period of this practice ranges from upto 5-8 days after delivery to upto four months after delivery.
- Among tribals, green leafy vegetables are given after 21 days.
- At Gohalora, fish or meat is restricted for 6 months. Tomatoes are also restricted.
- Older community members mentioned that at one time, lactating women were allowed to eat small quantities of food once a day but nowadays, they are allowed to eat twice to three times a day.
- Tomatoes are not given to children below 6 months of age. Caretakers feel that it will curdle the milk already drunk and lead to diarrhoea.
- Among members of the OBC (Other Backward Classes), rice is not given to a lactating mother for three days if the child is a daughter and for five days if the child is a girl.
- Respondents at Kasma believe that lactating women should not eat in the evening

Report on Focus Group Discussions:

Urban Area

(Khidirpur and Garden Reach Blocks)

Issue: Biscuits

- Biscuits are popular among members of all communities residing in these blocks. This includes the predominant Muslim community, some Hindu families and a large number of migrants from the states of Bihar, Orissa and Uttar Pradesh.

- As in tribal areas, biscuits are used as a weaning food and act as pacifiers. Milk or water or tea softens them for infants.
- The idea of the nutritive value of biscuits is vague. As in tribal areas, caregivers believe that the more highly priced the brand, the greater the nutritive value. However, only those having a regular source of income can afford to buy the more expensive brands.
- Caregivers have a vague perception that dipping biscuits in tea can be harmful for the child but do not believe that they have any other options.
- The cheap local brands of biscuits that are popular in the area are not perceived to be nutritious. In one area caretakers believed biscuits to be the main cause for hookworms. Yet they are forced to buy these, as there are no alternatives for biscuits.

Issue: Other Commercial foods:

- In the urban areas of Khidirpur and Garden Reach where it is common practice to purchase breakfast and snack foods such as kachauri (deep-fried refined flour and lentil savoury), halwa (a sweetmeat made from semolina, oil and sugar), jalebis (a deep-fried sweetmeat made of fermented refined flour), spiced puffed rice and other deep-fried savouries, the child is given these items from the age of 1 year.
- Their essentially 'ready-made' nature saves mothers the time and trouble of cooking.
- As contrasted to rural and tribal areas, urban communities have access to a larger variety of commercial foods.
- Caretakers believe formula to be good for health but not always affordable. They try to give these when children fall ill. Expensive biscuits and fruits are also bought for an ill child.

Issue: Homemade Foods:

- In this area, it is hard to find families where mothers continue to cook separate food items for infants and children. Some caretakers feel that these are causing harm but cannot find any suitable alternative. Children also insist on buying such foods as they find them tastier than home preparations. .
- Members of the older generation informed us that commercial food replaces traditional homemade foods like suji, semai, roti, and halwa. The idea about the nutritive value of purchased foods is not quite clear.

Issue: 'Anna- prasana' ceremony:

- The population of the two urban blocks of Khidirpur and Garden Reach are predominantly Muslim and most of the information below relates to this community. The Hindus of the area have separate customs but, interestingly, the customs of the two communities regarding this ritual (locally called 'Kheer khilana' (or the 'rice porridge- feeding ceremony') have a lot in common.
- This ceremony is held at the age of 5 months for boys and at 7 months for the girls.
- There are no hard and fast rules as to who should be invited though all neighbours and relatives are generally called. However, this depends mainly on economic status.
- The ceremony takes place at the parent's home. The child is to be fed kheer (porridge made from rice and milk) which must be consecrated from the local mosque. Tradition, but some families who do not have a tradition of holding such a ceremony nevertheless hold the ceremony imitating their neighbours mostly dictate the rituals.

- As in tribal areas, the community does not relate the ceremony to the diet of the child although the predominant ritual is feeding 'kheer' to the child. Community members perceive the occasion more as a family get-together.
- In the Hindu-dominated area of Alipore Road, participants mentioned that there was no distinction in the age at which the ceremony was held for boys and girls. Both would have it at the age of 6 months. They too feed the children consecrated kheer, rather than the traditional Hindu rice. Puri (a deep-fried bread), sabji (vegetable curry), bhaji (fried vegetables) and other food items are also sanctified, but not fed to the child. The mother is the first to feed the child. This also is unlike traditional Hindu rites where the child's maternal uncle gives the first feed of rice.
- Normally, the child is not allowed a rice-based diet before the ceremony. In addition to breast milk, candy-water, softened semolina, arrowroot and barley as well as formula may be prepared for the child. However, commercial savouries and snacks usually deep-fried may occasionally be given.
- Even after the ceremony, children are not allowed to partake of the normal family diet; One reason for this is the suspicion that the child cannot yet digest such food. The main motivating factor is however, convenience – the child is given the usual family diet after the age of two when it can eat on its own.
- Green leafy vegetables are not given to the child before the age of two, as they are believed to be difficult to digest.
- Both communities were of the same opinion that even if the ceremony is delayed or not celebrated, the child should be started on a rice-based diet between the ages of 5 – 7 months.

Issue: Feeding practices of children during illness

- As in tribal areas, the community perceived diarrhoea, fever, measles, cough and cold, stomach ailments to be the common childhood ailments. As in tribal areas, fish, meat and oil are not given to the child during an attack of measles. Instead, rice and boiled vegetables are given. In Garden Reach community members mentioned that lentils are also prohibited during this disease. Respondents in Mominpur area mentioned that breast-milk should not be given to children suffering from measles. The period of observing these practices differ in various area from seven to eleven days.
- Bananas and yoghurt or curd are believed to aggravate coughs and colds A child suffering from fever is not fed rice. Barley and sago are given to the child during such times and wheat-based food items such as homemade whole-wheat flour bread are preferred over rice-based food.
- In case of diarrhoea and other stomach ailments, khichri (a bland preparation made from rice and lentils), rice flakes and green bananas are given. Bread or other wheat-based foods are believed to aggravate stomach ailments.
- Breast-milk is predominantly restricted during illness of the child.
- There is some usage of home remedies in urban areas although people have more faith in the verdict of private practitioners. In Mominpur especially, the community spoke of various novel remedies, which are given before doctors are consulted. In case of coughs and colds, tulsi juice with honey is a common herbal remedy. In Mominpur asafoetida mixed with milk is also given, and massage oil named 'Ruh-Mustaqui' is heated with hing and massaged all over the body in the belief that this will cure cough and cold. In case of stomach ailments and diarrhoea, ajwain (omum) water and asafoetida are used. There is however no home remedies for measles.

- However, faith in home remedies is declining and the newer generation of mothers have more faith in the advice of doctors.

Issue: Taboos during pregnancy and lactation

- None of the respondents mentioned any dietary restrictions for pregnant women except at Mominpur where they felt that pregnant women should not eat too much 'vitamin'rich food as it may lead to a large baby and hence a difficult delivery.
- At Mominpur, Green leafy vegetables are not given to lactating women for upto forty days after delivery in the belief that the child will suffer from diarrhoea.
- Some mothers give boiled green leafy vegetables to children below the age of 2 years. Some do not since they are scared that the child may catch a cold or suffer from diarrhoea.
- As in tribal areas, mayalu, spinach as well as shrimp are restricted as they are believed to be 'hot' foods and difficult to digest.

Rural Area

(Bishnupur and Mandirbazar Blocks)

Issue: Formula food:

- Although nearby shops do not always store tinned formula foods, these are popular among the community. Those who have a steady source of income (service, business etc.) Can afford to buy these high -priced foods. Others who cannot afford expensive brands purchase skimmed milk powder meant for use as dairy whiteners in tea or coffee.
- A common belief among mothers is that they do not have enough breast-milk and hence must supplement this with formula
- Community members mentioned that formula food was expensive but was the ideal food for a growing child.

Issue: Biscuits

- As in urban and tribal areas, biscuits are popular as a weaning food and are given to the child from the age of 6 months onwards, dipped in water, milk or tea.
- Expensive brands are not generally purchased although they are especially purchased for sick children.
- The motivating factor for giving biscuits to children are that they are filling and act as pacifiers. However, community members believed that the more expensive brands had a "high nutritive value"
- Here it must be mentioned that except for some pockets near CINI where community health workers had conducted health and nutrition awareness programmes, the community's perception about nutrition was vague. They do not have the perception of different food groups and relate any malady to the lack of an adequate amount of food. Their only perception about the quality of food was that there were some "good" foods, which they identified as "strength-giving" and "vitamin rich. This list includes eggs, milk, vitamin tonics and of course the biscuit!

Issue: Other Commercial foods:

- In many areas food items like jalebis, gaja (deep fried sweetmeats), samosa, kachauri (deep-fried flour and lentil savouries) are available from the daily market. However, these are generally not given to children aged below two. School-goers are the main clientele of such foods.
- Children below two are generally not given preparations involving the

Addition of oil

Issue: Homemade Food

- In this area, mothers prepare some home-made items such as

Muri (puffed rice), rice flakes, gruel made from semolina, barley or arrowroot, candy water. Mothers think that these are "safe" for children, as they do not contain any chemicals earlier, puffed rice was mainly roasted at home while now there are few houses where this is done. Community members felt that young girls are reluctant to learn traditional preparations, mainly because of the time and effort required for such preparations.
- Elders observed that a change in food habits has come about. With ready to eat foods such as biscuits gaining increasing popularity whereas the older generation remember times when only home-made foods like suji, roti, parboiled rice, 'panta' (rice soaked in water), 'murki' (sugar-coated puffed rice), 'batasha' (sugar candy) etc. were fed to children.
- The elders also observed that it was difficult to maintain a cow and purchased milk was liable to be diluted. This, they felt was a reason for the increased popularity of formula.
- The younger generation, however, thinks that the change is good for the community as a whole as purchased foods are easily available and taste better too. The elders were not so happy-yet conceded that the convenience and availability are better.

Issue: 'Anna-prasana' ceremony

- In rural areas, Anna-prasana is an important ceremony. Children (both boys and girls) are to be given 'Anna prasana' (locally called "Mukhebhat") on attaining 6 months. There is no clear idea about the basis of this ceremony. Some say that it is written in the Panjika (holy almanac) whereas some attribute it to family tradition.
- The ceremony takes place at the parents' home. The maternal uncle and his family must be invited, as he has to play an important part in the ceremony by being the first to feed the child. He is also custom-bound to give new clothes and some cooking utensils (in which the child's food is to be prepared). All neighbours and relatives are generally called but this depends on the financial status of the family.
- Normally, the child is not allowed to eat rice or rice-based preparations before the ceremony.
- While the rituals are religiously observed, community members do not relate the ceremony to the introduction of complementary food. Although micronutrient rich vegetable as is abundantly available and cooked for the rest of the family, these are not given to the child in the belief that the child cannot digest them. The child is instead given the gravy from such curries mixed with rice, lentils or lentil water and among vegetables, predominantly the potato and occasionally green plantains or green papaya. Also oil is generally not added to the child's diet.
- The usual family diet is given to the child once it can eat by itself.
- In case the ceremony is postponed e.g. because of an illness in the family, family tradition dictates whether or not a rice preparations can be given to the child. In some families, this must wait until the ceremony is held whereas in others, some payesh (a preparation made from rice and milk) is sanctified at a local temple and rice-based preparations may be eaten once the child has partaken of this.

Issue: Feeding practices of children during illnesses

- Common childhood ailments recognised by the community are diarrhoea, fever, measles, cough and colds and stomach ailments. In case of measles, eggs, onions

and meat are to be avoided and it is even a taboo to cook these items at home. Rice, small fishes and boiled vegetables are given instead. In one area, (Raghunathpur) community members mentioned that they cook moati fish, as the soup is good for the patient. Light soup of leafy vegetables like kalmi are also given. They think that it would help the baby to recover. The period of observing these practices differ in various areas and ranges from eleven to twenty-one days.

- Bananas, yoghurt and milk of any kind are taboo during colds and rice and rice-based products are taboo if the child has fever.
- In case of diarrhoea and other stomach problems, candy water, barley, rice flakes and green bananas are commonly given.
- In all of the above-mentioned illnesses except diarrhoea, breast milk can be given.
- Grandmothers and older community members spoke of various home remedies such as tulsi juice with honey for coughs and colds.

The juices of babla, sajna (drumstick) leaves are also cures for cold and cough. In case of stomach problems and diarrhoea, juices of babla, bel, (wood-apple) and date palms were used. The older members also revealed that in their time's doctors were not as popular as they are now. They also mentioned that they were sometimes sceptical of the doctor's advice but that the younger generation had greater faith in doctors than in home remedies. The availability of these herbs was also an influencing factor.

Issue: Taboos during pregnancy and lactation

- None of the community members mentioned any dietary restrictions during pregnancy.
- Green leafy vegetables, meat and fish are restricted for one month, as mothers believe that this may lead the child to suffer from diarrhoea.
- Water intake is restricted after lactation.
- Foods are eaten twice a day and dry fried food such as bread; fried rice flakes are given for 21 days.
- At Mandirbazar, fried green bananas, dried jute leaves or neem leaves (if jute not found) are especially prepared for lactating women. All other green leafy vegetables are restricted.
- At Kulerdari, lactating women are not given green leafy vegetables to prevent them from suffering from hyperacidity, which may be transmitted to the child.
- Lactating women are given boiled food for one and half months at Kulerdari. No sour foods or mayalu leaves are allowed.
- At Khirishtala, lactating women are allowed to eat spinach but not mayalu leaves.
- At Bhasa, rice and green leafy vegetables are not given for five days. The usual family diet is re-introduced after five days.

Report on in-depth interviews

Rural areas:

Blocks: Bishnupur and Mandirbazar

Issue: Night-blindness

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| <p>Have you seen anyone who can see clearly during the day but cannot see at night?</p> | <ul style="list-style-type: none"> • There are no present cases but we have seen cases of (nutritional) among children |
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| | aged below 7- 8. |
| What is the local term for night-blindness? | <ul style="list-style-type: none"> • 'Raat-kana'. |
| What are the causes for night-blindness? | <ul style="list-style-type: none"> • Not sure. • A lack of ' vitamins'. • A symptom of night-blindness is excessive diarrhoea. • Treading on eggshells. • Casting an evil eye can lead to night-blindness. |
| What is their perception about 'vitamins' ? | <ul style="list-style-type: none"> • Lime and onion are vitamin rich. |
| Who are susceptible to this disease ? | <ul style="list-style-type: none"> • Children . (Pregnant women were not mentioned) |
| Is there any cure for this disease ? | <ul style="list-style-type: none"> • At first home remedies are to be used. Eggs of black hens and roasted rice are given. Hymns are chanted and the patient must dance with a mat on his head. (Probing revealed that no dietary changes are made). • Fish curry must be eaten after having a bath at night else a doctor must be consulted. (The community was not sure whether diet played a role in causing night-blindness). • Fireflies stuffed in a banana should be consumed. • Now, the community has less faith in home remedies and a greater faith in doctors. |
| Does the government health centre provide anything that ' protects eyes' ? | <ul style="list-style-type: none"> • We don't know. • Health workers prescribe boiled eggs. |
| What is given to pregnant women? | <ul style="list-style-type: none"> • Calcium tablets, tetanus injections and vitamin tablets to combat weakness. |
| Is there any food that is good for the eyes ? | <ul style="list-style-type: none"> • Hot rice with onion, boiled drumsticks or drumstick juice. Walking on dewdrops is also beneficial for eyes. • Lime, banana stem, banana flowers and colocasia are good for the eyes but are not commonly eaten, as they are not |

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| | considered tasty. |
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Issue: Anaemia

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| <p>Have you seen anyone who suffers from tiredness, dizziness, swollen hands and feet? Who are susceptible to this disease ?</p> | <ul style="list-style-type: none"> • Yes, this can occur to anyone. Some call this condition 'pressure'. • This occurs among pregnant women because they eat less rice than usual because of acidity. Families do not pay sufficient attention to her diet. • Girls and older women. • Those who have many children. |
| <p>What is the local term for this condition ?</p> | <ul style="list-style-type: none"> • Reduction in blood volume |
| <p>Can this condition be prevented ?</p> | <ul style="list-style-type: none"> • At one time, lactating mothers were given bitter jute leaves picked on a full moon night, dried, roasted and ground. |
| <p>Is any food avoided during pregnancy and lactation ?</p> | <ul style="list-style-type: none"> • The community believes that imposing dietary restrictions must prevent ailments that arise after delivery, as they believe that otherwise, such complications will persist. These complications (such as diarrhoeal diseases or gastro-intestinal problems) are locally termed 'Sutika'. • Mayalu leaves, pumpkin, meat and eggs used to be avoided during pregnancy. However, now the trend is changing and there are no food restrictions during pregnancy. • Only dry and fried food such as fried rice flakes are given to lactating women in the belief that they will help the uterus to heal quickly. Water intake is also restricted and a measured quantity of warm water is given. • Sour food is prohibited. • The child must not be breast-fed if the mother has acidity. • Pregnant women must not eat rice on the night of the full moon or the new moon. Lactating mothers must not consume rice at dinner. • Lactating mothers must restrict their intake of 'cold' food such as rice. Mayalu leaves must not be consumed as the child may catch a cold. • Mangoes and peas must not be consumed, as the child will be big. • Lemons must not be eaten as they can |

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| | cause acidity. |
| Are any foods especially given during pregnancy ? | <ul style="list-style-type: none"> • Dry and fried items such as fried plantain, fried jute leaves, fried 'ashok' flowers and black pepper. |
| Can this condition be cured? | <ul style="list-style-type: none"> • One must consult a doctor. Doctors advise restriction of salt and water. They also prescribe red 'vitamin' tablets. • Milk, fruits and tonics must be taken. • 'Good' food such as meat and chicken. |
| Has anyone discussed these issues with them? | <ul style="list-style-type: none"> • No. |
| What are the consequences of anaemia ? | <ul style="list-style-type: none"> • Dizziness and loss of eyesight. |
| What food helps in the formation of blood ? | <ul style="list-style-type: none"> • Apples, grapes, milk and Horlicks. • Apples, cucumbers, bananas and lemons. • The juice of the hinchey leaf is a rich source of iron. • Boiled green leafy vegetables without the addition of oil. However some of these vegetables have now become scarce. |

Issue : Breast-feeding

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| What is first fed to the newborn ? | <ul style="list-style-type: none"> • Honey (to reduce mucous) ,goat's milk and candy water. Candy water is filling and is believed to increase immunity. • Milk powder, biscuits soaked in water and sago. |
| When is the child first put to the breast ? | <ul style="list-style-type: none"> • After 3-4 days. The first milk is indigestible since it has accumulated over a long period. |
| How long is the child exclusively breast-fed ? | <ul style="list-style-type: none"> • For six months. |
| Besides breast-milk, what else is fed ? | <ul style="list-style-type: none"> • Rice is given after the 'anna-prasana' ceremony. Besides, biscuits, candy water and flour mixed with water are given. Plain water is also given. - Two tablespoons of cold water are given |

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|---|---|
| | <p>after every feed of breast-milk.</p> <ul style="list-style-type: none"> • Those who do not have sufficient breast-milk must supplement this by formula. Nursing mothers who spend long hours near an open flame are prone to have reduced breast-milk yield. • Mothers must supplement breast-milk with formula as now most mothers do not have enough milk. • Affluent families feed their children formula and others are also influenced to emulate them. |
| <p>When is the family diet introduced ?</p> | <ul style="list-style-type: none"> • Rice is not regularly given until the child is one year old. Boiled potatoes, dal or strained dal water, boiled green plantain may be given. Salt and oil are not added to a child's diet, as they may be difficult for the child to digest. • Fish, meat and egg are introduced between the ages of one and two. Green leafy vegetables are also introduced at this time i.e. once the child can eat by itself. • Boiled eggs or a bland preparation of freshwater fish may be introduced earlier. • Fruits such as mangoes, bananas and papaya are not given as the child may suffer from diarrhoea. Those who can afford to do so feed the child apples and grapes. • Boiled food is nutritious for the child. |

Issue : Food practices

| | |
|---|---|
| <p>What types of cooking vessels do people use ?</p> | <ul style="list-style-type: none"> • Earthen and iron vessels were once used but stainless steel and aluminium vessels are now preferred as they are easy to maintain. |
| <p>What are the common methods of preserving food in the area ?</p> | <ul style="list-style-type: none"> • Leftover rice is soaked in water and consumed for breakfast. • Curries, which are prepared for lunch, are usually preserved at room temperature to be consumed for dinner. Daily wage earners generally prepare vegetables in the evening after returning from work. • People depend on weekly markets for green leafy and other vegetables. However some villages have the facility of a daily market. • At Khirishtala, 'jukti' flowers, cabbage, tamarind and cauliflower are still preserved |

| | |
|---|--|
| | by drying in the sunlight and eaten in off-season. Green mango pickles are also made in a few households. |
| Do many people grow their own vegetables and fruits ? | <ul style="list-style-type: none"> • There used to be only one crop of paddy. Now, two crops of paddy, green gram and vegetables such as radish, spinach, ladies finger, brinjal, tomatoes, carrots and other seasonal vegetable are grown. |

Urban areas :

Blocks : Garden Reach and Khidirpur

Issue : Night-blindness

| | |
|--|--|
| Have you seen anyone who can see clearly during the day but cannot see at night? | <ul style="list-style-type: none"> • No. • Yes, such symptoms arose when I was pregnant. |
| What is the local term for night-blindness ? | <ul style="list-style-type: none"> • 'Raat kana', 'Raat-andhi' |
| What are the causes for night-blindness ? | <ul style="list-style-type: none"> • Don't know. |
| Who are susceptible to this disease ? | <ul style="list-style-type: none"> • Not sure. |
| Is there any cure for this disease ? | <ul style="list-style-type: none"> • Elders advised me to ignore the condition, as it would return to normal after delivery. • When nightblindness was common, a home remedy consisted of feeding the child burnt mutton together with different kinds of food cooked by seven different families. Some of the mutton had to be offered to a black dog. • Indigenous practitioners are consulted. |
| What is the community's perception about vitamins ? | |
| What is 'good' food ? | |
| What are the consequences of night-blindness ? | |
| Do you know of any government measures to control night-blindness ? | <ul style="list-style-type: none"> • Oil is given together with the measles vaccine. |

| | |
|---|---|
| What food is good for eyesight ? | |
| Are there any times that these foods are avoided ? | <ul style="list-style-type: none"> • Too much 'vitamin'-rich food should not be eaten during pregnancy as this may lead to a large baby. |
| Is there any other food taboos during pregnancy and lactation ? | <ul style="list-style-type: none"> • Meat and fish are not eaten during lactation. • Green leafy vegetables and shrimp are not to be consumed during lactation. |

Issue : Anaemia

| | |
|---|--|
| Have you seen anyone who suffers from tiredness, dizziness, swollen hands and feet? | <ul style="list-style-type: none"> • Pregnant women • Poor people. • It occurs in large families where the mother often has to give her share of the meal to her children. • It occurs to children. |
| What is the local term for this condition ? | |
| What are the causes for this condition ? | <ul style="list-style-type: none"> • Too little food. • Getting married at a young age. • Doctors say that it is a condition called 'pressure'. |
| Who are susceptible to this disease ? | |
| Is there any cure for this disease ? | <ul style="list-style-type: none"> • The doctor advises 'good food' and rest but this is not always possible. • The doctor gives 'vitamins' but we have not found these to be effective. • There are so many mouths to feed at home. How can we afford to take rest ? • Tonics and injections must be taken. • No, there is no cure. • Doctors advise to double food intake but this is not possible . |
| What are the consequences of not treating this condition? | |
| Has anyone discussed these issues with them ? | |
| What food helps in the formation of blood ? | <ul style="list-style-type: none"> • Doctors advise to eat apples, grapes, and Horlicks. • Doctors recommend 'cold' food such as milk, ghee (clarified butter), ghee |

| | |
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| | leafy vegetables. They also prescribe tablets to combat weakness. These can be pink, white or red. |
| Are there any times that these foods are Avoided ? | <ul style="list-style-type: none"> • Green leafy vegetables are not to be consumed during lactation. • Too much food can lead to high blood pressure. |

Issue : Breast-feeding

| | |
|--|---|
| What is first fed to the newborn ? | <ul style="list-style-type: none"> • Water and candy water. • Hot water and honey. |
| When is the child first put to the breast ? | <ul style="list-style-type: none"> • The child is first put to the breast after two to three days. • Mothers-in-law advise us to throw away the first milk. • The first milk is thrown away, the breast washed and then the child is allowed to suckle. • The child cannot digest the first milk. |
| How long is the child exclusively breast-fed ? | <ul style="list-style-type: none"> • Six to seven months. • Six months to one year. |
| Besides breast-milk, what else is fed ? | <ul style="list-style-type: none"> • Mothers complain that they do not have enough breast-milk so doctors prescribe formula . • Biscuits and milky tea are given. • Mashed apples are given. |
| Has anyone told you about the importance of the first yellowish milk ? | |
| At what age is the usual family diet introduced ? | <ul style="list-style-type: none"> • Rice, boiled vegetables such as potatoes, lentils or strained lentil water, 'chapatis' (whole-wheat flour bread) with salt are given after the 'kheer'khilana' ceremony has been held. • Oil is not added to homemade food because it is 'bad' for the child. • Other vegetables, fish and meat are given after 1 to 1 ½ years, as the child is healthy enough on breast-milk. • Green leafy vegetables are not given before the child is 18 months old. |

| | |
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| | they can lead to diarrhoea. |
|--|-----------------------------|

Issue : Food practices

| | |
|--|---|
| What types of cooking vessels do people use ? | <ul style="list-style-type: none"> • Steel or aluminium utensils are used. |
| What are the common methods of preserving food in the area ? | |
| Do many people grow their own vegetables and fruits ? | |
| What is done with the surplus ? | |

Tribal areas :

Blocks : Gopiballavpur II and Binpur II

Issue : Night-blindness

| | |
|--|--|
| Have you seen anyone who can see clearly during the day but cannot see at night? | <ul style="list-style-type: none"> • No, there are no such cases in our locality. • Yes, there is a seven-year-old child in our village who suffers from this. |
| What is the local term for night-blindness ? | <ul style="list-style-type: none"> • 'Raat-kana', 'Thaarey', 'Andhaar-kana'. |
| What are the causes for night-blindness ? | <ul style="list-style-type: none"> • Not sure. • Too little food. |
| Who are susceptible to this disease ? | <ul style="list-style-type: none"> • Those who have to spend long hours in the sun such as those who go for cultivation. • It does not occur among children. • At one time, it used to occur to children but now it is not common. |
| Is there any cure for this disease ? | <ul style="list-style-type: none"> • Yes, there is a course of five white tablets after which eyesight is restored. • Yes, vitamin A oil is given. • Practitioners of herbal medicine are consulted. They do not reveal their treatments. • Yes, 'andhaar-kana' tablets are available at the local market. |

| | |
|---|--|
| What is the community's perception about vitamins ? | |
| What is 'good' food ? | <ul style="list-style-type: none"> The doctor recommends milk and eggs but tribals cannot afford such food. |
| What are the consequences of night-blindness ? | |
| Has anyone discussed these issues with them ? | |
| What food is good for eyesight ? | <ul style="list-style-type: none"> Onions |
| Are there any times that these foods are avoided ? | |

Issue : Anaemia

| | |
|---|---|
| Have you seen anyone who suffers from tiredness, dizziness, swollen hands and feet? | |
| What is the local term for this condition ? | <ul style="list-style-type: none"> Lack of blood. |
| What are the causes for this condition ? | <ul style="list-style-type: none"> We are not sure. The doctor must know. Excessive physical labour. Lack of 'vitamins'. |
| Who are susceptible to this disease ? | <ul style="list-style-type: none"> It can occur to anyone. It occurs to aged people. It can occur to pregnant women if they frequently vomit. It can occur to lactating women if they do not eat enough for two. It occurs during pregnancy as mothers take rest only on the day of delivery. (The community at Panchrukha were not sure whether anaemia was common during pregnancy) |
| Is there any cure for this disease ? | <ul style="list-style-type: none"> Doctors prescribe 'vitamin' tablets but mothers do not consume them. 'Good' food such as eggs and milk. |
| What are the consequences of not treating this condition? | <ul style="list-style-type: none"> Tiredness, bodyache. |
| Has anyone discussed these issues with them ? | |

| | |
|--|---|
| <p>What food helps in the formation of blood ?</p> | <ul style="list-style-type: none"> • Milk is the best treatment for this condition. • We have heard that amaranth leaves have a high 'vitamin' content. • Grapes and apples. • (Probing revealed that the community does not believe green leafy vegetables to be very effective .) • Meat, milk, fish and 'vitamin' tablets. • Glucose, Horlicks. |
| <p>Are there any taboos during pregnancy and lactation ?</p> | <ul style="list-style-type: none"> • No food is given for seven to eight days after delivery. Mothers must eat off the floor. • However, nowadays, such practices have diminished. • Onions and chillies are not to be taken during pregnancy, as the delivery will be difficult. • Pumpkin should not be eaten as it can lead to arthritis. • During lactation, rice with boiled vegetables such as brinjal or green banana is given. Fish is given after 6 months to one year as otherwise, menfolk may feel a sexual desire. • Lactating women are not given green leafy vegetables, 'panta' (rice soaked in water), pumpkin, fish or meat. Consuming green leafy vegetables can cause the child to suffer from diarrhoea. If the mother consumes fish, the child is at risk of catching a cold. • Fish, eggs and meat are not given for four months. |

Issue : Breast-feeding

| | |
|---|--|
| <p>What is first fed to the new-born ?</p> | <ul style="list-style-type: none"> • Honey is given in the belief that the language will be 'sweet'. • Powdered milk, hot water and candy water. • Goat milk is given if the child refuses to suckle. |
| <p>When is the child first put to the breast ?</p> | <ul style="list-style-type: none"> • The child is given breast-milk once the mother's milk lets down. The first milk is thrown away as it is too thick to digest. |
| <p>How long is the child exclusively breast-fed ?</p> | <ul style="list-style-type: none"> • For 8-10 months. - The child is breast fed for 8-10 months |

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| | but other food such as arrowroot or candy water may be given as the mother resumes work soon after. |
| Besides breast-milk, what else is fed ? | <ul style="list-style-type: none"> • Rice with salt, biscuits, puffed rice. • We realize that formula is nutritious but cannot always afford it. • Some items from the daily diet such as potatoes are washed with water and given to the child. • Cow's milk, formula, Complan, lentils, green leafy vegetables, other vegetables are introduced after 6 months. |
| Has anyone told you about the importance of the first yellowish milk ? | |
| At what age is the usual family diet introduced ? | <ul style="list-style-type: none"> • Rice with a little bit of gravy may be given at the age of eight months. • Fish and meat are introduced after the child is one year old. • Children are given green leafy vegetables once they can eat by themselves. • Children are weaned once they can eat by themselves. • The usual diet is introduced when the child is 1 – 1 ½ years old. |

Issue : Food practices

| | |
|--|--|
| What types of cooking vessels do people use ? | <ul style="list-style-type: none"> • Tin or iron pots are used • Earthen or aluminium vessels. |
| What are the common methods of preserving food in the area ? | <ul style="list-style-type: none"> • None. |
| Do many people grow their own vegetables and fruits ? | <ul style="list-style-type: none"> • Two crops of paddy, sesame seeds, nuts, Bengal gram and red gram dal are cultivated. Among vegetables, mayalu, amaranth, ipomoea and 'bathua' leaves, broad beans, tomatoes, potatoes, brinjals, 'kundri', parwar and drumsticks are grown • Carrot and beans are not grown and not consumed by tribals.. • Pumpkin is rarely cultivated. • Pumpkins are not commonly eaten. • The practice of growing kitchen gardens has waned now these community |

| | |
|---------------------------------|----------------------------------|
| | members go to the towns to work. |
| What is done with the surplus ? | |

REPORT ON FOOD SYSTEM DATA TABLE

Carotene and iron rich fruits and vegetables

- The different green leafy vegetables (saag) available in the three areas are Spinach, Mayalu, Drumstick leaves, Ipomoea, Coriander, Amaranth, Pumpkin, Radish, Cauliflower, Fenugreek, Bottle-gourd, Carrot leaves, Susni leaves and Colocasia leaves.
- The preferred types are Spinach, Mayalu, Drumstick, Ipomoea, Coriander; because these saags are eaten on a regular basis, are widely available and cheap.
- Children are given these preferred varieties usually in boiled or fried form, once they can eat by themselves i.e. around the age of 1 ½ - 2 years. However, in tribal areas, green leafy vegetables are given to children from the age of six to eight months. This however is not to fulfil the micronutrient needs of the child but because green leafy vegetables are cheap and filling.
- Children are given 'Saag' boiled with the rice starch or salt. Spices like garlic and chillies are added but many, especially in rural and urban areas, do not add oil in the belief that the child cannot digest it.
- Pregnant women, it was seen, do not have any special restrictions in their diets. The only difference was at Kulerdari, where pregnant women were not given Mayalu saag.
- However, after giving birth, in most areas, there are food restrictions in all the areas. In the rural area, there are food restrictions in each village. In Dhopar More, there is no restriction at all on any saag while in Khirishtala, mayalu is not given as the child may catch a cold. In Krishnarampur, there is no restriction on any type of foods. However, in Jhanjra, no saags are given for 21 days after birth, while there is a total restriction on puisaag. In Rahgunathpur, the diet is supplemented with Nalte (dried jute)leaf or neem leaves. In Brindabanpur, all saags, meat and fish are restricted for on month. In Bhasa, for 5 days, no saag and no rice are given.
- In tribal areas, there is even greater disparity between villages. In Topsia, lactating women are given boiled food(vegetables, eggs) and no saag at all. For 5 days , only boiled water is given. In the village of Nota , only Amaranth saag is given. Pumpkin is not given as mothers find it difficult to digest and the gastro-intestinal problems will be transmitted to the child. In the village of Asui, Amaranth, Ipomoea and susni saags are given after 5-8 days while in the case of the tribals saag is given after 21 days.In Kharbandhi, only susni and pumpkin saag are given and Mayalu and Ipomoea are not part of the diet. Women from Gohalora do not eat Mayalu or colocasia leaves for 2 months and no meat or fish for 6 months after the baby is born. In Kako no saag is given for a 2-month period. In Jaipur there is a definite distinction in dietary restrictions between the Adivasis (tribals) and other people. Where the Adivasis are concerned Mayalu and drumstick leaves are not given for 5-6 months and fish or meat for 6 months in their diet. Where the other people are concerned, fish and meat are given after 5-6 days. In the case of Balichua, lactating mothers are allowed Mayalu and bottle gourd leaves but no pumpkin, Mayalu or other saags are given. There is a restriction on pumpkins and drumstick leaves for 6 months while there is a restriction on the other saags for a month. No meat or fish is given for 6 months. A diet of water and parboiled rice is given instead. These lactating mothers eat food in

Small quantities once a day only. In Kasma , Mayalu is not given since it makes the

body swells . Lentils and colocasia leaves are also not given.

The people believe that eating pumpkin leads to problems of digestion in case of the mother while eating Mayalu will lead to cold and cough, illnesses and stomach upset in the case of the child. These restrictions are generally for all the tribal villages in Midnapur district. The people of Balichua also said that there is a change in the eating trend of lactating women. These days women eat twice or thrice a day whereas at one time, only one meal a day was allowed.

Most of the villages have a limited kitchen garden and much of the produce is

bought from the daily market in another town or at the weekly bazar in the village.

From where most people buy almost all their raw vegetables and other saags. Many said that saag, although available, was only eaten when there other vegetables were too expensive to buy. For them sag is not full of vitamins or good for health. It is eaten because it is cheap, easy to cook and widely available. These days since almost all women are daily labourers there is some more money which is used to buy other vegetables and fruits instead of the despised saags.

- Most of the saags are prepared with other vegetables especially potatoes, brinjals and pumpkin. Saag is also boiled, fried, and added to 'tarkari', 'ghant', 'ghonto', 'chorchori' (various types of vegetable curries) apart from being cooked with fish or prawns as in the case of spinach, mayalu, red gram leaves.
- Generally however there is not much difference in the method of preparation in any of the three areas under consideration except in the urban areas where meat is added to all preparations of green leafy vegetables since menfolk insist on this.
- Since in all areas under scrutiny the people interviewed belong to the lowest income category, their perception about saags is not very different. Some have the perception that it is nutritious although they cannot specifically name the nutrients. However, the main reason for consuming saag is that it is cheap and filling.
- Some of the commonly available vegetables and dark green leafy vegetables have been selected for collection of further data from urban, rural and tribal areas on their availability, cost and other related matters.

SOME COMMON VITAMIN A & IRON RICH FOOD ITEMS:

COMMUNITY FOOD SYSTEMS DATA TABLE # 1

1. Food name Drumstick Leaves
2. Food category Green leafy Vegetable
3. Local name (s) 1. Sajne Saag
2. Marsi Saag(Tribal)
3. Scientific name Moringa oleifera
4. Part(s) used 1. Leaves
2. Stalks
5. Preparation (s) 1. Fry-(with prawns, mustard or fried with Ipomoea)
2. Curry

3. Boiled

6. Is the food mainly

Wild

Hunted

Cultivated Y

Purchased Y

7. Is it available in

Tribal areas Y

Rural areas Y

Urban areas Y

8. Seasonality of use :

| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sept | Oct | Nov | Dec |
|-----------------|------|------|------|------|------|------|------|------|------|------|------|------|
| High | X | X | X | X | X | X | X | X | X | X | X | X |
| Medium | | | | | | | | | | | | |
| Low | | | | | | | | | | | | |
| None | | | | | | | | | | | | |
| Average | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Market Price | | | | | | | | | | | | |

9. Importance value to the community

- This saag is not given to lactating mothers for a month or two after the child is born. In Topsia this trend has been noticed.
- Pregnant women have no restriction on diet.
- Children after the age of 1 year are given this saag to eat.
- Most don't like to eat this saag.
- This saag is eaten twice or thrice a week in season.

COMMUNITY FOOD SYSTEMS DATA TABLE # 2.

1. Food name Mayalu

2. Food category Green leafy Vegetable Y

9. Importance value to the community

- Gives 'vitamins', good for children.

10. Other miscellaneous information:

- Pui saag is cooked between twice or thrice a week. Since pui saag tastes good with prawns it is cooked often in the Muslim areas. But the dish is rich and heavy to digest.
- Pui saag is not given to lactating mothers. They feel that as the mothers cannot digest it, the child will fall sick.
- Pui saag is also not given since it causes acidity, cough and cold in children.

COMMUNITY FOOD SYSTEMS DATA TABLE # 3

1. Food name Spinach

2. Food category Green leafy Vegetable Y

3. Local name (s) 1. Palang Saag

3. Scientific name Spinacia oleracia

4. Part(s) used 1. Leaves

2. Stalks

5. Preparation (s) 1. Fried

2. Boiled

3. With fish/meat/prawns---

1. In Dal

1. With Ash-Gourd

2. Mixed preparations-
chachchori, ghonto,
tarkari

6. Is the food mainly

Wild

Hunted

Cultivated Y

Purchased Y

7. Is it available in

Tribal areas

Rural areas Y

Urban areas Y

8. Seasonality of use

| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sept | Oct | Nov | Dec |
|----------------------------|------|------|------|------|-----|------|------|------|------|------|-----|------|
| High | X | X | X | X | | | | | | | | |
| Medium | | | | | | | | | | | | |
| Low | | | | | | | | X | X | X | X | X |
| None | | | | | | X | X | | | | | |
| Average Market Price | 3.00 | 3.00 | 5.00 | 5.00 | | 12.0 | 12.0 | 10.0 | 10.0 | 10.0 | 8.0 | 8.00 |

9. Importance value to the community (By age/ gender)

It is given to children. It contains vitamins and doctors advise parents to take. Also it is good for health apart from being tasty.

10. Other miscellaneous information:

- Palang saag is not given during fever.
- Blood and stomach are purified when this saag is eaten.
- This saag is eaten mainly in winter when the price falls.

- This vegetable is eaten for one or two months in some of the rural areas, almost daily in the other rural areas and twice to thrice a week in the urban areas. Children do not like that taste of this saag.

- However, for 21 days (in rural areas) no saag is given.

COMMUNITY FOOD SYSTEMS DATA TABLE # 4

1. Food name Tomato

2. Food category Yellow-Orange Vegetable

3. Local name (s) 1. Bilati (tribal)

3. Scientific name *Hycopersicon esculentum*

4. Part(s) used 1. Fruit

5. Preparation (s) 1. Curries

2. Chutney

3. Roasted (in tribal areas, to conserve oil)

4. Raw

6. Is the food mainly

Wild

Hunted

Cultivated Y

Purchased Y

7. Is it available in

Tribal areas Y

Rural areas Y

Urban areas Y

8. Seasonality of use :

| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sept | Oct | Nov | Dec |
|---------|------|------|------|------|------|------|------|------|------|------|------|------|
| High | | | X | X | | | | | | | | |
| Medium | X | X | | | X | X | | | | | X | X |
| Low | | | | | | | X | X | X | X | | |
| None | | | | | | | | | | | | |
| Average | 10.0 | 10.0 | 0.50 | 1.00 | 11.0 | 11.0 | 15.0 | 15.0 | 20.0 | 20.0 | 12.0 | 12.0 |
| Market | | | | | | | | | | | | |
| Price | | | | | | | | | | | | |

9. Importance value to the community

Good for eyesight. Contains 'vitamins.'

10. Other miscellaneous information:

- In certain tribal areas(Gohalora) tomato is not given to the lactating mothers. They believe that the child and mother will be unable to digest.

- In Balichua tomato is not given to children below 6 months since it will curdle the milk taken in by the child who will lead to stomach upsets.

COMMUNITY FOOD SYSTEMS DATA TABLE # 5.

1. Food name Pumpkin

2. Food category Yellow-Orange Vegetable

3. Local name (s) 1.Kumro(Bengali)

2.Boital(tribal)

3.Dingla(tribal)

3. Scientific name Cucurbita maxima

4. Part(s) used 1. Fruit

5. Preparation (s) 1. In curry.

2. Fried

3. In mixed vegetable curry(tarkari)

1. Boiled with rice

1. With masalas(tribal dish).

6. Is the food mainly

Wild

Hunted

Cultivated Y

Purchased Y

7. Is it available in

Tribal areas Y

Rural areas Y

Urban areas Y

8. Seasonality of use

| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sept | Oct | Nov | Dec |
|----------------------------|------|------|------|------|-----|-----|-----|------|------|------|------|------|
| High | | | X | X | | | | X | X | | | |
| Medium | | | | | X | X | X | | | X | X | |
| Low | X | X | | | | | | | | | | X |
| None | | | | | | | | | | | | |
| Average Market Price | 6.00 | 6.00 | 1.00 | 1.00 | | | | 2.50 | 2.50 | 4.00 | 4.00 | 5.00 |

9. Importance value to the community

- Pumpkin is restricted in the diet of lactating mothers since the mothers cannot digest it and the child will fall sick.
- Many of the people feel that pumpkin does not have any nutritive value. It is eaten only because it is grown widely and is cheap. It does not give much energy.
- In Raghunathpur children are given boiled pumpkin. Parents say fried pumpkin leads to stomach upset.
- There is however no mention of pumpkin in the diets of pregnant women. In Topsia (tribal village) most of the populace don't eat pumpkin at all.

COMMUNITY FOOD SYSTEMS DATA TABLE #6

1. Food name Carrot

2. Food category Roots and Tubers

3. Local name (s) 1. Gajar

4. Scientific name Daucus Carota

5. Part(s) used 1. Root

6. Preparation (s) 1. Raw

2. Boiled with rice

3. In mixed vegetable curries

4. Halwa

6. Is the food mainly

Wild

Hunted

Cultivated Y

Purchased Y

7. Is it available in

Tribal areas Rare

Rural areas Y

Urban areas Y

8. Seasonality of use

| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sept | Oct | Nov | Dec |
|----------------------------|------|-----|-----|------|------|-----|------|------|------|-----|------|------|
| High | X | | | | | | | | | | X | X |
| Medium | | | | X | X | | | | | | | |
| Low | | | | | | | X | X | | | | |
| None | | | | | | | | | | | | |
| Average Market Price | 8.00 | | | 11.0 | 10.0 | | 22.0 | 23.0 | | | 7.00 | 7.00 |

9. Importance value to the community

- Not available and not familiar to many respondents from tribal areas. Most of the people are unable to recognise the vegetable .
- Most do not buy it since it is expensive.
- Not a popular vegetable
- .In the Garden Reach area, carrot is eaten throughout the year, regardless of its price.
- In some areas(Raghunathpur), carrot is only eaten in winter.

There is no restriction regarding pregnant women and lactating mothers. No mention of carrots in the diet of children.

CHAPTER-IV

SITUATION ANALYSIS ON SUPPLY & DEMAND OF MICRONUTRIENT SUPPLEMENTS IN WEST BENGAL

For the purpose of studying the present situation in the state of West Bengal four different formats (enclosed as annexures) have been developed in consultation with the Nutrition Foundation of India, New Delhi to check the inflow of four supplements and its related supply and demand problems in the state. They are as such:

1. Iron and Folic Acid Tablets (for adults and children),
2. Vitamin A solution,
3. Antimalarials, and
4. Anthelmintics

Starting from the Central Medical Stores of Govt. of India, the investigations include different levels at the state, district, block, sub-centre, anganwadi etc. (enclosed as annexures). The knowledge, attitude and practices of the health care providers have also been tested as well as the demand related problems of the pregnant women during the last trimester. A brief report of the findings has been given below.

The distribution of Micronutrient supplements from the state level to the Anganwadi centre level is one of the major tasks of this survey. The work is done with an aim to observe the flow of MN supplements from the state departmental stores to the Sub-centre or Anganwadi level as well as to study whether they are properly received or not by the people. In the process the receiving & distribution systems at all levels for the last three years i.e. 1994-95, 95-96, 96-97 have been checked from the past records. The selected supplements for the study are Iron and folic acid tablets, Vitamin A solution, Mebendazole tablets, Chloroquine tablets, Primaquine tablets, and Piperazine citrate.

Results: State level

The state is receiving the MN supplements from the Central Government Stores and also directly from other companies for distribution.

1. Adult Folic Acid: It is observed that in the year 1994-95 a large number of folic acid tablets were received by the state. The tablets were distributed among the 19 districts according to their demands. In 1995-96 comparatively the Central Stores received 30% less tablets when in 1996-97, 60% less tablets were received by the CMS and the stock was not sufficient to distribute among the districts.
2. Child Folic Acid: All the three years i.e. 1994-95, 95-96 & 96-97 a large number of tablets were received. Most of the districts were given child Folic Acid more than their demands instead of Adult Folic Acid in the year 1996-97.
3. Vitamin A solution: The supply was very limited in comparison to the demands during these years. It was 50% less than the demands made by the districts. It was revealed on inquiry that demands were placed by Health Dept. to D.G.H.S at regular intervals. But the CMS could not meet the demands of the district during the years. The condition of the stores for keeping of the medicines was not at all satisfactory.
4. Chloroquine: On inquiry from the state Malaria department it was found that the shortage of chloroquine has never occurred in the districts, which generally received more than their requisition. In the year 1996-97 malaria broke out in some of the districts and the year saw a short supply.
5. Primaquine: These are never supplied from the Government Medical Stores but on inquiry it was found that the district authorities were empowered to buy these locally according to their requirements.

6. Piperizine Citrate: This was not in stock or supplied by the state Malaria Dept. to the districts.

7. Mebendazole: CMS does not supply these tablets to the state regularly as it is to be procured from the state budget. CMS supply only about 20,000 tablets to the districts. It was understood that the CMOH at the district level had their allotment to buy these tablets locally according to their requirements from time to time. The State Social Welfare Dept. that manages the ICDS activities distributes some Mebendazole tablets to the pregnant women & children under 6 years through the AWWs. But the materials are supplied from Health dept. by their staff directly to the AWW.

DISTRICT LEVEL

Adult Folifer:

Calcutta:

The Calcutta District provides health care to the people in different wards under its control through different channels – direct govt. channel through chief Medical Officer, Family welfare dept. and Calcutta Municipal Corporation etc. The Family Welfare dept. receives the MN supply within the Medical kits from the MSD In Zone 4 where the field work was conducted the Calcutta Municipal Corporation provides services on their own.

Regarding Adult Folifer tablets the centres received maximum number of tablets in the year 1994-95 and minimum in 1996-97 from the Family Welfare Department. It is learnt from the dept. that the supply did not fulfil the demands of the service area. Zone 4 also received maximum in the year 1994 and minimum in the year 1995-96 as also in 1996-97. But altogether the area got 20,35,000 tablets in the year 1994-95, 2,55,000 in 1995-96 & 3,58,000 in 1996-97, which are sufficient according to the ratio of Pregnant & lactating mothers. The Calcutta Municipal Corporation did not extend their co-operation for verifying their stocks supply records.

Midnapur:

In 1994-95 this district did not receive any supply of folifer tablets. But in subsequent years i.e. 1995-96 & 96-97 received 55,00,000 & 19,44,000 respectively which were not sufficient for the district. The ratio of pregnant women & lactating mothers are much more than the supply of MN supplements. On inquiry it is learnt that the requisition during the years given to CMS have not been met. BPHCs are supplied with very limited stock of 50,000 tablets in 1994-95 from the previous year's stock.

24 Parganas (s):

The district receives supply from the CMS and sometimes from the MSD. In 1994-95 this district received 1,56,00,000 tablets of Adult Folifer whereas in 1995-96 it did not receive any supply. And in 1996-97 it received only 50,00,000 tablets according to the CMOH in-charge, All the BPHCs did not get enough supply.

Child folifer:

Calcutta – The Social Welfare Departments did not receive any child folifer for these years. But from the Family welfare department it received regular supply for all these years i.e. 1,70,000 average per year. Zone 4 received more than 21 lakhs in the year 1994. But it was observed that gradually it was decreased i.e. in the year 1996-97 it received only about 1,90,000 tablets.

Midnapur: The largest district of West Bengal received regularly about 237 lakhs tablets, 50 lakhs & 14 lakhs for those years respectively. Comparatively in the year 1996-97 the supply was very much limited. It was revealed that this year the district received less supply according to their requirements.

24 Parganas (s): The condition of this district was worst comparing to other two districts. Only 14.4 lakhs & 55 lakhs were received during 1994-95 & 95-96. No supply was found in the year 1996-97. Comparing the supply position it was seen that Calcutta & Midnapur districts received the supply more or less regularly whereas the position is not such in the rural district of 24 Parganas (S).

Vitamin – A:

Calcutta: The district received 1,000 Vitamin – A solution bottles in the year 1994-95 but in other two years an average of 400 bottles have been received which was not sufficient.

Midnapur: The largest district of the state has only received 18750 bottles in the year 1994-95. But in 1995-96 again it did not receive any supplies when about 1000 bottles were carried over from previous year. Only 6000 bottles were received in the year 1996-97.

24 parganas (s): In the year 1995-96 the district received 6000 bottles which was definitely better than the other two years with an average of 2000 bottles per year. Again it may be mentioned here that the supply was not regular and sufficient according to the requirements.

Malaria:

Chloroquine - The supply of such tablets were almost constant for all three districts and in 24 Parganas (s) it was comparative less as verified from the records. It was noticed that in this district also shortage of the tablets does exist to meet the demands, Midnapur district is generally prone to Malaria and the district authorities had no grievance regarding the supply of such medicines. The district received maximum supply compared to the other two districts.

Primaquine: It is learnt from the authorities that these tablets are administered after the attack of Malaria. The people of Midnapur district also do suffer more from Malaria, when the supply position is good in that district, But it was very meagre in the district of 24 parganas (S) in comparison with Calcutta & Midnapur. For other Anti – Malarials medicines were only distributed in the district of Calcutta.

Mebendazole: Calcutta district received 10,000 tablets in each year from Family Welfare department and the Zone 4 of CMC. Midnapur district did not receive any supply for the year 1994-95 & 95-96. In 96-97 an outbreak of enteric diseases was seen in some areas of Midnapur district. The CMOH purchased a total of 20,000 tablets to fulfill the requirements to some extent. Some outbreak was seen at 24 parganas (S) in the year 1994-95 and under emergency the CMOH purchased 2 lakhs tablets to face the situation. Consequently in other two years these districts did not receive or purchase any such tablets. On inquiry of the records it was found that in the year 1995-96 only 50,000 tablets were distributed to various BPHCs from the previous year stock in 1994-95.

It may be concluded that Mebendazole tablets were distributed only when any outbreak has occurred. But in the district of Calcutta regular supply was noted.

BLOCK –LEVEL

Adult Folifer :

All BPHCs received delivery of the MN Supplements from their district headquarters. In Calcutta, Khidirpur received comparatively less supply of Adult Folifers than that of Garden Reach. In 1994-95 and 96-97 Khidirpur received 20% of less supply than Garden Reach. In the year 1995-96 more or less supply was uniform. In both of these areas the Muslim population is about 60% & 80% respectively. It was found that the Health delivery system was comparatively better in Garden Reach. The Doctor-in-charge of Garden Reach told that they have regular supply of Adult folifers. During the last three years they got Adult folifers as per their requisition. Sometimes they received the tabs one or two months before expiry of date. So all tablets could

not be distributed on time, which was brought to the notice of higher authorities severally. The MO in charge of Khidirpur told that the Adult folifer flow was constant and they never faced any problem. He also told that when these tablets are in short supply they receive from Vidyasagar hospital. The pregnant women and lactating mothers attend various private doctors of different clinics and purchased the required medicines from the local markets. Comparatively mothers of Garden Reach are mostly from poor families of basti (slum) area who received the services from ICDS, CMC. & Other Government Health Services at their doorsteps. The CDPOs of two blocks told that they were receiving some MN Supplements but very irregularly.

The Topsia BPHC of Gopiballavpur block of Midnapur district with a 40-bedded hospital was visited to verify the supply of Adult folifer tablets. It was learnt from the MO. in-charge that due to strict supervision and monitoring the supply situation is quite normal. But on inquiry from stock it was revealed that in the year 1995-96 the supply was very meagre.

The CDPO in-charge told that his office does not receive any supply. When the team visited the Binpur-II block the BPHC at Belpahari, the MO in-charge of the centre discussed that due to some disturbances the higher authorities sealed the store and stock books and could not be possible to show. But from registers it was noted that in the year 1994-95 only 50% tabs and in 1996-97 only 20% tablets were received. The proportion was very meagre according to the demand. More over it was also revealed in the year 1995-96 that these tablets were received in maximum. But most of them were outdated. It was stored at the corner of the verandah of the store. The MO has told that though the tribals dominate this area they did not get tablets according to their requirements. As this area is far from Head quarters communication was also very poor.

The picture of South 24 parganas (S) was very grave. The MO in charge of the BPHC of Bishnupur could not show any stock of the tablets as the records were destroyed. She also said her centre received some tablets from CINI. But the need of the community could not be met. Practically in the year 1996-97 their centre did not receive any supply.

At BPHC of Mandir Bazar Block there was no medical officer. All posts were vacant. Then the team met with ACMOH of Diamond Harbour, who arranged to show all the records. It was kept very nicely and the store was maintained properly. But only 30,000 tablets were received in the year 1994-95. But in other two years there was no supply. By verification of records it was seen that though requisition was given, due to lack of persuasion this centre did not receive such tablets. The CDPO told that they received small quantity of such tablets but during the last two years no such tablets were received.

Compared to other Blocks it was noted that in Calcutta the urban Blocks received such tablets regularly than the Tribal Blocks of Midnapur. But the position of 24 Parganas (S) is worst. From this study it may be said that from CMS distribution does not reach the Block level for which people of the Blocks suffer.

Child Folifer:

In case of child folifer the picture was just opposite. The Khidirpur received twice than of Garden Reach. In the year 1996-97 both the centres received better supply but much less than their demands. Khidirpur received 42,000 tabs where as Garden Reach received 30,000 tablets only. According to respondents demands could not be met at any centre.

But in Midnapur both the centres had sufficient supply. Topsia received 11,42,000 tablets where as Belpahari received 2,70,000 in the year 1994-95. Topsia received 75,000 and 30,000 tablets for the year 1995-96 & 96-97 respectively. Belpahari received maximum 144,000 tablets in the year 1995-96 and only 50% i.e. 72,000 in the year 1996-97. It was revealed that Belpahari distributed child folifer to the pregnant and lactating women for shortage of Adult folifers at 34 tablets per dose. According to the MO. Topsia had no say against supply.

Again the picture of Bishnupur was pathetic. As per the MO in charge received folifer from CINI but was in very small quantity and could not meet the demands for all three years. No supply was received from CMOH office.

Mandir Bazar received 60,000 and 50,000 tablets for the year 1994-95 & 1996-97 respectively. They also did not receive any supply in the year 1995-96.

Considering the findings it may be concluded that most of the blocks are not satisfied with the distribution system from head quarters. They faced a lot of problems at the lower level. They placed requisitions according to the instructions and repeatedly visit the Head Quarters but could not receive tablets as per their demands.

Vitamin – A:

In every Block the position is very grave. Garden Reach received 17 & 21 bottles in the year 1994 – 95 & 96-97 respectively. There was no supply in the year 95-96. According to the MO they could not distribute Vitamin A to all the sub-centres equally as per their demands. The condition of Khidirpur was better. Average 60 bottles were received every year. But still it was not as per their demands. Most of the children take Vitamin A from private Doctors or Nursing Homes etc. But in Midnapur district the condition of Belpahari was much better than Topsia. Topsia received only 5 bottles in the year 1996-97 and in other two years at an average of 35 bottles each. Here also demand was more than supply. In Belpahari in the year 1994-95, 1000 bottles were received and out of which for 100 bottles the date was expired. In other two years in average 250 bottles were received.

It was disappointing at south 24 parganas. Both the centres did not receive any supply according to records. Mandir Bazar received only 6 bottles in the year 1994-95.

Chloroquine:

The Malaria Department covered all the centres. No shortage was seen any time. In Midnapur both the centres received chloroquine and primaquine in maximum. They had regular spraying, bleaching etc and supplied sufficient tablets to the community. They had no say about the supply. During the visit they were sufficiently in stock. But in case of 24 parganas (S) position was grave. The Bishnupur MO told that they did not receive any chloroquine and primaquine as such. There was Malaria dept. store, which could not show the stock book. In Mandir Bazar the BPHC has received 15,000 chloroquine tablets for the last three years but there was no supply of primaquine. There was no supply of Piperizine to any of the blocks surveyed during the fieldwork.

Mebendazole:

In Khidirpur the BPHC did not receive any supply of such tablets for all the years. But Garden Reach received more or less 150 tablets every year. At both the places the people used to go to the private doctors or Hospitals for treatment when such diseases attacked them. They had no faith on such govt. Medicines. In Midnapur district, Belpahari did not receive any such tablets for all these years. But Topsia received a maximum of 50,000 per year. After investigation no cause could be revealed. But it was surprising to see that in 24 parganas (s) both the centres received sufficient tablets. Bishnupur received average of 3,000 tablets every year and Mandir Bazar at an average of 1500 tablets per year.

SUB-CENTRE LEVEL:

Adult Folifer Tablets:

Khidirpur: It was found that the supply was almost uniform with 1600 tabs for all the years. Only in 1995-96, 12.5 % of centres did receive a supply of 160 tablets.

Garden Reach:

25 % centres received regular supply of such tablets and 75 % had no supply.

Gopiballavpur:

No centre received any supply in the year 1994-95. 12.5% centres received 8000 in 1995-96 and only 2000 for 96-97.

Binpur:

62.5%, 37.5% & 50% of centres in subsequent years had not received any supply,

Bishnupur:

The centres did not receive any supply.

Mandir Bazar:

14.3% of centres received good number of tablets in 1994-96 where as in 1996-97 the supply was not so.

Child folifer Tablets:

Khidirpur:

In all the years all centres received 2400 tablets, which was not according to their demands.

Garden Reach:

75% centres did not receive any supply. 25 % received regular supply for all the years but limited.

Gopiballavpur:

In 1994-95 no centres received any supply. Only 12.5% received supply of 4000 tablets in other two years.

Binpur:

37.5% & 50% in 1994-95 & 1996-97 respectively did not receive any supply. But in 1995-96 all the centres received good supply.

Bishnupur:

No supply was seen at any centre.

Mandir Bazar:

85.7% did not receive any supply for all three years. In 1994-95 sufficient supply was seen among 14.3% centres and in other two years supply was same i.e. 9000 tablets in average.

Vitamin A :

Khidirpur: All the centres received 800 bottles for all the years. As per the statements of the ANMs it was not enough for the centres.

Garden Reach:

75% centres did not receive any supply. 1994-95 & 1996-97, 25% centres received supply according to their demands. But in 1995-96 supply was there but was short in quantity.

Gopiballavpur:

In 1994-95 no centres received any supply. Only 12.5% of centres received the supply during the other two years.

Binpur:

25% of centres did not receive any supply at all for all these years. 25% centres received maximum in the year 1995-96 and other centres for all the years had limited supply.

Bishnupur:

No supply was there.

Mandir Bazar:

85.7% of centres did not receive any supply for all these years. Only 14.3% received the supply in maximum in the year 1995-96.

Mebendazole:

Khidirpur: For all the three years the centres received 800 Mebendazole tablets each.

Garden Reach: Supply in this centre was less than Khidirpur i.e. 50% for all the three years.

Gopiballavpur: During the last year (1996-97) 12.5% of centres received supply, which was sufficient and in other two years there was no supply.

Binpur:

Five centres out of eight received total 200 tabs in the year 1996-97, which was very poor. Other two years there was no supply.

Bishnupur:

During all the three years at all the centres did not receive any supply.

Mandir Bazar:

During the first two years only one centre got supply. But in the year 1996-97 no centre received any supply.

Piperazine:

No centre of any block received any supply during last three years.

Chloroquine:

Khidirpur & Garden Reach:

No supply was seen all the centres for last three years.

Gopiballavpur:

Only one centre received limited supply last year in 1996-97 and in other two years this centre has also not received any supply.

Binpur:

The condition to supply of this block was better than other blocks. All the centres received supply in regular intervals for all the three years. This block is Malaria prone.

Bishnupur:

No supply was seen at any centre for the last 3 years.

Mandir Bazar:

One centre of this block got regular supply for all the three years. The ANM maintained the records, which was available at the time of review.

Primaquine:

Khidirpur & Garden Reach did not receive any supply for last three years.

Gopiballavpur:

No centre received any supply of these tablets for last three years.

Binpur:

In 1996-97, only 37% of centres received supply and other 63% did not receive any supply.

Bishnupur:

Only one sub-centre was receiving regular supply for all the three years. Other centres did not receive any.

Mandir Bazar:

No supply was seen for all the three years.

It may be noted here that in urban area all the sub-centres remained open for certain time the Health workers were also available who maintained the records of stock and supply. But almost all sub-centres of rural and tribal areas have no room of their own. After several attempts the investigators could get them but they have no stock register. The health workers were really less interested to co-operate with the investigators. In some subcentres the condition of stocks were found to be deplorable.

ANGANWADI CENTRE LEVEL:

It was already mentioned that no AWC received any supply of MNS. But sometimes ANMs of some sub-centres distributed MNS to AWWs in small quantity.

Folifer tablets:

Khidirpur:

No supply of any folifer adult or child to any AWCs was seen for last three years.

Garden Reach:

Records were available at 7 AWCs and three centres did not receive any.

Gopiballavpur & Binpur:

No AWC received any supply for last three years.

Bishnupur:

No supply of folifers child or adult was seen. But on verification it was found at three centres some child folifers were there and after inquiry the AWW told that their respective ANMs gave them to distribute but could not shown any records.

Mandir Bazar:

No supply was seen.

Mebendazole:

Khidirpur: During last three years five centres received supply regularly and three centres did not receive any.

Garden Reach:

In this block also 5 centres were receiving regular supply though limited for last three years.

Gopiballavpur:

6 centres were receiving very limited supply for last three years.

Binpur:

In this block also 4 centres were receiving good supply for last three years but other 4 centres did not receive any.

Bishnupur:

In the year 1996-97 only 25% centres received some supply but in other years there was no supply.

Mandir Bazar:

3 centres in 1996-97 and one centre for all the three years received some supply and other centres did not receive any supply for last 3 years.

Vitamin – A

No block received any supply for the last three years.

Availability of Medicines in Pharmacies:

Although all types of medicines having Iron and Vitamin A are available in all these drug stores surveyed in the state in tribal areas the stores are in very limited number. Both in rural and tribal areas people generally do not go to these stores regularly to purchase their requirements due to poverty. Sometimes they mostly depend on the unregistered practitioners who never prescribe such medicines. The pharmacists of these pharmacies who manage these medicine stores never also do it. So there is an urgent need to educate them in this regard.

Demand of Iron Folifer (IFA)Tablets by Pregnant women :

Although nearly 69% of the women got these tablets during their pregnancy, their receipt of 100 tablets is very low at 25% . Similarly also the 18% consumption level of IFA is found to be very much proportional to the receipt level. The situation of the urban blocks seems to be far better than the other blocks in receipt and consumption level of IFA tablets by pregnant women. While comparing the present data with the previous data, it is seen that the receipt and intake of IFA tablets have certainly increased during the last couple of years in the state but it still falls back of the desired level, which can effectively check the wide-spread iron deficiency anaemia in women during pregnancy. But as observed in the field, women generally do not consume the given IFA tablets due to either sheer negligence or sometimes due to some side effects and other physical complaints. However, age and parity do not play much of a significant role in intake of IFA tablets. The intake of IFA tablets is more regularised among the more educated women, which is found to be highest in the urban blocks, where literacy status is quite high.

Health Care Providers Knowledge regarding Micronutrients:

The Anganwadi workers and ANMs at the grass roots level are the main stay of the Health and Nutrition programmes of both Govt. and Non-Govt. agencies. But to utter dismay it was found that these functionaries have very little knowledge on different issues concerning the health care of the population. Their concern was mainly the Micronutrient deficiency disorders and their treatment . About prevention they know less and about the long term measures they are almost ignorant. The AWWs in some centres do some home visits and group meetings but they do not impart any knowledge to the community regarding micronutrients.

CHAPTER-V

REVIEW & EVALUATION OF IEC STRATEGY

Information, Education and communication strategy is the first step to aware the people about importance of micronutrients and without such efforts no interventions will be effective at all. The Evaluation and review work was made among the state level officers, central government departments, international organisations, and two NGOs of the state. Structured schedules were administered along with open interviews with the functionaries.

State Level:

1. The CINI-OMNI team met with the Officer in charge of IEC Departments. The health department through this office published and broadcast through multi-media. This department developed booklets on general Nutrition for Health workers. Some posters were displayed on food availability in West Bengal. On enteric diseases 2/3 booklets were also published on preventive, treatment methods on ORS, Malaria, Cholera, Goiter, Night blindness etc. They also published folders, posters, wall paintings, and flash cards and displayed them and used T.V very rarely. Their aids were sent to periphery for circulation.
2. From the newly formed Nutrition cell in the state, the Joint Director, Nutrition, West Bengal revealed that no aids were developed by this department but used IEC materials supplied by IEC department, Health.
3. The Joint Director, Malaria Department told that his department received all aids regarding Malaria from IEC Department, Health.
4. Interviews also were conducted with four ADHS of West Bengal. They told that they have no separate budget to publish any materials. IEC department, health, developed all materials and publications regarding IEC of various diseases. After receiving all these materials the department distributed them to different districts for circulation.
5. Social welfare Department: The Director of this department was interviewed. As per his statement they have no such publication.

Central Government :

1.All India Institute of Hygiene and Public Health, Calcutta – In this Institute a separate nutrition department is there which conducted courses on nutrition under Calcutta University. This department also imparted specialised knowledge to public health courses conducted by this institute. This Institute has a good library facility where all national and International Journals including valuable books on Nutrition, Malaria and Enteric diseases are available but this Institute developed no aids.

2. Television:

The Doordarshan, India broadcasts several programmes on general Nutrition forwarded by State Health Department. In 1997-98, specialists in this field where MN was also discussed conducted ten such panel discussions on Nutrition. Some visual aids on Malaria, Enteric diseases, ORS etc. were shown every day at least once or twice. But during peak seasons more time was provided. Some discussions on pregnant and lactating women and child growth were also conducted during the current year.

3. Radio :

About Malaria and Enteric diseases and on their prevention and treatment scripts were developed and broadcast for several times every day during seasons. Discussion by experts on Malaria, Cholera, General Nutrition were broadcast for two to three times every month. Regarding MN supplements rarely discussions were organised.

4. Food and Nutrition Department :

They organise seminars and orientation courses on General Nutrition where MN issues are also discussed . Some booklets , posters, calendars , etc. were published on General Nutrition. The Nutritionists delivered two Radio talks.

International Organisations :

1. **UNICEF :** Most of the works on Nutrition were carried out especially on Iodine , School Health etc. All the reports were available in their library. No poster, leaflet, booklet were available on other micronutrients. Some books were available on General Nutrition . No publication was done on Malaria.
2. **CARE -West Bengal :** It was known that CARE provided supplementary nutrition through the ICDS department. Sometimes they organise orientation courses among health workers on anaemia and Child Nutrition. There was no special publication, poster, leaflet etc. on micronutrients.

Non Government Organisations :

1. West Bengal Voluntary Health Organisation :

This Organisation organised seminars, orientation courses among the various workers of NGOs . They also conducted exhibition on public health problems Nutrition, enteric diseases and malaria. They developed some books , leaflets, posters etc. on General Nutrition, Child Health ,and School Health and on care of pregnant & lactating women . No special programme or publications on MN have been done so far.

2. Loko Shikhya Parishad – Ram krishna Mission , Narendra pur :

The in charge of the Health Department of this Institute informed that this Institute did not develop any material on Health but uses the aids and documents, received from the Government of West Bengal and other agencies. They provide education on Iron ,Iodine , Vitamins among the mother and children . They also impart knowledge among the villagers regarding the nutrition value of food items available locally.

District Level :

Among three districts Calcutta Corporation and Midnapur developed leaflets on prevention on treatment during epidemic or enteric diseases. All the three districts distributed materials received from IEC Department, Health and forwarded them to block levels. They have no separate budgets to publish such materials .

Block Level :

6 blocks of three districts were visited to enquire about the IEC materials distributed by them. It was learnt that very few they received materials from the district headquarters, which were developed by IEC department, health. The BPHCs and ICDS authorities very rarely distribute materials to sub-centres and AWCs .

From review and evaluation of IEC strategy it was revealed that for MN no special emphasis were given as such .Home visits and mothers meetings are never held in the villages. But during epidemics or special drives every year in some part of the state special stress was given to distribute some posters, leaflets, pamphlets, etc. To impart knowledge among community the will to do so is still lacking among the Health Care providers at the grassroots level. Sometimes the IEC materials made by the workers or distributed to them during the training programmes are seen to be retained by them without any use.

A list of IEC materials collected and reviewed from different centres :

| Sl.# | Type | <u>Title of the material</u> | Distributed by | Contents |
|------|----------|--|--|--|
| 01 | Pamphlet | Mother's milk-The best gift by nature to Infants | Food & Nutrition Board, Govt. of India | <ol style="list-style-type: none"> 1. Importance of Breast Milk 2. Preparational steps before breast feeding and during breast feeding 3. Breast-feed while infant is ill . 4. Continue as long as possible. 5. Usage of semisolids as supplements – increase inequality and variety with the growth of the child. |
| 02 | Pamphlet | Babies and their food | Food & Nutrition Board, Govt. of India | <ol style="list-style-type: none"> 1. Colostrum 2. Breast Milk 3. Avoid bottled milk. 4. When to start semisolid foods. 5. Recipes of infant semisolid foods that can be prepared at home. 6. How to start infants on semisolid foods. |
| 03 | Book | Food care for sick children | ICDS | <ol style="list-style-type: none"> 1. Teach each mother / child care person and learn yourself. 2. Any kind of illness is dangerous for a child's health. 3. Why is more care taken while giving a sick child food . 4. Foods given to sick child . 5. Foods given to children suffering from chicken pox. 6. Rules of feeding a child during the Diarrhoea. |

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| 04 | Book | Instructions on care for children below the age of two years. | ICDS | <ol style="list-style-type: none"> 1. With increase in body growth there is an increase in food in take of a child. 2. Tell each mother or child care person and learn yourself. 3. Bear in mind from birth to four month of age . 4. Bear in mind from 4 month to 6 months. 5. Bear in mind from 6 months to 9 months. 6. Bear in mind from 9-12 months . 7. Bear in mind from 12 to 18 months. 8. Bear in mind from 18 to 24 months. 9. Chart – showing what to feed a child from birth of the age of 2 years. |
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| 05 | Poster | Instructions on child's food. | Food & Nutrition Board, Govt. of India | <ol style="list-style-type: none"> 1. Age 2. Condition. 3. What is to be fed. 4. When to be fed. 5. Why is it fed. |
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| 06 | Pamphlet | Malaria danger to life steps of prevention. | Calcutta Municipality Corporation – Health Department. | <ol style="list-style-type: none"> 1. Blood test. 2. Avoid keeping stagnant water. 3. Use mosquito net. 4. Help prevent Malaria. 5. Inculcate awareness among the people in the neighbourhood. |
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| 07 | Book | How to detect Malaria. | West Bengal Voluntary Health Association. | <ol style="list-style-type: none"> 1. Signs and symptoms of Malaria. 2. How to use a thermometer. 3. Types of Malaria germs. 4. Ways in which Malaria spreads . 5. Life cycle of Malaria germs. 6. Malaria in children . 7. Malaria in Women-risks. 8. Breeding place of malarial mosquito. 9. Different stages of growth of mosquito. 10. Habits of rest and eating of Malarial mosquito. 11. How to control the growth of mosquito . 12. Ways in which malarial mosquito can be destroyed. 13. Preventive measures to be taken before spraying of D.D.T. in the house. 14. How to save ourselves from mosquito. 15. Adverse effects of insecticides 16. Diagnosis of Malaria . 17. Reasons for collective testing of blood of fever patient. 18. Measures to be taken while collecting blood for test . 19. Symptomatic treatment during early days of Malaria. 20. Radical treatment . 21. Steps of recording information of malaria patient. 22. Side effects of Chloroquine . 23. Side effects of _Prima quine. 24. Sample of blood collection record for use of health workers. 25. List of Malariologists country wise. |
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| 08 | Leaflet | Eradicate malaria | IFCWA | 1. 0. 1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. 31. 32. 33. 34. 35. 36. 37. 38. 39. 40. 41. 42. 43. 44. 45. 46. 47. 48. 49. 50. 51. 52. 53. 54. 55. 56. 57. 58. 59. 60. 61. 62. 63. 64. 65. 66. 67. 68. 69. 70. 71. 72. 73. 74. 75. 76. 77. 78. 79. 80. 81. 82. 83. 84. 85. 86. 87. 88. 89. 90. 91. 92. 93. 94. 95. 96. 97. 98. 99. 100. |
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| | | | Bengal | <p>Malaria.</p> <ol style="list-style-type: none"> 2. Signs of Malaria . 3. Diagnosis and treatment of Malaria. 4. Malignant Malaria 5. Ways of controlling Malaria 6. What to do in case of Malaria. |
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| 09 | Leaflet | Malaria – reasons , causes and treatment. | District Health Department- Midnapur | 1. Regarding causes, treatments and peoples duties |
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| 10 | Poster | Eradicate Malaria | IEC Division- Family welfare department – West Bengal | <ol style="list-style-type: none"> 1. Control Malaria spread <p>- Different steps.</p> |
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| 11 | Leaflet | Vote for good nutrition | Calcutta Medical Centre | <ol style="list-style-type: none"> 1. Vote for good nutrition. 2. More is not necessary better. 3. The vision of tomorrow is in today's glass of milk. 4. Ask not what can be done for you but what you can do to avoid high blood pressure and heart disease. 5. What this country needs is more. Carbohydrate on the dinner plate. 6. It's time to get moving. 7. Vote the healthiest ticket, <ul style="list-style-type: none"> • Fruits & vegetables . • Bread & cereals. • Milk & dairy products • Protein foods. <p>8. Did you know that---</p> |
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| 12 | Poster | Snakes & Ladders (A nutrition game) Mogy Dazy way (A nutrition game) | National Institute of nutrition (ICMR) | <ol style="list-style-type: none"> 2 Nutrition games Use of Fenugreek seeds for reducing blood sugar and cholesterol levels. |
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| 13. | Leaflet | Community food & nutrition education unit. | Health & Nutrition Board. | <ol style="list-style-type: none"> Relation between Health & Nutrition . Education for Nutrition – Main aims of giving Nutrition Education. Different services offered <ul style="list-style-type: none"> Education trainee helpers Training at grass root level Imparting training Interaction with NGOs Teaching preservation of fruits and vegetables including giving a list of foods prepare Easy availability of fruits and vegetables Countrywide list of CFNEU. |
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| 14. | Book | You and your food | Food and Nutrition Board – Govt. Of India. | <ol style="list-style-type: none"> Introduction – <ul style="list-style-type: none"> Strength giving foods Body building foods Body protecting foods. Nutrition – its different work and advantages. Table – babies, boys and girls correct foods nutritional amounts and level Table – Correct amount of food for a working man and level of Nutrition. Table – correct amount of food for working women with its level of Nutrition. Three tables of right foods |
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| 15. | Booklet | Mothers know | Mass Media Health & welfare Department – Govt. of West Bengal | <ol style="list-style-type: none"> 1. Advise on pregnant women. 2. Care of children . 3. Check up of children. 4. Food of children. 5. Immunisation. |
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| 16. | Pamphlet | Growing Children need more food | UNICEF | <ol style="list-style-type: none"> 1. More food required of the growing children . 2. Food for different age group. 3. Starting time of substitute food. 4. Different foods to be given . 5. Quality of foods. 6. Foods during general diseases. |
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| 17. | Table Calendar (Folded) | Nutritional Anaemia | Dept. of Women & Child Development, Govt. of India | <ol style="list-style-type: none"> 1. The symptoms of Anaemia . 2. The consequence of Anaemia. 3. Causes of Anaemia . 4. High risk group . 5. To prevent Anaemia , eat food rich in iron . 6. Iron absorption enhancement . |
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CHAPTER-VI

REVIEW AND EVALUATION OF TRAINING STRATEGY

EVALUATION OF TRAINING PROGRAMMES FOR ICDS SUPERVISORS AT CCRC.

The CINI-CHETNA RESOURCE CENTRE is the only mid-level training centre for training the ICDS supervisors for both the job course and refresher programmes. As the Institute is a sister organisation of CINI a lot of opportunities exist for the trainees to work among the community. But the 3-months job training module does not provide enough space for it which is thought to be a major handicap for proper orientation of the trainees to the field situation. The head of the Institute, however, did not agree to this view completely. She was of the opinion that this is only felt in case of the fresh and new entrants whereas the majority of supervisors have got adequate experience in the field as Anganwadi workers for a good number of years. The training centre currently is not having adequate staff and as the head of the Institute remains very busy due to administrative and management work; sometimes the staff members find it very difficult to manage the programmes effectively.

The 3 faculty members on nutrition are very well trained and got adequate experience in their profession. Their theoretical orientation was very much appreciated by the trainees. But the lack of adequate audio-visual aids often becomes the major impediment to suitably convince the trainees about certain topics. The other teaching aids supplied by different national and international agencies do not cover the micronutrients adequately. So CCRC has developed some of the materials on their own and always put emphasis on teaching their trainees to develop their own materials which can be used by them during their field placements. As reviewed during this project-work, some of the materials are found to be very appropriate and interesting. But the innovation is lacking and future inputs are required to give due emphasis on nutrition and micronutrients.

The trainees from their side praised the efforts of the staff members of CCRC in teaching them sufficiently on practical aspects in the field situation, but what they wanted is more practice on the actual locations where they will be posted afterwards. Some of them have also revealed that the situation during training programmes in comparison to the working conditions in the Government set up vary a lot and they had to face a lot of difficulty in adjusting with it.

However, the field team during the evaluation work has felt the necessity of monitoring and evaluating the follow up programmes once after the training sessions are over. The trainees need to clarify some of their problems in the field situations where they feel that their trainers will help them better than their superiors. All of them agreed that in no circumstances neither the Government nor the community want to solve their concern problems amicably, which pose a major threat for achieving success in any programme operation.

EVALUATION OF TRAINING PROGRAMMES OF ANGANWADI WORKERS

The ICDS Training Centres in the state are mostly run by NGOs. CINI-CCRC is the only organization which train the ICDS Supervisors, hence called as the Middle level Training Centre. All other centres are only approved for training the Anganwadi workers and Helpers. Out of 22 Training centres (A complete list is attached as annexure) for this project only 4 centres have been selected which cater to the needs of the three selected sample districts.

These centres train the Anganwadi workers for three months for job course or basic training and three weeks for different types of refresher training on a variety of subjects as directed by the Dept. of Social Welfare, Govt. of West Bengal. They also train the Helpers for one week for the job course and six days for the refresher.

The Heads of these Institutes and their faculty members have been interviewed during the course of this fieldwork as well as some of the trainees of different programmes. The Field investigators of this project also attended some of the training sessions and could review the programmes on the spot. A brief report of the above is as follows.

All the four AWTCs surveyed during this survey have been found to be having very trained and experienced Instructors/Trainers on their rolls. All of them follow the syllabus developed by National Institute of Public Co-operation and Child Development (NIPCCD) at New Delhi and approved by the Govt. of India. However, it leaves no scope for any modification or alternation at the state level. The linkages of these Institutes with the Dept. of Health & Family Welfare as well as the Dept. of Social Welfare dealing with ICDS are excellent. They share some common platforms to resolve their problems very often. But they do not co-operate much at the time of the training programmes and rarely the Institutes hire them as resource persons. However, at times for the Trainers' training programmes they do oblige the departmental directives.

Regarding the course modules designed by NIPCCD the faculty members of these Institutes have very reserved opinions and do not know how exactly this can be further developed. The blend of the theoretical and practical course contents is found to be optimal. But what surprised the Field Investigators the most is their wish to undergo further refresher courses to update their knowledge regarding the current developments in the field of health and Nutrition.

All the Institutes have adequately trained staff but lack in sufficient teaching materials including books, journals and audiovisual aids. There is a resource crunch in almost all Institutes except CINI-CCRC. Financial sanctions sometimes come very late and after the completion of the concern programmes, which cause enough hardship for the centres to manage themselves. Therefore, the monitoring and evaluation work of the programmes does not get proper attention. Although the course work is not completely covered within the stipulated time period the training centres do not like the duration to be extended at all as this may again put additional burden on them.

Some of the pertinent solutions the faculty members gave during the interviews include the following:

The course contents of the training modules should be more practical and field oriented rather than theoretical and classroom oriented.

- The Health and Nutrition contents must be very much region specific and should include a lot of local variation.
- The micronutrient portion should get its due focus and both long term and short measures to prevent; control and treat must be highlighted.
- The IEC materials to be used during the programmes should be developed locally in the local language.
- The training programmes should be designed as per the need of the communities rather than the requirement of the functionaries.

The trainees of these institutes have also been interviewed after the nutrition sessions were over and the analysis of their responses are given below:

From their side the trainees are not sure about the fate of their training programme and found to be not confident enough for its use in the field. Their knowledge on micronutrients were very limited and they themselves were not very much clear about the long term measures to control the related deficiency disorders. They felt the classroom lectures to be very drab and not interesting. They were very sceptic about their field placements and found to be wanting in practical orientations. The use of audio-visual aids was so limited that their perception about the subject was found to be wanting. To make these sessions more effective the trainees themselves have offered the following suggestions:

- The training programmes must be conducted in a real field situation rather than within the classrooms of the training centres.
- Special emphasis should be put on the maximum use of audio visual aids during the programmes.

- Although the training programmes are better oriented to enhance their own knowledge base, they are not trained about the approaches and methods to initiate community participation and involvement of beneficiaries in the programme.
- The trainers should teach them with techniques of practicalities in the field situation rather than an idealistic one.
- They prefer the nutrition sessions to be more specific on practical demonstrations in the actual field situation.

EVALUATION OF TRAINING PROGRAMMES OF NURSING TRAINING SCHOOLS

Only four schools have been covered during fieldwork and nutrition sessions were covered for review and evaluation of the training programmes of Health Workers in the state. Both job course and refresher courses were conducted in these centres from time to time. For this purpose the heads of the Institutes, faculty members of nutrition and some of the trainees have been interviewed in the process. Their viewpoints have been enumerated as follows.

Both Govt. and non-Govt. training centres are operating in the state. Although there is no much difference exist between the course modules the Govt. training centres are more oriented to practical training than theoretical. But the non-Govt. training centres have problems of space and staff, which are mostly due to financial constraints mostly. They lack in adequate IEC materials on nutrition and whatever course contents are there, they do not cover the topics of micronutrients sufficiently. The audio-visual inputs are almost negligible which make the training programmes very drab at times. However, the linkage with health department is very good. But hardly they exchange ideas, opinions and views on all new developments in these fields.

The time factor to cover the course contents sometimes become very hard to manage and the faculty members are of the opinion to extend the duration of the job course training. Some of the specific contents in the training modules do not cover the topics adequately and requires redesigning in future. Micronutrient coverage is so negligible that often the trainees ignore them completely. There is also complete lack of interest with the faculty members to give additional focus on them at the present context. Some of the short-term measures are so highlighted that often the trainees overlook the long-term measures.

The trainees were, however, very reluctant to give any interview at first due to the fear of future harassment by the institutes at a later date. After convincing them of the confidentiality of the outcomes of this survey they could review the truth in certain cases. Their main problem is that they were not properly guided to take up the job efficiently. And most of the times the trainers used to say them that only repeated practices afterwards will improve their work efficiency. They never get to learn its future implication in the field that they get it by heart to come out of the final examinations at the end of the course only. They mostly depend on old notes to pass out the tests and practical demonstrations are very much limited in non-Govt. Institutes.

Some of the suggestions for future improvement as received from both the trainees and the trainers are as follows:

- The training modules should be designed as per the need of the people rather than the requirement of the participants in the programme.
- The training programmes must be conducted in the actual situation in a Hospital rather than within the corridors of the training centres.
- The course contents of the training modules should cover more topics on micronutrients and be more practical rather than theoretical.

- The Health and Nutrition contents must include a lot of region specific problems as well as their local field solutions.
- The Micronutrient Deficiency Disorders should get its due focus and both long term and short measures to prevent; control and treat must be highlighted.
- The IEC materials have to be designed as per the requirement of the programmes in the local language.
- Special emphasis should be put on the maximum use of audio visual aids during the classwork.
- Although the training programmes have to be oriented to enhance the knowledge base of the trainees, they are not trained about the approaches and methods to initiate community participation and involvement of the real beneficiaries in the field situation.
- The trainees prefer the nutrition sessions to be more specific with practical demonstrations in the actual field situation. So the trainers should teach them with techniques of practicalities in the field situation.
- All nursing training schools must be taken over by the Government for equity and uniformity in the programmes.

As studied during the present field-survey, it became clear that both the training programmes of health care providers at the grass root level should be redesigned further to include micronutrients in the course contents. There should be a better monitoring and evaluation system to properly follow up in the field situations by a third agency. The trainers are to be given further orientation on the subject with extra inputs of teaching aids the majority of them in audiovisual medium.

NUTRITION & HEALTH EDUCATION SESSIONS BY HEALTH CARE PROVIDERS AT THE VILLAGE LEVEL

It is very difficult to attribute specific health gain to any particular input and, therefore, becomes necessary to be assessed through direct or indirect indicators for measurement. But in this case as input were not very specific and could not be measured as such it became very difficult to review and evaluate the programme impacts on the community. However, improvement on the Health and Nutrition sector of a population or community, particularly of a rural, tribal or urban slum area are not on a single factor, rather than on a complex dynamic of several elements, not all of which are strictly related to the health sector.

- Change in local beliefs and behaviour,
- Improved economic status,
- Environmental sanitation and clear water supplies
- Diet
- Improved quality and quantity of health care provision
- Better access to health services
- Increased demand for and utilisation of services
- Wider range of services available locally
- Improved quality and quantity of treatments (i.e. drugs) available.

Within this sector, improvements are achieved through the increase of an appropriate balance of arrangement of resources, of which facilities are one, rather than the increase of a single resource.

So Health & Nutrition Education, mostly carried out at small group meetings often covered by Health Care providers at the grassroots level have never been done in practice. Only very rarely the ICDS

workers do conduct a few mothers' meetings which are poorly attended. No significant discussion takes place during these meetings and nutrition only occupies the bottom rank. With target achievement- the focus of the work there is little scope or incentive to increase the range of services provided even if the additional resource inputs were available. It is unlikely that unless a fundamental reappraisal of the role of these health care providers is undertaken, the range of services at this level will be increased.

At some of the centres on an experimental basis the field investigators of this project tried to organise such meetings where AWWs and ANMs were given chance of conducting nutrition & health education sessions. But they were so sketchy that they could not be properly reviewed. Without the teaching aids of any kind the poor and less educated mothers did not take these sessions very seriously to use them in their day to day life afterwards. Both the content and context of these sessions became so out of focus that their impact is measured to be almost negligible on the community. As it is known the training of such a kind is one of the key elements of a balanced input of resources that can lead to improved health care and when supported by other resources can make a major impact on individual workers abilities which could lead to increase in utilisation of these services.

CHAPTER-VII

STRATEGIES FOR FUTURE INTERVENTION

As this study mainly restrict itself only to two major micronutrient deficiencies, in this chapter both Iron Deficiency Anaemia and Vitamin-A Deficiency Disorders are discussed one after another for both long term and short term measures for future interventions. They are as follows:

Iron Deficiency Anaemia

About Iron:

Iron is an essential element for the formation of haemoglobin of red cells of blood and plays an important role in the transport of oxygen. Tissues also require iron for various oxidation reduction reactions. Most of the iron in the body is reutilised and some of the body iron is also stored in liver and spleen. The amount of iron to be absorbed from the daily diet is quite small. It is in the neighbourhood of 1-3 mg depending upon the sex and the physiological status. Since there is limited capacity to absorb dietary iron, diet should contain 10-25 fold iron required daily. Diets differ very widely in the bio-availability of their iron. Diets predominantly based on cereals permit only a low level of absorption in the range of 25% , while diet containing low levels of cereals and high levels of meat and fish permit 10-25% absorption . The types of diet consumed normally in India should contain 20-30 mg iron to meet the iron requirement of an adult. In considering iron requirements, availability of iron from the composite diet is more important than from the individual foods because of profound interaction between foods in influencing iron absorption.

Rich sources of iron are cereals, millets, pulses, green leafy vegetables. Of the cereal grains and millets, bajra and ragi are very good source of iron. Since these grains are contaminated with dust etc. the true contents of these grain are often lower than the values obtained by analysis of the market samples, Contaminant iron which is often not available at all may constitute 20-30% of the total iron present in foods as purchased. Milk , a good source of several nutrients , is a poor source of iron.

Inclusion in our daily diet about 50 g of green leafy vegetables which are rich sources of iron can meet a fair proportion of iron needs besides providing Ca, beta-carotene and vitamin C.

Although diet rich in iron may be able to meet our daily iron requirement and prevent iron deficiency, they may not be effective in correcting iron deficiency anaemia as indicated by lowered level of haemoglobin in the blood. Medicinal iron in the form of iron salts and other haematinics have to be provided to correct anaemia. Pregnant woman because of her high iron requirement often suffer from anaemia even on a diet containing normal levels of iron. In such cases supplementation with iron salts may be essential at least during later half of pregnancy.

About Iron Deficiency Anaemia:

Anaemia is another important nutritional problem affecting all segments of the population in general and children , women and pregnant women in particular . In the latter groups prevalence of anaemia may be as high as 60 – 70% . Anaemia in our country is essentially due to iron deficiency although in children and pregnant women, folate deficiency also plays a part. Although our diets contain fairly good amount of iron, its absorption is very poor (2-3%) . Anaemia can be aggravated by environmental factors which lead to blood loss e.g. hookworm infestation. All the available information indicate that anaemia can be prevented by increasing iron intake in the population . Two approaches are used to achieve this. One is therapeutic supplementation of iron and folate tablets and the other is fortification of a dietary item with iron. A public health programme of distribution of iron folate tablets to pregnant women (during last trimester) and pre-school children is in operation as a part of RCH services. This approach is designed to achieve results in a limited time, like in pregnancy. There are however certain problems in making this programme effective and to have an impact on the problem of anaemia. The bottlenecks are poor motivation of the beneficiaries to take tablets regularly, poor supply of tablets for distribution, etc. These shortcomings have to be overcome to make the programme more efficient and effective.

An alternate, preventive approach is to improve iron balance in the entire population through fortification of a commonly consumed dietary item with iron. Towards this end a technology for fortifying salt with iron has been developed in India by the National Institute of Nutrition and its effectiveness in reducing anaemia was demonstrated in pilot trials. Currently attempts are being made to manufacture and distribute iron fortified salt in Tamil Nadu. Hopefully this will be extended to other parts of the country.

Prevention & Treatment:

Iron Supplementation - Oral Iron is the treatment of choice for anaemia . For preventing anaemia, low dosage iron is adequate. This is the basis of the National Nutritional Anaemia Prophylaxis Programme (NNAPP) in India, wherein pregnant women receive 60 mg elemental iron +500 mg folic acid daily for at least 100 days during pregnancy and pre-school children receive 20 mg elemental iron +100 mg folic acid daily. However, the programme has not been very successful due to a) lack of awareness and realisation of the adverse consequences of anaemia in the community, b) poor distribution system, c) irregular intake by the beneficiaries. In overt anaemia, amount of iron should be two to three times the prophylactic dose and given in divided dose schedule for proper absorption. Higher doses of iron are associated with problems of intolerance and side effects such as nausea, vomiting, pain in abdomen, constipation or diarrhoea occur. Frequent evaluation is needed to assess the impact of iron supplementation as either therapeutic or as preventive measure. Since deficiency of folic acid is high during pregnancy and infancy incorporation of folic acid would be of value in both therapeutic and in preventive programmes. In view of the poor response and high incidence of anaemia in the communities the dose of iron has been increased to 100 mg in the National Anaemia Control Programme.

In addition to increased iron and folate intake improvement in environmental sanitation and personal hygiene are also needed to control worm infestations and infections . Deworming done regularly would help in reducing the incidence of anaemia and improve the efficacy of iron supplements. Only in severe cases of Anaemia during the last trimester of pregnancy where haemoglobin levels have to be resurrected rapidly, the methods of blood transfusion and parenteral iron therapy are administered. Otherwise the dietary therapy is the safest one in these circumstances.

Dietary Approach – Promoting consumption of iron-rich foods: All medical, health and social workers, horticulture department and voluntary organisations have roles to play in promoting the consumption of iron-rich foods. Extensive efforts by community level workers and effective use of modern media are recommended for achieving success in this strategy. Following points need to be considered for promotion of the strategy .

- Promotion of consumption of pulses, green leafy vegetables, other vegetables (which are rich in iron and folic acid) and meat products rich in iron and superior bioavailability of iron particularly by pregnant and lactating mothers and pre-school children. Only sources for B12 are meat or eggs.
- Creation of awareness in mothers attending antenatal clinics, immunisation sessions, anganwadi centres and crèches about the prevalence of anaemia, ill effects of anaemia and its preventable nature.
- Addition of iron-rich foods to the weaning foods of infants.
- Regular consumption of foods rich in vitamin C to promote iron absorption such as orange, guava, amla, etc.
- Promotion of home gardening to increase the availability of common iron-rich foods such as green leafy vegetables.
- Discouraging the consumption of foods and beverages like tea and tamarind that inhibit iron absorption, especially by the vulnerable groups like pregnant women and children.

Food Fortification with Iron to Control Anaemia : In view of widespread iron deficiency and also ineffective distribution of iron-folate tablets through the anaemia prophylaxis programme due to logistic reasons, it is important to diversify and improve the availability of iron in the diet. Also fortification of foods with iron would act as a long-term measure to improve the iron balance in the entire population. Salt has been found to be the most suitable vehicle for this purpose since it is cheap and universally consumed. Initial trails have proved the efficacy of the iron-fortified salt in improving

the iron status of rural population . Technology is now available to double fortify the salt with iron and iodine to tackle the twin problems of iron deficiency anaemia (IDA) and iodine deficiency disorders (IDD) . However, till it becomes universally available, it is essential that anaemia prophylaxis programme is implemented more effectively.

Vitamin-A Deficiency Disorders:

About Vitamin-A:

A well understood function of retinol (Vitamin-A) is in the visual process. Vitamin A is necessary for clear vision in dim light. Lack of vitamin A thus leads to night blindness. Another function of vitamin A is to maintain the integrity of epithelial tissues. For example in the absence of adequate vitamin a intake, the outer lining of the eye ball loses its usual moist white appearance and becomes dry and wrinkled. Redness and inflammation of the eye and gradual loss of vision may follow. The central portion of eye (cornea) may lose its transparency and become opaque and soft and if not treated may lead to total blindness. Its function in vision and eye is well understood but not its other functions. Although its function growth and integrity of other epithelial issues is known the manner in which these functions operate is not understood clearly.

Vitamin A or retinol is present in some animal foods like butter and ghee, whole milk, curds,egg yolk, lever etc. The liver oils of certain fish like cod, halibut and shark and saw fish are some of the richest known natural sources of the vitamin. Vitamin A is not present as retinol in vegetable foods. These foods contain yellow pigments called carotenes which are converted into vitamin A in the body. Carotenes are therefore termed provitamin A from The rich source of b – carotene is green leafy vegetables, spinach, amaranth, coriander, drumstick leaves, curry leaves, mint, radish leaves etc. Ripe yellow fruits such as mangoes, papaya and tomatoes are also rich in carotene. Among other vegetables, carrots and yellow pumpkin are good sources. It can be said that in general the greener the leafy vegetables, higher the content of carotene, and thus the outer green leaves of cabbage have more carotene than inner white leaves, Most of the Indian diets have b -carotene as the main source of vitamin A .

About Vitamin-A Deficiency Disorders:

Vitamin a deficiency is a major nutritional problem affecting young children leading to blindness. It is estimated that nearly 20,000 children go blind every year due to severe vitamin A deficiency and keratomalacia. It has been established that PEM measles can aggravate vitamin A deficiency and contribute to nutritional blindness. Prevention of vitamin A deficiency should therefore receive top priority in our national nutrition programmes . Two approaches are advocated,. One is, educating the mothers to feed their children daily with green leafy vegetables and yellow fruits like papaya to provide them with much needed b -carotene . A more effective alternate approach is administering a massive dose of vitamin A,i.e. 200,000 I.U. every six months. This approach is based on the property of vitamin A that it can be stored in liver and utilised slowly over time. This programme of administering 200,000 IU vitamin A in a spoonful of groundnut oil is in operation in most states as a part of maternal and child health services. Certain difficulties are encountered in its effective operation, but if properly implemented it can bring down blindness due to vitamin A deficiency significantly.

As to encouraging increased consumption of vitamin A rich foods through nutrition education, several attempts have been made to educate the mother. Mothers are encouraged to feed their children with GLV and papaya. These two can be grown in the backyard as kitchen garden. These efforts must be persuaded vigorously since adequate dietary intake of vitamin A/ carotene should be the foundation of any long term solution to prevent the problem of vitamin A deficiency.

Prevention & Treatment:

The oral administration of large doses of vitamin A is the recommended method of treating of all stages of active xerophthalmia including corneal lesions.

Vitamin A deficiency is one of the simplest preventable nutrition disorders. WHO states that although the goal of controlling the florid forms of severe malnutrition like kwashiorkor, marasmus and keratomalacia by the turn of the century may be difficult to attain, it is not unrealistic as far as keratomalacia is concerned, provided the current knowledge is applied. Vitamin A deficiency is a nutritional disease with a primarily nutritional solution; improve vitamin A nutrition to a physiologically acceptable level of removing the determinant of the disease i.e. chronic dietary insufficiency and/or poor absorption of vitamin A. Several strategies are possible for controlling xerophthalmia and the consequent blindness:

- Periodic dosing (supplementation) of vitamin A
- Fortification of commonly and widely consumed foods with vitamin A, and
- Dietary modifications to promote production and consumption of vitamin A/b carotene rich foods through nutrition education and/or horticulture intervention.

Needs of a Prevention Programme- At the outset, any prophylactic programme requires:

- An establishment of the extent, severity and distribution of the problem,
- Clear definition of its objectives,
- Fixing operational targets and
- Developing/identifying appropriate infrastructure.

The classic comprehensive approach to vitamin A deficiency control is multifaceted, involving:

- Problem assessment,
- Vitamin A provision to the target group,
- Nutrition education,
- Training of functionaries, and
- Monitoring and Evaluation.

The objective of the prevention programme will depend on several factors such as the severity of the problem and availability of financial, material and manpower resources. The objective can either be prevention of blindness attributable to xerophthalmia or improvement of vitamin A status of target groups. While the former involves prevention and control of clinical xerophthalmia, the latter requires raising of serum of hepatic vitamin A levels in the community.

Dietary Modifications:

The most rational and sustainable long-term solution to control of vitamin A deficiency is to ensure that the community includes regularly, in their daily diets, foods rich in vitamin A or its precursor. The major inexpensive dietary sources of provitamin A are dark green leafy vegetables, and deep yellow and orange fruits and vegetables. Preformed vitamin A is found only in costlier animal foods such as egg yolk, fish liver, animal liver and dairy products. Dark green leafy vegetables like spinach (palak), amaranth, creeper spinach (Basella alba) drumstick leaves, agathi (Sesbania grandiflora) etc. which are affordable by the rural or urban poor, are ubiquitous in India.

Any strategy to improve dietary intake of vitamin A rich foods requires the expertise from the fields of agronomy, horticulture, education, communication and health. Home-gardening coupled with strong information, education and communication methods has been suggested as one of the long-term strategies to control vitamin A deficiency. Even in areas where Seasonality is a critical factor in limiting the availability of provitamin A rich foods, promotion of home-gardening along with appropriate food preservation technology can lead to higher intakes.

Food Fortification:

Fortification or enrichment of widely consumed foods with vitamin A is another strategy to prevent and control vitamin A deficiency. Foods which are consumed daily by all the sections of the community with little variation in the intake are generally selected for the purpose. In India, for long,

common salt has been used as a vehicle to fortify with iodine to control iodine deficiency disorder, particularly in the sub-Himalayan regions. Fortified foods can be integrated into the conventional food system as value-added products to reach a large segment of population. In countries like Guatemala and Costa Rica sugar is used as a vehicle for fortification, and in Indonesia and the Philippines field trials are being conducted with Mono Sodium Glutamate (MSG) (Ajinomoto). In India, foods like vanaspathi (hydrogenated oil) , bread and milk are fortified with vitamin A in a limited scale. However, these foods are not within the purchasing power of the needy segments of the population and do not within the purchasing power of the needy segments of the population and do not serve the public health purpose of reaching the most needy.

The World Summit for children held in New York in 1990 , where 157 countries, including India, were represented, has called for virtual elimination of vitamin A deficiency and its consequences including blindness by the year 2000 AD.

It is essential, based on the past experience, to formulate low cost programmes which are based not on a single approach, but on a mix of interventions. The strategy should be a combination of long-term programme of nutrition education and improvement in household food security, and a short-term periodic massive dose of vitamin A . There is also a need for intensification of research and development activities to identify technologies to increase the production and consumption of less familiar B – carotene rich foods such as red palm oil, and spirulina, a blue-green algae. Involvement, motivation and mobilisation of community are essential for achieving the global targets by the year 2000 AD.

Nutrition Education for controlling IDA and VAD:

Nutrition education , through appropriate communication procedures, is an important tool to increase awareness and improve consumption of iron/ vitamin A rich foods. A multimedia approach consisting of person to person communication, use of mass media and folklore can yield good result. In the recent past, social marketing strategies i.e. adopting marketing methods to promote social goals like nutrition, are increasingly being used for nutrition and health education. Effective communication programmes are built on people's recognised needs, beliefs and circumstances. Nutrition communication uses innovative techniques and technologies to encourage people to try new behaviours and sustain them. In northern Thailand social marketing methods were successfully used to promote the intake of iron/ vitamin A –rich foods. Nutrition education should also include aspects such as promotion of breast feeding and utilisation of the available primary health care services to control PEM , infections and infestations. UN agencies like FAO and UNICEF, State Agricultural Universities, Indian Council for Agricultural Research and Food and Nutrition Board of the Government of India are making efforts in the direction of dietary modification through horticulture intervention for promotion of iron/ vitamin A- rich nutrition.

The Current Information, Education and Communication Strategy:

Any strategy planned must be based on a participatory and need based approach. This implies an approach that begins with where the people are, and one, which places them at the centre of all interventions, whether it is the individual woman, health worker or the panchayat member. All IEC strategies therefore must start by defining the needs of the targeted or focus group. This has two implications for both IEC and training interventions - one at the level of the methodology adopted for the development and usage of IEC materials, and another at the level of the content of the messages.

Methodology: The methodology of development of IEC materials so far have been centrally based, where the materials are all developed not from the field level up, but from a central point down. This is why the people find the materials uninteresting and irrelevant. And, also because the preparations of the materials are centrally based, there is no scope for interaction with the community during the process. For future interventions, what is therefore recommended is a process or an approach, which decentralises the formulation of the IEC components. It is recommended that IEC materials should be developed at the village/panchayat level, using interactive processes such as focus group discussions, folk plays and songs, puppet shows, etc., to elicit the kinds of content areas which need to be covered, to understand the existing levels of awareness of the community and their attitudes to some of the components of the RCH to be able to develop materials or contents which will effectively

communicate with the people, and not to the people. It must also be kept in mind that the majority of the people at the village level are illiterate, and therefore the thrust of all IEC interventions must be on visual presentations rather than on content and input, in terms of language, levels of information, etc. To quote an old truism, "the medium is more powerful than the message", must be always kept in mind.

Most of the existing materials also seem to be aimed more at the health functionaries at present. And this is also reflective of the approach mentioned above. The focus of materials must shift to the community as the end beneficiaries, and not merely seen as tools for the functionaries. IEC materials must be seen as facilitating interaction, and not an end in themselves. At the community level all IEC materials can only be used effectively if those who use them are trained in doing so to initiate interactive discussions to generate awareness and needs through this process, and then to refer the women to the available health referral services.

It is imperative that this approach and methodology be understood and internalised by all those who will use IEC materials, either directly or indirectly, including the health workers/ panchayat members as well as the health functionaries at all levels from the district down.

Content: The primary focus of the contents should be on their relevance to the expressed health needs of the community, particularly the women and not on what the centralised health system perceives as being important in promoting a particular programme like this. If the women's needs are for information about reproductive health problems, then the messages must first address those needs before imparting additional information regarding the intervention programmes. Unless the women feel that their needs are being met, they will not be motivated to access any services even if they might require them.

The content of the messages should also be simple and uniform to avoid any confusion in the mind of the people. It should be culturally context specific so that the women can relate their lives and realities to the messages being transmitted. One of the suggested ways of ensuring this is to direct the messages from the individual to the community, so that the totality of relationships and linkages are understood. For example, at the community level, an individual woman cannot take a decision regarding MDD control by her. Her immediate family members, particularly her husband and mother in law, have to be a part of this decision. Similarly, if the cause of the health problems of her children is unsafe drinking water or polluted drinking water sources, or in-sanitary drains and toilets, then just her change of attitude and behaviour is not sufficient to bring about long lasting improvements in her child's health. The other members of the community also have to be made aware of these causes and their effects. All IEC materials, therefore, must cover content areas which move from the individual women, to her family members, then to the extended community, then to the extended socio-environmental conditions which affect and impact her health as well as the health of her family, then to the providers of health and related services, the decision makers who influence the provision of those services, etc.

The IEC strategies recommended therefore are to primarily provide capacities for implementing and carrying out IEC activities through a participatory, people centred approach which develops materials through a proactive and interactive process, using traditional innovative methods and including simple and culturally relevant information.

The need for a Change in IEC strategy:

- The calibre and capacity of IEC staff is very variable, therefore the Block/District capacity to train staffs, and design and produce materials have to be questioned. The availability of technical support for the high-tech approach with electronic media is also suspect and a cause for concern among staff themselves.
- The attitude of most medical staff to health education is autocratic. They hold the belief that ignorant people must be told what to do. The emphasis is on one –way, rather than two-way communication. Participation, dialogued empowerments are not concepts easily understood or adopted by many health staff.

- There is very little room for worker initiative and this must be changed. It is likely that staff will require extensive, experientially based training to effect such changes.
- Technical and creative capacity to use electronic equipment is required at the training institutes and expertise in participatory methods.
- Training on design for peripheral staff should be followed up by provision of the equipment and supplies to produce materials at Block/sub-centre level and supportive supervision to encourage action.
- Small research initiatives into local health beliefs and behaviours should be fully encouraged, developed and implemented possibly with the funding of a small team of social scientists/anthropologists.
- A small discretionary budget for IEC related activities should be allocated to chosen IEC staff in order that their plans are not disrupted by late arrival/non-release of State held/District controlled funds.
- NGOs exist with long, active histories of community level, participatory work, including needs assessment and materials production. There is a tendency within them to be pessimistic about the potential for change among more senior/older health staff, but more positive about peripheral workers.
- Selection of a smaller number of well-established NGOs with proven field experience which are then supported in a more comprehensive and long-term manner is more likely to bear dividends than the current pattern of NGO involvement.

The Current Training Strategy:

While it is recommended that specific training modules be planned with the specific groups, including community/Panchayat members, community members, especially women, other resource persons and organisations, the following are some of the suggested content areas, which can be covered in the modules:

- Understanding the roles and responsibilities of community/ panchayats, specifically with regards to the implementation of MDD control programmes but also more broadly with regards to implementation of other health interventions and initiatives; their inter-linkages with the existing health delivery infrastructure at the village level.
- Specific components of any such programme, and their relevance in the local context, including the focus on women as the primary stakeholders.
- Understanding elements of information, education and communications as strategies to involve community members in taking charge of their own health, and not only in the context of imparting messages.
- Understanding of different participatory strategies for IEC starting from one to one individual interaction and interpersonal communication to wider awareness generation methods.
- Developing IEC materials, with the help of available local resources, both financial and human, ranging from basic printed materials such as posters, etc., to developing plays, songs, puppet shows.

The above are examples of the types of content areas to be covered. These can be further sub-divided into modules for training. However, the thrust of the training interventions should not only be on building the capacity of the community/ panchayats to carry out all of the above initiatives by themselves, but also to equip the members with the skills and understanding of accessing and utilising available resources such as other institutions working in the area, the existing expertise of NGOs in the area, the other training programmes being imparted to the ANMs, ICDS workers, etc.

In conclusion, some fundamental issues need to be settled if meaningful partnerships between the existing health systems and the community have to be built. Every small intervention and/or

interaction planned in the course of building bridges between people's organisations and the health care system must begin by respecting people's ability to take their own decisions, respect equality, and create room for individual variation and uniqueness. If a poor woman is asked what she really means by development, she is bound to place dignity and self-respect in the centre. While the centrality of this concept is widely accepted in actuality the concept has not permeated across the board. In a sense, therefore, participatory initiatives have the potential to become the platform where the concept and practice of people's empowerment and participation in developmental processes can coalesce and where the holistic approach to population as an issue which covers the totality of the lives of the poor become a realistic component of such programmes.

The need for a change in Training strategy:

- A state-wide , strategic training plan is required covering planning for the future training requirements of different cadres such as ICDS workers, ANMs and Supervisors i.e. Defining the types of training required for different cadres throughout the state,estimating future numbers to receive training of different types, assessing the implications of these requirements in terms of training units, location of training, numbers of trainers required, building a critical mass of trainers of trainers.
- A critical mass of trainers of trainers needs to be built up and maintained at the Centre.
- Curriculum design must be made responsive to local needs.
- Capacity of the master trainers needs to be strengthened considerably before focusing on District and Block levels.
- Improvements in training programmes and skills practice require higher levels of investment.
- Focus needs to be on improving quality of training not quantity.
- Training methodology must be adjusted to allow practice of skills taught.
- While training resources are few, they should be concentrated, not spread too thinly to be effective.
- Higher levels of investment are needed to achieve real impact.
- Given the proportionately small input to the IEC programme by the project, work should be concentrated in the more receptive and enthusiastic areas and people and where there is potential for collaboration with NGOs involved in IEC activity. Pilot activities should be encouraged particularly with regard to expansion of electronic media.
- IEC activities must become more responsive to local needs and the materials used developed from an understanding of how issues are viewed within the local cultural and socio-economic context.

Monitoring patterns and indicators should be altered from the current numerical bias. Information must be gathered about the changes in local understanding and knowledge and alteration of behaviour patterns.

CHAPTER – VIII

CONCLUSION

Malnutrition is a great decisive factor for any ailments prevailing in human society. Availability of adequate edible materials, their procurement capacity by the consumer and actual intake are fundamentals of nutrition. These variables are not only dependent on economy but also on social beliefs, customs and cultural status. The local ecological conditions also influence the nutritional status of a population to a great extent. Energy expenditure on nutritional leakage due to chronic diseases or parasitic load decides nutritional status of women or children. Much of under-nourishment situation is caused by these factors. So the future strategy must take a view of this situation before being put into implementation.

There is no comprehensive report consisting of actual data on extent of malnutrition and its correlated problem-variables for the state of West Bengal. The specific observations on limited samples are definitely not helpful for devising a uniform formula for whole of the state. So care must be taken in advance to set the achievable targets for improving the health and nutritional status of the people, because malnutrition is a vicious problem which is intricately associated with economy, occupation, habitation, cooking and eating habits and other demographic characteristics of the family.

To encounter all these, there should be concerted efforts to alleviate the living conditions of the people for which all Govt. and non-Govt. agencies must be geared up to provide sufficient work for the community to maintain the household food security. Nutrition and health education must be a part of all types of education for the community, linking it up with population education covering all social, cultural and demographic factors, which cause these above menaces. Not only good planning is required but also there should be a real interest of the Government so that the non-Government sectors can join hand. No doubt, this is a hard and tough task for a poverty-stricken country like India, but definitely not an impossible one.

It has also been marked from field-observations that the distances of health-care facilities do not necessarily affect the habit and attitude of the villagers to avail these services in their need. But the awareness level of women, their socio-economic and educational statuses play a major role in getting the services on time. However, religion and caste do not matter much in this regard.

In rural areas of West Bengal traditionally there remain some problems regarding food-intake either in pregnancy or lactation when the village women generally refuse to take certain kinds of food due to certain social taboos or food-fads and it is very difficult to change these dietary habits without proper NHED programmes to convince them. Although the basic causes of malnourishment in West Bengal are too many, the incidence of acute poverty, high density of population, improper dietary practices, lack of proper knowledge on nutrition and lack of necessary health care delivery services are the major ones. Most of the cases of malnutrition seen in women and children are due to lack of general awareness on the problems associated with over and under nutrition, which to a larger extent contribute to the perpetuation of the vicious cycles of malnutrition. To augment it, early marriages, repeated pregnancies, shorter birth intervals, low weight gain during pregnancies also do play their part in this regard. Also, the less educated rural people do not equate malnourishment, anaemia or pregnancy to any other kinds of disease for which they need to visit a doctor. Only for difficult delivery cases or treatment of their children suffering from acute illness they feel it necessary to visit a doctor.

In the last three decades in India the food production rose many folds particularly in respect of cereals and millets almost matching to the population growth. In the preceding two decades there was almost no shortage of grains or cereal foods in the country as a result of the Green revolution. The poultry and farm production also increased markedly. The pulse production as well as its consumption rate remains stationary or decreased because the land for pulse cultivation was partially used for cereals or oil seeds cultivation. However, in the last 10 years the prices of food have also gone up very sharply and the public distribution system has also failed to reach the unreached with the proper quality and the adequate quantity of essential food commodities; as a result, despite spectacular improvement in food production, per capita consumption in some food items did not improve or was below RDI. Most surveys, National Regional, State or local, indicated that average

intake of energy and protein was almost adequate, whereas average intake of vitamin A, B2, C, folic acid and iron were lower than their respective RDI's. Comparison over last four decades help to summarise:

- The cereal consumption shows a marginal increase during the past 40 years.
- The consumption of pulses is slowly and steadily decreasing.
- There is an increase in the consumption of vegetables, especially roots and tubers.
- There is a marked increase in the consumption of milk, milk products, eggs and sugar.
- The intake of calories increased by about 400 calories per day immediately after the full benefits of the Green Revolution were reaped.
- The protein intake showed a similar increase due to increase cereal intake.
- Consumption of fats and oils, consisting mostly of vegetable oil, continued throughout the last four decades at about the same low level. The increasing demand for edible oil by the moderate and upper economic segments of the population and the needs of the rapidly increasing population forced the Government to import edible oil every year.

However, as a result of multisectoral efforts the IMR and MMR in the country have gone down significantly. The under nutrition in the pre-schoolers, particularly of Grades II and III, also came down. Nutritional blindness due to vitamin deficiency came down drastically to 0.04% from 2.0 % over a period of about 20 years. Overt kwashiorkor and Marasmus in the pre-schoolers were hardly come across. However, no significant dent could be made on the anaemia prevalence rate particularly among pregnant women or women of child bearing age because of a number of reasons- the most important of which was that the folifer tablets are not reaching in proper quality and adequate quantity to those who need them most and also due to a lack of compliance of the recipients to folifer tablets consumption.

In India there are regional differences in the literacy level, family planning practices and various other socio-economic aspects that determine the quality of life. This is also manifested in the state-wise nutrition profile. The malnutrition (moderate and severe) of 1-5 years children was the least (34%) in Kerala whereas, very high in Gujarat, Orissa, Madhya Pradesh and West Bengal as revealed from NNMB repeat surveys (1996).

Through informed, educated and an oriented manpower on nutrition is essential to make the community as ours aware of the golden rules of nutrition to be applied in day to day life. Recently nutrition has been introduced, step by step, into high school curriculum and onwards. Home science and nutrition institutions had come up all over the country giving under graduate and postgraduate diplomas and degrees. Post graduate degrees and diplomas in basic and applied nutrition, dietetics and food sciences are being offered in a number of Universities and National Institutes including the All India Institute of Hygiene and Public health, Calcutta and National Institute of Nutrition, Hyderabad. Besides, masters in biochemistry course in most Universities have a full paper on nutrition. Therefore a great number of nutrition oriented, highly qualified persons are now available in the country. However, nutritionists or dieticians have not become professionals in the sense a medical doctor or an engineer or other professional person have. They should be given professional status so that they can practise in the community for public interest.

Researches, both basic and applied, studies and surveys are being done in great numbers from various institutions- the pioneer in this field being the National Institute of Nutrition (ICMR), at Hyderabad. A National Nutrition Monitoring Bureau, set up by ICMR, New Delhi, has also been working for the past few decades and has been providing a good nutritional database. International institute for Population Science, Mumbai, has recently conducted a family health survey throughout the country, which provided a recent database on nutritional profile of young children and mothers. Good numbers of important researches, studies and surveys have been conducted by the All India Institute of Hygiene and Public Health, Calcutta, in the pre-independent and post independent period, covering all east and north-eastern states of the country.

However, the country does not have a consolidated Nutrition Information System for all the areas. A good compilation of available information and data is a necessity for preparing local, regional and national planning. A nutrition surveillance system should also be developed and perhaps one such

system has already been developed by the National Institute of Nutrition, Hyderabad, which should undergo trials in different regions and areas to find its applicability under different socio-economic, cultural and geographical conditions. Researches on nutrition under special conditions, such as, disasters of different types, should be given emphasis so that the affected areas may be provided nutritional care readily and effectively. This institute is trying to develop modules of nutritional studies and cares for different types of disasters.

Sustainable achievements in community nutrition are thought to be IEC dependent in a country where functional literacy level is low. Information, education and communication materials have a great role to educate, sensitise and motivate the people working at various levels down to the grass root level. Deviating from the stereotype, new innovative IEC should be produced, evaluating them at each step, its effectiveness and replacing old ones by the new sets. IEC, for ORS, breast feeding, using of iodised salt, using of carotene or vitamin A and iron, vitamin C rich foods are available, but they have to be evaluated as to their effectiveness. International experience in developing countries should be utilised to prepare effective IEC for the illiterate and socio-economically disadvantaged people, especially women. The service of senior school students, teachers, Panchayat workers, mahila mandal workers may be utilised and they are to be supplied with proper IEC materials.

Therefore, in a country with a vast mosaic of cultural diversities like India, defining progress through assessment, surveillance and evaluation of a programme on sustainable control of micronutrient deficiency is extremely a difficult proposition. Still then if long term measures along with short term ones are introduced simultaneously the success rate of such programmes will be definitely higher. For dietary interventions the continuous efforts should not only be directed towards increasing the consumption and hence, creating a demand for those food items in the community. Another three major developments, which should get priority in the follow-on programmes of CINI-OMNI project in the state of West Bengal, are as such:

- The lack of appreciation of the link between food and disease by the community has to be changed over time and then they should realise that micronutrient deficiency disorders are caused due to lack of nutritious food only.
- The lack of appreciation of the link between those disorders and other diseases like measles, diarrhoea etc. should also be known to the community to a considerable extent to accept the targeted intervention programmes.
- Although household food security has been achieved by the state of West Bengal since long, for the majority of population in the state the community nutrition security is still a far-flung proposition, which must get the top priority in the next phase of the project.

In summing up, it can be said here that diets deficient in essential vitamins and minerals not only have an adverse effect on the health but also have social and economic consequences. Several programmes aimed at correcting these deficiencies have been initiated, which have had some success but have served only as short-term solutions. Long term answers lie in nutrition education modifying the diets and eating habits, food fortifications and sustainable production of nutrient-rich foods. The next phase of the project operational system must include the following sub-systems: (1) Logistics and Supply, (2) Personnel and Training, (3) Information, Education and Communication,

(4) Management and Supervision, and (5) Monitoring and Evaluation and sincere efforts must start at once before it is too late.

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ANNEXURE –6

THE CINI-OMNI TEAM

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Ms.Sabari Roychowdhury, Research Investigator

Ms.Manu Das, Research Investigator

Ms.Bobby Halder, Research Investigator

Mr.Soumyadeep Guha, Research Investigator

Ms.Arundhati Banerjee, Research Investigator

Ms.Agnesh, Research Investigator

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