

Report

Refresher Course for Community Hunger Fighters

Wardha, Maharashtra

16 February 2018

Background

Nutrition awareness programme is being conducted as a complementary activity to the nutrition sensitive agriculture interventions conducted as a part of Farming System for Nutrition (FSN) study under the research programme on Leveraging Agriculture for Nutrition in South Asia (LANSA) at 5 villages in Wardha, Maharashtra. For sustainability of the nutrition awareness programme, “Community Hunger Fighters (CHF)” approach was undertaken in mid 2016 under the guidance of Dr. Rama Narayanan. In this approach each village selected 5 adults consisting of men and women who were trained in nutrition literacy through two residential training workshops. They were also supported with follow up. Endline evaluation of the programmes was conducted which revealed the need for a refresher course. Based on this and in order to further strengthen the knowledge of CHFs on nutrition, a refresher course was planned to be conducted at both FSN locations. The present one day workshop was organized for this reason. The CHFs have already identified some themes in which they would like to be trained which are mentioned in the objectives. In addition to the already trained CHFs new members from the community were participated in the training.

Objectives

1. To provide refresher training to CHFs and also introduce some key nutrition concepts to other participants from the villages of Wardha.
2. To revisit the concept of balanced diet, key nutrients and deficiency diseases such as anaemia and Vitamin A deficiency
3. To discuss different cooking methods and preserving nutrients during cooking
4. To discuss water borne diseases, particularly typhoid. – causes, prevention, treatment, dietary management
5. To understand the life cycle period of adolescence - physiological changes in boys and girls and dietary requirement, importance of personal hygiene especially during menstruation, interventions by government
6. Pregnancy and lactation – dietary requirements during three trimesters, weight gain, Govt support

Duration of course: The CHF refresher course was held for one day on Friday, 16 February 2018 at Shree Bachharaj Dharmshala, Wardha. The agenda is in Annex 1.

Resource Person: Avanti Naidu, Assistant Professor in the Dept of P G Studies and Research in Home Science, JBAS College for Women, Chennai

Coordinators: Dr. D J Nithya and Rupal Wagh.

Participants

Forty participants consisting CHFs, community nutrition garden member, community seed bank members, PRI members, SHG members, proactive villagers and Wardha. Profile of the participants is given in Annexure 2.



1. Introduction

The introduction and objectives of the training was explained by Rupal Wagh. The CRP and other participants introduced themselves with their names and the villages they came from. CRP shared their previous training experience and benefits of the training in their personal life. Shakuntala Pethe, Anganwadi worker from Borgaon Gondi and Bebi Bhalavi from Susund shared their work experience as anganwadi worker and with LANSA, MSSRF.



2. Discussion on endline survey result

The endline results of FSN study was shared with the participants by Rupal Wagh. The following points were discussed.

- Objective of Farming System for Nutrition
- Intervention done under Farming System for Nutrition
- Selection of household for the survey
- Household Characteristics
 - House types
 - Use of toilet
 - Use of cooking fuel
 - Water source
- Agriculture
 - Cultivation of kharif and rabi crop during baseline and endline
 - Crop given by project
 - Production and consumption of crop
- Home Garden
 - Cultivation on home garden during baseline and endline
 - Vegetables diversity before and after intervention

- Production and consumption of vegetables from home garden
- Household Food Consumption Pattern (Quarterly)
 - Consumption of various food groups by the households
 - Median Nutrient intake
- Nutrition Assessment
 - 24 hours recall method - diet survey
 - Consumption of various food groups by the households
 - Median Nutrient intake
 - Frequency distribution of households according to food intake
 - Anthropometry – height and weight
 - Nutritional status of 0-5 years children
 - Nutritional status of 6 to 17 years school going children and adolescents
 - Nutritional status of > 18 years adults
 - Blood sample – Iron and Vitamin A
 - VAD status of 1-5 years Children
 - Anemia status of 15-17 Adolescents girls and >18 years Women
 - Anemia status of 1-5 children and 12 -14 yrs girls



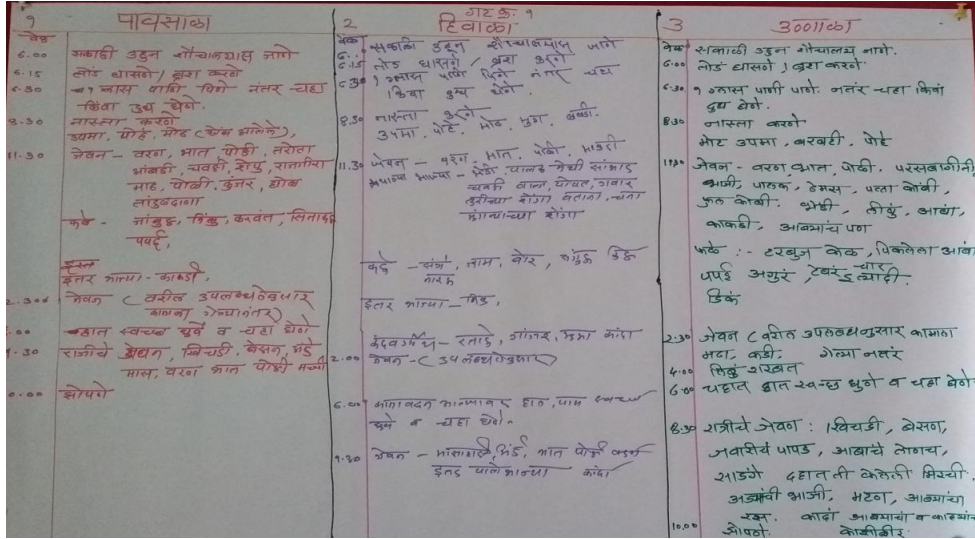
Participant agreed on the results that area under crop and vegetables cultivation increased. Consumption of pulses and vegetables also increased in their regular diet. It was explained that the village people should regularly include pulses and vegetables in their diet to meet balanced diet.

3. Existing consumption pattern

Participants were divided randomly into three groups. All three groups were requested to draw the balanced diet plan according to season i.e. rainy, winter and summer.

Table 1. Existing consumption pattern based on season by group no.1

Meal Pattern	Meal Time	Season wise menu plan		
		Rainy	Winter	Summer
Morning	6.30 am	1 glass of water Tea/milk	1 glass of water Tea/milk	1 glass of water Tea/milk
Breakfast	8.30am	Upama, Poha, Moth bean (sprouted pulses)	Upama, Poha, Moth bean, cow pea, green gram	Upama, Poha, Moth bean, cow pea
Lunch	11.30am	Rice, Dhal, Chapathi, Sabji - Tarota, Ambadi, Chavali, Shepu, Rajgira, Math, Kunjar Ghol, Tanduldana, Poi, Cucumber Fruits- Lemon, Papaya, Karvand, Jamun	Rice, Dhal, Chapatti/Bhakar Sabji - Spinach, Fenugreek, Coriander, Leady Finger, Chavali, Beans, Tender red Gram, Peas Green, Bengal Gram, Moringa Fruits- Guava, Bor, Graphs, Banana, Coconut, Orange, Lemon, Sweet Potato, Carrot, Radish, Onion	Rice, Dhal, Chapatti, Sabji - Spinach, Tinda, Cauliflower, Cabbage, Leady Finger, Lemon, Mango, Cucumber, Mango Pan Fruits- Watermelon, Banana, Mango, Papaya, Grapes, <i>Tembhur</i> , <i>Char</i> ,
Lunch	2.30pm	Same	Same	Same / Kadi, Mattha (mango)
Evening	6.00pm	Tea	Tea	4.00 – lemon, squash Tea
Dinner	9.30pm	Khichadi, Besan, Egg, Meat, Dhal, Rice, Chapathi, Fish	Egg, Meat, Chapatti , Rice, Fish, Onion	Khichadi, Besan, Sorghum Papad, Mango, <i>Sandage</i> , <i>Dahi Mirchi</i> , Egg, Meat, Chapatti, Fish, Onion, Kanda V Mango <i>koshimbir</i>



The image shows three columns of handwritten text in Marathi, detailing a diet plan for three seasons: 1. पाल्साळा (Rainy), 2. हिवाळा (Winter), and 3. उन्हाळा (Summer). Each column lists meal times (e.g., 6:00, 9:00, 11:30, 2:00, 4:00, 9:00) and corresponding food items like Upama, Poha, Sabji, Chapatti, Dal, Rice, etc.

Fig 1. Balanced diet plan for rainy, winter and summer season by group no 1

Table 2. Existing consumption pattern based on season by group no. 2

Meal Pattern	Meal Time	Season wise menu plan		
		Rainy	Winter	Summer
Morning	6.00am	Tea	Tea	Tea
Breakfast	9.00am	Upama, Poha/ Sabji-Chapatti	Upama, Poha, Moth bean	Upama, Poha/ Sabji-Chapatti
Lunch	11.00am	Dal, Rice, Chapatti, Sabji -Fish, Leady Finger, Chavali, Tinda, Cluster bean, Spinach, Coriander	Rice, Dal, Chapatti, Sabji - Ambadi, Shepu, Beans, Tender red Gram, <i>Math</i> , <i>Kunjar</i> , Coriander vadi, colocasia vadi	Rice, Dal, Chapatti, Sabji Lemon, Mango, Mango <i>Panh</i> , <i>Kalna</i> (pulses), Tamarind
Lunch	2.00pm	Same	Same	Same
Evening	4.00pm	-	Tea	Lemon juice, Tea
Dinner	9.00pm	Rice, Dal, Chapatti, Sabji, Cucumber, Buttermilk, Jambhul	Dal, Rice, Chapatti, Sabji - Egg, Meat, Fish, Green Sorrel, Fenugreek, Coriander, Spinach, Moringa, Agathi, Spring onion, Sweet Potato, Pumpkin, Carrot, Radish, Bitter guard, Ridge gourd, Beans , Fruits - Guava, Papaya, Custer Apple	Dal, Rice, Chapatti/Bhakari, Sabji, Sorghum papad, Mango, Vermicelli, Potato, Brinjal, Ambadi dried, Mung vadi, Meat, Chicken, Onion, Jack fruit, Tomato, Ground nut, Bor, Papaya, <i>Tembhur</i> , <i>Chaloli</i> , buttermilk,

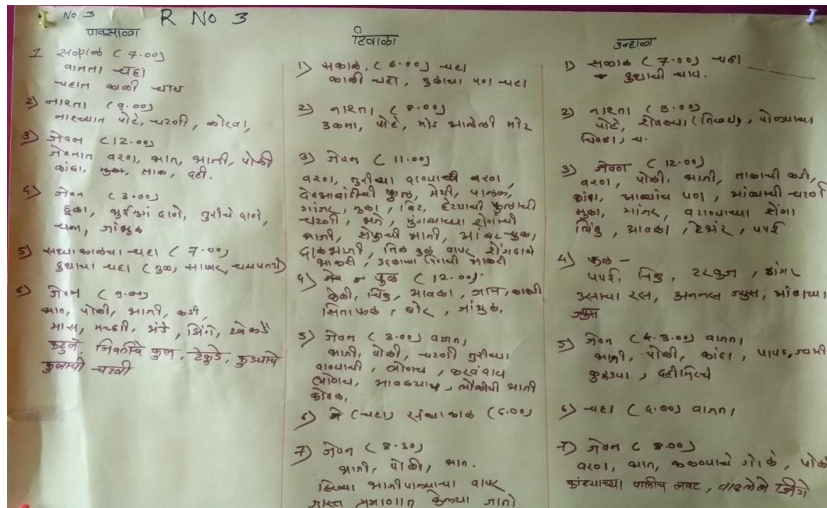
गट नं २

उन्हाळा	पावसाळी	तिवाळा
1) 6 वाजता -चरा 2) 9 वा नारता (भाजी-पोळी) -चोटे, उपमा 3) 11 वा जेवण वरण, भात पोळी, कोसा, निंबू, भोसा, चिंच-कोव्हा, पत्रा. 4) 4 वाजता -चरा (विट्, स्पगल) 5) रात्री जेवण 3 वाजता -भाकर, आम्लु वानेची आम्ली आम्लीचा कोरवा, पुसाच्या बड्या, जवोरा, चिपळ्या -निमा, आरीची, केवळ, पयडी -मोद, ताक, दही, जेवण्या, गुग्गुली, फुल्ल्या, रमटे, जेवणा जेवणा क्कना, शूरका योगा	1) 6 वाजता -चरा 2) 9 वाजता -नारता (भाजी-पोळी) 3) 10 वाजता जेवण भाजी, पोळी कोव्हा, चवनी, गवळ, जेवणे देवण, पान्क, जामुन 4) रात्रीच जेवण 3 वाजता वरण, भात, भाजी, पोळी, 5) आम्लु, काकरी, ताक, कावली,	1) सकाळी -चरा 2) 9 वाजता, मोद, मोद, उपाय, 3) 10 वा. जेवण -साल पोळी, तुरीचे दाळे, जेवणेची दाळे: वाळी-वाळी शेंगा, सोळाची-पोळी: कावळामाद, कुंदे, रात्री भाजी, सावरळी. 4) दुपारी. 4 वा. चाप, 5) रात्री. 9 वा. जेवण -भांड्याची भाजी, विट्, घालोळीची भाजी, लीलाफळ, आम, पयडी, चालक, मेथीची भाजी, संभार, मोठ -पुला, शेवणान्हा शेंगा, देवणची फुला, हिरवी ताक कावळ, रकवाचे, कोवळ, गोपट, कुंडा, लुटीचे दाळे. आम्लु, कावली, सोडके, चलाय, वाळ्याच्या शेंगा,

Fig 2. Balanced diet plan for rainy, winter and summer season by group no 2

Table 3. Existing consumption pattern based on season by group no. 3

Meal Pattern	Meal Time	Season wise menu plan		
		Rainy	Winter	Summer
Morning	7.00 am	Tea	Tea	Tea
Breakfast	9.00am	Poha, Sabji-Chapatti Leafy vegetables dried	Upama, Poha, Moth bean,	Poha, Vermicelli, Left over chapatti chivada
Lunch	11.00 - 12.00 pm	Dal, Rice, Chapatti, Sabji, onion, buttermilk, curd	Dal, Rice, Chapatti, Sorghum & blackgram bhakar, Sabji- Hibicus flowers , Spinach, Fenugreek, Coriander, Red gram, Drumstick, Agati, Carrot, Radish, Beetroot, Green sorrel, Sesame- jaggry, Ground nut, Fruits-Guava, Bor, Sapota, Banana, Amla, Jamun , Cucumber	Dal, Rice, Chapatti, Sabji, <i>Kadi</i> , Spinach, Onion, Radish, Carrot, Lemon, Mango, Peas green, Bean, Tembhur, Mango Panh Fruits- Watermelon, Cane Sugar, Mango, Sapota, Papaya, Pineapple
Lunch	3.00pm	Ground nut, Hurada, Red gram, Jamun, Channa	Chapatti, Sabji, onion, Pumkin, Bottle guard, Tender red gram, Pickle – Lemon, Karvand, Amla	Chapatti, Sabji, onion, Sorghum papad, <i>Kurudya</i> , <i>Dahi mirchi</i>
Evening	5.00pm	Tea	Tea	Tea
Dinner	8.00- 8.30 pm	Rice, Chapatti, Sabji, Onion, <i>Kadi</i> , Egg, Meat, Fish, Crab, Prawns, Spine gourd, <i>Jivati & Kuda</i> flowers, wild Mushroom	Dal, Chapatti , Rice, Green Leafy Vegetable Sabji	Dal, Rice, Chapatti, Sabji - <i>Kalna gole</i> , Spring onion, prawns



The image shows a handwritten document titled 'Balanced diet plan for rainy, winter and summer season by group no 2'. It is organized into three columns: 'पारंपारिक' (Traditional), 'ठंडाळा' (Winter), and 'उन्हाळा' (Summer). Each column lists various food items and their quantities, such as '1) अकोब (६००) चहा', '2) गरम (८००) चहा', and '3) जेवण (१००) गरम'. The text is written in Marathi and includes details about the diet plan for different seasons.

Fig 2. Balanced diet plan for rainy, winter and summer season by group no 2

Discussion and Resolution by the participants

- According to season they could use available food.
- They are using dal and soaked/sprouted pulses in their diet.
- Available wild vegetables i. e. amaranths sp., *kunjar*, spine gourd, hibiscus, *jivati* flowers, *kuda* flowers, mushroom and fruits i.e. *bor*, *jamun*, *char*, *tendu*, custard apple, according to the season they are using.
- They are using growing vegetables at their household during rainy and winter season. During summer they brought vegetables from market. Less households grow vegetables at their backyard during summer season.
- In summer season they mostly consume animal source foods and the reasons being less production of vegetables and guest comes during vacation period.
- During busy period such as sowing, weeding and harvesting, they consume only one vegetable and chapathi. In dinner they cooked sabji, chapathi, dal and rice.
- To the question, do you follow balanced diet daily in your life, they answered that *it is not possible daily but 4-5 days in week is possible and the daily diet includes one vegetable, chapatti, dal and rice.*

4. Lecture by Avanti Naidu

With the help of powerpoint following topics were explained. One page briefs on the following topics in Marathi was distributed to participants (Annex 4).

- Importance of balanced diet and its importance for good health
- Different cooking methods and preserving nutrients while cooking
- Anemia and VAD: definition, symptoms and how to overcome the problem through diet
- Different life cycle approach particularly adolescence, physiological changes in boys and girls and dietary requirement, importance of personal hygiene especially during menstruation.
- Pregnancy, lactation and dietary requirement

Discussion was done after presentation

- ✓ Participants agreed to take balanced diet.
- ✓ Vitamin A and C can be met by consuming curry leaf, moringa, lemon, guava etc.
- ✓ For the calcium: ground nut, sesame and poppy seed.
- ✓ Various cooking methods, hygienic cooking method were discussed.
- ✓ During pregnancy and lactation women should consume all types of food.
- ✓ Girls should take care of their menstrual hygiene.

5. Game to refresh knowledge

Game was arranged to keep up interest and refresh what participant understood in training. A topic was placed in chair and the participants were asked to sit randomly (with the help of music). The participants were then asked to talk about the topic for 1 minute. This helped the participants to refresh their understanding and learn further. Chikki and banana were distributed as prize for the participants who answered correctly.

A game to keep interest and knowledge



The utility of the workshop;

1. Help the participants particularly the CHF's and volunteers for refreshing their knowledge on nutrition.
2. The materials that were distributed in local language will be useful for the CHF's, as a tool for sharing the messages to the community.
3. Help to plan a balanced diet according to seasons.

Annexure 1

Agenda of the CHF refresher course

Timings	Agenda	
11.00 am	Introduction of the participants	All
11.15 am	Sharing of FSN endline results Objective of the training	Rupal Wagh
11.20 am – 12 noon	What do we eat? How do we eat? - Participants are divided into three groups and each group is requested to outline a normal day's household food intake. The time of each meal and what is eaten should be listed out. Each group is given one season (rainy, winter and summer) and requested to write the dietary pattern according to that season.	Rupal Wagh and Nithya D.J.
12 noon – 12.45 pm	<ul style="list-style-type: none"> • Importance of balanced diet and its importance for good health • Different cooking methods and preserving nutrients while cooking 	Avanti Naidu
12.45 – 1.15	Evaluation of the dietary patterns by participants with inputs from resource persons	All with inputs from Avanti Naidu
1.15 – 2 pm	Lunch	
2.00 – 2.15 pm	A game to keep up the interest	
2.15 – 3.00 pm	<ul style="list-style-type: none"> • Anemia and VAD: definition, symptoms and how to overcome the problem through diet • Different life cycle approach particularly adolescence, physiological changes in boys and girls and dietary requirement, importance of personal hygiene especially during menstruation. 	Avanti Naidu and Anganwadi worker
3.00 - 3.30 pm	Tea break	
3.30 – 4.45 pm	Pregnancy, lactation and dietary requirement	Avanti Naidu ASHA & Anganwadi worker
4.45 – 5.00 pm	Discussion and queries	
5.00 pm	Final note	Rupal Wagh

Annexure 2

Details of the participants

S N	Name of Participant	Gender	Designation	Village
1.	Sheetal Nehare	Female	CRP	Saheli
2.	Kiran Thombare	Male	Sarpanch	Saheli
3.	Archana Kale	Female	ASHA	Saheli
4.	Kamal Borje	Female	CNG & CSB member	Saheli
5.	Kaushal Borje	Female	CNG & CSB member	Saheli
6.	Nandakishor Masaram	Male	PRI member	Saheli
7.	Alka Masram	Female	SHG member	Saheli
8.	Kishore Thombare	Male	Farmer	Saheli
9.	Raju Kale	Male	Farmer	Saheli
10.	Kishore Masram	Male	Farmer	Saheli
11.	Surkha Uike	Female	CRP	Bitpur
12.	Bhimrao Ramteke	Male	PRI member	Bitpur
13.	Kanchan Somkuwar	Male	Farmer	Bitpur
14.	Rupali Warathi	Female	CRP	Susund
15.	Bebi Bhalavi	Female	Anganwadi Worker	Susund
16.	Sulochna Uike	Female	SHG member	Susund
17.	Vijay Chudhari	Male	PRI member	Susund
18.	Megha Kamble	Female	Anganwadi Worker	Heti
19.	Ashmita Kamble	Female	CNG & CSB member	Heti
20.	Amit Kalamkar	Male	Ex. village volunteer	Heti
21.	Shakuntala Pethe	Female	Anganwadi Worker	Borgaon Gondi
22.	Manda Pethe	Female	CNG & CSB member	Borgaon Gondi
23.	Sharada Mandari	Female	CNG & CSB member	Borgaon Gondi
24.	Radhabai Uike	Female	CNG & CSB member	Borgaon Gondi
25.	Shashikala Mandari	Female	CSB member	Borgaon Gondi
26.	Rajana Rakte	Female	CSB member	Borgaon Gondi
27.	Dinesh Bavankar	Male	Farmer	Borgaon Gondi
28.	Fakirchand Khandate	Male	Village Volunteer	Saheli, Bitpur
29.	Gautam Yesankar	Male	Village Volunteer	Susund Heti
30.	Sudhir Kumare	Male	Village Volunteer	Borgaon Gondi
31.	Nithya D. J.	Female	Scientist	MSSRF, Chennai
32.	Rupal Wagh	Female	Research Associate	MSSRF, Wardha
33.	Raju S.	Male	Senior Research Fellow	MSSRF, Chennai
34.	Anjali Barraee	Female	Project Assistant	MSSRF, Wardha
35.	Rahul Yedkar	Male	Office Assistant	MSSRF, Wardha
36.	Prakash Polkade	Male	Accounts Assistant	MSSRF, Wardha
37.	Savita Telang	Female	Office helper	MSSRF, Wardha

Annexure 4

Balanced Diet - Meaning and Importance

A balanced diet is nutritionally adequate and should be consumed through a wise choice of variety of foods. A balanced diet is one that gives your body the nutrients it needs to function correctly. It can be achieved through consuming proper combination of basic five food groups.

- Cereals, grains and millets
- Pulses and legumes
- Vegetable and fruits
- Milk and milk products
- Fats, oils and sugars

The quantities of the foods to be consumed are based on person's age, gender, physiological condition and physical activity. Men usually need more calories than women, and people who exercise need more calories than people who don't.

A balanced diet is a combination of carbohydrates, proteins, fats, vitamins, minerals, fiber and water. Each of these is essential for survival and disease free life. A balanced diet should ideally provide 65-70 % of the total calories from carbohydrates, 10-12% of the total calories from proteins and 20-25% of the total calories from fats.

Vitamins and minerals in the diet are vital to boost immunity and good health. A healthy diet can protect the human body against diseases, particularly non-communicable diseases such as obesity, diabetes, cardiovascular diseases, certain cancers and skeletal conditions.

To ensure a balanced diet one should include the following in their diet-

- ✓ A mix of different cereals like –wheat, rice, jowar, bajra, ragi etc.
- ✓ Different pulses like –red gram dal, green gram dal, soy etc.
- ✓ At least one leafy green vegetable like fenugreek leaves, Drumstick leaves, Coriander , mint ,Spinach
- ✓ Minimum one other vegetable like bottleguard , pumpkin , bittergurad , beans
- ✓ At least a fruit daily- like guava, papaya, mango, Amla, banana
- ✓ Fats and oil
- ✓ Sugars like jaggery or dates
- ✓ Seeds and nuts like gingelly, groundnuts, Flax seeds, sunflower seeds
- ✓ A glass of milk or curd
- ✓ An egg or a piece of non-vegetarian food
- ✓ Spices like turmeric, ginger, garlic ,cumin which are rich source of antioxidants

Apart from eating a balanced diet, regular exercise, good sleep and abstinence from alcohol and tobacco is also needed for a healthy and happy life.

Preservation of Nutrients and Different Cooking Methods

Good nutrition also includes correct cooking practices to get the best benefit out of the food consumed. Cooking makes the food more digestible, more flavorful, tasty and appealing. But wrong cooking practices or overcooking makes the food unpalatable and results in loss of nutrients. Cooking practices include storage, preparation and actual cooking of foods. Sum of a few important practices are mentioned below-

Storage of foods – All dried foods need proper storage. Improper storage can lead to food spoilage. Cereals, pulses, spices should be sundried or roasted and should be stored in clean, dry and air tight containers.

Vegetables and fruits should be cleaned before storing them in a cool place or they can be wrapped in a wet cloth.

Milk and non-vegetarian foods should not be stored more than a day or they should be kept only in a refrigerator.

Preparation of foods-

- ✓ Use fresh ingredients whenever possible
- ✓ Vegetables should be washed before cutting them
- ✓ Excessive soaking or rinsing of cereals and pulses should not be done.
- ✓ Peeling of skins should be done minimally.
- ✓ Reheating the same food or refrying in the same oil should be avoided.
- ✓ Vegetables should be cut into large pieces and should be cooked with a lid.
- ✓ Draining of water should be avoided.

Cooking of foods-This requires basic knowledge about the food and their combinations. Cooking is a life skill which should be acquired by all irrespective of their gender. Some of the methods of cooking are listed below-

Boiling- Boiling is quick, easy, and requires nothing but just water. Excessive water or draining of water can dissolve vitamins and minerals in some foods (especially vegetables). Excess water should not be discarded but can be used in gravies or soup.

Eg. boiling of potatoes, vegetables and eggs

Steaming- Steaming anything from fresh vegetables or fleshy foods allows them to cook in their own juices and retain all that natural freshness and nutrients. It makes the food light fluffy and easily digestible. Pressure cookers which are most popular are based on this method.

Eg. Idli, Dhokla, steaming of vegetables

Baking-Baking enhances the natural flavors. It requires lesser time and less monitoring. But specialized equipment like oven and knowledge of baking skills is a must.

Eg. Cakes, Biscuits, bread

Stir frying - While this method does require some oil in the kadhai, it should only be a little amount. Eg. Sautéing of the vegetables

Shallow frying- Shallow frying is cooking in minimal amount of oil with partial coverage. Food is only partly submerged in oil and it must be turned around during cooking.

Eg. Fish, meat and food like cutlets.

Deep Frying- Cooking the food submerged in oil with complete coverage. Deep fried foods are high in calories and takes longer to digest but they are very tasty. The high heat of the oil seals in a food's moisture and crisps up the outside, making it crunchy. Deep fried foods should be eaten occasionally.

Eg. Poori, Pakoda, Vada, Bhajji

Deficiency Diseases –Anemia and Vitamin A deficiency

Good and wholesome food is needed for normal growth and development of the body. Absence of even single nutrient can interrupt in the normal body function and processes and can cause deficiency disease. The common most deficiency diseases in India are Anemia and Vitamin A deficiency

Anemia:

Nutrients like iron and folic acid are important for hemoglobin synthesis, mental function and immunity. Deficiency of iron is called as anemia. Anemia is common among young children and women in childbearing years. Anemic person looks pale, easily gets tired, has poor attention span and breathlessness. The nails may get thinner or spoon shaped. Iron deficiency can be prevented or treated by following ways-

- ✓ By providing iron supplementation to affected individuals.
- ✓ Preventing anemia among pregnant women by providing foods rich in iron and folate
- ✓ Timely weaning (at the end of 6 months)
- ✓ Nutrition education to mothers on rich sources of iron
- ✓ Cultivation of kitchen garden to obtain cheap sources of iron
- ✓ Cooking in iron vessels
- ✓ Including rich sources of vitamin C like lemon, amla in daily diet for better absorption of iron.

Foods rich in Iron

Liver, meat, green leafy vegetables, dried fruits like dates, raisins, cereals like flattened rice, ragi.

Vitamin A deficiency:

Many children partially or completely lose their vision due to vitamin A deficiency. Vitamin A deficiency can be easily preventable. The first sign of this deficiency is inability to see in dim light or in dark which is called as night blindness. Further there are changes seen in white part of the eye which results in loss of eyesight. Vitamin A deficiency can be prevented or treated by following ways-

- ✓ By providing mega dosages of vitamin A to affected children
- ✓ Preventing vitamin A deficiency among pregnant women by providing foods rich in vitamin A
- ✓ Feeding the newborns on colostrum and continuing exclusive breast feeding up to 6 months
- ✓ Timely weaning (at the end of 6 months)
- ✓ Nutrition education to mothers on rich sources of vitamin A
- ✓ Cultivation of kitchen garden to obtain cheap sources of vitamin A

Foods rich in vitamin A

Milk, eggs, liver, fish, green leafy vegetables, yellow-orange vegetables and fruits like carrots, pumpkin, mangoes, papaya, vegetable oils.

Infectious water borne diseases-Typhoid

Typhoid fever is an acute illness associated with fever caused by the Salmonella Typhi bacteria. It can also be caused by Salmonella paratyphi, a related bacterium that usually causes a less severe illness. The bacteria are deposited in water or food by a human carrier and are then spread to other people in the area.

Typhoid fever is contracted by drinking or eating the bacteria in contaminated food, milk or water. People with acute illness can contaminate the surrounding water supply through stool, which contains a high concentration of the bacteria. It is more prevalent in places where handwashing is less frequent. It can also be passed on by carriers who do not know they carry the bacteria.

The two major symptoms of typhoid are fever and rash. Other symptoms can include- weakness, abdominal pain, constipation, headache, diarrhea and vomiting.

Treatment

Getting vaccinated against typhoid fever is recommended for prevention. The only effective treatment for typhoid is antibiotics. The most commonly used are ciprofloxacin and ceftriaxone.

Other than antibiotics, it is important to rehydrate by drinking adequate water. Diet should be light to digest, high in proteins and nourishing foods.

Soups, juices, boiled eggs, steamed foods, kanjee and porridges should be given at regular intervals.

General guidelines to avoid Typhoid

- ✓ Before drinking water, ensure water is heated on a rolling boil for at least one minute before consuming.
- ✓ Be aware of eating anything that has been handled by someone else.
- ✓ Avoid eating at street food stands, and only eat food that is still hot.
- ✓ Do not have ice in drinks.
- ✓ Avoid raw fruit and vegetables, peel fruit yourself.
- ✓ Boil the milk properly before using.

Nutrition and Hygiene during Life Cycles - Adolescence and Pregnancy

Adolescence is a period when the childhood is transformed into the adulthood. It is a period of rapid physical, physiological changes and final growth spurt. If proper care and attention is not given to the nutritional needs of adolescents, it can result in various nutritional problems like weight imbalances, anemia, early osteoporosis, menstrual problems and eating disorders. Nutrition and hygiene for adolescent girls is extremely important and should not be overlooked, as it is a key to healthy motherhood and childhood ahead.

Dietary and hygiene guidelines for adolescent girls-

- ✓ Balanced diet which included all the five food groups in correct quantities should be consumed by adolescents to avoid weight imbalances.
- ✓ Empty calories from carbonated beverages and junk foods should be avoided.
- ✓ Foods which are rich in iron and calcium should be consumed to prevent anemia and early osteoporosis respectively.
- ✓ Home cooked foods and acquiring cooking skills must be encouraged among adolescents
- ✓ Physical activity should be part of lifestyle for an adolescents

- ✓ Proper menstrual hygiene and personal hygiene should be encouraged at school and home of adolescent girls.
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Pregnancy is a period when a woman makes many adjustments in her life as well as diet. Healthy eating is important during pregnancy. Good nutrition is needed to meet the added demands of pregnancy and for the growth of the fetus. The diet in the pregnancy should comprise of more of tissue building and protective foods and not just energy giving foods. Around 300 calories are additionally needed daily to maintain a healthy pregnancy. These calories should come from a balanced diet of protein, fruits, vegetables, and whole grains, with sweets and fats kept to a minimum. A woman should neither eat for two nor should she eat very less in fear of having a big baby; which might be difficult to deliver.

A healthy, well-balanced diet during pregnancy can be preventive measure for pregnancy related complications like anemia, preeclampsia. It can also be useful in minimizing problems like as nausea and constipation.

The weight gained by the mother serves as a reserve of nutrients during the period of lactation. Additional nutrients would also be stored in the baby's vital organs to provide nutrition for the first six months of life.

Dietary guidelines for expecting mothers:

- ✓ Eat variety of whole grains, fruits and vegetables every day.
- ✓ Consume at least 300 ml of milk
- ✓ Vary your protein sources.
- ✓ Limit foods with "empty" calories.
- ✓ Take vitamin supplements of calcium, folic acid and iron.