

# FORTIFICATION OF MID-DAY-MEAL IN DHENKANAL

TRAINING MODULE FOR THE COOK-CUM-HELPER (CCH)



*Multi-Micronutrient Fortification of Mid-Day Meals  
in Dhenkanal District of Odisha*

**(A pilot intervention to reduce malnutrition in school going children)**

**Implementing Agency:**

**SOCIAL ORGANISATION FOR VOLUNTARY ACTION (SOVA)**

**DHENKANAL**

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## About the Training Module

This training module is a collaborative effort between the Department of School and Mass Education, Government of Odisha, the World Food Programme and Arun Institute of Rural Affairs. It has been developed as part of the project activities of the mid-day meal fortification project in Dhenkanal and is expected to facilitate the Cook cum Helpers (CCH) in discharging their role and responsibilities in a better and efficient manner. The training module is intended to enhance their knowledge and practices of food safety and kitchen hygiene in the preparation of Mid-Day Meal.

Smt. Roopa Roshan Sahoo, IAS,  
Collector and District Magistrate,  
Dhenkanal.



Dhenkanal

Date: 05.04.2017.

## MESSAGE

To address the need of micronutrients among the school going children in the age-group of (6-14years), the Dept. of School and Mass Education, Govt. of Odisha and World Food Programme(WFP) has taken an initiative to pilot and implement a project on fortification of Mid-Day-Meal in Dhenkanal district.

*Anemia and micronutrient deficiency disorders are a major public health problem. India and Odisha specifically, suffer from a huge burden of anemia across the spectrum of age, sex and socio-economic background. For school children, anemia translates into ill health, school absenteeism, sub-optimal performance and concentration at school thereby reducing total number of years of schooling and earning potential in later life. Though there are many reasons for anemia and micronutrient deficiencies, one of the immediate cause is a gap in the intake of micronutrients on account of poor diets.*

As we progress towards our goal of quality education for all children, we have an added responsibility of facilitating good nutrition and healthy practices during handling and preparation of food at the school point to foster overall development.

The present training module has been specifically conceived for the purpose of orientating and giving a practical knowledge to the Cook cum Helpers (CCHs) on the various aspects of food handling, food safety, food storage & preparation, kitchen safety and hygiene. I urge all officials to actively engage themselves in ensuring quality implementation of this project which is expected to influence the national policy. I am certain that this well-conceived training module developed by AIRA/SOVA shall go a long way in changing situation at the ground level and will serve as a handy resource for project implementation.

A handwritten signature in green ink, appearing to read 'R. Roshan Sahoo'.

(Smt. Roopa Roshan Sahoo)

Sri.Sudhananda Parida.OES-(1)  
District Nodal Officer (MDM) cum  
District Education Officer  
Dhenkanal.



Dhenkanal  
Date: 23/03/2017

### **MESSAGE**

Awareness plays a vital role for preparation and distribution of MDM in a healthy and hygienic atmosphere for which a training module in pictorial form has been developed for Cook-cum-Helpers (CCHs) to sensitize them and internalize the importance of MDM. Quality assurance of Mid-Day Meal (MDM), food preparation & kitchen hygiene should be an integral part of food safety procedures at the school kitchen. Here, the role of all concerned specifically the cook cum helpers in the preparation of the school meals is most significant.

I am pleased that World Food Programme (WFP) in collaboration with Department of School and Mass Education (S&ME) has initiated a pilot project towards fortification of Mid-Day-meal in Dhenkanal district. Fortification is an efficient strategy to address the issue of malnutrition and anaemia among the children.

To build the capacity of the Cook cum Helpers (CCHs) and field officials involved in this pilot project, a well-designed training module has been developed and effective capacity building programmes are to be conducted for the better implementation of the project at different levels. This training module developed by AIRA/SOVA would definitely serve the purpose in this regard.

I heartily thank all staffs and experts who have given their proactive effort to bring out this simple, illustrative & concise training module for the cook cum helpers & all concerned officials involved directly in the project. I wish them a grand success in the implementation of this project in Dhenkanal District.

  
(Sri.Sudhananda Parida)

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**BRIEF DESCRIPTION ABOUT THE PROJECT- FORTIFICATION OF MID-DAY-MEALS IN DHENKANAL AND THE ROLE OF THE COOKS**

**1.1 About the project:**

Malnutrition or malnourishment is a condition that results from eating a diet in which nutrients are either not enough or are too much such that the diet causes health problems. It may involve calories, protein, carbohydrates, vitamins or minerals. Not enough nutrients are called under-nutrition or undernourishment while too much is called over-nutrition. Malnutrition is often used specifically to refer to under-nutrition where there are not enough calories, protein, or micronutrients. Odisha chapter of UNICEF, the United Nation's arm to address issues relating to children, their health, education and well being, in pursuance of its objectives found that prevalence of micronutrient deficiencies among school children; in Dhenkanal district among children belonging to 5-9 years is 76.2% whereas it is 64.4% among children between 10-17 years. As per the National Nutrition Monitoring Bureau (NNMB) Survey, in 2011-12, the average daily intake of micronutrients as against the recommended dietary allowances (RDA) for school children in Odisha reflects a gap between 50-70% across the school age for both sexes for most micronutrients.

In this back drop, UNICEF Odisha launched a programme in Dhenkanal district to address the issue of malnutrition.

To improve the nutritional status of school-age children partaking the mid-day meals, the Department of School and Mass Education, Government of Odisha in collaboration with the World Food Programme will be fortifying the mid-day meals in Dhenkanal district of Odisha. The programme has the following Goal and objectives:

**Goal:**

To improve the micronutrient status and anemia in the school going children between the age group of 6-14 years covered under the MDM programme in the district of Dhenkanal.

*The fortified rice will be processed centrally at M/S Laxmi Narayan Agro Foods Pvt. Ltd., Panchupati, Dhenkanal through blending of Fortified Rice Kernel (FRK) with regular rice. Then it will be provided to schools in four blocks i.e. Dhenkanal (Sadar), Kamakhyanagar, Bhuban and Parjang for on-site cooking of MDM and served to the school children. The other four blocks i.e. Gondia, Odapada, Hindol and Kankadahad will receive micro-nutrient powder (MNP) which will be added in measured amount to the cooked and cooled curry dishes served in the schools.*



**Fortified rice in the mid-day meals:**

Rice fortification is simpler and easier process where fortified rice kernel (FRK) can be blended with regular rice centrally and served to the school going children to prevent themselves from anemia and mal nutrition. In current project the fortified rice FRK (fortified rice kernel) will be blended with normal rice at Laxminarayana Agro Foods Pvt. Ltd (LNAF), Panchupati, Dhenkanal. The nominated teachers and CCH from every school will be properly trained on the modalities of fortification.

**1.2 Role and responsibilities of CCHs in the MDM.**

The CCHs are important persons in the MDM scheme. They are directly involved in the preparation, cooking and serving of the meals to the children. Their clear cut roles can be defined as follows:

- They have to arrive at the school on time.
- Ensure availability of raw food materials before starting the process of food preparation.
- Discuss with the HM and as per the attendance of the day ascertain that the required food items are in place.
- Clean the (kitchen and workplace) before starting the cooking process.
- Ensure availability of portable water for cooking and cleaning purpose.
- All the utensils and raw vegetables, rice etc are properly cleaned and washed before use.
- Maintain personal hygiene before initiating the cooking process.(e.g. wearing of aprons, head cap, hand washing etc. etc.)

**Role in the Project**

- Ensure that all the utensils are cleaned and dried before cooking.
- Coordinate with the HM or MDM teacher in-charge for measuring the rice to be cooked and the water to be added to follow water tight method
- Taste the fortified rice before serving to the children.
- Ensure water-tight method of cooking of the rice for each meal.
- Adhere to the tenets of food procurement, storage, safety and kitchen hygiene practices as outlined in the training modules.

**1.3 Procedure of cooking of rice (Water tight method) at school point.**

- i. Note: In case rice is pre-soaked before cooking, please ensure that the rice is cooked in the same water in which it has been pre soaked.
- ii. Do not throw away the water left after boiling rice as it is rich in source of many vitamins and minerals.
- iii. Cooking shall be done only by water tight method. So that all the vitamins and minerals are absorbed and NEVER use Water Drain Method.

**Rice cooked with water tight method**



*Clean the rice by removing husk, foreign matter thoroughly*



*Transfer the cleaned rice in a clean container/ Vessel and wash with potable water 1-2 times*



*Cover the container with the lid and cook to get appropriately softened rice.*



*Boil potable water in cooking container. Water shall be just enough to get absorbed in the rice while cooking and no water (Peja) is drained out. Add washed rice in the boiling water.*



*Final step- serving while with safe temperature*



**WRONG PRACTICE**

**Cooking shall be done only by Water Tight Method. So that all the vitamins and minerals are absorbed and NEVER use Water Drain Method**

## **2.1 Food safety and Mid-Day-Meals**

Mid-day Meal (MDM) scheme is a Centrally Sponsored Scheme which serves hot cooked mid-day meal to school children studying in Classes I-VIII of Government, Government-aided schools, Special Training centres (STC) and Madarasas and Maktabas supported under the Sarva Shiksha Abhiyan.

The mid-day meal should contain adequate nutrients and should be, palatable, hygienic, and safe. Quality assurance of mid -day meal and food safety should be an integral part of food handling procedures at the school kitchen.

Food safety encompasses selection, handling, preparation, and storage of food in ways that prevent food borne illness and contamination. This includes a number of routines that should be followed to avoid potentially severe health hazards.

### **What is the Importance of Food Safety?**



## **2.2 Food Poisoning**

Food poisoning is a general term for health problems arising from eating contaminated food. Food may be contaminated by pathogens (bacteria, viruses, environmental toxins, or toxins present within the food itself, such as the poisons in some mushrooms or certain seafood).

**What are symptoms of Food Poisoning?**

- Vomiting
- Diarrhoea
- Abdominal Pain
- Nausea
- Fever
- Death

**What are pathogens?**

A pathogen is an infectious agent that causes illness to the host. These are commonly attributed to be bacteria and viruses.

**2.3 How does food get contaminated and become unfit for consumption?**

**I. Food contamination** refers to the presence in food of harmful chemicals and microorganisms which lead to illness. The types of contaminants can be categorised as under:

a. **Biological contaminant:** includes bacteria, yeasts, molds, viruses or parasites that are present in air, food, water, soil, animals and humans etc.

b. **Physical contaminant:** Foreign bodies in food are usually due to accidental contamination and / or poor handling practices these are visible particles like pebbles, stones, metal, glass, wood, insects, soil, dirt, jewellery, hair, fingernails sneezing and coughing etc.

c. **Chemical contaminant:** Includes Chemicals used for cleaning and sanitizing food contact surfaces; Pest control chemicals, paints and water treatment chemicals; Pesticides, fertilizers, fungicides.



**II. Cross Contamination:** Cross Contamination is the term used to describe the transfer of bacteria from a source to another food.

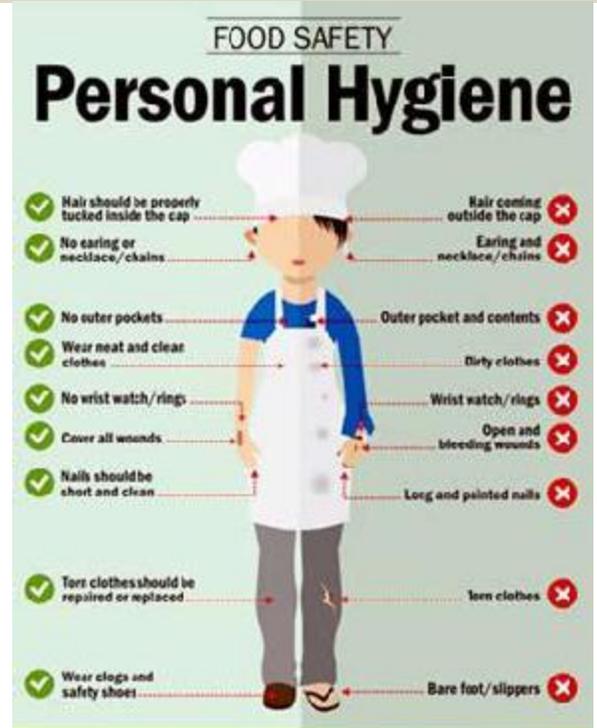
**a) Medium of cross contamination:**

- i. People: Unclean hands
- ii. Process: Chopping boards & dusters used for multiple jobs
- iii. Infrastructure: Design of kitchen affecting work flow
- iv. Storage: Storing vegetarian & non vegetarian items together

## PERSONAL HYGIENE OF COOKS

### 3.1 Personal Hygiene

- Do not chew tobacco, do not smoke.
- Always use aprons as Basic hygiene measure
- Cover your hair properly with caps / hair nets
- Scratching nose, hair, years must be avoided in food areas
- Keep your hair and nails short and clean.
- No jewelry must be worn while we are at work. (e.g. ; Ring, bracelets, threads, bangles, *kadas*, nose rings, ear-rings etc)
- In case of any illness / stomachache we need to inform immediately and cover any open wounds.
- Any wound must be covered with band aid which can be identified easily.
- Nail polish or artificial nails should not be worn.
- When serving ready to eat food we must always wear hand gloves
- Wash your hand regularly when we are at work.
- Conduct medicals of Cooks once every six months



**Personal hygiene is of top priority**



**Don't cook without an apron**



**Always wear apron while cooking**

### **3.2 Hand washing**

There should be a dedicated time within the daily time table that will allow enough time for all children, cooks and teachers in the school to wash their hands with soap. The hand washing of the children should be supervised and monitored vigorously.

Wherever proper hand washing facilities are either not available or inadequate for all children, buckets and mugs can be used to supplement the available facilities.

#### **How should we wash and disinfect our hands?**

- Wet your hands
- Take liquid soap
- Rinse your hands with running water thoroughly
- Dry your hands

#### **When should I wash my hands while food handling?**

- Before & after eating.
- Immediately after using toilets
- After touching the body
- After sneezing or coughing



Use soap for handwashing before and after taking food.

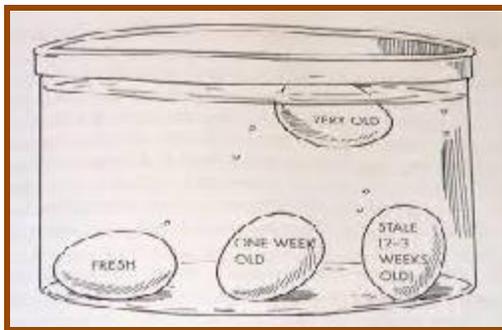
### **3.3 Water Supply**

- Continuous supply of potable water should be ensured in the premises.
- Since the sources of water are bore-well, hand pump & pipe line the water must be made potable by boiling.
- In case of intermittent water supply, adequate storage arrangement for water used in food or washing should be made.
- Water used for cleaning, washing and preparing food should be potable in nature.
- Water storage tanks, if available, should be cleaned periodically and records of the same should be maintained.
- Non potable water pipes should be clearly distinguished from those in use for potable water.

## PROCUREMENT AND STORAGE OF RAW MATERIALS / INGREDIENTS FOR COOKING MID-DAY MEALS

### 4.1 Procurement of Raw / Perishable materials

- Dal, Soya, Chunk, Iodized salt, Condiments and cooking oil shall be purchased locally on a weekly basis in packets and not in loose quantity
- Eggs are to be procured on the day of consumption or one day before. The quality of eggs is to be checked by dipping in the water.
- Vendors name/ address/ details may be kept on record.
- Vegetables to be purchased on daily basis to avoid getting damaged or rotten.



Good eggs will sink, bad egg will float



Buy vegetables on daily basis

### 4.2 Inspection and Storage of raw material

Storage of the raw materials used in MDM is a vital component in the process of food handing. A predefined storage space is exclusively identified for the purpose in every school. All the commodities used for the MDM should be stored as per the specified guideline.

### 4.3 Guidelines for storage of raw material



Don't keep condiments/ cooking materials etc. disorderly



Don't keep condiments/ cooking materials etc. close to harmful chemicals



Don't store pulses/ oil soya chunks in dirty and loose-lid containers





Store the cooking materials in proper order



Store with Dry Provision at 21° C



Storage containers should be cleaned at regular intervals



Correct practice- Bags stored on elevated surface



Incorrect practice- Storage of bags directly on the floor

- ✓ Bags stored away from the wall.
- ✓ Storage in dry and cool condition.
- ✓ Stacking of bags on an elevated surface.
- ✓ Storage area free from pest and rodent

#### **4.4 FIFO and FEFO**

First In First Out principle should be strictly adopted for all the raw materials procured and used in the MDM. Similarly, First Expiry and First Out should be adopted for the packaged products purchased for the purpose.

- FIFO (First in First out) should be followed strictly
- All the products should be having date tags before they are stored
- All the open packets should be stored in proper air tight containers
- Cardboard boxes needs to be avoided in stores as they attracts pests

#### **4.5 Pest & Rodent Control Measures**

To ensure that pest does not enter work area following things have to be monitored.

- Keep the area clean
- Ensure that there are no holes and gaps in the premises
- Fly screens should be placed at the doors and windows
- Food containers should be off the floor
- Ensure that the spillages and scrap and immediately cleared
- Follow FIFO to ensure that there is no infestation in the raw material
- Pest control schedule to be made & followed. Pesticide records to be maintained.
- No spraying should be done during the cooking of Mid Day Meal, but instead fly swats/ flaps should be used to kill flies getting into the premises.
- Prevent insects and rodents from entering the processing area from drains



***Do not spray pesticides inside kitchen***



***Keep the kitchen free of rodents***

Maintaining proper hygiene during the entire process of MDM preparation (pre, during and post) is a necessity. Adopting healthy hygiene practises should become a habit and to be adhered to at the schools in particular. Some of the important practises are detailed below.

### **5.1 Kitchen and Store**

- The location of Kitchen cum Store should be in a clean and hygienic environment.
- Adequate lights, ventilation and sufficient free space for movement to be available
- Floors, ceilings and walls must be smooth and easy to clean without any flaking paints or plaster.
- Continuous supply of potable water should be ensured. In case of intermittent water supply, adequate storage arrangement for water used in food or washing should be made.
- There should be efficient drainage system and there should be adequate provisions for disposal of refuse.
- Potential sources of contamination like rubbish, waste water, toilet facilities, open drains and stray animals should be kept away from kitchen.
- Availability of First aid box is preferable.



**Keep the cooking place neat and clean**



**Better to keep a First Aid Box handy**



**Keeping a fire extinguisher shall prevent accidents**

## 5.2 Kitchen Hygiene and Sanitation

- Utensils must be thoroughly washed, cleaned & air dried after use.
- To avoid cross contamination the cleaning tools should be separate for each section.
- Scrap off the food and waste present in the Dishes and utensils and dispose the same in the Waste disposal garbage bin
- Equipment and utensils used in the preparation of food should be kept at all times in good order and repair and in a clean and sanitary condition. Such utensil or container should not be used for any other purpose.
- Cleaning Schedule should be developed and followed
- Cracks, rough surfaces, open joints etc. must be repaired as soon as possible.
- Cleaning schedules must be in place covering all areas effectively.
- Always “**Clean as you go**” methodology should be followed



**First wash the vegetables and then cut them into pieces**



**Maintaining cleaning standards to ensure hygiene**

### 6.1 Food safety measures during preparation & Cooking.

- Sorting of cereals and pulses. Leafy Vegetable to be washed properly before preparation.
- For chopping vegetables a clean chopping board should be used. Wooden chopping boards to be avoided.



**Always use a plastic Chopping Board**



**Never use wooden Chopping Boards**

- The range between 5 – 63 ° C is called the Temperature “Danger Zone” where bacteria can grow rapidly in this temperature range.
- Cooking temperature should be above 75 Degree C for cooked food. Service temperature should be maintained at 65°C.
- Water use for cooking should be potable.
- Cooking must be done with the lid on to avoid loss of nutrients and contamination Segregation of Vegetarian & Non vegetarian to be strictly followed.
- Controlling the temperatures of food during food preparation prevents the growth of disease-causing microbes in potentially hazardous foods.
- Potentially hazardous foods like all non vegetarian, seafood, milk + dairy products, cut melons and high protein foods such as beans, rice and noodles, etc. support the rapid growth of disease-causing bacteria when these foods are kept in the Danger Zone. These should be stored at required temperature.
- Always follow segregation of food.
- Work should be done on the working platform & not directly on the floor.
- Water source should be maintained clean.



**Please maintain food safety measures**

### **7.1 Tasting and serving of Food**

- Food to be tested must be taken in spoon not in hand.
- Every day the cooked food is to be tested checked by two teachers and cook-cum-helper before it is served to the children. The test checking teachers and cook-cum-helper shall sign on the register maintained for the purpose on daily basis.



*Food should be tasted with a spoon, not directly by hand*

- One member from SMC/ Parents to be invited to come to school, however inspect MDM and taste the cooked food. A roaster has to be prepared in this regard which is mandatory.
- Cook-cum-helper shall be vigilant about the cleanliness and hygiene during serving of the meals.



**Drainage and waste disposal**

- Adequate drainage, waste disposal system & facilities should be provided to avoid cross contamination to food & potable water.
- Waste bins should be emptied and washed and dried daily before next use.



***Waste must be disposed to the designated space/ bin***

# Fortification of Mid-Day Meal in Dhenkanal, Odisha

## DO's



**Clean the Rice  
Thoroughly**



**Wash with potable water 1-2 times**

## DON'T's



**NEVER keep hazardous materials  
with cooking materials**

# Fortification of Mid-Day Meal in Dhenkanal, Odisha

## DO's



**Cook with water-tight method**



**Cover the container with lid**

## DON'T's



**NEVER use Water Drain Method**



**NEVER Cook without a lid**

# Fortification of Mid-Day Meal in Dhenkanal, Odisha

## DO's



**Serve in safe temperature**



**Maintain personal hygiene**

## DON'T's



**NEVER serve stale rice**



**NEVER wear dirty clothes while cooking**

# Fortification of Mid-Day Meal in Dhenkanal, Odisha

## DO's



Use Apron while cooking

## DON'T's



NEVER forget to wear Apron while cooking



Keep condiments properly



NEVER keep cooking materials disorderly

# Fortification of Mid-Day Meal in Dhenkanal, Odisha

## DO's



Store Bags away from the wall on elevated surface

## DON'T's



NEVER store Bags directly on the floor



*Supported by :*

**SCHOOL & MASS EDUCATION DEPARTMENT,  
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and

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