

A Facilitator's Guide for Nutrition Training in Bangladesh

A training of trainers module

Training Module 1

November 2024



ABOUT THIS TRAINING MODULE:

In the context of nutrition sensitive agriculture, it's crucial to empower farmers with the right knowledge on producing crops to meet their nutritional requirements. This publication, 'A facilitator's guide for nutrition training in Bangladesh' has been produced as a part of action research in the CGIAR Regional Integrated Initiative *Transforming Agrifood Systems in South Asia* (TAFSSA) that aims to deliver a coordinated program of research and engagement across the food production-to-consumption continuum to support equitable access to sustainable healthy diets, improve farmer livelihoods and resilience, and conserve land, air and groundwater resources.

In our experience, not all farmers or farming communities have information on the ways in which the crops, livestock, and fish products they may produce are linked to nutrition outcomes. This training module is therefore a response to this important community-level information gap.

The contents of this module have been systematically organized into six sessions, accompanied by illustrative examples of participatory teaching approaches to help the facilitators deliver the contents in an interactive way.

WHO CAN USE THIS TRAINING MODULE?

This publication aims to equip training facilitators with essential tools to effectively share key nutrition information with farmers and partners who plan to deliver foundational nutrition training to farming

communities.

WHERE CAN THE TRAININGS BE CONDUCTED?

It's advised to conduct the training at a central location in the village where a group of farmers can be comfortably seated in a circular arrangement for better interaction among themselves and with the facilitators.

WHO CAN ATTEND THE TRAINING?

Both men and women—preferably husbands and wives from farming families of all ages—are encouraged to attend the training. Sessions 1, 2, 3, and 6 are designed for a broad audience, while sessions 4 and 5 provide specialized education for adolescent girls, pregnant women, and lactating mothers.

HOW MANY PARTICIPANTS CAN PARTICIPATE IN A SESSION?

An ideal group size of 20 participants per session ensures an interactive and participatory training experience.

HOW LONG IS THE DURATION OF TRAINING?

Conducting all six sessions consecutively can be challenging for farmers due to time constraints and other responsibilities. A gradual delivery over 3-6 weeks, with 1-2 sessions per week lasting 3-4 hours each, improves engagement, reinforces learning, and provides time for applying knowledge, reflecting, and engaging in community discussions.

SESSION 1: AGRICULTURE AND NUTRITION LINKAGES

WHAT TOPICS ARE COVERED IN THIS SESSION?

- 1) Linkages between Agriculture and Nutrition.
- 2) Applied nutrition, nutritious foods, and key nutrients for healthy diets.
- 3) Types of food and balanced diet.

OBJECTIVES OF THIS SESSION:

- 1) To help the participants connect crop production with nutrition.
- 2) To help the trainees understand the importance of nutritious food for good health.

MATERIALS REQUIRED:

- 1) Three sets of food cards (Annex-1)
- 2) At least one cooking stove
- 3) White board and markers

1. INTRODUCE THE CONCEPT OF AGRICULTURE-NUTRITION LINKAGE:

Before diving into basic food and nutrition concepts, facilitators should introduce the connections between crop production and nutrition, helping farmers see how agricultural choices impact nutritional outcomes. Review the concepts thoroughly to ensure a clear, accessible presentation.

Encourage the trainee group to actively engage by mapping out the various crops grown in each season within their village, fostering proactive contributions to the crop mapping activity.

Ask the participants to consider the following questions carefully:

1. Do you have any idea about the nutritional benefits you gain from eating the crops you grow?

2. Have you heard anything about the types of food your body needs?



Above: Women farmers discussing crop production calendars, Bangladesh; photo: Harun-Or-Rashid

After gathering their responses, explain the linkages in the following way: Agriculture affects the availability of food for household consumption, which in turn impacts the diversity, quality, and affordability of food (von Braun et al., 2010). Emphasize that a diverse diet improves dietary quality by promoting the production and consumption of foods rich in various micronutrients, enhancing access to a well-rounded, high-quality diet.

Agriculture-related health losses are significant, contributing to up to 25% of all disability-adjusted life years lost and 10% of deaths in low-income countries (Gilbert et al., 2010, as cited in IFPRI and ILRI, 2010). In populations with severe energy deficiencies or physically demanding work, increased nutrient intake can enhance labor productivity. Both the quantity and quality of food consumption are crucial in determining nutritional status, serving as a direct link between agriculture and nutrition.

Several pathways connect changes in agricultural production and markets to health and nutrition outcomes:

- 1) Shifts in agricultural production can introduce new foods into diets, enhancing dietary diversity.
- 2) Changes in crop types may affect the physical demands of agricultural work, which can indirectly impact time available for nutritious food preparation and health-related activities.
- 3) Adjustments in agricultural production may influence household resource allocation. If these changes lead to increased income for women, they can positively impact household spending, food distribution, and asset accumulation.

2. INTRODUCE THE CONCEPT OF NUTRITION:

Start the session by informing participants that this training will provide them with valuable insights into making informed dietary choices for their families, emphasizing how these choices can be directly linked to the crops they cultivate on their farms.

Ask the participants: What do you enjoy eating in different seasons?

Start by asking participants about their favorite foods, letting them know they'll learn how these foods support their health. This training will also cover how seasonal crop availability impacts diets and explore ways to diversify food sources by integrating nutrient-rich crops into farming practices. Open discussion is encouraged to share ideas and experiences.

While acknowledging that taste plays a role in our food choices, emphasize the importance of selecting foods that provide a range of nutrients to maintain good health, as detailed in the following pages.

Refer to the stove set up at the training site and ask participants what is needed to ignite it. After gathering their responses, explain:

- Just as the stove functions optimally when fueled, our body operates efficiently when provided with nutritious food.
- Similarly, our body needs a steady intake of nutrient-rich food to maintain strength and well-being, serving as its essential fuel.
- Without proper nutrition, the body may experience fatigue and weakness, and even diseases.
- Nutrients obtained from food act as vital fuels for human health and energy.

3. EXPLAIN THE CONCEPT OF NUTRIENTS TO THE PARTICIPANTS:

After introducing the concept of nutrition, explain the meaning of nutrients as follows:

- A nutrient is a chemical compound in food that the body uses to function properly and maintain health.
- All foods contain nutrients, though the quantity and type of nutrients vary across different foods.
- Understanding the nutrient composition of foods helps in making dietary choices that support overall health and well-being.

Following this discussion, transition the topic to food groups, which will be dealt with in detail in the subsequent sessions.

4. WHAT ARE THE MAJOR FOOD GROUPS?

- All types of food can be categorized into five basic constituent parts: carbohydrates, proteins, vitamins and minerals, fats and oils, and water.
- Each food group serve distinct functions. For example, carbohydrates and fats supply energy, while proteins contribute to the development of muscles, skin, blood, and bones. Vitamins and minerals are essential for protecting the body against infections and supporting other vital functions.
- A key to maintaining a healthy life is consuming a diversified diet daily, ensuring a balanced intake of essential nutrients.
- Adequate and varied food intake is especially critical for the physical growth and development of children, laying the foundation for good health in adulthood. In Bangladesh, a common issue among children is stunting, resulting from recurrent malnutrition.

Using the food plate and balanced diet poster (Annex 2) along with Table 1, explain the different components of food. Emphasize how each part supports energy, growth, immunity, and overall health, and highlight the importance of including all food groups in daily meals.

- **CARBOHYDRATES:** Also known as energy-producing foods, some common sources include rice, bread, molasses, sugar, potatoes, honey, biscuits, nuts, and coconut. There are also many other sources of carbohydrates as well.
- **PROTEIN:** Proteins are essential for body development, tissue repair, and growth. Key sources include fish, meat, soybeans, pulses, milk, eggs, beans, and liver.
- **VITAMINS AND MINERALS:** These essential nutrients help prevent disease, support immune function, and aid various biochemical processes in the body. Nutrient-rich foods include sweet potatoes, small fish, milk, liver, leafy greens, lemon, carrots, pumpkin, tomatoes, and seasonal fruits like mango, papaya, jackfruit, pineapple, guava, amla, and banana.
- **FATS AND OIL:** Along with carbohydrates, fats provide energy and aid in the absorption of fat-soluble vitamins. They also supply essential fatty acids for cellular and hormonal health. Sources include vegetable oils like soybean, groundnut, mustard, sunflower, and sesame oil, as well as animal fats like butter, cheese, and ghee.
- **WATER:** Water is essential for regulating body temperature and transporting nutrients throughout the body.

CONSTITUENT PARTS OF FOODS AND THEIR FUNCTIONS

Group	What does this do?	Examples of food sources
Carbohydrates	Produce energy in the body to support supporting metabolic processes	Rice, wheat, sugar, suji or semolina , potato, sweet potato, molasses
Proteins	Support body maintenance and promote growth and development	Fish, meat, milk, eggs, pulses, soybean, beans
Fats and oil	Produce energy and support nutritional development	Cooking oil, ghee, butter
Vitamins and minerals	These are necessary to maintain the structure and fitness of the human body and to improve the immune system	Meat, eggs, milk, small fish, sea fish, iodized salt, all types of vegetables and fruits
Water	60-70% percent of the body is composed of water. Water plays a vital role in flushing out unnecessary materials from the body.	Filtered and purified drinking water free from germs or boiled and cooled water

Table 1: Some constituent parts of foods and their functions



Above: A tomato farmer in Pirganj, Rangpur, Bangladesh. Photo : Abdul Momin

5. EVALUATE THE PARTICIPANTS' UNDERSTANDING OF FOOD GROUPS:

Use food cards (Annex 1) for this exercise.

Following up on the food concepts explained earlier, ask the participants:

WHAT FOODS DO YOU CONSUME MOST FREQUENTLY DAILY?

Collect participants' responses and relate their answers to energy-giving foods or sources of carbohydrates.

WHAT DO YOU EAT WITH RICE AND BREAD?

Collect the answers and link the answers to the food groups: proteins, vitamins and minerals, and fats. For example, take cards with pictures of pulses, eggs and fish, and tell the participants that these foods do not only increase the taste of rice, but are also important for both adults and children as they contain proteins, vitamins and minerals.

Select one image from each of the four food groups carbohydrates, proteins, fats and oils, and vitamins and minerals (Annex 1) and position them at each corner of the stove. Encourage participants to guess and list more examples for each category of food.

Assess whether the training participants can identify the functions of those foods. Collect responses and reiterate the correct responses or help the trainees by providing right answers if all the responses are not

accurate. Illustrative explanations for a couple of examples are provided here.

PROTEINS FOR GROWTH AND STRENGTH:

Reiterate to the participants that fish, meat, eggs, milk, beans and pulses are among the sources of protein.

Encourage participants to consider the idea of cultivating pulses and beans on their farms to significantly boost their protein intake.



Pulse



Chicken Meat

VEGETABLES AND FRUITS FOR HEALTH:

Show food cards of vegetables and fruits, explaining that these foods are vital for disease prevention, metabolism, immune support, bone strength, and vision. Highlight that liver, eggs, cheese, and dark green, red, yellow, and orange vegetables, as well as fruits, are rich sources of vitamins and minerals. Stress that inadequate intake of these nutrients can lead to health issues.



Carrot



Dragon Fruit

After conveying this message, suggest to the participants that they may contemplate cultivating more vegetables on their farms.

OILS AND FATS FOR ENERGY: Show food cards of coconut and cooking oil, explaining that oils and fats are concentrated sources of energy that enhance heat and provide fuel for the body. Examples include cooking oil, butter, nuts, ghee, and coconut. The WHO recommends a fat intake of up to 50 grams per day for adults.



Coconut



Edible Oil

6. ORGANIZE A CARD SORTING GAME:

Explain to participants that they'll play a simple game to review the food groups. Divide them into three groups and give each group a set of food cards. Ask them to categorize the cards into carbohydrates, proteins, vitamins, and fats. Offer assistance, if needed.

7. DISCUSSION: LINKING PRODUCTION TO NUTRITION:

After participants have categorized the food cards, guide the discussion toward crop production. Ask them which primary food group they predominantly cultivate. To spark interest in diversifying crops to meet nutritional needs, pose the following questions:

- Which foods do you produce by

yourself? In which seasons do you grow these crops?

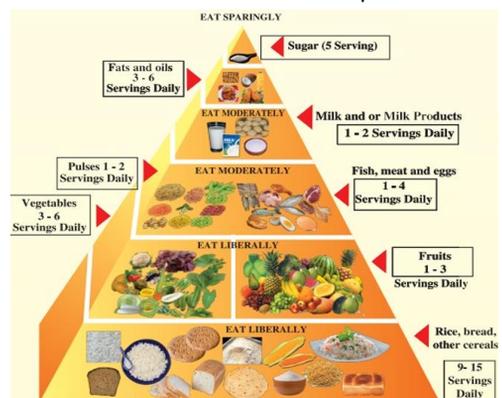
- Which foods do you eat?
- Which foods do you eat but do not grow?
- Which foods do you produce but do not eat?
- Is there a chance to grow new crops needed for your body?

Allocate 10 to 15 minutes for the responses from the participants. Facilitate brainstorming to help them identify at least two new crops feasible for cultivation indicating the major nutrients that can be obtained through those crops.

8. WHAT IS A BALANCED DIET?

Begin by explaining the importance of a balanced diet, then elaborate as follows:

A balanced diet includes foods that provide all the essential nutrients the body needs at different ages and for both genders. It supplies energy, supports growth, and helps prevent diseases. Emphasize that while it's not necessary to consume all nutrients in a single meal, eating a variety of foods throughout the day ensures the body receives the nutrients it requires.



Above: Bangladeshi Food Pyramid; photo: FAO

Explain and emphasize on the key message for balanced diet as follows:

In any meal, fill only 50% of the plate with rice, and allocate the remaining 50% for dal, vegetables, and meat (refer to Annex 2).

Addressing the challenge of consuming a low-cost balanced diet, suggest incorporating inexpensive nutritious food options such as a banana, an egg, a tablespoon of peanuts, a teaspoon of beans or peas or lentils, a few pieces of fish/meat, and a glass of milk at least once a week.

9. CONCEPTS OF FOOD, NUTRITION AND APPLIED NUTRITION:

While these concepts may not be needed for the training participants, it might be useful for the facilitators to know the difference for clarity in the terms used within the context of nutrition.

FOOD:

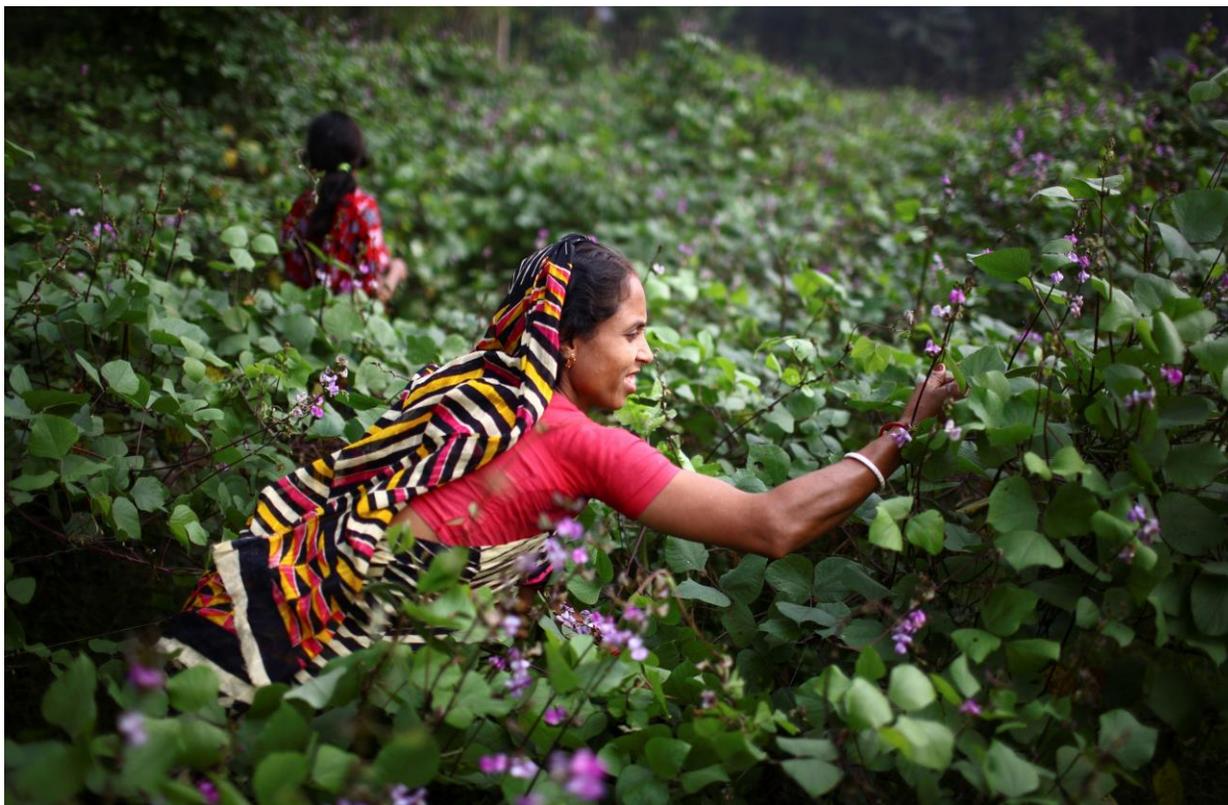
Food contains essential nutrients that support the body's growth and regular functioning. It provides energy for daily activities, aids in tissue repair, supports various bodily functions, and strengthens the immune system.

NUTRITION:

Nutrition is a metabolic process that provides heat and energy by absorbing nutrients from food. It supports body growth and strengthens the immune system.

APPLIED NUTRITION:

Applied nutrition focuses on the relationship between nutrition and the health and well-being of people of all ages. It includes choosing nutritious foods, preparing and cooking food in a healthy way, and consuming a variety of foods.



Above: Woman collecting vegetables, Bangladesh; photo: Panos Pictures

প্রতিদিন এক জন প্রাপ্তবয়স্ক মানুষের কমপক্ষে ৩০০ গ্রাম শাকসবজি ও ১০০ গ্রাম ফল খেতে হবে।

ফলিত পুষ্টি:

পুষ্টি জ্ঞান কাজে লাগিয়ে সঠিক নিয়মে প্রয়োজনীয় পুষ্টিবর্ন খাদ্য গ্রহণ করাকেই ফলিত পুষ্টি বলে। অর্থাৎ ফলিত পুষ্টি কলাতে এমন একটি প্রক্রিয়া বোঝায় যেখানে নিম্নোক্ত চারটি বিষয় সঠিক উপায়ে মেনে চলতে হবে:

- ১। খাদ্য নির্বাচন;
- ২। নির্বাচিত খাদ্য রান্নার জন্য প্রস্তুতকরণ;
- ৩। সঠিক উপায়ে রান্না করা; এবং
- ৪। সঠিক প্রক্রিয়ায় বৈচিত্র্যপূর্ণ খাদ্য গ্রহণ।

বারটানের ধানজান
জানন কস পুষ্টি মান



সঠিক উপায়ে খাদ্য নির্বাচন



শাকসবজি কাটার আগে ধোয়া ও বড় করে কাটা



সঠিক উপায়ে রান্না করা



সঠিক প্রক্রিয়ায় খাদ্য গ্রহণ

খাদ্যের পুষ্টিমান অঙ্কন রাখতে সঠিক রন্ধন পদ্ধতি অনুসরণ



বাংলাদেশ ফলিত পুষ্টি গবেষণা ও প্রশিক্ষণ ইনস্টিটিউট (বারটান)
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SESSION 2: MICRONUTRIENT ELEMENTS: IODINE AND IRON

CONTENTS COVERED:

- Iodine and iron rich foods, their deficiency symptoms and testing
- Testing salt for iodine
- Management of deficiencies, their prevention and control

OBJECTIVE:

- To help participants learn about the importance of iodine and iron, as well as symptoms of their deficiencies and methods of prevention.

MATERIALS:

- Images or samples of open salt and iodized salt from local market
- A lemon
- Two cups of drinking water
- Three sets of food cards
- Picture of persons with goiter (Annex 3)

INTRODUCE MICRONUTRIENTS:

Explain the micronutrients to the participants as follows:

Healthy food comprises essential nutrients, including macronutrients such as carbohydrates and proteins, as well as micronutrients like vitamins and minerals. The term "macro" refers to "big," emphasizing the need for larger quantities of macronutrients, while "micro" denotes "small," underscoring the requirement for smaller amounts of micronutrients that are crucial for optimal bodily function.

Inform the participants that this session will specifically address the importance of micronutrients in maintaining good health. Start the session by stating that the human body needs only small amounts of each nutrient, and a severe deficiency in any specific nutrient can lead to illness. Mild deficiencies are not easily noticeable.

Request the participants to recall their gardens and answer the following questions. Ask the participants:

“What do you use in your garden or on your field to ensure good growth of seeds and plants?”

Collect responses and draw a clear analogy between plant and crop health and human nutrition.

Elaborate the analogy as described here.

The role of micronutrients in the human body is comparable to the function of organic and chemical fertilizers, as well as water, in a garden or cropped field. Proper nourishment is essential for the healthy growth of human bodies, and providing the right foods is akin to supplying the necessary nutrients for optimal development, similar to ensuring proper nourishment of crops for their growth.

After explaining what is meant by micronutrients, ask the participants: “Can anyone name any micronutrient?”

Allow participants to recall appropriate answers from what they know. If the participants need any help, provide options to participants such as Vitamin A, B, C, D, iron, iodine, zinc, and calcium.

Mention that this session will focus on iodine and iron.

IODINE:

1. START WITH DEFICIENCY SYMPTOMS:

Show picture of persons (Annex 3) with goiter.

Ask the training participants: “Do you have or seen anyone with this problem? Do you know the cause for this disorder?”

Explain that the deficiency of iodine in both food and the soil where food is cultivated can lead to the occurrence of goiter. Explain the disease condition as follows:

A **goiter** is a lump or swelling at the front of the neck caused by a swollen thyroid, which is a small gland in the neck that makes hormones. Goiters are not usually serious but should be checked by a general physician.



Above: Goiter patient; photo: Banglapedia

Goiters can be prevented by consuming iodine rich food such as sea food and iodized salt.

Ask the participants: “Have you seen any child who hasn't developed mentally in line with his/her age? Have you investigated the potential reasons for such a condition? Has anyone in his/her family, including parents, displayed similar symptoms? If no, have you wondered what else might have led to this disorder?”

While acknowledging that there may be several causes for mental disorders, assist the participants in learning and being mindful that insufficient iodine in the daily diet of pregnant women can have consequences on the child's well-being.

The child may face an increased risk of mortality, lower intelligence quotient, and/or hearing impairment. These risks persist even if the mother doesn't exhibit goiter and may be unaware of the iodine deficiency in her body.

2. PROVIDE INFORMATION ON IODINE SOURCES:

Show pictures of two types of salt and explain how to test them for iodine content as described below.

Display open salt and iodized salt packets and explain the difference. People require only a small amount of iodine, and the most convenient way to fulfill this need is by purchasing iodized salt. Commonly found open salt in the market may lack iodine, whereas packet salt is usually iodized. Recognizing that salt is a ubiquitous addition to various meals, the government has introduced iodization

to ensure sufficient iodine intake needed by the population.

Iodine may also be found in sea fish and plants and milk. For enough iodine one can eat sea fish every week, if available and affordable.

3. HOW TO TEST IODINE IN SALT?

Demonstrate this simple method for testing iodine in salt:

1. Place four pieces of rice on a small plate or white paper.
2. Add one tablespoon of iodized salt and mix it with the rice.
3. Add a few drops of lemon juice.

If the salt turns violet, it contains iodine. Refer to Figure 1 for a step-by-step illustration.



Above: Nutrition Training at Pirgacha, Rangpur, Bangladesh; photo: Abdul Momin

আপনি সহজে ঘরে বসে লবণে আয়োডিন পরীক্ষা করতে পারেন



এক চা চামচ পরিমাণ লবণ নিন এবং
চামচের উপরের বাড়তি লবণ
আঙ্গুল দিয়ে ফেলে দিন



একটি পরিষ্কার প্লেটে লবণ রাখুন



৫টি ভাতের দানা নিন।
লক্ষ্য রাখুন যেন ৫টির বেশী
ভাতের দানা না হয়



ভাতের দানা লবণের সাথে
ভালভাবে চটকে নিন এবং প্লেটের
মাঝখানে সমানভাবে ছড়িয়ে দিন



লবণ মেশানো ভাতের উপর দু'ফোঁটা
লেবুর রস দিন এবং লক্ষ্য করুন।
যদি লবণের রং বেগুনী হয় তাহলে
আপনার লবণে আয়োডিন আছে

প্রাতিবার লবণ কেনার পর উপরের নিয়মে পরীক্ষা করুন

Figure 1: Steps in testing iodine in salt

IRON:

1. TESTING FOR IRON DEFICIENCY:

Request the participants to examine each other's nails, tongue, gums and inspect the inner side of their eyes. Ask if they are feeling weak or tired. Ask the participants: What does it mean if a person's gums, eyes are pale / white? Why might a person feel weak and tired very often?"

Collect responses to determine if the participants have knowledge or awareness about iron deficiency.

2. PROVIDE TIPS ON IDENTIFYING DEFICIENCY:

Explain iron deficiency as described below.

WHAT IS ANEMIA?

Anemia is the condition of low hemoglobin (a protein in blood that carries oxygen) levels in human body.

Low hemoglobin levels can be caused by iron deficiency, B12 deficiency, and

parasites, and others mentioned further below. Children, adolescents, pregnant women and lactating mothers suffer more from this problem due to lack of necessary food, especially lack of iron-rich foods.

Displaying symptoms such as paleness in the gums, inner eye area, and nails may be indicative of anemia. This condition arises when the body fails to generate an adequate amount of blood to compensate for losses or destruction. Anemia, a significant health concern, often results from insufficient iron levels in the body. Many women may suffer from anemia because of not eating enough iron rich food after menstruation or delivery. If children suffer from frequent or chronic diarrhea, or if they have parasites, they may also be suffering from anemia. As a result, they become weak and tired and may lose appetite. Ankle, foot and swelling of lower parts are usually the signs of anemia.



Above: Iron deficiency symptoms, photo: Mahjabin, BIRTAN

3. DISCUSSION ON POTENTIAL CAUSES FOR IRON DEFICIENCY:

To begin with, ask the participants: “What are the possible causes of anemia?”

Summarizing the responses, explain the reasons as follows:

- Losing blood due to cuts/wounds or menstruation
- Diarrhea or stomach disorders
- Worms or other parasites in the stomach
- Not consuming adequate quantities of iron-rich food.

4. WHAT ARE THE SOURCES OF IRON?

Show examples of iron-rich foods from the food cards. (Annex 1)

SOURCES OF IRON:

ANIMAL-BASED SOURCES:

Some examples for animal-based sources of iron are meat, fish, and liver. Iron from animal sources is easily absorbed by human body compared to that from plant sources.

PLANT-BASED SOURCES:

Some of the examples for iron-rich plant-based foods are sweet potato spinach, arum spinach, red amaranth, spinach, sweet pumpkin spinach, moringa leaves, coriander leaves, cauliflower leaves, dates, watermelon, ripe tamarind, and molasses.



Above: Vegetable market, photo: Edmund Lowey

Explain to the participants that the best way to consume iron-rich foods is by pairing them with vitamin C-rich foods, as vitamin C serves as a catalyst in the absorption of iron. Examples of foods high in vitamin C include lemon juice, green chili, guava, amla, hog plum, and coriander leaves.

Conclude the session by prompting participants to consider cultivating iron-rich leafy vegetables, emphasizing positive health outcomes. Encourage the participants to do crop budgeting for different leafy vegetables to understand the potential economic gains.

Session 3: Micronutrient components: Vitamin A and Zinc

CONTENTS COVERED:

- Micronutrients: vitamin A and zinc
- Foods that contain these elements
- Deficiency symptoms and testing, management, prevention and control

OBJECTIVE:

- To assist the trainees in understanding and discussing the causes of vitamin A and zinc deficiency, its signs and symptoms, as well as foods that are rich in vitamin A and zinc.

MATERIALS:

- Poster paper, crayon / color pencils (yellow, orange, dark green)

VITAMIN A:

1. DRAWING VEGETABLES:

Inform the participants that they will learn about vitamin A and zinc during this session. To make it more engaging, start the session with drawing activity. Request the participants to divide themselves into four groups of five persons each. Give each team a paper and a crayon / pencil to everyone. Ask them to discuss in their groups and draw pictures of fruits and vegetables that are bright in color.

Inquire within the group about individuals cultivating those vegetables either on their farms or in their home gardens. Ask if they have any idea on the nutrients in orange, yellow and dark green vegetables and fruits.



Sweet pumpkin

2. INTRODUCE DEFICIENCY SYMPTOMS:

Ask the participants: “Do you know any visually impaired child under the age of five? Can you identify the cause of this disorder?”

Listen to the responses and provide additional information as described in the next sections.

3. PROVIDE INFORMATION ON IMPORTANCE OF VITAMIN A:

Vitamin A deficiency is a leading cause of blindness in children. Initially, affected children may have trouble seeing in low-light conditions, followed by the development of dryness in the eyes. Subsequently, the white part of the eyes loses its natural luster, and grayish clusters may appear within the eyeball. As the disease progresses, severe cases can lead to blindness in children.

Vitamin A is essential for strengthening the body's immune system to combat diseases and infections caused by germs. Children who do not receive an adequate amount of vitamin A are more susceptible to illness, and their recovery can be challenging.

Explain the sources of vitamin A, both animal-based, and plant-based, as detailed below.

Explain that the absorption of vitamin A is facilitated when vitamin A rich foods are cooked with fat. For instance, adding two to three tablespoons of edible oil while cooking spinach, pumpkin, or sweet potatoes enhances the body's ability to absorb vitamin A. After communicating this message, mention the following health alert.

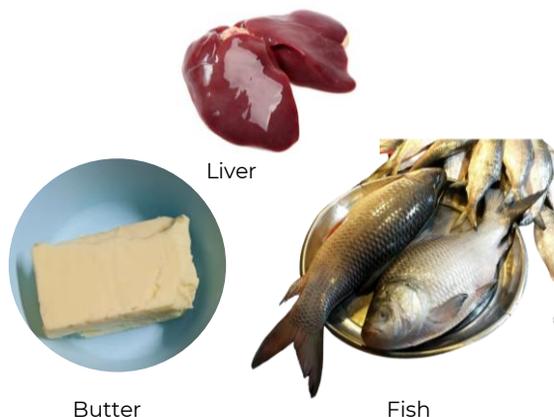
HEALTH ALERT: Using more than two to three tablespoons of cooking oil per person per day is not advisable as it may lead to high cholesterol and other ailments eventually.

SOURCES OF VITAMIN A:

ANIMAL-BASED SOURCES:

Show images from Annex 5. Some of the animal sources that supply vitamin A to human body are goat liver, cow

liver, chicken liver, duck liver, egg yolk, small fish, especially 'Mola' fish with head, fish oil, butter, cheese, among many other foods. Vitamin A from animal sources is absorbed rapidly in human body.



PLANT-BASED SOURCES:

Some examples of plant-based vitamin A sources are ripe jackfruit, ripe mango, ripe papaya, pumpkin, carrot, sweet potato, sweet potato with orange flesh, curry leaves, radish leaves, spinach, coriander leaves, ceylon spinach, water spinach, moringa leaves, red amaranth, jute spinach, thankuni leaves, mint leaves, among many others.



4. TEAMWORK TO IDENTIFY VITAMIN A DEFICIENCY:

Encourage the group to discuss the reasons why adults and children may experience vitamin A deficiency. Explain the causes as follows:

POTENTIAL CAUSES OF VITAMIN A DEFICIENCY IN CHILDREN:

- Mother might have stopped breastfeeding the baby.
- The child might have recently suffered from diarrhea, measles or pneumonia.
- The child is not usually fed with vitamin A rich foods such as yellow / orange vegetables and fruits, dark green vegetables, meat, eggs, and liver.

POTENTIAL CAUSES OF VITAMIN A DEFICIENCY IN ADULTS:

The person is unaware of the health benefits and does not pay attention to incorporating vitamin A -rich foods such as yellow / orange vegetables and fruits, dark green vegetables, meat, eggs, or liver into his/her diet.

SYMPTOMS OF VITAMIN A DEFICIENCY IN ADULTS:

Explain vitamin A deficiency symptoms in adults as described here.

In adults, severe deficiency of vitamin A causes night blindness, which means having trouble seeing in dim or dark settings. In its more severe forms, vitamin A deficiency can lead to total blindness by causing excessive dryness of the two most crucial parts of the human eye, cornea (transparent tissue that protects the eye) and retina (captures and reflects visual images).

Display the poster on vitamin A rich foods (Annex 6) and encourage the group to carefully review the need for adding them into their diets more frequently.

Connecting the session with the crops grown, inquire with the training participants if they would consider cultivating vitamin A-rich vegetables and fruits in their farms.



Above: Bangladeshi woman farmer cultivating pumpkin; photo: G.M.B.Akash, PANOS

ZINC:

Firstly, explain the sources of zinc to the participants. Subsequently, discuss zinc deficiency, its prevention, and possible remedies.

1. PROVIDE INFORMATION ON ZINC SOURCES:

Explain that zinc is a mineral needed in small quantities. Pregnant women and young children are more likely to suffer from zinc deficiency and the symptoms are not easily identifiable.

Some of the sources of zinc (Annex 7) are fish, meat, liver, egg, grains with husk, pulses, nuts and rice husked by local machine called 'Dheki', and bio-fortified rice.

For more information to the training participants about bio-fortified rice, provide details given below about the international agriculture research centers working on biofortification of rice.

The [International Rice Research Institute \(IRRI\)](#) is developing high-iron and high-zinc rice through transgenic and conventional breeding approaches as a novel, food-based approach to complement current interventions in Bangladesh that aim to alleviate iron and zinc deficiencies.

[International Maize and Wheat Improvement Center \(CIMMYT\)](#)'s work on [Zinc rice improved linear growth](#) in Bangladeshi children under three years old, which may contribute to reducing stunting and its attributable impact on cognitive and physical performance.

After explaining what zinc rice is and how it contributes to zinc supplementation, inquire if any of the participants is interested in growing zinc rice. Provide additional information given in table 2 on zinc rice varieties available for cultivation.

2. Discussion on zinc deficiency and its prevention:

Explain to the participants the problems resulting from zinc deficiency as follows.

- Normal growth of the body is impeded.
- Children are prone to diarrhea more often.
- Bone maturity might be hindered.
- Zinc deficiency can result in skin changes resembling dry skin and acute hair loss as well.

Consumption of zinc-rich foods such as fish, meat, liver, egg, grains with husk, pulses, nuts and zinc rice might help in preventing zinc deficiency that usually goes unnoticed.



Fish



Liver

SEASON	VARIETY
Aman	BRR1 dhan62, BRR1 dhan72, BINA dhan20
Boro	BRR1 dhan100, BRR1 dhan102

Table 2: Zinc rice varieties

SESSION 4: BREASTFEEDING AND ADDITIONAL FOOD SUPPLEMENTS FOR CHILDREN

CONTENTS COVERED:

- Importance of breastfeeding
- Additional food supplements for children
- The first 1,000 days
- The malnutrition cycle

MATERIALS:

Poster paper and marker pens/

White board and marker pens

OBJECTIVE:

To help the participants understand the importance of breastfeeding and identify the benefits of additional food to children.

1. WHY BREAST FEEDING?

Ask participants what they understand about breastfeeding and clarify that exclusive breastfeeding means providing the infants with breast milk alone, without introducing even a drop of water, until they reach the age of six months.

With the help of the points enlisted below, explain that both mother and baby will be benefited by feeding babies with breast milk.



Above: Bangladeshi children having food; photo: C. de Bode/CGIAR

2. HOW IS THE MOTHER BENEFITED?

- Breastfeeding in the first hour helps provide colostrum to the newborn. Colostrum is the first milk rich in antibodies.
- Breastfeeding can reduce the mother's risk of breast and ovarian cancer, type 2 diabetes, and high blood pressure. For more information, refer to [Centers for Disease Control and Prevention](#).

3. HOW IS THE BABY BENEFITED?

- As per [International Federation of Gynecology and Obstetrics](#), breastfeeding also helps prevent newborn infections such as pneumonia and diarrhoea, thereby reducing the risk of neonatal mortality.

Breast milk provides critical nutrients that support growth and immune development during infancy. For more information, refer to [Breast Milk, a Source of Beneficial Microbes and Associated Benefits for Infant Health - PMC \(nih.gov\)](#)

4. WHAT ARE ADDITIONAL FOODS?

Ask the participants: “Why introduce additional foods to babies if they are being breastfed and are growing well?”

In Bangladesh, major challenge in the child development is ‘stunting’, which is a result of recurrent malnutrition in the growing period. To manage this, it is needed to introduce additional foods.



Above: A girl child enjoying her snack; photo: Adam Cohn, IFPRI

Facilitate the discussion and explain their responses as follows:

- Starting additional foods, also known as complementary foods along with breastfeeding ensures growing baby's necessary nutritional needs and prevents stunting. Complementary foods are the additional foods to breast milk, and are a combination of various foods, mainly vitamin A and iron rich foods, which are needed for a child's proper growth.
- Complementary foods are necessary to meet approximately one-quarter to one half of the child's nutritional needs from six to 12 months of life and two thirds from 12 to 24 months of life.

For more information, refer to [International Special Dietary Foods Industry](#).

Explain the need for complementary foods as follows.

- After six months of birth, children need nutrient dense foods (figure 2) along with breastfeeding, firstly to grow and become more resilient, secondly for mental development.
- As children grow older, their diets can transition from liquid to semi-solid to thick or solid state.
- Cook the complementary foods thoroughly in well cleaned cooking pots and close the container with a properly fitting lid.

5. SOME RECOMMENDATIONS OF COMPLEMENTARY FOODS:

Explain that World Health Organization(WHO) has provided some recommendations on age-appropriate complementary food to ensure children's proper nutrition and growth. Table 3 on the next page presents the quantities of complementary foods. For more information, refer to [WHO](#).

Write the recommendations of complementary foods (Table 3) on a poster paper or white board with a marker pen.

If there are any mothers and fathers in the group with children under 24 months of age, ask them to explain what they understood from the information presented.



Above: Mother feeding her children; photo: Finn thilsted

Age of children	Recommended daily feeding frequency (main meal & snacks)	Expected daily energy requirement from the age specific complementary food	Quantity of complementary food (according to locally used pot)
6-8 months	2-3 times	200 kilocalories	Half bowl (125 ml) semi solid food for two times a day
9-11 months	3-4 times	300 kilocalories	Half bowl (125 ml) solid/ semi solid food for 3 times and healthy snacks for one to two times a day
12-24 months	3-4 times	550 kilocalories	A bowl (250 ml) solid/ semi solid food for three times and healthy snacks for one to two times a day

Table 3: Age-appropriate recommended daily diet for children

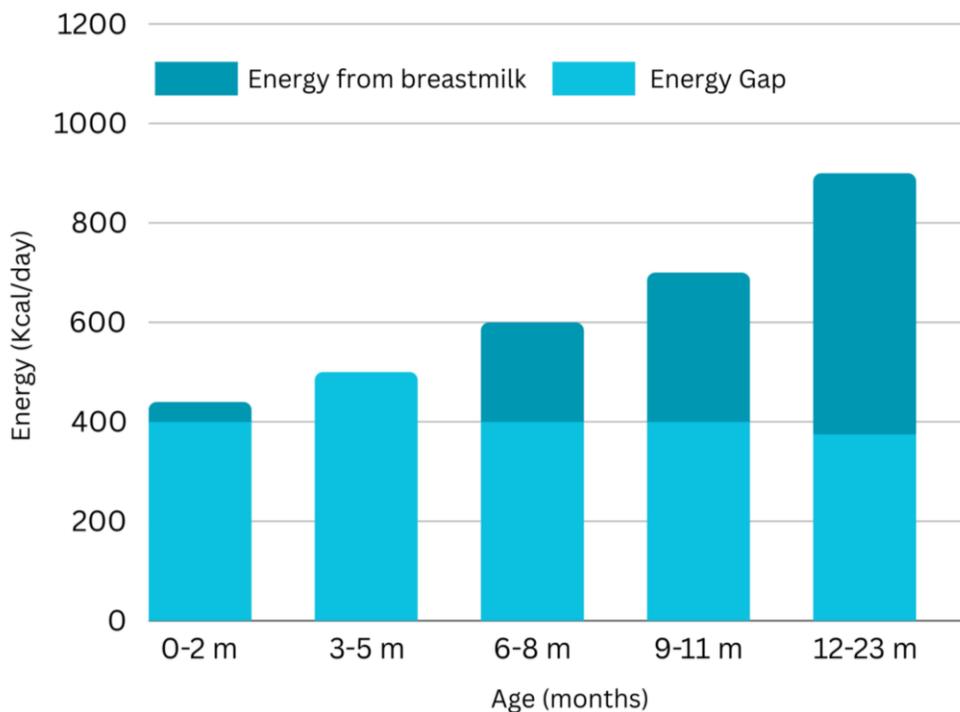


Figure 2 : Energy required by age of the child; photo: [Complementary feeding - Infant and Young Child Feeding - NCBI Bookshelf \(nih.gov\)](#)

SESSION 5: NUTRITIONAL CARE FOR WOMEN

CONTENTS COVERED:

Nutritional care for pregnant women and lactating mothers, adolescent girls, minimum dietary diversity for women and children

OBJECTIVE:

To help the participants comprehend the nutritional care needed for adolescent girls, pregnant women and lactating mothers.

1. INTRODUCTION:

Discuss why adolescent girls, pregnant women, and lactating mothers need special nutritional care.

Ask the participants: “Why do adolescent girls, pregnant women, and lactating mothers need additional food?”

After collecting the responses, explain the malnutrition cycle from figure 3.

Discuss the nutritional needs of women with support from the explanation below.

2. WHY IS A WOMAN'S NUTRITIONAL CARE IMPORTANT:

- Women, especially those of reproductive age, need diets with higher nutrient density compared to men.
- If a special care is not taken on their nutrition, it makes them vulnerable to micronutrient deficiencies, which impair women's health and the health of their children.
- In some settings, women may be disadvantaged in the intra-household distribution of nutrient-dense foods (for example, animal-source foods).



Above: Smiling Bangladeshi adolescent girl in her maize field; photo: PANOS Pictures

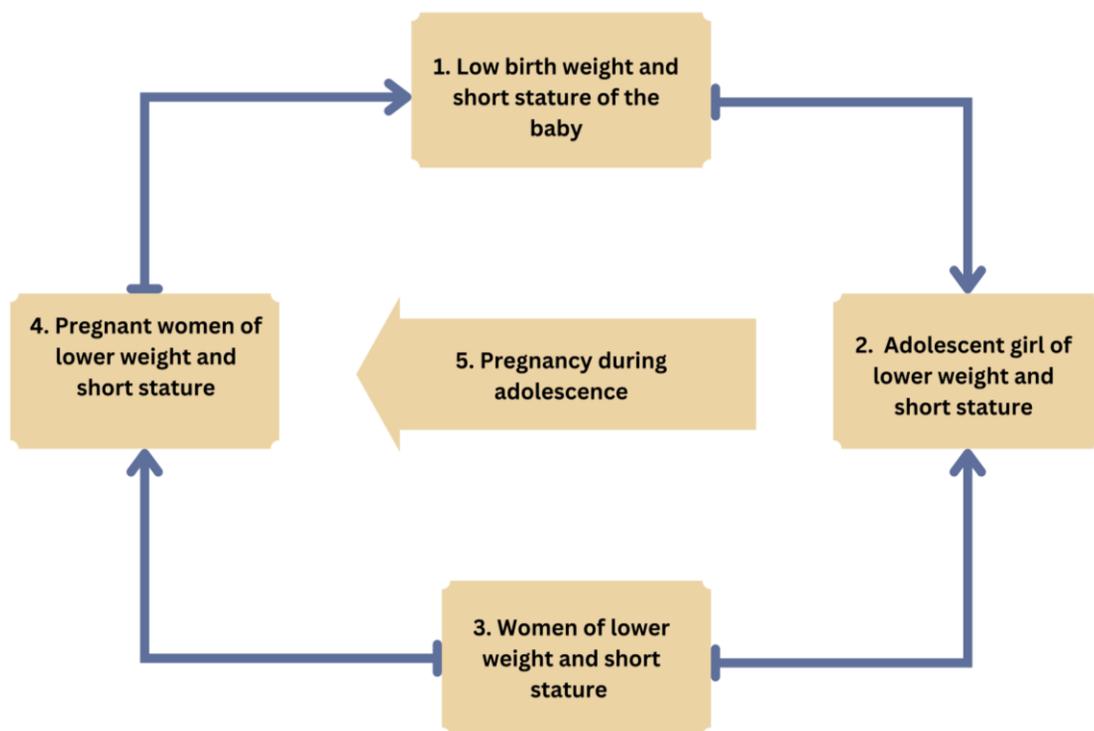


Figure 3: Malnutrition cycle

3. TEAM WORK ON NUTRITIONAL NEEDS:

To facilitate the team activity, first, verify if the participants can discuss the nutritional needs of women based on what they have learned about food groups and their functions. Continue with the group work if the participants are prepared, otherwise explain the contents as mentioned in the following sections on nutritional care for adolescent girls, pregnant women and lactating mothers.

Follow these suggested steps if you are facilitating the group work.

- Ask the participants to divide themselves into three teams randomly.

- Inform the participants that the first team will discuss adolescent girls' nutritional care, second team will discuss on nutritious care for pregnant women and the third team will discuss nutritional care for lactating mothers.
- Give each team ten minutes to discuss their respective topics. Inform the training participants that when the time is up, each team member should share at least one point discussed in their groups.

After the participants report back, elaborate on the points as detailed below for adolescent girls, pregnant women and lactating mothers explaining the malnutrition cycle (figure 3).

4. NUTRITIONAL CARE FOR ADOLESCENT GIRLS:

The adolescent period for girls spans from the ages of 10 to 19, during which their physical and mental growth accelerates. Adequate nutrition is crucial during this phase to ensure proper development. Failure to meet these nutritional needs may lead to interruptions in both physical and mental growth, manifesting in various symptoms of malnutrition.

Additionally, girls typically experience the onset of menstruation between the ages of 12-13, and insufficient intake of iron-rich foods during this time can result in various problems associated with iron deficiency.

- Adolescent girls should be encouraged to consume iron-rich foods (refer to session 2 and Annex 1 for sources) and vitamin A enriched foods (refer to session 3 and Annex 6 for sources)
- Explain to the training participants that everyone, not just adolescent girls, should consider incorporating vitamin C-rich foods such as olives, sour fruits, guava, and green peppers into their daily diet for an immunity boost.
- Explain that taking iodine enriched foods is important to meet the iodine requirement. Refer to session 2.
- Encourage parents to eliminate any discrimination and ensure equal opportunities and rights for their girl children over consuming adequate quantities of nutritious food.

5. NUTRITIONAL CARE FOR PREGNANT WOMEN:

- Emphasize that pregnant women should consume an additional handful of nutritious food each day and suggest that they include more proteins in their diet. Refer to session 1 for sources of protein.
- Explain to the participants that they should encourage pregnant women in their families, friends and relatives to include vitamin A-rich foods in their diet as its demand increases during pregnancy. Refer to session 3 for sources.
- Suggest that Vitamin C rich foods such as lemon, guava, amla, green chili, need to be a part of pregnant woman's daily diets to boost her immunity.
- Advise the training participants to educate pregnant women about the importance of using oil in cooking, recommending not more than 30 ml per day per person. Emphasize the caution that excessive oil consumption can lead to serious health disorders, including heart, liver, and intestinal ailments.
- Additionally, inform that the pregnant women need to follow the specific advice provided by health workers.

5. NUTRITIONAL CARE FOR LACTATING WOMEN:

Continuing the general discussion on crucial nutrients, their functions, deficiency symptoms, and preventive measures, incorporate the following points for new mothers.

- Lactating mothers should include a variety of nutritional foods in their diet, such as eggs, milk, fish, meat, pulses, and a range of colorful vegetables and fruits (including green, yellow, and orange varieties).

6. WHAT IS MINIMUM DIETARY DIVERSITY (MDD) FOR CHILDREN AND WOMEN?

After providing advice on the nutritional needs for women, it is important for the facilitators to explain to the training participants the minimum dietary diversity for children and women.

Minimum Dietary Diversity (MDD) means consumption of at least recommended minimum number of food groups from the list.

Explain to the participants that from the list of eight food groups provided, parents should ensure that their children consume items from at least five food groups in a day.

WHAT ARE THE EIGHT FOOD GROUPS FOR MINIMUM DIETARY DIVERSITY FOR CHILDREN:

1. Breast milk
2. Grains, roots and tubers
3. Beans, peas, lentils, nuts and seeds
4. Dairy products
5. Flesh foods
6. Eggs

7. Vitamin A- rich fruits and vegetables
8. Other fruits and vegetables

Source: [Minimum Dietary Diversity \(MDD-IYCF\) | INDDEX Project \(tufts.edu\)](https://www.tufts.edu/inddex)

In the case of women, from the list of 10 food groups provided, they should consume items from at least five food groups in a day.

WHAT ARE THE 10 DEFINED GROUPS OF MINIMUM DIETARY DIVERSITY FOR WOMEN:

1. Grains, white roots and tubers, and plantains
2. Pulses
3. Nuts and seeds
4. Dairy
5. Meat, poultry and fish
6. Eggs
7. Dark green leafy vegetables
8. Other vitamin A- rich fruits and vegetables
9. Other vegetables
10. Other fruits

Source: [Minimum Dietary Diversity for Women \(MDD-W\) | INDDEX Project \(tufts.edu\)](https://www.tufts.edu/inddex)

Explain to the participants that the critical phase of a human being's development is 'the first 1,000 days'.

WHAT ARE 'THE FIRST 1,000 DAYS'?

The first 1,000 days of reproductive stage are a time of tremendous potential and enormous vulnerability. This is because the first 1,000 days are when a child's brain begins to grow and develop and when the foundations for their lifelong health are built.

গর্ভবতী ও দুগ্ধদানকারী মায়ের যথাযথ ও পর্যাপ্ত পুষ্টি নিশ্চিত করলে কার্যকর ওজন নিয়ে শিশু জন্মগ্রহণ করে।

সোনালী ১০০০ দিন:

একজন মা যখন গর্ভবতী হন সেই দিন থেকে শিশুর জন্মের ২ বছর পর্যন্ত সময়কালকে সোনালী ১০০০ দিন বলা হয়। কারণ, এই সময়ই শিশুর শারীরিক বৃদ্ধির পাশাপাশি মস্তিষ্কের/ব্রেন এর বেশীর ভাগ বৃদ্ধি সম্পন্ন হয়। তাই এসময় গর্ভবতী, প্রসূতি মা এবং শিশুকে পর্যাপ্ত পুষ্টি সরবরাহ দিতে হবে।

বাংলাদেশের খাদ্যজ্ঞান
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Figure 4: The first 1,000 days

This period consists of 270 days in the mother's womb and 730 days in the first two years after birth. Please refer to figure 4 for details.

SESSION 6: SAFE AND HEALTHY COOKING FOR CONSUMPTION

CONTENTS COVERED:

What is safe food, healthy methods of cooking, clean and healthy preservation techniques, maintaining food quality, five keys to safer food, cross contamination of food, removing pesticide residues from food items

OBJECTIVES:

- To discuss and help the training participants understand good and not-so-good food preparing processes.

- To highlight the importance of good cooking practices in maintaining the nutritional value of food.
- To help the trainees examine the outcomes of consuming unsafe food and offer guidance on minimizing pesticide residues on fruits and vegetables.

1. INTRODUCTION TO SAFE FOOD:

Announce to the participants that this session focuses on the consumption of safe and risk-free food. The principles of safe food consumption involve careful collection, processing, preservation, and consumption of food in a hygienic and secure manner to minimize the potential risks associated with diseases and contamination by harmful germs.

2. STORY TELLING:

Explain to the participants that you will share a story. Ask them to listen attentively and raise their hands when they identify someone in the story doing something unsafe or risky.. Make this session interactive and when someone stops you, ask other trainees to explain what went wrong in the narrated story.

The story: On a sunny day following the cessation of rain, Abida was returning from her garden with a full basket of freshly harvested vegetables. Accompanying her was her son, Shiraj, carrying a sizable gourd. Abida suggested, "Let's head home and prepare a delightful meal."

In the kitchen, a hen was playfully exploring the pots and pans. Abida, using the sound "Chu," shooed it away. Setting aside the basket, Abida took the gourd from Shiraj and suggested, "Let's cut the gourd." As they began slicing the gourd with a knife, Shiraj, holding a slice in his hand, exclaimed, "This slice is quite large." He then savored the aroma and quickly licked it. Abida collected the slices in a dish and placed it beside her.

Next, Abida retrieved some onions from the basket. However, as she commenced cutting the onions, the pungency triggered a reaction, and she began to sneeze, exclaiming, "Heccho!" With a slight smile, she swiftly cleaned her nose using a part of her dress called 'achol'.

As hunger overcame Shiraj's patience, Abida, gesturing, directed him to indulge in some rice that had been cooked the previous day. The rice was

elegantly arranged on a floral-patterned dish. Shiraj eagerly took a spoonful from the dish placed on the floor and devoured it with enthusiasm.

Simultaneously frying onions, Abida expertly sliced some eggplants. The combination of these ingredients, along with the rice and vegetables, promised a delicious khichuri in the making. The enticing aroma of the fried onions permeated the kitchen. Shiraj, having finished his meal, had his mouth wiped clean by Abida using her 'achol'. Abida then carefully placed the pot of hotchpotch on the stove. A quick glance at the water jar revealed a meager amount, prompting her to realize she needed to go to the pond to collect more water.

Ask the participants: During cutting, slicing, sorting, cooking, conserving, what should Abida be doing to keep the food safe and clean?

ADVISE THE PARTICIPANTS AS FOLLOWS:

- Wash hands with clean water and soap before touching food.
- Thoroughly wash raw or pre-cooked foods before consumption.
- Wash vegetables before cutting them.
- Cover food to protect it from flies and other disease-spreading insects.
- Boil food thoroughly to eliminate germs.
- Heat up previously cooked food to a temperature of at least 100°C.
- Use safe and clean water, as well as clean dishes, knives, and spoons in cooking.

- Avoid placing food containers on the floor or ground to prevent dust and dirt contamination.
- Cover your face when sneezing or coughing to prevent the spread of germs.²

3. DISCUSSION ON IMPORTANCE OF SAFE FOOD:

Ask the participants: “Why is taking safe food important?”

Summing their responses, facilitate the probable answers as follows:

FOR DISEASE PREVENTION:

- Effective food handling practices aim at controlling the spread of diseases through food, ensuring the safety and well-being of consumers.

FOR LONGEVITY ENHANCEMENT:

Proper food handling contributes to the increased longevity of food, maintaining its quality, nutritional value, and safety over an extended period.

Building on the discourse around safe and clean food, engage in a conversation about strategies to minimize food wastage across the production-to-consumption continuum.

Before delving into the topic, encourage participants to share their experiences with food losses, both on the farm and during the marketing process.

Offer participants guidance on minimizing food wastage with the following advice:

4. HOW TO MINIMIZE FOOD WASTAGE:

- Adhering to proper food handling procedures not only reduces food wastage but also optimizes resource utilization and promotes sustainability in the food value chain.
- Follow appropriate handling techniques at farm level to minimize food losses at production and marketing levels.
- Embracing both traditional and modern food preservation methods, such as drying, fermenting, or processing, can effectively extend the shelf life of perishable items, contributing to a substantial reduction in food wastage.



Above: Bangladeshi rural woman preparing vegetables for cooking food; photo: Md.Sazzad Ali

5. REVIEW THE MESSAGES ON COOKING PROCESSES AND CONSUMPTION OF SAFE FOOD:

Discuss the obstacles of food related cleanliness and give advice about how to prevent them.

Summarize the key messages as follows.

COOKING PRACTICES THAT ARE ENCOURAGED:

- Wash hands, cooking pots, and pans with soap and clean water before cooking.
- Before chopping, wash fruits and vegetables with safe water. Refer to next section for washing techniques.
- Cook rice with appropriate amount of water. Cooking in excess water and straining the cooked rice leads to loss of vitamins and minerals.
- Chop the vegetables into big pieces to preserve the nutrients. Do not cook in excess water and discard the stock. Vitamins B and C will be lost with the discarded water.
- Cover the cooking pots while cooking to avoid food contamination with germs.
- Cook at moderate temperature and for a short time. High temperatures exacerbate nutrient losses through evaporation, particularly vitamins B and C.
- Cooked and stored meat should be boiled again before serving to ensure the germs in the stored food are killed.

Continuing the topic of safe food, transition into food preservation.

BEST PRACTICES FOR FOOD PRESERVATION AND CONSUMPTION:

- Foods should be preserved in clean and covered pots to safeguard them from external contaminants.
- Consume cooked food as early as possible after preparation to ensure optimal freshness and nutritional value.
- If food has been stored for an extended period, warm it thoroughly before consumption to prevent the proliferation of harmful germs.
- Uncooked animal-based foods such as fish, meat, and chicken should be kept away from cooked food to prevent contamination.
- Iodized salt should be stored in an air-tight glass jar or plastic jar and should be kept away from sunlight.
- Chemicals such as fertilizers, insecticides and pesticides used in the farms should be kept away from the kitchen and children.

6. CONDUCT QUIZ ON COOKING PRACTICES:

For a quick recap on good practices, conduct a quiz activity. Assist participants in understanding the competition format. Explain the rules as follows:

There will be two groups of participants. The team that provides the correct answer will earn a point. If any team chooses to answer but fails, the other team will gain a point.

Divide the participants into two teams: **A and B.**

Ask the two teams to take questions on rotation. After every answer, discuss the answers shortly to help everyone understand what is right and what is not.

Sample questions are provided in table 4.

QUESTIONS	ANSWER
What happens if vegetables are boiled with a lot of water and the extra water is discarded?	Boiling vegetables with excess water and discarding the extra water can lead to nutrient loss, as water-soluble vitamins and minerals may leach into the cooking water.
What happens if vegetables are boiled for long time at high temperature?	Vitamins and minerals in the vegetables evaporate with water if boiled at high temperature.
What is the best way to chop vegetables for cooking?	Slicing vegetables into big pieces helps in minimizing the losses of nutrients.
What happens if the fresh vegetables and fruits are eaten without washing them?	There might be a risk of getting harmed by germs and chemical residues on the vegetables and fruits.
What happens if cooked meat is just reheated instead of being boiled?	There might be a risk of food poisoning due to germs developing in the food during the storage time.
Why is it important to wash hands with soap before touching food?	Washing hands with soap will help avoid the germs on the hands from contaminating the food.
How can you protect food from harmful germs and prevent resulting wastage?	Food can be protected by covering the food containers with appropriate lids.
What should be added to spinach while cooking it to enhance iron absorption in the body?	Vitamin C rich foods such as lemon juice or tamarind extract or raw mango can be added to enhance the absorption of iron in spinach.
Why is it important to eat food as early as possible after cooking?	It is important to consume food as early as possible after cooking because nutrition value decreases with the time the food is stored, and the risk of contamination increases.
How to minimize loss of vitamins and minerals while cooking rice?	Nutrients can be retained in the cooked rice by cooking rice with the appropriate amount of water needed.

Table 4: Sample questions for the game on cooking practices

7. HOW TO WASH OFF PESTICIDE RESIDUES FROM VEGETABLES AND FRUITS :

Initiate an open discussion on how the participants ensure their vegetables and fruits are safe from pesticide residues. Inform them that the Government of Bangladesh has published some techniques for removing pesticide residues from vegetables and fruits, which are explained below:

- Pesticide residues can be removed by washing vegetables and fruits in running water and cleaning them well with hand at least for a minute.
- Immersion of fruits and vegetables in salt water significantly reduces pesticide residues. Mix two teaspoons of table salt in a liter of water and soak vegetables and fruits for 15 minutes to cut down at least 30-80 % of residues.
- At least 50% of the pesticide residues can be removed by peeling fruits and vegetables in applicable cases.
- Cooking vegetables at moderate temperatures can remove pesticide residues.
- For more information and details, refer to [Agriculture Information Service](#) portal to download the joint publication of Entomology division, Bangladesh Agricultural Research Institute (BARI) and Agriculture Information Service(AIS) under Government of Bangladesh.

TRAINING SUMMARY AND CONCLUSION :

- Display the poster (Annex 4) and review the key messages from all six sessions.
- Conduct pre-training evaluation before starting the first session and repeat the same questions for post-training evaluation after sixth session. The questionnaire is available as Annex 7.

INFORMATION SOURCE:

This module has been prepared based on the adoption of the national guidelines on Infant and Young Child Feeding (IYCF), IYCF job aids, and national TOT (Training of Trainers) modules on nutrition, all of which were formulated by the Ministry of Health and Family Welfare. The 'Transfer Modality Research Initiative'(TMRI) study module also contributed to its development. A technical committee was established to validate these modules, including representatives from the National Nutrition Services, the Institute of Public Health and Nutrition, the Bangladesh Institute of Research and Training on Applied Nutrition (BIRTAN), and other key stakeholders.

REFERENCES:

Chung, K. (2012). *An introduction to nutrition-agriculture linkages* (MINAG/DE Research Report 72E). Directorate of Economics, Ministry of Agriculture, Maputo, Mozambique.

Hoddinott, J. (2011). Agriculture, health, and nutrition: Toward conceptualizing the linkages.

IFPRI. (2011). *Leveraging agriculture for improving health and nutrition: Highlights from an international conference*. Washington, DC: International Food Policy Research Institute.

Leveraging Agriculture for Improving Nutrition and Health. (2020). *Conference paper 2*.

Transfer Modality Research Initiative (TMRI), IFPRI.

World Health Organization. (n.d.). *Infant and young child feeding* [Fact sheet].

Guidelines for Complementary Feeding in Bangladesh. (2013, June).

Infant and young child feeding: A sensitization module.



Above: Low-cost balanced diet. photo: Bharathi Parupalli

ANNEX 1: FOOD CARDS:

Print each image on a thick A4 paper

CARBOHYDRATES



RICE



SUGAR



Molasses/Jaggery

**ANNEX 1: FOOD CARDS:
CARBOHYDRATES**



Potato

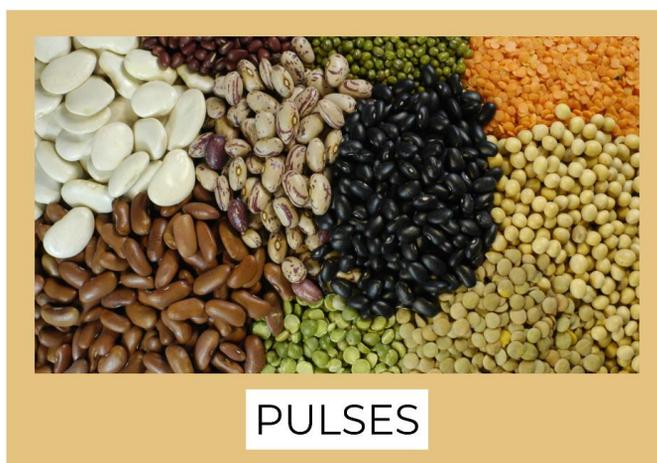
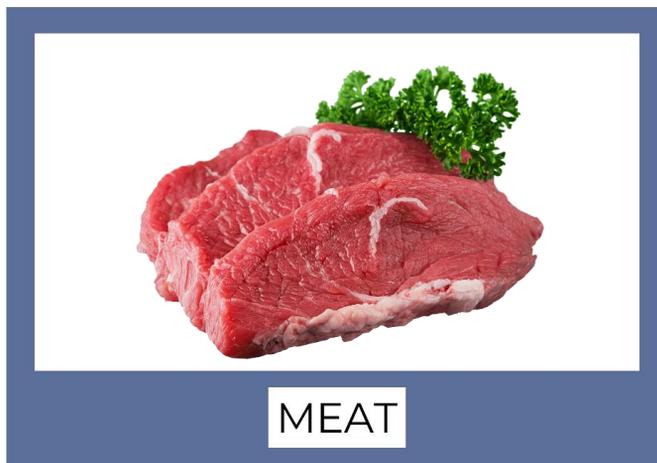


Maize



WHEAT

**ANNEX 1: FOOD CARDS:
PROTEINS**



**ANNEX 1: FOOD CARDS:
PROTEINS**



FISH



EGGS



BEANS

**ANNEX 1: FOOD CARDS:
VITAMINS AND MINERALS**



DATES

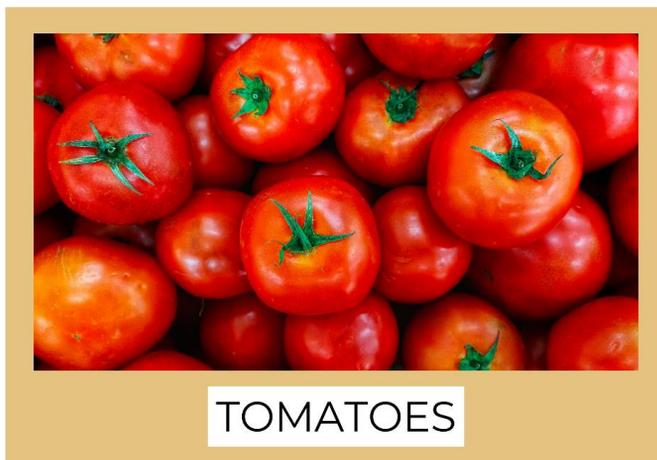


LEAFY VEGETABLES



GUAVA

**ANNEX 1: FOOD CARDS:
VITAMINS AND MINERALS**



**ANNEX 1: FOOD CARDS:
VITAMINS AND MINERALS**



LEMON



BANANA



CAULIFLOWER

**ANNEX 1: FOOD CARDS:
VITAMINS AND MINERALS**



RIPE MANGOES

FATS AND OILS



COCONUT



COOKING OIL

ANNEX 1: FOOD CARDS:

FATS AND OILS



BUTTER



GHEE

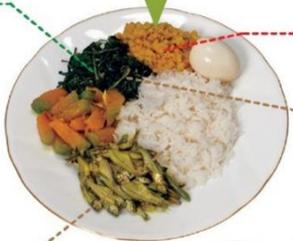
ANNEX 2: FOOD PLATE AND BALANCED DIET

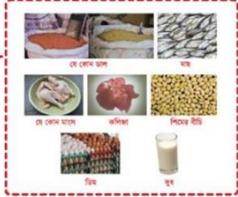


বাড়ীর আশেপাশে অথবা কম দামেই পাওয়া যায় পরিবারের জন্য পুষ্টির খাবার

প্রতিদিন প্রতি রঙের স্তর থেকে যেকোনো একটি খাবার খেতেই হবে













আয়েডিনের অভাবে

- কলকত (যক্ষণ) হয়
- শার্টিক ও ফাটলকভাবে বিকলাঙ্গ শিশুর জন্ম হতে পারে
- পাতের শিক মায়াল থেকে পারে

আইসি পরিবারের সবাইকে প্রতিদিন আয়োডিনযুক্ত লবণ খেতে হবে








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ANNEX 3: GOITER

আয়োডিনের অভাবজনিত লক্ষণ



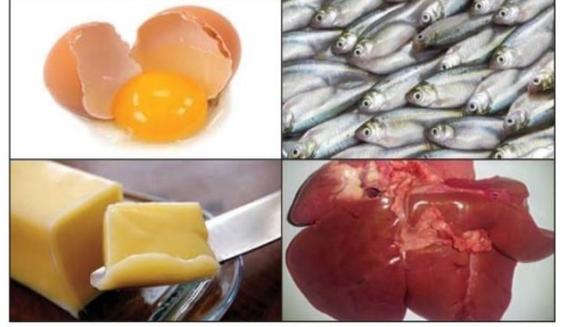
ছবি: গলগন্ড ও মানসিক প্রতিবন্ধী

ANNEX 5: IRON RICH FOODS

ভিটামিন- এ চর্বিতে বা তেলে দ্রবনীয় ভিটামিনগুলোর মধ্যে একটি অন্যতম ভিটামিন যা শরীরের জন্য অত্যন্ত গুরুত্বপূর্ণ ।

ভিটামিন-এ এর উৎস:

প্রাণিজ উৎস: সব ধরনের কলিজা, ডিমের কুসুম, ছোট মাছ বিশেষ করে মাথাসহ মলা মাছ, মাছের তৈল, মাখন, পনির ইত্যাদি । প্রাণিজ উৎস থেকে ভিটামিন এ গ্রহণ করলে তা আমাদের শরীরে দ্রুত শোষিত হয় ।



ছবি: ভিটামিন-এ'র প্রাণিজ উৎস

উদ্ভিজ্জ উৎস:

পাকা কাঁঠাল, পাকা আম, পাকা পেঁপে, গাজর, মিষ্টি কুমড়া, কমলা শাঁসযুক্ত মিষ্টি আলু, কমলা শাঁসযুক্ত মিষ্টি আলুর শাক, কচু শাক, মূলা শাক, হেলেধগা শাক, ধনে পাতা, পুঁই শাক, কলমি শাক, সজনে শাক, লাল শাক, পাট শাক, পালং শাক, খানকুনি পাতা, পুদিনা পাতা ইত্যাদি



ছবি: ভিটামিন-এ'র উদ্ভিজ্জ উৎস

ANNEX 6: ZINC RICH FOODS

জিংক সমৃদ্ধ খাদ্য

(প্রতি ১০০ গ্রাম হিসাবে)



মিষ্টি কুমড়ার বীজ
(১.১১ মিলিগ্রাম)



কাষু বাদাম
(০.৭৬ মিলিগ্রাম)



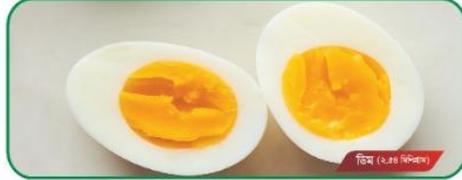
বিক্রম মাংস
(০.৫৯ মিলিগ্রাম)



ডিম্বাদাম
(০.৩৬ মিলিগ্রাম)



আখরোটি
(০.৩৬ মিলিগ্রাম)



ডিম (০.৩১ মিলিগ্রাম)



মুরগীর মাংস
(১.০৬ মিলিগ্রাম)



মসুর ডাল
(১.১২ মিলিগ্রাম)



কই মাছ
(১.০৬ মিলিগ্রাম)



কাঠি বাদাম
(১.০৬ মিলিগ্রাম)



পাশপুস
(১.১৬ মিলিগ্রাম)



দই (০.৫৫ মিলিগ্রাম)

উৎস: খুঁট বংশোদ্ভূত ট্রেসিং-২০১০
সিডেন্স কুঁট বংশোদ্ভূত ট্রেসিং-২০১৭

রোগ প্রতিরোধ ক্ষমতা বৃদ্ধি এবং দ্রুত সুস্থতার জন্য প্রতিদিন জিংক সমৃদ্ধ খাদ্য গ্রহণ করতে হবে।



বাংলাদেশ ফলিত পুষ্টি গবেষণা ও প্রশিক্ষণ ইনস্টিটিউট (বারটান)
কৃষি মন্ত্রণালয়



বিশনন্দী, আড়াইহাজার, নারায়ণগঞ্জ।

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Annex 7: TRAINING EVALUATION QUESTIONNAIRE

Pre and post training evaluation questionnaire

নাম:

স্বামী/স্বরীর নাম:

গ্রাম:

জেলা:

উপজেলা:

ইউনিয়ন:

১। কোন ধরনের খাবার আমাদের প্রতিদিন খাওয়া উচিত?

- ক) তাপ ও শক্তিদারক খাবার।
- খ) শরীর গঠন ও ক্ষয় পূরণ কারী খাবার।
- গ) রোগ প্রতি রোধী খাবার।
- ঘ) উপরের সব গুলো।
- ঙ) অন্যান্য হলে নাম লিখ....
- চ) জানি না।

২। কোন ধরনের খাবারে ভিটামিন এ বেশি পাওয়া যায়?

- ক) গাড় সবুজ পাতা জাতীয় সবজি।
- খ) মিষ্টি কুমড়া, গাজর ও অন্যান্য হলুদ সবজি।
- গ) পাকা পেঁপে, পাকা আম অন্যান্য হলুদ ফল।
- ঘ) ডিম।
- ঙ) ছোট মাছ।
- চ) কলিজা।
- ছ) হলুদ মিষ্টি আলু।
- জ) উপরের সবগুলো(৬) অন্যান্য নাম লিখুন.....

৩। কোন খাবার গুলোতে আয়রণ বেশি পাওয়া যায়?

- ক) ডিম।
- খ) মাছ।
- গ) শুটকি মাছ।
- ঘ) মাংস।
- ঞ) লাল শাক।
- ট) কচু শাক।
- ঠ) পালং শাক।
- ড) দুর্দা শাক।

ত) কালোজাম।

ণ) ভাত।

৪। আয়োডিনের প্রধান উৎসগুলো কি কি?

- ক) সামুদ্রিক মাছ।
- খ) আয়োডিন যুক্ত লবণ।
- গ) ভাত।
- ঘ) ডাল।

০৫। শিশু জন্মের কতক্ষনের মাঝে শিশুকে মায়ের শালদুধ খাওয়াতে হবে?

- ক) ৩০ মিনিট।
- খ) ১ ঘন্টা।
- গ) ২ ঘন্টা।
- ঘ) ১ দিন।

০৬। শিশুর বয়স কত মাস পূর্ণ হলে পরিপূরক খাবার শুরু করতে হবে?

- ক) ৮ মাস।
- খ) ৫ মাস।
- গ) ৬ মাস।
- ঘ) ৭ মাস।

০৭। একজন পূর্ণ বয়স্ক লোকের দৈনিক কত লিটার পানি পান করা প্রয়োজন?

- ক) প্রায় ১ লিটার।
- খ) প্রায় ২ লিটার।
- গ) প্রায় ৩ লিটার।
- ঘ) প্রায় ১.৫-৩.৫ লিটার।

Annex 7: TRAINING EVALUATION QUESTIONNAIRE

০৮। জিংক সমৃদ্ধ খাবার গুলো কি কি?

ক) মাছ।

খ) মাংস।

গ) ডিম।

ঘ) ডাল।

ঙ) বাদাম।

চ) ঢেঁকি চাটা চাল।

ছ) অন্যান্য হলে নাম লিখ...

ঞ) জানি না।

৯। শাকসব্জী হতে আয়রন পেতে হলে কোন ভিটামিন টি প্রয়োজন হয়?

ক) ভিটামিন-এ

খ) ভিটামিন-সি

গ) ভিটামিন-ডি

ঘ) ভিটামিন-বি

১০। রান্নার সময় ভাতের মাড় ফেলে দিলে কি হয়?

ক) ভিটামিন ও মিনারেল কমে যায়।

খ) ভিটামিন কমে যায়।

গ) মিনারেল কমে যায়।

ঙ) কোন কিছুই কমে না।

চ) অন্যান্য।

ছ) জানি না।

১১। শাক সবজি কখন ধোয়া উচিত?

ক) কাটার আগে।

খ) কাটার পরে।

গ) জানি না।

১২। কখন কখন হাত ধোয়া প্রয়োজন বলে আপনি মনে করেন?

ক) খাবার তৈরীর পূর্বে।

খ) খাবার গ্রহণের পূর্বে।

গ) খাবার গ্রহণের পর।

ঘ) শিশুকে খাওয়ানোর আগে।

ঙ) শিশুর মলমূত্র পরিষ্কারের পর।

চ) মলমূত্র ত্যাগের পর।

ছ) উপরের সব গুলো।

জ) কখনোই না।

ঞ) জানি না।

১৩। একজন অপুষ্টিতে ভুগছেন এমন মা সাধারণত কম ওজনের একটি শিশুকে প্রসব করবেন আপনার কি মনে হয় এই কথাটি –

ক) সত্যি।

খ) মিথ্যা।

১৪। একটি ছেলে শিশুর একটি মেয়ে শিশুর চেয়ে প্রতিদিন বেশি খাবারের প্রয়োজন / প্রতিদিনের খাবার তালিকায় একটি ছেলে শিশুর একটি মেয়ে শিশুর চেয়ে বেশি পুষ্টিকর খাবার রাখা প্রয়োজন। আপনার কি মনে হয় এই কথাটি –

ক) সত্যি।

খ) মিথ্যা।

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ABOUT TAFSSA

TAFSSA (Transforming Agrifood Systems in South Asia) is a CGIAR Regional Integrated Initiative that supports actions improving equitable access to sustainable healthy diets, that boosts farmers' livelihoods and resilience, and that conserves land, air, and water resources in a climate crisis.

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