

REPUBLIC OF KENYA



MINISTRY OF AGRICULTURE
MINISTRY OF PUBLIC HEALTH AND SANITATION

APPLIED BASIC AGRI-NUTRITION RESOURCE TOOLKIT FOR TRAINERS



USAID
FROM THE AMERICAN PEOPLE

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CHART NUMBER 1

WHAT IS APPLIED NUTRITION?



SELECT



PREPARE



COOK



HEALTH

CHART NUMBER 1

WHAT IS APPLIED NUTRITION?

Trainers note: Ask the participants, “What do you think is applied nutrition?”

It is what you **‘select’** to eat, how you **‘prepare’** the food, and how you **‘cook’** the food.

SELECT:

Select a variety of foods from each of the following groups: starches (carbohydrates), fruits and vegetables, proteins, fats and oils, salt and sugar, and water.

- **Starches (Carbohydrates):** Select a variety of carbohydrates throughout the day including roots, tubers, grains, legumes, and pulses. Make starchy foods the basis of most meals.
- **Fruits and Vegetables:** Select a variety of fruit and vegetables. Include at least five different colors. You will be eating necessary vitamins and minerals to maintain a healthy body.
- **Proteins:** Select a variety of protein from both animal and plant sources. Each week select proteins from sources such as beans, lentils, fish, chicken, beef, goat, rabbit, and eggs.
- **Fats and Oils:** These are necessary for the body to function, but should be used in small quantities.
- **Salt and Sugar:** Reduce your intake of salt and sugar.
- **Water:** Consume at least eight glasses of water daily.

PREPARE:

- Wash your hands. Attend to personal hygiene before preparing food.
- Use only well washed utensils and cooking vessels.
- Wash fruit and vegetables in clean, safe water very well to remove all dirt that may cause diarrhea or gastric upset (vomiting).
- Only remove skin off fruit and vegetables if necessary or inedible.
- Wash and chop leafy greens just before cooking, as this will retain the most nutrients.
- If you need to chop leafy green vegetables, make sure you do not chop the vegetable too finely, as this will also reduce the nutrient retention when cooking.
- Pre-soak legumes and pulses to release nutrients and save on fuel since soaked legumes and pulses take a shorter time to cook.

COOK:

- Ensure animal products are well-cooked to avoid food-borne infections (i.e. diarrhea).
- Avoid over-cooking vegetables, as this will increase the nutrient loss.
- Only cook vegetables just before meal times to retain as many nutrients as possible. The longer cooked vegetables sit in water, the more nutrients are lost.
- Use alternative food cooking methods to make meals interesting and ensure diets contains sufficient nutrients. Cover food that requires long periods of cooking to retain nutrients and save energy.

CHART NUMBER 2

BENEFITS OF HEALTHY EATING



Healthy Food



Improved Performance

Healthy Family



Improved Productivity



CHART NUMBER 2

BENEFITS OF HEALTHY EATING

Eating the right quantities and variety of foods will improve the health of your body and mind.

Improved Studies:

- Children grow and develop in a healthy way.
- Health of your children will result in better performance in their studies.

Improved Productivity:

- Eating healthy will enable you to physically work harder and make positive decisions, which will lead to making more money.

Healthy Family:

- The possibility of family members becoming ill is reduced when eating a balanced diet; thus, less money is spent on medical costs.
- Spending less on medical costs means you have more money to buy healthy food for the family.

CHART NUMBER 3

THE HEALTHY EATING PYRAMID



CHART NUMBER 3**THE HEALTHY EATING PYRAMID****WATER**

- Drink at least eight glasses of clean, safe water daily.

STARCHES: 6 – 11 servings each day

- Starches (carbohydrates) provide the body with energy, vitamins, and minerals.
- Keeps the body warm and working well.

VEGETABLES: 3 – 5 servings each day**FRUITS: 2 – 4 servings each day**

- Both are low in fat and rich in fiber.
- High in vitamins and minerals, which strengthens the body's immune system.

ANIMAL AND PLANT PROTEINS: 2 – 4 servings each day

- Helps build and repair body tissue, including muscles.
- Provides vitamins and minerals for body systems to function.
- Milk, yogurt, and cheese (two - three servings each day) provide proteins, vitamins, and minerals.

FATS, OILS, SALT, AND SUGAR

- They are necessary, but should be eaten in moderation.
- Provide mostly energy.
- Large amounts of these foods will cause a nutritional imbalance in the body.
- These foods can cause health issues such as Diabetes Type 2, obesity, hypertension (blood pressure), and some cancers.

CHART NUMBER 4

THE EFFECTS OF POOR NUTRITION

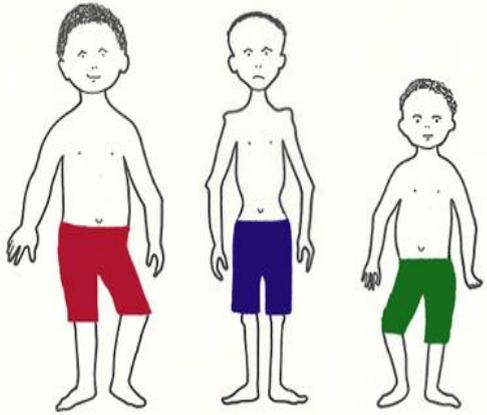
	<p>Wasting occurs from not eating enough food containing essential nutrients for the body to develop. Extreme losses of fat and bone density to the body. Causes organ failure, bone breakage, and heart failure.</p>												
 <table border="0" data-bbox="143 1198 718 1265"> <tr> <td>Wasted</td> <td>No</td> <td>Yes</td> <td>No</td> </tr> <tr> <td>Stunted</td> <td>No</td> <td>No</td> <td>Yes</td> </tr> <tr> <td>Underweight</td> <td>No</td> <td>Yes</td> <td>Yes</td> </tr> </table>	Wasted	No	Yes	No	Stunted	No	No	Yes	Underweight	No	Yes	Yes	<p>Stunted growth is from babies not being exclusively breastfed for the first six months and from not receiving adequate nutrients for growth and development after six months.</p> <p><i>All of the children pictured to the left are 7 years old.</i></p>
Wasted	No	Yes	No										
Stunted	No	No	Yes										
Underweight	No	Yes	Yes										
	<p>Frequent sickness can occur from not eating adequate foods containing a variety of vitamins and minerals.</p>												
	<p>Rickets can happen by not receiving adequate, calcium, Vitamin D, and other important nutrients for the body to develop. Causes abnormal bone formation while children are still growing.</p>												

CHART NUMBER 4

THE EFFECTS OF POOR NUTRITION

- **WASTING** occurs from not eating enough food containing essential nutrients for the body to develop.
 - Extreme losses of fat and bone density to the body.
 - Causes organ failure, bone breakage and heart failure.
- **Stunted growth** is from babies not being exclusively breastfed for the first six months of life and from not receiving adequate nutrients for growth and development after six months.
 - All of the children in the picture are 7 years old.
- **Frequent sickness** can occur from not eating adequate foods containing a variety of vitamins and minerals.
- **Rickets** can happen from not receiving adequate, calcium, Vitamin D and other important nutrients for the body to develop.
 - Causes abnormal bone formation while children are still growing.

CHART NUMBER 5

THE EFFECTS OF POOR NUTRITION

 <p>Vitamin A deficiency complicated by measles (Rubeola)</p>	<p>Blindness can result from not receiving adequate Vitamin A.</p>
	<p>Obesity is from eating too much high fat, processed foods and carbohydrates, coupled with a lack of physical activity. Increases risk for Diabetes Type 2, heart disease, high blood pressure, and some cancers.</p>
	<p>Skin infections are from not receiving enough of the Vitamin B group. Causes the body not to be able to repair damaged skin due to infections or cuts.</p>
	<p>Heart disease occurs from having too much cholesterol from fatty foods and carbohydrates or from a genetic problem with the heart. Causes heart attack and stroke.</p>

CHART NUMBER 5

THE EFFECTS OF POOR NUTRITION

- **Blindness** can result from not receiving adequate Vitamin A.
- **Obesity** is from eating too much high fat, processed foods and carbohydrates, coupled with a lack of physical activity.
 - Increases risk for Diabetes Type 2, heart disease, high blood pressure, and some cancers.
- **Skin infections** are from not receiving enough of the Vitamin B group.
 - Causes the body not to be able to repair damaged skin due to infections or cuts.
- **Heart disease** occurs from having too much cholesterol from fatty foods and carbohydrates or from a genetic problem with the heart.
 - Causes heart attack and stroke.

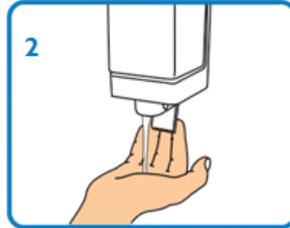
CHART NUMBER 6

BASIC HYGIENE GUIDELINES

Hand-washing technique with soap and water*.



1
Wet hands with water



2
Apply enough soap to cover all hand surfaces



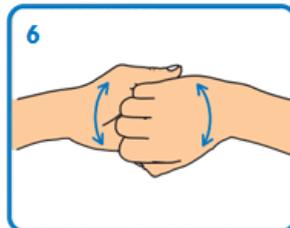
3
Rub hands palm to palm



4
Rub back of each hand with palm of other hand with fingers interlaced



5
Rub palm to palm with fingers interlaced



6
Rub with back of fingers to opposing palms with fingers interlocked



7
Rub each thumb clasped in opposite hand using a rotational movement



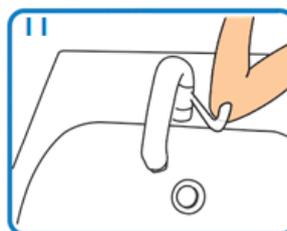
8
Rub tips of fingers in opposite palm in a circular motion



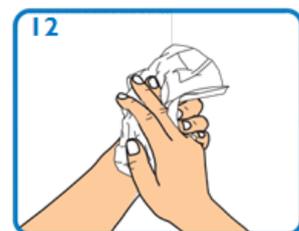
9
Rub each wrist with opposite hand



10
Rinse hands with water



11
Use elbow to turn off tap



12
Dry thoroughly with a single-use towel

*Adapted from World Health Organization (WHO) Guidelines on Hand Hygiene in Health Care

CHART NUMBER 6

BASIC HYGIENE GUIDELINES

- Wash hands after visiting the toilet, blowing your nose, brushing hair, or touching your body.
- Wash hands between food preparation tasks.
- Wash hands when coming from the farm.
- Wash hands after handling animals.
- Wash raw foods thoroughly. Fruits and vegetables contain harmful dirt, fertilizers, and pesticides.
- Avoid unnecessary human contact and over-handling of food. Use spoons or other utensils.
- Prepare raw and cooked food separately; use separate chopping boards and utensils where possible. This prevents cross contamination, or transferring micro-organisms from contaminated food to uncontaminated food (by hands, utensils, or storage).
- Wash cooking equipment with soap and clean water before and after use and when preparing different foods using the same equipment.
- Never eat while preparing food.
- Minimize time food is at unsafe temperatures during preparation.

CHART NUMBER 7

BEST METHODS FOR COOKING FOOD TO RETAIN NUTRIENTS



STEAMING UTENSILS



STEAMING



SAUTEING



BOILING

CHART NUMBER 7

BEST METHODS FOR COOKING FOOD TO RETAIN NUTRIENTS

- **Steaming:** A quick method of cooking that retains the color, flavor, and nutritional value of food. It is a fat-free, healthy method.

Trainer note: Demonstrate how to steam vegetables using the colander with a leafy green vegetable sitting in it over the sufuria and a lid placed on top.

- **Sautéing:** A quick method of cooking that requires only a very small amount of oil, fat, or even water. Vegetables only require partial cooking before being consumed. Nutritional value of vegetables remains particularly high. No nutrients are being lost in the discarded liquid.
- **Boiling:** Root vegetables are placed into cold water and then brought to boil. The vegetables cook more evenly. Rice and flour for Ugali are placed into water that is already boiling. This sets the starch and stops the food from sticking together or lumping.
- **Blanching:** Green, leafy vegetables are placed in boiling water. This reduces the loss of color and nutrition.

CHART NUMBER 8**TOOLS TO USE WHEN MEASURING SERVING AMOUNTS**

Cup 	2 Servings 250 grams
Tub 	2 Servings 250 grams

CHART NUMBER 8

TOOLS TO USE WHEN MEASURING SERVING AMOUNTS

Use this guide to help measure out the serving sizes of each of the food groups.

- One cup measure = 2 servings
- One tub measure = 2 servings

Trainers note: Ask the participants, “Which measurement would you use in your home?”

CHART NUMBER 9

SERVING SIZE RECOMMENDATIONS: CEREALS, GRAINS, TUBER, & ROOTS

Each day eat 3 – 5 cups (6-11 servings) of cooked cereals, grains, tubers, or roots.



250 grams = 2 servings



CHART NUMBER 9**SERVING SIZE RECOMMENDATIONS:
CEREALS, GRAINS, TUBER, & ROOTS**

Select a variety of these products to eat each day to provide your body with energy. Try to eat wholemeal grains when possible for fiber to keep your body regular.

- Rice
- Arrowroot
- Cassava
- Wheat
- Potato
- Millet
- Sorghum
- Sweet potato
- Maize

CHART NUMBER 10

SERVING SIZE RECOMMENDATIONS: VEGETABLES & FRUIT

Each day eat 1.5 – 2.5 cups (3-5 servings) of cooked or 3-5 cups of raw chopped vegetables.



250 grams = 2 servings



CHART NUMBER 10**SERVING SIZE RECOMMENDATIONS: VEGETABLES & FRUIT**

Vegetables are rich in vitamins and minerals to help maintain a healthy body.

- Select at least five different colors of vegetables each day to receive a variety of vitamins and minerals.
- Children from 6 to 8 months of age should have mashed vegetables.
- Children from 9 to 23 months of age should have finely chopped or mashed vegetables.
- Children from 24 months to 3 years old should have chopped vegetables.

CHART NUMBER 11

FRUITS

Each day eat 1-2 cups (2-4 servings) of chopped or whole fruit.



250 grams = 2 servings

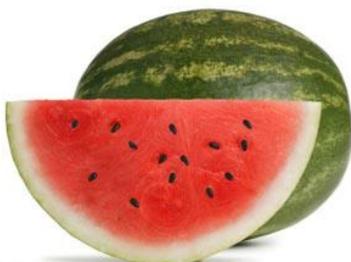
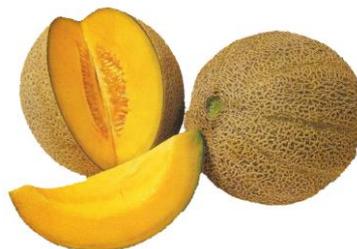


CHART NUMBER 11

FRUITS

Each day eat 1-2 cups of chopped or whole fruit.

- Fruits are rich in essential vitamins and minerals to help maintain a healthy body.
- Select at least two varieties of fresh fruit daily.
- Eat fruit with the skin where possible. The skin contains nutrients and fiber to improve digestion.
- Wash the fruit well before eating to avoid contamination.

CHART NUMBER 12

RAW FOODS

Eat raw foods often.

One serving or portion is equivalent to ½ cup fruit or cooked vegetables and 1 cup raw vegetables.



CHART NUMBER 12

RAW FOODS

Eat raw foods often.

One serving or portion is equivalent to ½ cup fruit or cooked vegetables and 1 cup raw vegetables.

Raw fruits and vegetables contain high levels of nutrients that have not been destroyed by heat. The health benefits of eating raw foods are:

- Increased energy
- Clear skin
- Reduced risk of illness and disease

Foods that can be eaten may include:

- All fruits
- Tomato
- Salad lettuce
- Carrot
- Capsicum
- Onion
- Cabbage
- Cucumber
- Carrots

CHART NUMBER 13

ANIMAL AND PLANT PROTIEN

Each day eat 80g-120g (1/3-1/2) cup servings of animal protein or 1-2 cups of plant protein (2-4 servings).



250 grams = 2 servings

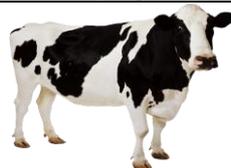
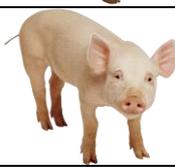
Animal Protein	Plant Protein
	
	
	
	
	
	
	
	

CHART NUMBER 13

ANIMAL AND PLANT PROTIEN

Each day eat 80g-120g (1/3-1/2) cup servings of animal protein or 1-2 cups of plant protein (2-4 servings).

PROTEIN CAN COME FROM TWO SOURCES: ANIMALS OR PLANTS.
ANIMAL PROTEINS INCLUDE:

- Fish
- Chicken
- Beef
- Mutton
- Goat
- Pork
- Rabbit
- Eggs
- Insects
- Offal (e.g matumbo, intestines, heart, lungs, liver, kidney, tongue)

When cooking animal protein, avoid deep-frying, as this will reduce the amount of nutrients. Use small amounts of oil and cook well; for tougher meats, add to liquid and boil gently until tender.

PLANT PROTEIN

ENSURE THAT BEANS ARE SOAKED FOR SEVERAL HOURS BEFORE COOKING TO HELP RELEASE NUTRIENTS AND SHORTEN COOKING TIME.

PLANT PROTEINS INCLUDE:

- red beans
- green grams
- cow peas
- soya beans
- peanuts
- cashews
- pigeon peas
- black bean

CHART NUMBER 14

SERVING SIZE RECOMMENDATIONS: DAIRY PRODUCTS

Each day take 2 cups of dairy



YOGURT

CHART NUMBER 14**SERVING SIZE RECOMMENDATIONS: DAIRY PRODUCTS**

Dairy foods are rich in calcium, which helps with bone and teeth development and strengthening. Calcium also aids in the prevention of Osteoporosis (breaking bones) in old age.

Dairy includes:

- Milk – cow, goat, and camel
- Yogurt
- Fermented milk

CHART NUMBER 15

FATS AND OILS

Reduce your intake of saturated fats and oils to one spoonful each day



Choose fats and oils that have this fortification logo:



CHART NUMBER 15

FATS AND OILS

REDUCE YOUR INTAKE OF FAT.

DO NOT EAT MORE THAN ONE SPOONFULL OF FAT EACH DAY.

Too much fat and oil can lead to:

- Obesity
- Heart disease
- Diabetes Type 2
- Some cancers
- Hypertension

WHEN SELECTING FATS AND OILS, TRY TO CHOOSE THOSE THAT HAVE BEEN FORTIFIED WITH NUTRIENTS.

Fats and oils include:

- Butter
- Margarines
- Cooking oils both vegetable and animal
- Vegetable shortening

Trainers note: Use a dessert spoon and pour oil into it to demonstrate exactly how much fats and oils should be taken daily.

CHART NUMBER 16

SUGAR AND SALT

Reduce your intake of sugar.



Reduce your intake of salt.



CHART NUMBER 16**SUGAR AND SALT****HIGH LEVELS OF SUGAR CAN INCREASE RISK OF ILLNESS, SUCH AS:**

- Diabetes Type 2
- Obesity
- Heart disease
- Dental caries
- Depression

The maximum recommended daily intake of sugar (including sugar contained in foods and drinks i.e, cakes, biscuits, mandazis, juices, sugar in tea) should be the following: for Women- 6 teaspoons daily, Men – 9 teaspoons daily, and Children – 3 teaspoons daily. Sugar intake should be no more than 10 percent of dietary energy.

HIGH LEVELS OF SALT CAN INCREASE RISK OF ILLNESS, SUCH AS:

- High blood pressure
- Heart disease

The recommended daily intake for salt should not exceed 5g.

Trainers note: Measure exactly one teaspoon salt to show how much should be taken each day.

CHART NUMBER 17

WATER

Drink at least eight glasses of clean, safe water each day, which is the same as 2 liters.

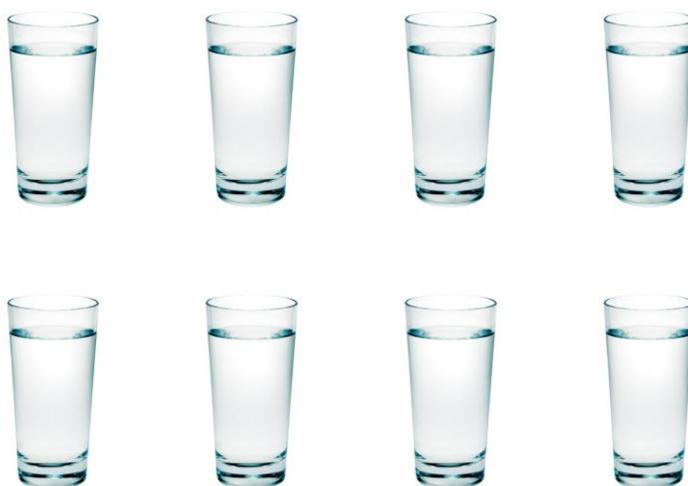


CHART NUMBER 17**WATER**

Drinking at least eight glasses of clean, safe water each day, which is the same as 2 liters of water, has the following benefits:

- Breaks down the solid foods you eat.
- Help nutrients move through your digestive tract and into your bloodstream.
- The nutrients move throughout your body to nourish muscles, tissues, and organs.
- Helps with bowel movements and removing waste and toxins.

You can make your water safe by boiling or treatment.

CHART NUMBER 18**BREASTFEEDING****BABIES SHOULD BE EXCLUSIVELY BREASTFED FOR THE FIRST 6 MONTHS**

<p>0 – 6 months</p>  <p><i>Courtesy: Let's Talk Breastfeeding, Kenya</i></p>	<p>Give only breast milk, no other foods or liquids.</p>
<p>6 months – 8 months</p> 	<p>Complementary foods are needed, such as thick liquid or well mashed food. Breastfeeding should still provide half or more of daily food.</p>
<p>9 months – 11 months</p> 	<p>One third of the child's food should be breast milk. Finely chopped or mashed foods.</p>
<p>12 months – 23 months</p> 	<p>Family food chopped or mashed if necessary, plus breast milk.</p>

CHART NUMBER 18

BREASTFEEDING

Babies should be exclusively breastfed for the first 6 months.

- The baby receives 100 percent of its nutritional requirements from breast milk in the first 6 months.
- Breastfeeding reduces the risk of illness, especially diarrhea and respiratory infections.
- Stimulates growth.
- Breastfeeding contributes to food security for the infant.

CHART NUMBER 19

VALUE ADDITION THROUGH PROCESSING AND ITS IMPORTANCE



CHART NUMBER 19

VALUE ADDITION THROUGH PROCESSING AND ITS IMPORTANCE

Adding highly nutritious foods to your everyday meals will help add important vitamins and minerals to your diet.

Some examples are:

- Amaranth flour
- Sweet potato flour
- Sorghum flour
- Moringa powder and leaves
- Cassava flour
- Pumpkin flour and seeds
- Banana flour



When purchasing food products from the market, look for the Kenyan Food Fortification logo.