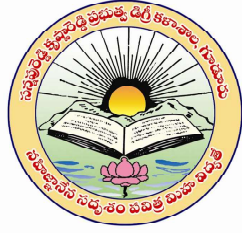


FOOD AND NUTRITION



*Community Service project submitted to
SKR Govt. Degree College, Gudur*

DEPARTMENT OF ZOOLOGY

By

I & II BSC -MZC STUDENTS

MENTOR

Dr. K. SIVA PRASAD

Lecturer in Zoology

**DEPARTMENT OF ZOOLOGY
SKR GOVT DEGREE COLLEGE, GUDUR**

JUNE 2022

**Commissionerate of Collegiate Education , Government of Andhra Pradesh
SKR GOVT DEGREE COLLEGE, GUDUR, TIRUPATHI DT. AP.**

Format - II Community Service Project (CSP) - Weekly Progress Report by Lecturer

Sno	Zone	District	College Name	Details of the Lecturer / Mentor Allotted for Community Service Project			Student details							Details of the Community Service Project (CSP)			Weekly Feedback by the Lecturer / Mentor on execution of CSP				Link of CSP Report
				Name	Subject	Type of Lecturer	Regd. No.	Name	Year	Gender	Mobile Number	Program studying (BA/B.Com/ B.Sc etc.,)	Program Combination	Name of the CSP	Place - Village/Ward	Mandal / Municipality	Week-1	Week-2	Week-3	Week-4	
1	III	TIRUPATHI	SKR GDC GUDUR	Dr. K. Sivaprasad	Zoology	Regular-DR	203129012	P. Vijaya kumar	2	Male	7794830745	BSc	MZC	Food and Nutrition	Gudur	Municipality	Data collection	Data collection	Compilation of data	Project Preparation and submission	http://skrgdcgudur.ac.in/
							213129008	A. Yaswanth	1	Male	7093298253	BSC	MZC	Food and Nutrition	Gudur	Municipality	Data collection	Data collection	Compilation of data	Project Preparation and submission	http://skrgdcgudur.ac.in/
							2131290010	K. Chenchu Narendra	1	Male	7659024973	BSC	MZC	Food and Nutrition	Gudur	Municipality	Data collection	Data collection	Compilation of data	Project Preparation and submission	http://skrgdcgudur.ac.in/
							213129016	K. Mahesh	1	Male	8639685615	BSC	MZC	Food and Nutrition	Gudur	Municipality	Data collection	Data collection	Compilation of data	Project Preparation and submission	http://skrgdcgudur.ac.in/
							213129018	A. Ganesh	1	Male	9989453130	BSC	MZC	Food and Nutrition	Gudur	Municipality	Data collection	Data collection	Compilation of data	Project Preparation and submission	http://skrgdcgudur.ac.in/
							213129021	C. Chandra sekhar	1	Male	7842466461	BSC	MZC	Food and Nutrition	Gudur	Municipality	Data collection	Data collection	Compilation of data	Project Preparation and submission	http://skrgdcgudur.ac.in/

Commissionerate of Collegiate Education , Government of Andhra Pradesh

WEEK 1

Format - III Community Service Project (CSP) - Student Daily Progress Report

1	Name of the Student	P. Vijaya Kumar	
2	Regd. No. of the Student	203129012	
3	Year	2	
4	Program studying (BA/B.Com/B.Sc etc.,)	BSC	
5	Program Combination	MZC	
6	Name of the Mentor	Dr. K. Siva Prasad	
7	Name of the CSP	Food and Nutrition	
8	Place of CSP execution	Gudur, Tilak Nagar	
S.No	Date	Work done	No.of hours spent
1	23.05.2022	Data collected door to door	3
2	24.05.2022	Data collected door to door	3
3	25.05.2022	Data collected door to door	3
4	26.05.2022	Data collected door to door	3
5	27.05.2022	Data collected door to door	3
6	28.05.2022	Data collected door to door	3

Commissionerate of Collegiate Education , Government of Andhra Pradesh

WEEK 2

Format - III Community Service Project (CSP) - Student Daily Progress Report

1	Name of the Student	P. Vijaya Kumar	
2	Regd. No. of the Student	203129012	
3	Year	2	
4	Program studying (BA/B.Com/B.Sc etc.,)	BSC	
5	Program Combination	MZC	
6	Name of the Mentor	Dr. K. Siva Prasad	
7	Name of the CSP	Food and Nutrition	
8	Place of CSP execution	Gudur, Tilak Nagar	
S.No	Date	Work done	No.of hours spent
1	30.05.2022	Data collected door to door	3
2	31.05.2022	Data collected door to door	3
3	01.06.2022	Data collected door to door	3
4	02.06.2022	Data collected door to door	3
5	03.06.2022	Data collected door to door	3
6	04.06.2022	Data collected door to door	3

Commissionerate of Collegiate Education , Government of Andhra Pradesh
WEEK 3

Format - III Community Service Project (CSP) - Student Daily Progress Report

1	Name of the Student	P. Vijaya Kumar	
2	Regd. No. of the Student	203129012	
3	Year	2	
4	Program studying (BA/B.Com/B.Sc etc.,)	BSC	
5	Program Combination	MZC	
6	Name of the Mentor	Dr. K. Siva Prasad	
7	Name of the CSP	Food and Nutrition	
8	Place of CSP execution	Gudur, Tilak Nagar	
S.No	Date	Work done	No.of hours spent
1	06.06.2022	Data Compilation	3
2	07.06.2022	Data Compilation	3
3	08.06.2022	Data Compilation	3
4	09.06.2022	Data Compilation	3
5	10.06.2022	Data Compilation	3
6	11.06.2022	Data Compilation	3

Commissionerate of Collegiate Education , Government of Andhra Pradesh

WEEK 4

Format - III Community Service Project (CSP) - Student Daily Progress Report

1	Name of the Student	P. Vijaya Kumar	
2	Regd. No. of the Student	203129012	
3	Year	2	
4	Program studying (BA/B.Com/B.Sc etc.,)	BSC	
5	Program Combination	MZC	
6	Name of the Mentor	Dr. K. Siva Prasad	
7	Name of the CSP	Food and Nutrition	
8	Place of CSP execution	Gudur, Tilak Nagar	
S.No	Date	Work done	No.of hours spent
1	13.06.2022	CSP Project preparation	3
2	14.06.2022	CSP Project preparation	3
3	15.06.2022	CSP Project preparation	3
4	16.06.2022	CSP Project preparation	3
5	17.06.2022	CSP Project preparation	3
6	18.06.2022	CSP Project preparation	3

Survey contents / Questions**FOOD AND NUTRITION – NAME OF THE CSP****1. How many times a day do you eat?**

- 1X 2X 3X

2. Please answer the following according to your particular eating habits?

1. Yes
2. Sometimes
3. No

I eat a good breakfast

1. Yes
2. Sometimes
3. No

I experience feelings of hunger during the day

1. Yes
2. Sometimes
3. No

I eat meat

1. Yes
2. Sometimes
3. No

I eat vegetables

1. Yes
2. Sometimes
3. No

I eat fruit

1. Yes
2. Sometimes
3. No

I eat dairy

1. Yes
2. Sometimes
3. No

I eat sweets

1. Yes
2. Sometimes
3. No

3. What meal would you consider to be your main meal of the day?

1. Breakfast
2. Lunch
3. Dinner
4.
5.

4. What does your main meal consist of and how is it prepared?

- Freshly home-cooked produce
- Restaurant meal
- Pre-cooked, microwave or TV dinners

5. What does your main meal on the weekend consist of and how is it prepared?

- Freshly home-cooked produce
- Restaurant meal
- Pre-cooked, microwave or TV dinners
-

6. Have you been avoiding some foods for health reasons?

- No

-

7. Do you have any particular food allergies?

- No
-

8. What is your weekly food intake frequency of the following food categories?

- Several times a day
- Once a day
- Several times a week
- Less often
- Never

Sweet foods

- 1.
- 2.
- 3.
- 4.

Salty foods

- 1.
- 2.
- 3.
- 4.
- 5.

Fresh fruit

- 1.
- 2.
- 3.
- 4.
- 5.

Fresh vegetables

- 1.
- 2.
- 3.
- 4.
- 5.

9. What percentage of your regular diet consists of meat and meat products?

- 90% or more
- 75%
- 50%
- 25%
- Less than 25%

10. How much of your diet consists of vegetables and non-animal products?

- 90% or more
- 75%
- 50%
- 25%
- Less than 25%

11. Do you or have you ever had cholesterol problems?

- Yes
- No
- I don't know

12. Do you know your current BMI (Body Mass Index) index?

- Less than 18,5 (Underweight)
- 18,5-25 (Ideal weight)
- 25-30 (Overweight)
- 30-35 (Moderate obesity)
- 35-40 (Obesity)
- More than 40 (Morbidly obese)

**S.K.R. GOVERNMENT DEGREE COLLEGE :GUDUR
SOCIO-ECONOMIC SURVEY FOR COMMUNITY SERVICE
PROJECT**

STUDENT NAME CONDUCTING SURVEY:

.....

CLASS: GROUP: ROLL NO:..... DATE:

.....

REGD. NO:..... MOBILE NO:

MENTOR'S NAME:

DESIGNATION:.....

I. Name of the Head of the family in full :

.....

II. Father's Name: Mother's

Name:.....

III. Door No: Street Name:Ward No.....

IV. Village: Mandal:.....

Dist:.....

V. Mobile No:

VI. Marital status : MARRIED / UNMARRIED

VII. Spouse

Name:

.....

VIII. CATEGORY: SC/ ST/ BC - / OC Caste:

.....

9. Qualification:

10. Occupation:

11. Annual Income: Rs.

12. No. of Family members :
13. Children : Male: Female:
14. Education status of the children:,
.....
15. No. of family members Earning:, source of their income:.....
16. Does the family have a motor vehicle? : Yes / No If yes type of vehicle
17. Does the family have a Ration/ Rice Card? Yes / No
18. Are you benefited by any Schemes from the Govt.? Yes / No If yes,
mention the scheme:
19. Does the family have Health card? Yes / No
20. Does the family have any agricultural land: Yes / No. . If yes, how much area?.....
21. Does the family have own house? Yes/ No
22. Is it a own construction ? or under any Govt. Scheme? Own / Govt. Scheme
23. Is any one of the family members is a Govt. Employee?
If yes give
details.....
24. Facilities available (a) Computer (b) Internet (c) Wi-Fi (d) Smart TV (e) Android Mobile
25. Cards available (a) Aadhar (b) PAN (c) Debit Card (d) Credit Card

Signature of the student

Signature of the Mentor

SKR GOVT DEGREE COLLEGE :: GUDUR

COMMUNITY SERVICE PROJECT



Introduction

Food is anything liquid, semi-solid or solid which contains nutrients and energy and when taken or eaten nourishes the body.

Food contains important substances which provide energy to move, think, work, run our body systems, keep us healthy, help to boost our immune system and protect us from infections. When we eat or take food, our bodies absorb useful nutrients into the blood and they are transported to areas where they are needed or stored. The food we eat or take is used for growth, maintenance and body functions.

Classification of foods according to their functions

Foods may be classified according to their functions in the body:

a) Energy-giving foods

Foods rich in carbohydrates and fats are called energy-giving foods or “GO” foods. They provide energy to the body and are essential for physical activity and basic functioning of the body. Foods like cereals, roots, tubers, starchy fruits and vegetables oils, milk, butter and ghee are good sources of energy.

b) Body-building foods

Foods rich in protein are called body-building foods or “GROW” foods. These foods help to maintain life and promote growth, repair worn out and damaged body tissues. “GROW” foods come from animal and plant sources. Milk, meat, eggs and fish are good sources of animal proteins while legumes and nuts are good sources of plant protein. Animal protein sources are considered to be of high quality compared to plant sources, apart from soybeans.

c) Protective

Foods rich in minerals and vitamins are known as protective or “GLOW” foods. They are essential for promoting body immunity and regulatory functions. Fruits and vegetables are the

main sources of “GLOW” foods. Fortified foods, including iodized salt, are also good sources of “GLOW” foods.

Nutrients in food

Nutrients are substances contained in food that nourish the body. They are required by the body to maintain general health and physiological functions, for example: provision of energy, building the body mass, keeping the body warm, boosting immunity and regulating the various body functions that help someone to live.

Major nutrients in human nutrition

Nutrients in food are divided into three major categories: macronutrients, micronutrients and water.

1) Macronutrients

These are required in large amounts:

- Carbohydrates
- Proteins
- Fats/oils

Carbohydrates

These are the primary source of energy in most diets. They include starches, fibre and sugars. Sweet foods such as sugar, jam, cakes and sugary drinks are sources of carbohydrates but should be consumed minimally because they do not provide any other nutrients and may increase risk of overweight.

Carbohydrate requirements

Individual carbohydrate requirements vary according to age, sex, physical activity level and physiological status. The recommended daily carbohydrate intake should provide about 45% to 65% of the total body energy/calorie requirements of 2000–3000 kilocalories (kcal). One gram of carbohydrates provides 4 kilocalories.

Proteins

Proteins are body-building foods and are required for growth and development, maintenance and repair of tissues, production of metabolic and digestive enzymes, and formation of certain hormones and all cells and tissues.

Protein requirements

The recommended intake of protein each day is about 1 gram per kilo- gram of body weight. Example: if a person is 60 kilograms, he will require 60 grams of protein each day. This is equivalent to one egg or a piece of meat about the size of an egg. However, children, teenagers, and preg- nant and lactating mothers require more protein as indicated below:

- Children: 30–50 g (half a palm of meat)
- Teenagers: 60–75 g (a palm of meat)
- Adults: 60–70 g (a palm of meat)
- Pregnant and lactating mothers: 90 g (one and a half palm of meat)

Fats and oils

Fats and oils also known as lipids are derived from both animal and plant sources.

Fats are rich in energy, build body cells, support brain development of infants, help body processes, and facilitate the absorption and use of fat-soluble vitamins A, D, E, and K. The major component of lipids is glyc- erol and fatty acids. According to chemical properties, fatty acids can be divided into saturated and unsaturated fatty acids. Generally lipids containing saturated fatty acids are solid at room temperature and include animal fats (butter, lard, tallow, ghee) and tropical oils (palm, coconut, palm kernel). Saturated fats increase the risk of heart disease.

Those containing unsaturated fatty acids are liquid at room temperature. These include monounsaturated and polyunsaturated fats and are found in vegetable oils such as sunflower, corn, soybean, canola and olive oils. Replacing saturated fats with unsaturated fats lowers risk of heart disease.

Fat/lipid/oil requirements

Fat provides high amounts of energy to the body; 1 g of fat produces over 9 kcals.

Daily intake of fats/oils should not exceed 30% of total kilocalories. Intake of saturated fats should be 10% or less of the total fat intake per day. Cholesterol intake should not exceed 300 mg.

Sources of fats/lipids/oils

- Animal sources include meat, suet, bacon, oil fish, cheese, butter, lard, milk, and egg yolk.
- Plant sources include groundnuts, soya, cocoa, sim-sim, maize, avo- cado, margarine, wheat germ, corn, sunflower, and palm oil.

Dietary fibre

This is a form of complex carbohydrate that is part of the nondigestible portion of the food.

Dietary fibre increases the body's sense of satisfaction thus preventing overeating. Diets high in fibre protect against constipation. Fibre can slow the body's absorption of sugar and cholesterol protecting the body from diseases of the heart and diabetes. Dietary fibre adds bulk to the faeces. In addition, dietary fibre slows down the breakdown of starch.

Main sources of dietary fibre

- Whole grains of cereals, for example: oats, millet, and maize bran.
- Vegetables, for example: dodo, nakati, malakwang, cabbage, and pumpkin leaves.
- Legumes such as beans, peas, and pigeon peas, among others.
- Fruits such as mangoes, oranges, and pineapples, among others.

2) Micronutrients

These are required by the body in small amounts and include: vitamins and minerals.

Vitamins

Vitamins are organic compounds that perform specific metabolic functions in the body. There are two forms of vitamins:

a) Fat-soluble vitamins

These are stored by the body and require dietary fat to be absorbed.

They include vitamins A, D, E and K. Fat-soluble vitamins are necessary for development and maintenance of body tissues and their functions, for example: eyes (vitamin A), bones (vitamin D), muscles and blood clotting (vitamin K), protection of cells (vitamin E), synthesis of enzymes and absorption of essential nutrients. Dietary sources of fat-soluble vitamins include carrots, tomatoes, liver, offal, kidney, gizzard, heart, milk and milk products and leafy vegetables.

b) Water-soluble vitamins

These are not stored by the body and must be consumed regularly.

They include vitamins C (ascorbic acid) and the B complex group. Their functions include releasing energy, supporting utilization of macronutrients and synthesizing red blood cells. Dietary sources of water-soluble vitamins include fruits, dark leafy vegetables, whole grains, meat, fish, poultry and fortified cereals. Citrus fruits are an especially good source of vitamin C. Vitamin C is crucial for improving iron bioavailability from plant food sources.

Vitamins requirements

- Water-soluble vitamins are not stored in the body and must be consumed daily.
- Fat-soluble vitamins are stored in the liver and may not have to be taken daily, excessive intake of these vitamins is toxic

Essential vitamins and their sources for the proper functioning of the body

Nutrient	Dietary Sources	Functions/Roles in the Body	Symptoms if Deficiency
WATER-SOLUBLE VITAMINS			
Vitamin B₁ (Thiamin)	Whole grain cereals such as maize, millet, sorghum, legumes and oil seeds, fish, liver, milk and egg	Producing energy for the body, supports appetite and central nervous system functions	<ul style="list-style-type: none"> • Failure to grow in children • Weak muscles • Painful and inflamed nerves • Depression, irritability • Beriberi
WATER-SOLUBLE VITAMINS			
Vitamin B₃ (Niacin)	Fish, meat, chicken, eggs, whole grain	Enables energy production in the body, supports appetite and central	<ul style="list-style-type: none"> • Dermatitis • Dementia • Diarrhea
Fish, liver, milk, meat and eggs, whole grain cereals, legumes	Contributes to energy production	<ul style="list-style-type: none"> • Failure to grow • Skin lesions • Dermatitis • Conjunctivitis • Sore lips, swollen tongue 	

	cereals	nervous system functions			
Vitamin B6 (pyridoxine)	Legumes, avocado, dark green leafy vegetables (DGLV), whole grains, nuts and seeds, cabbage, banana, liver, chicken, meat, fish, potatoes, watermelon, sunflowers seeds	Facilitates metabolism and absorption of fats and proteins, promotes red blood cells formation, production of protein and nerve transmitters, antioxidants	Tiredness, anaemia, irritability, depression, sore tongue, nausea, muscle twitching, dizziness, dermatitis (skin problem), neuropathy (nerve problem)		
Vitamin B12 (cyanocobalamin)	Seafood, liver, kidney, heart, whole grains, tuna,	Formation of red blood cells, affects white blood cells, maintains nerve and gastrointestinal tissue	Tiredness, anaemia, confusion, numbness, nerve problems, ringing		

	yogurt, eggs, cheese, meat, chicken		in ears, dementia, memory problems			
Folic acid	Kidney, liver, nuts, legumes, eggs, green vegetables, whole grains, avocado, oranges, fish	Contributes to synthesis of new red blood cells and gastrointestinal cells, aids cell division and growth	Diarrhoea, sore red tongue, anaemia, heartburn, fatigue, confusion, depression and dementia			
Vitamin C	Guavas, sweet pepper, leafy green vegetables, oranges, lemons, tomatoes , most fruits	Builds healthy bones, teeth and gums, helps fight infection, helps non- heme iron absorption, serves as an antioxidant s, helps in protein	Bleeding gums, bruise easily, slow heal, anaemia, muscle and joint pain, frequent colds			

		metabolism			
Vitamin B2 (Riboflavin)					
WATER-SOLUBLE VITAMINS					
Vitamin B3 (Niacin)		Fish, meat, chicken, eggs, whole grain cereals	Enables energy production in the body, supports appetite and central nervous system functions		<ul style="list-style-type: none"> • Dermatitis • Dementia • Diarrhoea
Vitamin B6 (pyridoxine)		Legumes, avocado, dark green leafy vegetables (DGLV), whole grains, nuts and seeds, cabbage, banana, liver, chicken, meat, fish, potatoes, water melon, sun flowers seeds	Facilitates metabolism and absorption of fats and proteins, promotes red blood cells formation, production of protein and nerve transmitters, antioxidants		Tiredness, anaemia, irritability, depression, sore tongue, nausea, muscle twitching, dizziness, dermatitis (skin problem), neuropathy (nerve problem)
Vitamin B12 (cyanocobalamin)		Seafood, liver, kidney, heart, whole grains, tuna, yoghurt, eggs, cheese, meat, chicken	Formation of red blood cells, affects white blood cells, maintains nerve and gastrointestinal tissue		Tiredness, anaemia, confusion, numbness, nerve problems, ringing in ears, dementia, memory problems

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FAT SOLUBLE VITAMINS

Vitamin A (Retinol)	Yellow/orange fruits and vegetables, DGLV, egg yolk, liver, milk, blue-band/ margarine	Supports immune system and provides resistance to infections, ensures good vision, healthy skin, teeth and bone development, promotes maintenance of epithelial cells and mucous membranes	Eye problems and night blindness, sensitivity to light, scaly and skin and hair, poor teeth and nails, colds
Vitamin D	Produced by the skin on exposure to sunlight Milk, cheese, butter, blue band margarine, fatty fish eggs and liver	Required for proper formation of bone and teeth Helps the body to absorb calcium and phosphorus	Poor absorption of iron and phosphorus will lead to formation of weak bones

			and teeth, growth of children is retarded severe deficiency leads to rickets and osteomalacia in adults/elderly
Vitamin E	Vegetable oils, nuts and seeds, whole grains, eggs, legumes, DGLV	Increases disease resistance, Protects fats and vitamins A and C from oxidation, prevents aging	Tiredness, dry hair, leg cramps, infertility, muscle weakness, impotence, nerve problems and heart disorders
Vitamin K	Vegetables such as spinach, lettuce, cauliflower, and cabbage, broccoli, fish, liver, meat, eggs	Helps with blood clotting	Bleeding

Minerals

Minerals are required for the normal functioning of body processes, including growth, development, water balance and neurological processes.

Minerals of public health importance

Iron is an essential component of blood and helps transfer oxygen to various body tissues. Dietary sources include red meat, fish, poultry (easily absorbed), legumes, leafy green vegetables (less easily absorbed, but absorption increases if eaten with animal source iron or vitamin C).

Calcium is a key component of bones and teeth and is needed for a strong skeleton and important in blood clotting. The major source of calcium in the world is milk and milk products. Other

sources include fish eaten with bones (silver fish—mukene, haplochromis species—nkeje) and dark green vegetables (plant sources are not well absorbed).

Iodine is important for thyroid function and for mental development of children. The most important dietary source is iodized salt.

Zinc enhances and strengthens the immune system, helps wound healing, facilitates digestion and is an important component of skeletal muscle. Dietary sources include beef, seafood, liver, nuts, beans and whole grains.

Other minerals involved in various body functions are chromium, copper, fluoride, magnesium, manganese, molybdenum, nickel, potassium, phosphorus, sodium and selenium.

Mineral requirements

Minerals that are required by the body in relatively large amounts such as calcium, iron, phosphorus, potassium, sulphur, chlorine, sodium and magnesium require deliberate efforts to be supplied them through increased food production, consumption and supplementation.

Most trace mineral elements such as iodine copper, manganese, fluoride, cobalt, nickel, zinc, chromium and selenium are supplied by a wide variety of foods and the body is unlikely to be deficient in them when one consumes a balanced diet.

SUMMARY

- Promote the consumption of both animal and plant foods in the community since minerals from plant sources are poorly absorbed.
- Use iodized salt for cooking.
- Consumption of animal source foods is necessary for a family to achieve a balanced diet.
- Animal source foods are a good source of readily digested protein and are rich in energy. Animal source foods are easily absorbable and an efficient source of micronutrients (calcium and B12 from milk, and iron, zinc and vitamin A).

Animal source foods are exclusive sources of dietary vitamin B12, and a good source of preformed vitamin A, particularly in milk which protects children from diseases.

Essential minerals, sources, functions and symptoms of deficiency

Mineral	Sources	Functions	Symptoms of Deficiency
Zinc	DGLV, sea food, meat, pumpkin seeds, milk, liver, whole grain, egg yolk, garlic, chicken, fish, legumes	Protects the immunesystem, needed for digestive and immune system enzymes, wound healing, Vitamin A metabolism, antioxidant.	Slow growth, loss of senses of smell and taste, loss of appetite, diarrhoea, prostate gland problems, poor wound healing, skin problems and ringing in ears
Selenium	Brown rice, nuts, liver, egg yolk, onions, garlic, meat, whole grains, milk	Serves as an antioxidant, prevents the breakdown of fat and other body cells.	Weakness, pancreas damage, impaired growth, hears problems
Magnesium	Legumes, nuts, whole grains, avocado, DGLV	Assists nerve and muscle function and release of energy from fats, proteins and carbohydrates.	Spasms, cramps, tremors, constipation (strained bowel movements)
Iodine	Breast milk from mothers with good iodine status, iodized salt, sea fish, milk from animals with good iodine status, sea weeds, plants from soils rich in iodine	it makes the brain and body function properly it is essential to the healthy development of unborn babies and young children. It helps pregnant women.	Impaired mental and physical development, deaf mutism (child cannot speak), cretinism, spontaneous abortion, still birth and birth defects, swelling of the front neck called goitre
Iron	Meat, liver, eggs, DGLV, seeds, wholegrain, legumes, fish, seafood	Needed for oxygen exchange in the blood, it strengthens the blood. It builds muscles and brain. It helps the body.	Headaches, tiredness, irritability, pale colour, dizziness, anaemia
Calcium	Milk, cheese and other dairy foods, green leafy	Helps build strong bones and teeth. Helps muscles and nerves function normally.	Myalgia, bone thinness, teeth breakage, bleeding

	vegetables, such as cabbage and okra	Helps to ensure blood clots normally.	
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Water

Maintains the fluid balance, cell turgidity, media for all biochemical reactions in the body, solvent for certain nutrients, used in removing excreta and keeps some parts of the body moist. Water is essential for life because it forms part of the body cells and fluids, such as blood and digestive juices.

Water requirements

Drink water everyday especially in hot weather when much is lost through sweating to avoid dehydration. A minimum of 2–3 Litres per day is recommended for an adult person. All drinks such as tea, coffee, fruit juice count towards the recommended daily total of at least 8 cups a day (for an adult). Children should drink all the time as they need.

The body requires water for many functions:

- To transport nutrients around the body.
- To make blood, saliva, tears and sweat.
- To enable body processes such as digestion.
- To keep the mouth and lungs moist, and to keep the skin moist and cool.
- To produce breast milk, which is also a source of water.

Extra water is needed:

- During illness when a raised temperature results in increased sweating. If vomiting or diarrhoea has occurred, both of which can cause dehydration especially in babies.
- In lactation when extra water is required for milk production. After intensive activity such as sport.

NUTRITION

Nutrition is the process of providing or obtaining the food necessary for health and growth. It broadly encompasses all actions necessary for obtaining, handling, preparing, serving, eating and utilization of food by the body. When individuals or communities do not feed appropriately they face a possibility of becoming malnourished and can face serious health problems. Extension workers should promote good nutrition in the community.

Nutrition

Good nutrition refers to a state when the food we eat is able to provide the recommended amounts of nutrients for the body to perform all its physiological activities. It is dependent on

one's age, physiological status, physical activity level and sex. Good nutrition is important throughout the life cycle; right from pre-conception, conception, pregnancy, infancy, childhood, adolescence and adulthood. Good nutrition makes an individual healthy, more productive and improves the quality of life.

Good nutrition means:

- Eating the right food.
- At the right time.
- The right amounts (quality and quantity) to ensure a balance diet and should be prepared in the correct way and right place.

Good nutrition is important because it:

- Enhances physical and cognitive development.
- Enhances breast milk production for the mother to adequately breastfeed her child.
- Builds and or boosts body immunity reducing susceptibility to disease.
- Reduces costs involved in disease management and control
- Enhances productivity.

A person with poor nutrition is at high risk of:

- Poor growth and development of the body and the brain (especially in young)
- Frequent illness, infections and prolonged (delayed) recovery
- Reduced ability learn or perform in school
- Reduced ability to work and earn a living
- Death

2. MALNUTRITION AND ITS PREVENTION

A malnourished and sickly population has low agriculture productivity.

The extension worker should demonstrate to community and households the gravity of the malnutrition situation and thus the need to prevent it.

What is malnutrition

Malnutrition is a condition that develops when the body does not get the right amount of the nutrients it needs to maintain healthy tissues and organ function. It includes conditions, such as undernutrition, overnutrition and micronutrient deficiency diseases (like vitamin A deficiency, iron deficiency anaemia, iodine deficiency disorders and zinc deficiency).

Malnutrition affects MOSTLY people of the following categories:

- Infants and children from pregnancy to two (2) years of age
- Non-breastfed children
- Pregnant and lactating women
- People suffering from chronic or infectious disease
- People are food insecure

Types of malnutrition

a) Undernutrition

This is a nutrition deficiency resulting from inadequate intake of food or inability of the body to convert or absorb food.

Undernutrition is the most common and easily observable type of malnutrition. Undernutrition often presents itself in two forms: acute and chronic.

1) Acute malnutrition: Underweight/wasting

Acute malnutrition takes place within a short time and can present loss of muscles in bulk. When severe, presents with visible wasting (prominence of bones) and/or symmetrical swelling of the body starting from both feet.

2) Chronic malnutrition: Stunting

A child's height is one of the most important indicators of his/her well-being. Height reflects the accumulated total of early-life health and diseases. The problems that prevent children from growing tall also prevent them from growing into healthy, productive, smart adults. Height predicts adult economic outcomes. Chronic undernutrition that affects children right from pregnancy to 5 years of age affects their growth and leads to reduced growth in stature (short-

for-age). Chronic malnutrition is due to prolonged long term deprivation of proper nutrients/foods to children.

b) Micronutrient malnutrition (lack of minerals and vitamins)

This type of malnutrition is called “hidden hunger;” and is due to inadequate intake of dietary mineral salts and vitamins leading to vitamin mineral deficiencies (VMDs). This form of malnutrition cannot be identified easily except in advanced stages when clinical signs appear.

Minerals and vitamins are required by the body in very small quantities, they are very important in protecting the body against infections. Usually, their absence in the diet does not cause a person to “feel hungry.”

Micronutrient deficiency disorders of public health significance in Uganda are:

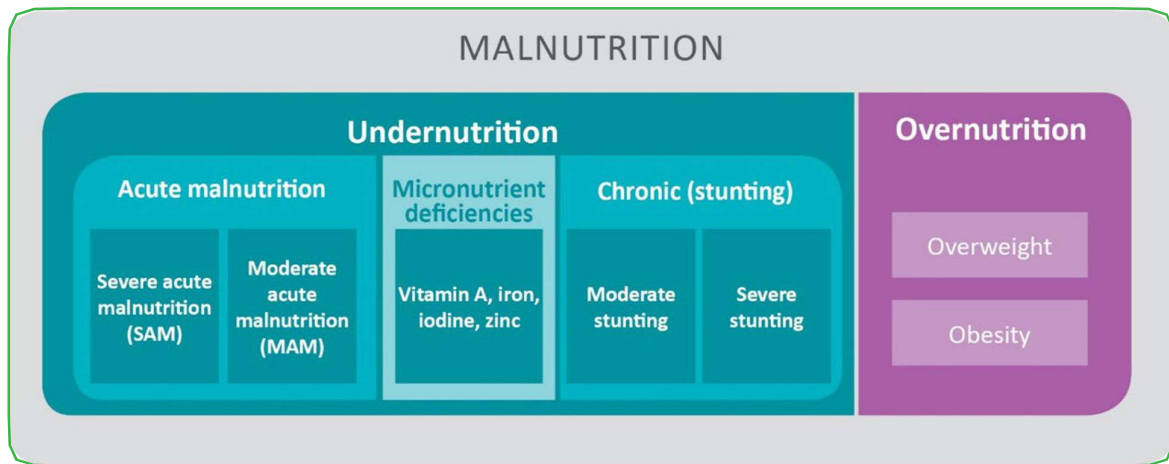
- Iron deficiency anaemia (IDA)
- Vitamin A deficiency (VAD)
- Iodine deficiency disorder (IDD)
- Zinc deficiency disorder (ZDD)

c) Overnutrition

This is the excessive intake of nutrients in foods over a given period of time exposing individuals to poor health. Overnutrition results in overweight, obesity, or vitamin toxicity.

Overnutrition may be caused by any of the following factors:

- Eating habits (overeating)
- Health conditions
- Taking too many unprescribed dietary supplements
- Lack of physical activity (sedentary lifestyle)
- Psychological factors (stress)
- Environmental factors (unsafe foods, e.g., heavy metals in food, peer pressure)
- Medication
- Genetic factors



Summary of types and categories of malnutrition

Prevalence of malnutrition in Uganda

Malnutrition is one of the main public health and economic and development problems facing Uganda. Children below the age of five years and women in reproductive age including pregnant women and lactating mothers are mostly affected (UDHS 2011). Children below the age of 5 years suffer mostly from under nutrition with:

- 33% of these children suffer from chronic undernutrition (they are stunted)
- 14% are underweight (body weight too light for their age)
- 49% suffer from iron deficiency anaemia (lack of iron/blood)
- 60% suffer from different forms of iodine deficiency disorders (IDD) Likewise women in reproductive age (15–49 years) also suffer from malnutrition:
- 52% of pregnant women and lactating mothers have vitamin A deficiency
- 23% suffered from iron deficiency anaemia

Causes of malnutrition?

There are several interconnected causes of malnutrition, ranging from policy issues to underlying community and cultural situations to house hold conditions and are commonly categorized into immediate causes, underlying cause and basic causes.

Immediate causes include:

- Inadequate dietary intake including poor quality and quantity of food in the diet (poor dietary diversity).
- Infection and diseases such as malaria, diarrhoeal diseases, acute respiratory infections, measles and worm infestations.
- Low intake of foods rich in appropriate nutrients.
- Low intake of substances like vitamin C that enhance nutrient absorption.
- High intake of factors like phytates and tannins that inhibit nutrient absorption.
- Food insecurity.

Underlying causes include:

- Household food insecurity including poor access to a diverse diet, inadequate quantity of food available and accessible, and seasonal fluctuations in food availability.
- Inadequate maternal and childcare, including suboptimal maternal nutrition and infant feeding practices, often a result of heavy work-loads for women and frequent births.
- Poor access to healthcare and inadequate water and sanitation, leading to increased illness.
- Inadequate and/or incorrect feeding practices.
- Inadequate caring capacity for example inadequate time, inadequate knowledge.
- Low levels of family education, awareness, knowledge and motivation.
- Intrahousehold maldistribution of access to food, health services and care.
- Poor food preparation, storage, preservation and processing practices at household levels.
- Beliefs and practices that restrict access to certain foods for some family members (food taboos).
- Poor health services and/or agricultural infrastructure.
- Lack of institutional capacity in nutrition and/or personnel trained in the various components of community nutrition programs.

- Low production of diversified nutritious foods.
- Lack of household level gardening.
- Insufficient marketing infrastructure for key food.
- Poorly developed commercial food processing industry.

Basic causes include:

- Limited livelihood opportunities and unequal economic structure.
- Inadequate educational opportunities.
- Priorities guiding the allocation of public funding and other resources.
- Quality of social and political leadership, e.g., poor economic or physical access to markets.
- Little or no productive land.
- High prevalence of certain endemic diseases, e.g., tuberculosis and HIV/AIDS.
- Low status of and lack of resource control by women.
- Failure to consider nutrition needs in agriculture and health policy-making.
- Lack of resources to produce nutrient-rich foods.
- Poor economic or physical access to markets.
- Little or no productive land.
- Lack of access to safe water for drinking, hygiene and/or irrigation.
- Seasonality of food availability.
- Low status of and lack of resource control by women.

Consequences (cost) of malnutrition

a) Consequences of undernutrition

Child deaths, diseases and disability

- Newborns who are born small (low birth weight, that is less than 2.5 kg) for their gestational age are more likely to die than children born with a healthy weight.
- A severely stunted child is four times more likely to die than a healthy child (Lancet 2008).
- A severely wasted child is nine times more likely to die than a healthy child (Lancet 2008).
- Micronutrient deficiencies—including vitamin A, zinc and iron—impair the immune system, increasing risk of illness and death.

- Anaemia increases risk of maternal and perinatal deaths (death of infant in the womb and during the first 6 weeks of birth).
- Vitamin A deficiency causes blindness.
- Malnutrition has negative consequence on physical productivity, health and education outcomes with consequential negative impacts on socioeconomic development in Uganda.

Malnutrition weakens brain development and nervous system

- Impaired brain development, poor school achievement, absenteeism (stunting, iron deficiency, anaemia, iodine deficiency)
- Neural tube defects: undeveloped back bone and the nervous system (folic acid deficiency)
- Impaired foetal brain development, brain damage, severe mental retardation, or congenital abnormalities (iodine deficiency in pregnancy)
- Diminished income: earning capacity in adulthood

Malnutrition decreases productivity and economic growth

- When malnourished individuals are sick, they are weak and cannot perform their daily work for example sick farmers.
- Individuals with iron deficiency anaemia (particularly women) become tired easily and cannot work for longer hours.

- Shortage of iodine decreases IQ and causes a productivity loss.
- Farmers with low literacy levels are less likely to adopt improved agricultural practices hence leading to poor agricultural production and productivity.
- People with low literacy levels are bound to have poor health-seeking behaviours and access to quality health services.
- Mothers with low education level are likely to follow poor feeding practices hence affecting the nutritional and health status of family members.
- Contributes to poverty.
- Cost of treating illnesses attributable to malnutrition.
- Cost of caring for sick.
- Lost care for other (not sick) household members.

b) Consequences of overnutrition

Malnutrition can lead to multiple medical conditions including:

- Coronary heart disease (heart attack)
- Diabetes (high blood sugar)
- Gout (swollen painful joints)
- Hypertension (high blood pressure)
- Overweight
- Obesity
- Death

Malnutrition increases the risk of death and illnesses

Malnutrition weakens immunity and predisposes individuals to different infections.

- More than half of infant deaths are associated with malnutrition.
- Marasmus and kwashiorkor and finally death are caused by severe malnutrition.
- Goitre due to iodine deficiency.
- Night blindness to complete blindness from vitamin A deficiency.
- Anaemia from iron deficiency.

Agriculture-based interventions and/or strategies aimed at preventing malnutrition

- Promoting production of nutrient-rich foods and rearing of live-stock.
- Promoting backyard farming, kitchen gardening, and hanging gar-dens.
- Encouraging rearing of small livestock and consumption of their products.
- Promoting production and consumption of biofortified foods.
- Promoting consumption of nutritious meals and diet diversification.
- Encouraging proper food preparation and feeding practices.
- Supporting and promoting nutrition education and good child caring practices.
- Supporting and promoting labour-saving technologies to reduce women's workload, e.g., establishment of woodlots, water harvest-ing technologies and various energy saving technologies.
- Promoting household and community-level food processing tech-nologies.
- Promoting good post-harvest handling practices and food safety along the value chain.
- Promoting water, sanitation and hygiene (WASH) practices.
- Promoting community-based food and nutrition information sys- tem to track vulnerable households and communities for corrective action.
- Integrating appropriate essential nutrition actions in the agricultural extension system.
- Mainstreaming gender considerations in agriculture development programs.

SUMMARY

- Malnutrition can be undernutrition or overnutrition.
- Undernutrition includes acute malnutrition, chronic malnutri- tion and micronutrient deficiencies.
- Undernutrition has immediate causes (inadequate food intake and illness), underlying causes (household food insecurity, inadequate maternal and child care practices, poor access to health, water and sanitation services) and basic causes (sub- optimal political, economic, and social policies and systems).
- Consequences of malnutrition include increased illness and death, poor growth and development, lower labour produc- tivity, poorer educational attainment, and noncommunicable disease like diabetes and hypertension.
- Undernutrition occurs across the life cycle and can pass from one generation to another.

- It is important to break this cycle through interventions to promote nutritional status of adolescent girls and women of reproductive age and from pregnancy through 24 months of age.

Water access

1. Access to safe water is considered a basic human need and, in most countries, a basic human right.
2. For many people especially in rural communities, there is lack access to safe water.
3. The negative effects of lack of access to sufficient quantities of water, water of reasonable quality, basic sanitation and hygiene are magnified for sick people including the malnourished clients.
4. The added burden of unsafe water affects not only the malnourished individual, but the entire family, increasing the risk of diarrhoea disease and lost productivity.
5. Water quality
6. Piped water is available in some areas, but is often untreated or is contaminated between the source and the home.
7. Simple, low cost technologies for treating and safely storing water at the household level can greatly improve the microbial quality of water and can significantly reduce diarrhoea achieving outcomes comparable to those achieved by hand washing and safe handling and disposal of faeces.
8. Several technologies are viable for treating water in the home: chlorination; use of aqua safe and water guard, use of various types of filters; proper boiling.

Project Results and discussion

Total Number of students 6

Total days for collected data 12 days each

Total samples collected each student 120

Total number of samples = 720.

Question wise analysis:

1. How many times a day do you eat?

- 1X 2X 3X

600 samples reveals 3X

120 samples reveals 2X

2. Please answer the following according to your particular eating habits?

- Yes, Sometimes, No

I eat a good breakfast

4. Yes - 600 samples reveal that this type of habit.
5. Sometimes – 120 sample reveals this type of food habit.
6. No – Nil data

I experience feelings of hunger during the day

4. Yes 360 samples reveal this type of food habit
5. Sometimes 240 samples reveal this food habit
6. No - 120 samples reveal this food habit

I eat meat

- 4. Yes – 480 samples reveal this food habit
- 5. Sometimes – 220 samples reveal this food habit
- 6. No – 20 are vegetarians

I eat vegetables

- 4. Yes - 720 samples positive this habit
- 5. Sometimes – Nil data
- 6. No – Nil data

I eat fruit

- 4. Yes - 600 samples positive this food habit
- 5. Sometimes – 100- samples reveal this data
- 6. No – 20 are said none.

I eat dairy

- 4. Yes - 360 people answer this data
- 5. Sometimes – 120 people answer this data
- 6. No – 120 said not followed

I eat sweets

- 4. Yes - 480 are eating sweets occasionally
- 5. Sometimes – 120 are said
- 6. No – 120 said not eat sweets.

3. What meal would you consider to be your main meal of the day?

- 6. Breakfast – 120 answered
- 7. Lunch - 360 are answered
- 8. Dinner – 240 are answered
- 9.
- 10.

4. What does your main meal consist of and how is it prepared?

- Freshly home-cooked produce – 600 people answered this question
- Restaurant meal - 100 answered
- Pre-cooked, microwave or TV dinners – 20 answered.

5. What does your main meal on the weekend consist of and how is it prepared?

- Freshly home-cooked produce 600 people answered this question
- Restaurant meal - 100 answered
- Pre-cooked, microwave or TV dinners – 20 answered
-

6. Have you been avoiding some foods for health reasons?

- No 720 people answered this data
-

7. Do you have any particular food allergies?

- No - 240 have food allergies and 480 people have normal condition.
-

8. What is your weekly food intake frequency of the following food categories?

1. Several times a day
2. Once a day
3. Several times a week
4. Less often
5. Never

Sweet foods

1. Several times a day - 60
2. Once a day - 60
3. Several times a week 120
4. Less often - 240

5. Never – 240

Salty foods

1. Several times a day - 240
2. Once a day - 120
3. Several times a week 60
4. Less often - 240
5. Never – 60

Fresh fruit

1. Several times a day - 120
2. Once a day - 360
3. Several times a week 60
4. Less often - 120
5. Never – 60

Fresh vegetables

1. Several times a day - 0
2. Once a day - 600
3. Several times a week - 120
4. Less often - 0
5. Never – 0

9. What percentage of your regular diet consists of meat and meat products?

- 90% or more - 0
- 75% - 120

- 50% - 480
- 25% - 60
- Less than 25% - 60

10. How much of your diet consists of vegetables and non-animal products?

- 90% or more - 360
- 75% - 120
- 50% - 120
- 25% - 60
- Less than 25% - 60

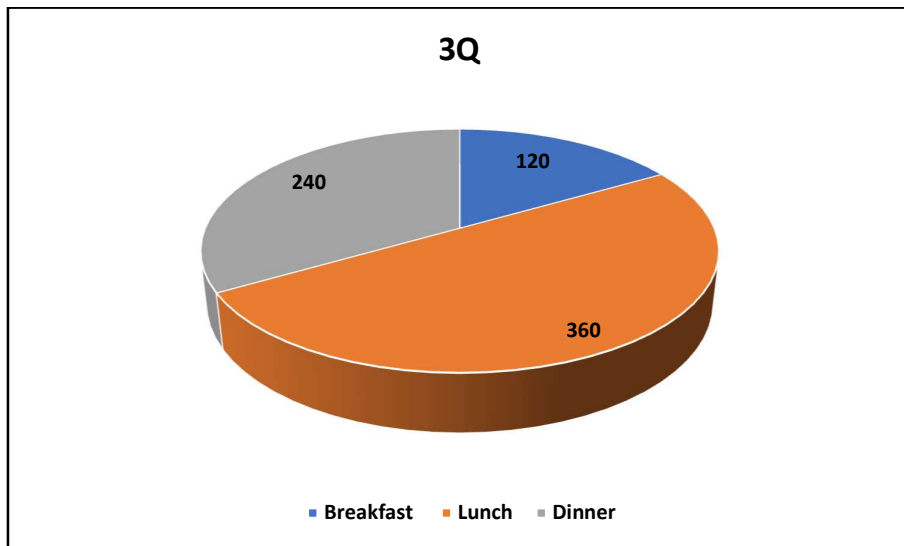
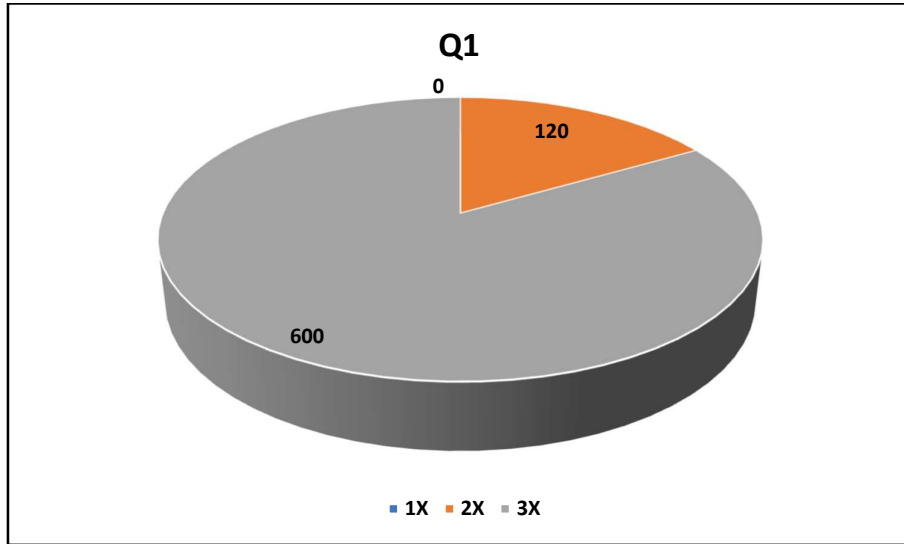
11. Do you or have you ever had cholesterol problems?

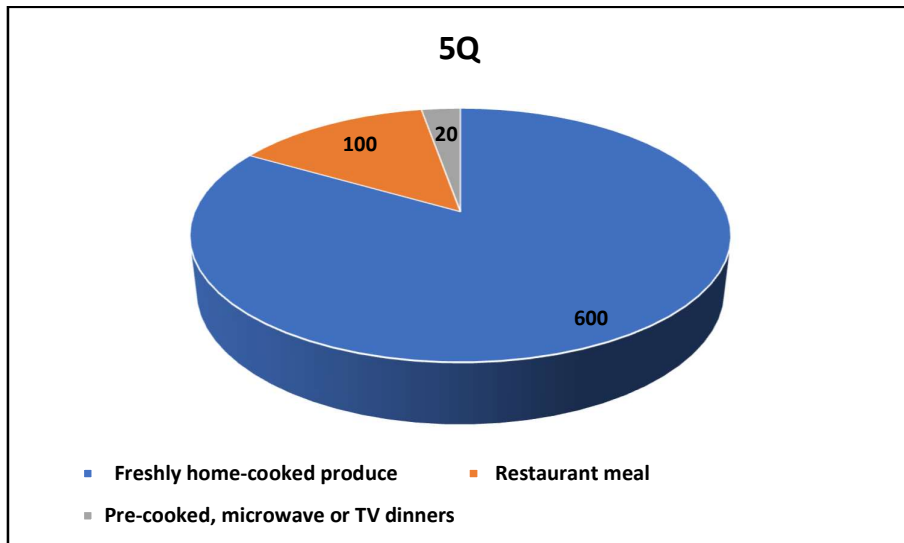
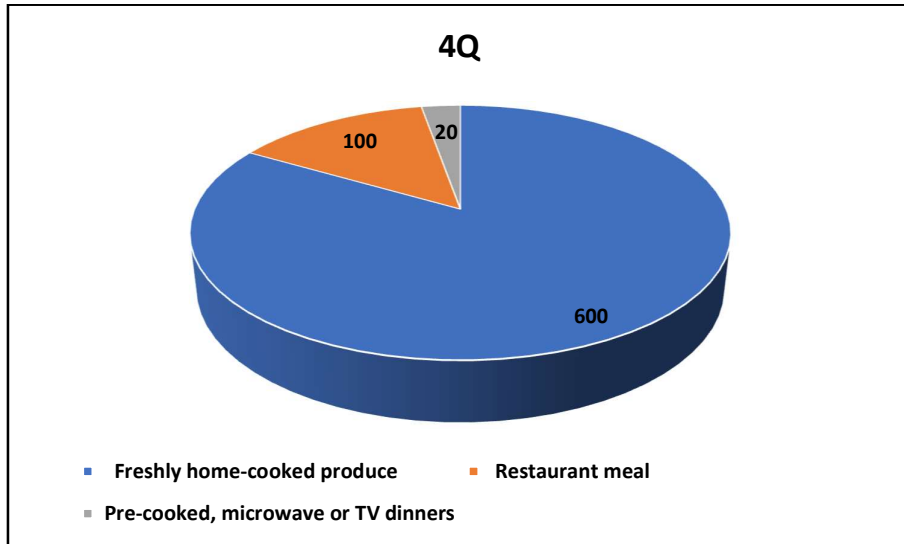
- Yes - Nil
- No - 600
- I don't know - 120

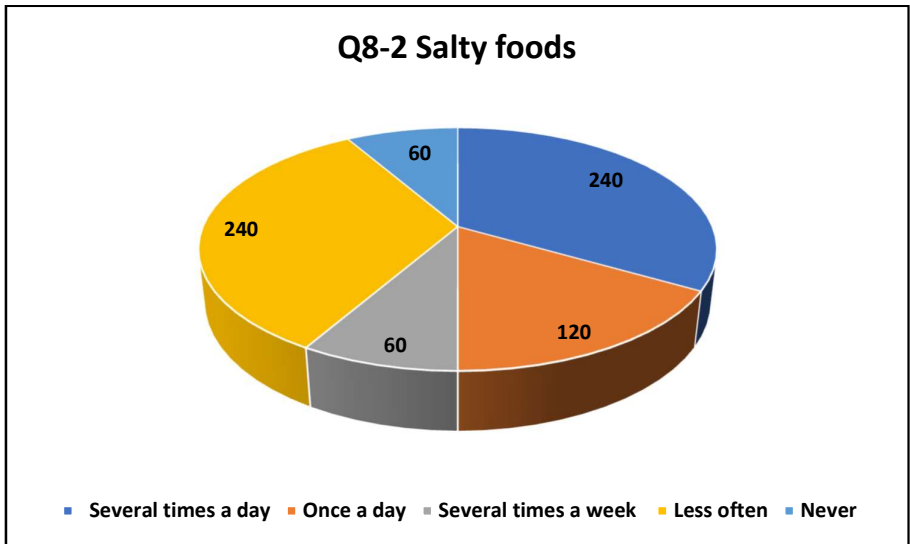
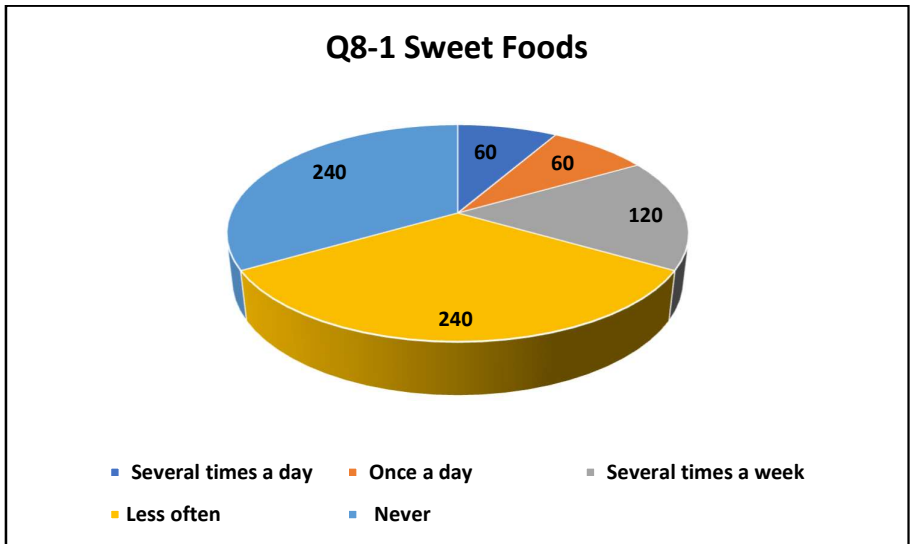
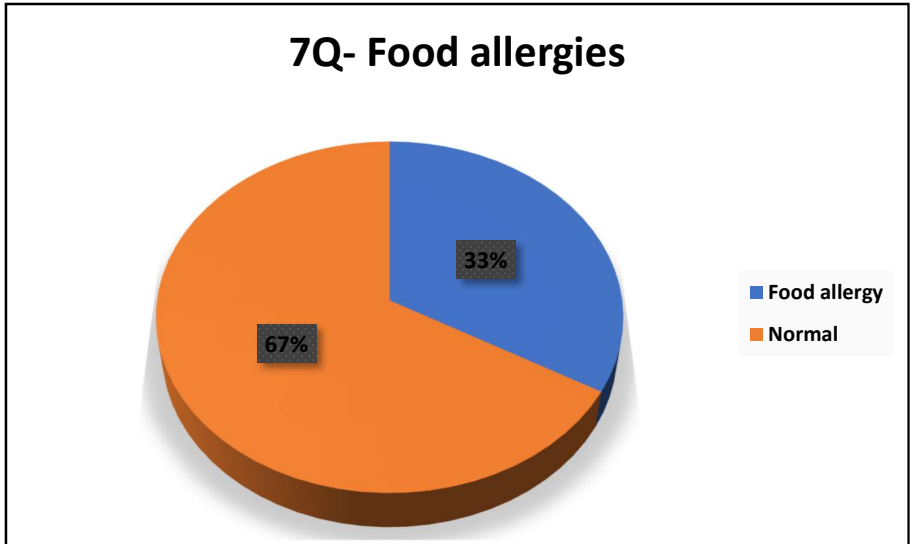
12. Do you know your current BMI (Body Mass Index) index?

- Less than 18,5 (Underweight) - 120
- 18,5-25 (Ideal weight) - 360
- 25-30 (Overweight) - 20
- 30-35 (Moderate obesity) - 100
- 35-40 (Obesity) - 60
- More than 40 (Morbidly obese) - 60

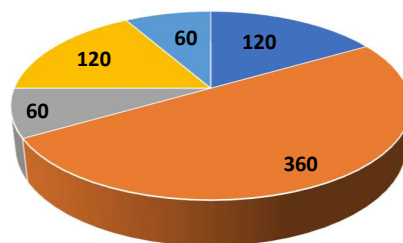
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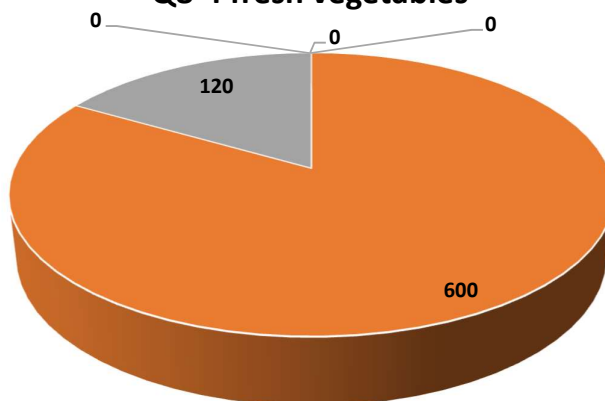


Q8-3 Fresh fruits



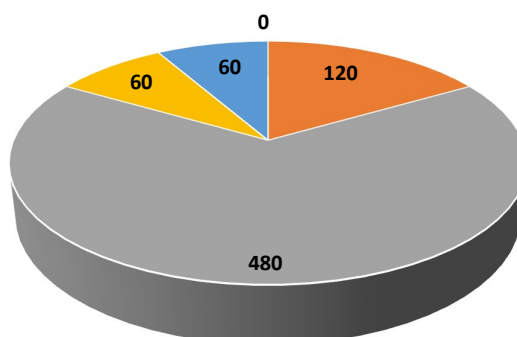
- Several times a day - 120
- Once a day - 360
- Several times a week 60
- Less often - 120
- Never - 60

Q8-4 fresh vegetables

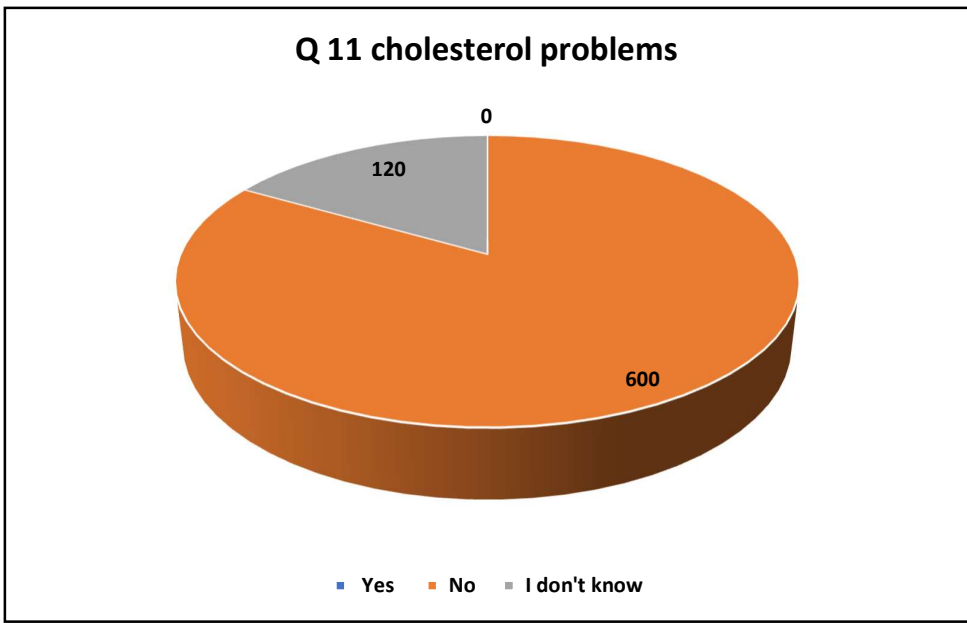
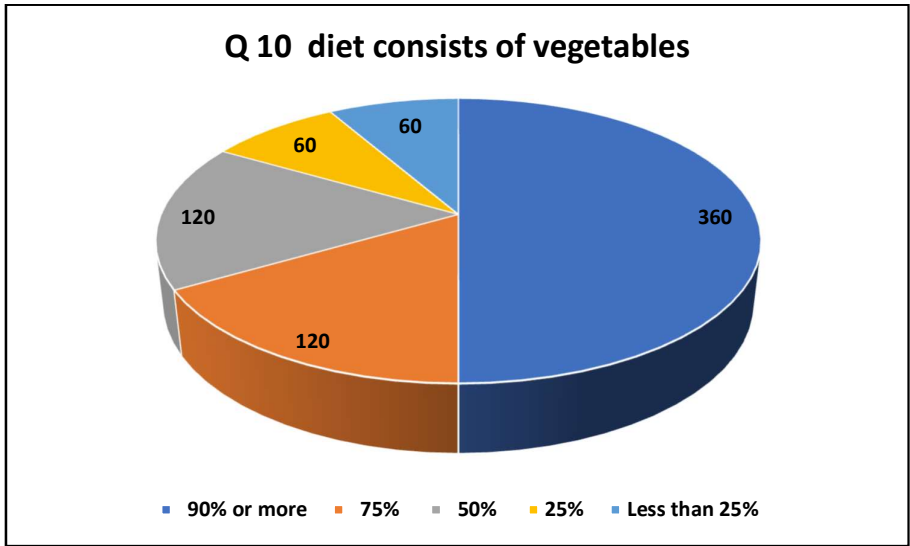


- Several times a day
- Once a day
- Several times a week
- Less often
- Never

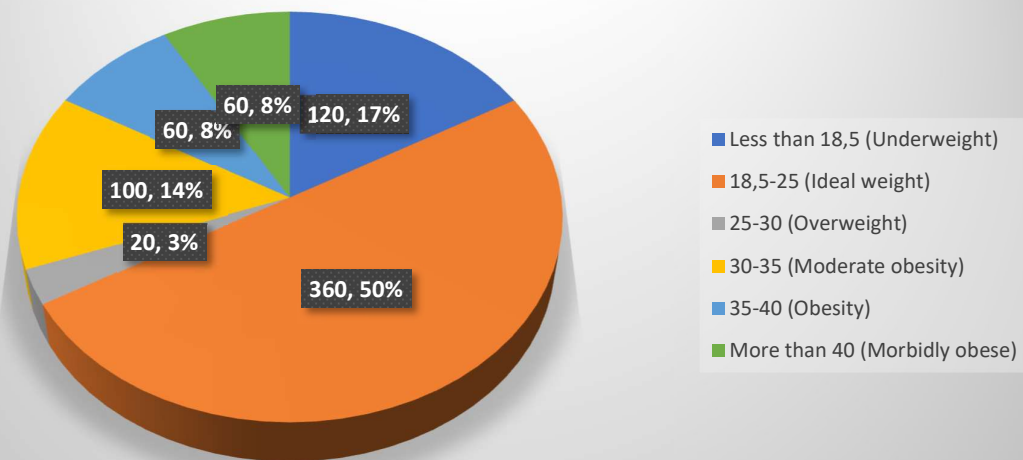
9Q meat and meat products



- 90% or more
- 75%
- 50%
- 25%
- Less than 25%



Q 12. BMI (Body Mass Index) index



Discussion

From this community service project results, the following observations identified by the students.

80% of the people taking food three time per day and remaining 20% of the people taking two times per day.

20% of the people taking good breakfast sometimes, remaining 80% of the people taking good breakfast.

66% of the people taking meat in their food habit, 30 % of the people taking meat occasionally and 4% of the people not consume the meat in their daily food habit.

100 % of the people taking the vegetable daily in their food habits

90% of the people taking fruits daily foods and 10% of the people occasionally.

66% of the people taking sweets along with foods , 16% of the people taking sweets some times and 16% of the people not taking the sweets.

33% of the people experiencing food allergies with different food products.

50% of the people taking vegetables daily in their food habits.

83% of the people are taking non- cholesterol food.

As per BMI 50% of the people have normal body weight, 17% of the people under weight, 3% of the people over weight, 8% of the people obesity.

Conclusion

A healthy diet is a diet that maintains or improves overall health. A healthy diet provides the body with essential nutrition: fluid, macronutrients such as protein, micronutrients such as vitamins, and adequate fibre and food energy. Diet consisting of the proper quantities and proportions of foods needed to maintain health or growth. The nutrition group of ICMR (Indian Council of Medical Research) has recommended the composition of a balanced diet for Indians. This includes cereals (like rice, wheat, and jowar), pulses, roots and tubers, fruits, milk, and dairy products, fats and oils, sugar, and groundnuts. They also recommended an intake of meat, fish, and eggs for non-vegetarians.



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