YASHWANTRAO CHAVAN MAHARASHTRA OPEN UNIVERSITY
SCHOOL OF SCIENCES
(FORMERLY SCHOOL OF ARCHITECTURE, SCIENCE & TECHNOLOGY)

UGV05: B.Sc. (Honours) (Zoology)

{2025 Pattern}

(Open Elective for other Faculty)

NEP 2020 Compliant

ZOOE202: Nutrition, Health & Hygiene

(2 Credits)

Open Elective

SEMESTER IV

Email: director.ast@ycmou.ac.in
Website: www.ycmou.ac.in
Phone: +91-253-2231473

Brief Contents

Vice Chancellor's Message 2

Foreword by the Director 3

Learning Objectives and Course Outcomes 4

Credit 01 5

Unit 01-01: Introduction to Nutrition 6

Unit 01-02: Basics of Nutrition 27

Unit 01-03: Health 56

Unit 01-04: Mental Health 81

Credit 02 113

Unit 02-01: Health Hazards 114

Unit 02-02: Health Policy and Health Organizations 146

Unit 02-03: Hygiene-I 176

Unit 02-04: Hygiene-II 207

Feedback Sheet for the Student 228

ZOOE202: Nutrition, Health & Hygiene

Yashwantrao Chavan Maharashtra Open University

Vice-Chancellor: Prof. Sanjeev Sonawane

School of Sciences

Director of the School: Prof. Chetana Kamlaskar

Programme Advisory Committee Members

UGV05: B.Sc. (Honours)(Zoology){2025 Pattern}

Prof. Chetana Kamlaskar Director & Professor, School of Sciences, YCMOU, Nashik	**Dr. Sunanda More** Former Director, School of Sciences, YCMOU, Nashik	
Dr. Resham Bhalla HOD & Professor, Department of Zoology, Loknete Vyankatrao Hiray Arts, Science & Commerce College, Nashik	**Dr. Chetan Jawale** HOD & Professor, Department of Zoology, H.P.T. Arts and R.Y.K. Science College, Nashik	**Dr. Somnath B. Waghmare** Associate Professor, Department of Zoology, Nowrosjee Wadia College, Pune
Mr. Ravindra K. Bharsat (Invitee), Academic Coordinator (Zoology) School of Sciences, YCMOU, Nashik **Mr. Rahul V. Navle** (06/01/2020 – March 2024)		

Development Team

Instructional Technology Editor	Course Coordinator	Book Writer	Book Editor
Prof. Chetana Kamlaskar Director & Professor, School of Sciences, YCMOU, Nashik	**Mr. Ravindra K. Bharsat** Academic Coordinator, School of Sciences, YCMOU, Nashik	**Mr. Ganesh G. Wakchoure** Assistant Professor Department of Zoology, New Arts, Commerce and Science College, Ahilyanagar.	**Prof. Resham Bhalla** HOD & Professor, Department of Zoology, Loknete Vyankatrao Hiray Arts, Science & Commerce College, Nashik

This work by **YCMOU** is licensed under a **Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International License**.

- **Book Publication**: 04/11/2025 **Publication No: 3394**
- **Publisher**: Dr. Govind Katalakute, Registrar (I/C), YCMOU, Nashik- 422 222, MH
- **ISBN:978-81-998695-3-0**

VICE CHANCELLOR'S MESSAGE

Dear Students,

Greetings!!!

I offer cordial welcome to all of you for the Undergraduate Degree programme of Yashwantrao Chavan Maharashtra Open University, offered by the School of Sciences.

As an undergraduate student, you have the autonomy to learn and gain information and knowledge regarding different dimensions in the field of Zoology. At the same time, intellectual development is necessary for application of knowledge wisely. The process of learning includes appropriate thinking, understanding key concepts, describing these concepts based on experience and observation, explaining them to others through speaking, writing or demonstrating. Today, the science of education acknowledges the principle that it is possible to achieve excellence and knowledge in this regard.

The syllabus of this course has been structured in this book in such a way, to give you autonomy to study easily without stirring from home. During the counseling sessions, scheduled at your respective learner support centre (LSC), all your doubts will be clarified about the course and you will get guidance from well qualified and experienced counselors/professors. This guidance will not only be based on lectures, but it will also include various techniques such as question-answers, doubt clarification. We expect your active participation in the contact sessions at the LSC. Our emphasis is on 'self-study'. If a student learns how to learn, he will become independent in learning throughout life. This course book has been written with the objective of helping in self-study and giving you autonomy to learn at your convenience, provide stimulating learning experience, of course, enjoyable and at the same time prepare for gaining, fulfilling employment.

During this academic year, you have to give assignments, complete laboratory activities, field visits and the Project work wherever required. You have to opt for specialization as per programme structure. You will get experience and joy in personally doing above activities. This will enable you to assess your own progress and thereby achieve a larger educational objective.

We wish that you will enjoy the courses of Yashwantrao Chavan Maharashtra Open University, emerge successful and very soon become a knowledgeable and honorable Degree holder of this university, which is fully aligned with the features and framework of the National Education Policy (NEP) 2020.

I congratulate "Development Team" for the development of this excellent high quality "Self- Learning Material (SLM)" for the students. I hope and believe that this SLM will be immensely useful for all students of this programme.

Best Wishes!

- Prof. Sanjeev Sonawane

Vice-Chancellor, YCMOU

FOREWORD BY THE DIRECTOR

Dear Students,

Greetings!!!

This book serves the primary goal of acquainting undergraduate level students, particularly those in the field of Science, with the conceptual and practical foundations of **Zoology** with applications essential for their studies. It offers a complete exploration of **Zoology** principles and their practical applications. Throughout the book, you will find numerous illustrative examples designed to enhance your understanding and skills while cultivating a deep appreciation for the applications.

We have adopted a "learn at your own pace" approach, making each unit of the book as user-friendly as possible. To do this, the book is written in a self-instructional format, ensuring that each unit follows a carefully structured approach. This not only facilitates comprehension but also keeps the learning process engaging.

Each unit of book commences with clearly defined learning objectives, using action verbs aligned with Bloom's Taxonomy to help you understand what you will achieve. Additionally, each unit starts with an introduction to stimulate the learner's curiosity and enthusiasm for the upcoming content. As you progress, you'll encounter detailed explanations supported by tables, figures, exhibits, and solved illustrations, all thoughtfully included enhancing your ability how to learn.

This Self-Learning Material (SLM) book is written in simple language with conversational style, concise sentences and covers the entire syllabus. The topics within each unit are presented in a logical sequence, starting from simple concepts and progressing to more complex one, ensuring that the material is approachable for learners with varying levels of intellectual capacity.

To enrich learning experiences, each unit contains a diverse range of exercises, including multiple-choice questions, conceptual questions, and practical problems. These exercises aim to guide students in understanding every aspect of a particular concept, gradually building their knowledge and skills.

We are grateful to the learners, resourceful writers, diligent editors, and the dedicated School faculty and staff who contributed to the development of this SLM book.

Hope this book becomes a valuable companion to support your academic pursuits and enrich your understanding of content covered in this course. We are excited to support you on this rewarding journey, in line with the holistic and multidisciplinary vision of NEP 2020.

Let’s Grow Together….Best Wishes to all of you!!

- Prof. Chetana Kamlaskar

Director,

School of Sciences, YCMOU

LEARNING OBJECTIVES AND COURSE OUTCOMES

LEARNING OBJECTIVES:

After successful completion of this course, student should be able to –

- Define and explain key concepts of nutrition, health, and hygiene.
- Analyze the roles of nutrients and their impact on physical and mental health.
- Apply principles of meal planning, hygiene, and disease prevention in real-life scenarios.
- Evaluate the influence of lifestyle choices and public health policies on individual and community health.
- Create awareness strategies using digital tools and community-based programs for promoting health and hygiene.

COURSE OUTCOMES:

After successful completion of this course, student should be able to –

- Recall foundational concepts of nutrition, mental health, and hygiene.
- Interpret symptoms and causes of nutritional deficiencies and common diseases.
- Apply knowledge of health education and hygiene to improve individual and community wellbeing.
- Critically analyze public health policies and roles of health organizations in disease management.
- Design community outreach or awareness programs using mobile applications and government schemes.

CREDIT 01

UNIT 01-01: INTRODUCTION TO NUTRITION

LEARNING OBJECTIVES

After successful completion of this unit, you will be able to

- ❖ Define the concept of nutrition and explain its importance in human health.
- ❖ Distinguish between good nutrition and malnutrition.
- ❖ Distinguish between good nutrition and malnutrition.
- ❖ Explore the significance of nutrients to human health.

INTRODUCTION

Every single cell in the human body is an outcome of the food we have ingested. Our mind and body are made of the food we eat and it continues until we live. The body parts, organs, muscles, blood and bones are all made from the food we have eaten. Food gives energy and stamina for work. It also gives emotional stability and security. Our appearance and feeling of good health and happiness also depends on the right kind of food and the quantity of food that we eat. Lot of research is being done and new findings published every day to increase our knowledge about food and nutrition, and to find ways to apply this knowledge in choosing the right foods to eat, so that our body is well nourished and healthy.

Nutrition science is defined by Robinson as: "The science of foods, nutrients and other substances therein; their action, interaction and balance in relation to health and disease; the process by which an organism ingests, digests, absorbs, transports and utilizes nutrients and disposes off their end products". In common terminology, it is stated as the science of food and nutrients and their action on our health is called Nutrition.

Nutrition and health, in fact, are two sides of the same coin. They are, therefore, inseparable. Health depends to a large extent on nutrition, and nutrition depends on the food intake. So, food, is the most important single factor for health and fitness.

01-01- DEFINITION AND IMPORTANCE OF NUTRITION

Let us define and describe food, nutrition, health and fitness

- Food can be defined as anything solid or liquid which when swallowed, digested and assimilated in the body provides it with essential substances

called nutrients and keeps it well. It is the basic necessity of life. Food supplies energy, enables growth and repair of tissues and organs. It also protects the body from disease and regulates body functions.

- Nutrition is defined as the science of foods, nutrients and other substances they contain; and of their actions within the body including ingestion, digestion, absorption, metabolism and excretion. While this summarises the physiological dimensions, nutrition has social, psychological and economic dimensions too.
- Nutrients are the constituents in food that must be supplied to the body in suitable amounts. These include carbohydrates, proteins, fats, minerals, vitamins, water and fiber. We need a wide range of nutrients to keep ourselves healthy. Most foods contain more than one nutrient such as milk has proteins, fats, etc. Nutrients can be classified as macronutrients and micronutrients on the basis of the required quantity to be consumed by us every day. The figure on the next page shows us the distinction between macronutrients and micronutrients.

MULTIPLE CHOICE QUESTIONS

1) What is Nutrition?

a) The science of food and nutrients and their action on our health

b) The science of material that we eat on our body.

c) The branch of science which deals with the study of nutrients and food quality.

d) None of the above

2) Which of the following are physiological actions?

a) Digestion

b) Metabolism

c) Respiration

d) All of these

3) -------- and ------- are the two sides of the same coin.

a) Digestion and Respiration

b) Health and Health Hazards

c) Nutrition and Mal nutrition

d) Nutrition and Health

Answers: 1) **a) The science of food and nutrients and their action on our health** 2) **d) All of these** 3) **d) Nutrition and Health**

SHORT ANSWER QUESTIONS WITH MODEL ANSWER

1) Define Nutrition?

Answer: Nutrition science is defined by Robinson as: "The science of foods, nutrients and other substances therein; their action, interaction and balance in relation to health and disease; the process by which an organism ingests, digests, absorbs, transports and utilizes nutrients and disposes off their end products". In common terminology, it is stated as the science of food and nutrients and their action on our health is called Nutrition.

2) What is the role of Nutrients?

Answer: Nutrients are the constituents in food that must be supplied to the body in suitable amounts. These include carbohydrates, proteins, fats, minerals, vitamins, water and fibre. We need a wide range of nutrients to keep ourselves healthy. Most foods contain more than one nutrient such as milk has proteins, fats, etc. Nutrients can be classified as macronutrients and micronutrients on the basis of the required quantity to be consumed by us every day. The figure on the next page shows us the distinction between macronutrients and micronutrients.

01-01-02: GOOD NUTRITION AND MAL NUTRITION

Our diet contains many food items which are obtained from different sources. The food may be obtained from animal or vegetable sources. We already know that food comprises constituents like proteins, carbohydrates, fats and supplementary substances such as minerals, vitamins and water that are vital for life. These constituents are known as nutrients. For proper functioning of our body we need to consume body building foods (e.g. milk, meat, poultry, fish, eggs, pulses, groundnuts); energy giving foods (e.g. cereals, sugar, roots, fats and oils); and protective foods (e.g. vegetables, fruits).

- **Nutrients**

The food we consume breaks down to simpler products before it is absorbed and utilized by the body. These simpler substances are called nutrients. Our body utilizes nutrients for building and repairing, obtaining energy and for protection

from diseases. What is nutrition? The term nutrition is related to our food intake and dietary patterns and utilization of protein, carbohydrate, fat, vitamins and minerals to maintain our health. Most of the natural food items contain more than one nutrient. Let us understand various nutrients contained in different food items.

Name of the Nutrient	Sources	Function	
Carbohydrates (energy giving food)	Rice, potato, wheat, sugar	Provides energy	
Fats (energy giving food)	Butter, ghee, milk, cheese	Gives more energy compared to carbohydrates	
Vitamins and minerals (protective food)	Fruits and vegetables	Required for normal growth and development	
Proteins (body building food)	Milk, eggs, meat, fish, soybean	Helps in building and repair of body	

Figure: 01-01. Role of Nutrients

(Source: Collegedunia.com)

1. Proteins

Proteins are called building blocks of our body. About 20 per cent of our body weight comes from proteins. Proteins are essential for growth and repair of muscle and other body tissues. Proteins are made of amino acids that contain the elements carbon, hydrogen, oxygen and nitrogen. We obtain proteins from animal as well as vegetable sources. Proteins of animal origin are found in milk, eggs, cheese, fish and meat. Proteins from these sources contain all the essential amino acids (EAA) in adequate amounts. Vegetable proteins are found in pulses (legumes), cereals, beans, nuts, oilseeds, etc. Those who take vegetarian food need to consume more and a wide variety of these foods to meet their protein needs.

2. Carbohydrates

Carbohydrates are the main source of energy for our body. There are three major categories of carbohydrates, viz. starch, sugar and cellulose. Our body breaks

down sugar and starch into glucose to provide energy. Cellulose does not have any nutritive value per se, but is a major contributor of dietary fibres. Excess carbohydrates are converted into fat by the liver and stored in the adipose tissues in our body. Carbohydrates are of two types – simple and complex. Simple carbohydrates are quick energy foods, e.g. sugar. Sources of simple carbohydrates are natural fruits, milk and milk products, and vegetables including potatoes and carrots. Complex carbohydrates are better sources of energy than sugar since these are released slowly. Sources of complex carbohydrates are breads, cereals (rice, wheat, bajra, corn, barley, ragi, etc.). We should consume starch and natural sugar and eat whole grains, rice, bread, cereals and fruits to obtain adequate amount of carbohydrates. Fast food items such as pizza, pasta, noodles, etc. are rich in carbohydrates only and cannot replace a balanced meal.

3. Fats

Fats and oils are concentrated sources of energy. Fats are substances that our body stores for future use. These are classified as simple lipids (e.g. triglycerides), compound lipids (e.g. phospholipids), and derived lipids (e.g. cholesterol). Fats may be obtained from animal or vegetable sources. The major sources of animal fats are ghee, butter, milk, cheese, eggs, fish and meat. The sources of vegetable oils are groundnut, mustard, sesame, coconut, etc. Excess carbohydrates are converted into fats. Fast food items like pizza, samosas, burgers are rich sources of fat. Therefore, children who consume only fast food items tend to become obese.

4. Vitamins

Vitamins are organic substances that we require in adequate quantities for good health. Our body, however, cannot synthesis them. Therefore, we need to consume their natural sources such as fruits and vegetables. Vitamins are divided into two groups–fat soluble vitamins (Vitamins A, D, E, and K) and water soluble vitamins (Vitamins of B group and Vitamin C). Each vitamin has a specific function and its deficiency leads to a particular deficiency disease.

5. Minerals

Minerals are the nutrients that are very essential for proper growth and functioning of our body and are required in small amounts. Calcium, Chlorine, Copper, Fluoride, Iodine, Iron, Magnesium, Manganese, Phosphorus, Potassium,

Sodium and Zinc are essential mineral nutrients. Some of them are explained below.

Vitamin	Source	Function	Deficiency Disease
A	Milk, butter, egg yolk, carrot, tomato, green vegetables	- night vision, - healthy skin	- night blindness - skin defections
B	Yeast, eggs, liver	- Releases energy from carbohydrates - Healthy nervous system - Healthy skin - Formation of red blood cells	- beriberi - anaemis
C	Fresh fruits and vegetables	- healing of wounds - resistance to disease	- scurvy (bleeding gums)
D	Butter, fish oils, eggs	- strong bones and teeth	- rickets (soft bones and dental decay)
E	Cereals, green vegetables	- May be needed for reproduction - Helps to fight against diseases	- sterility
K	Milk, butter, egg yolk, carrot, tomato, green vegetables	- clotting of blood	- prolonged bleeding

Figure: 01-02, Role of Vitamins

(**Source:** ponasa.condesan-ecoandes.org)

A nutritious diet provides all the nutrients the body needs. Malnutrition can increase people's chances of becoming ill, and hamper their physical and mental development, therefore making it harder for them to be productive members of society. An average adult requires approximately 2,100 kcal per day to carry out basic body functions. These calories need to come from a varied diet in order to meet all nutrient needs. Energy comes from macronutrients; micronutrients are not a source of energy. Nutritional requirements differ between individuals, change through the life cycle and vary by factors such as age, sex and environmental conditions. Energy and nutrient needs can also increase with heightened physical activity, during illness, during periods of growth, as well as during pregnancy and breastfeeding.

TYPES OF MALNUTRITION

Malnutrition is a general term that refers to a broad range of conditions. Malnutrition occurs when nutrient and energy intake does not meet, or exceeds,

an individual's requirements to maintain growth, immunity and organ function. In the context of WFP's work, the terms malnutrition and undernutrition are often incorrectly used synonymously. In reality, undernutrition is a form of malnutrition, as is over nutrition: Undernutrition occurs when the intake or absorption of energy or one or more nutrients (protein and/or micronutrients) is less than required. Undernutrition can result in chronic malnutrition, acute malnutrition and/or micronutrient deficiencies. Over nutrition is the overconsumption of nutrients and energy to the point at which health is adversely affected. Over nutrition can result in overweight and obesity, as well as nutrition-related non communicable diseases.

A. UNDERNUTRITION

Undernutrition is the result of insufficient intake of energy, protein and/or micronutrients; or poor absorption or rapid loss of nutrients due to illness or increased energy expenditure. Undernutrition contributes to poor health, mortality, and long term negative impacts. Children who are undernourished are more vulnerable to infection, and face impaired cognitive development. Undernutrition in childhood can have long-term consequences, including reduced school readiness, poor school performance and lower earning as adults – all of which reduce contribution to a country's economy. Ensuring adequate nutrition during the first 1,000 days from conception to a child's 2nd birthday – also known as the 'window of opportunity' – can have particularly high potential for both short- and long-term impact. When a person consumes less energy than needed, they become thin, start to lose fat and muscle tissue and become more vulnerable to infections and diseases. When a person consumes less of a specific nutrient than needed, they can develop a diverse array of health issues. For example, if an individual consumes too little vitamin A, they can become blind – a condition that is irreversible.

There are three forms of undernutrition:

1. **Acute malnutrition** occurs as a result of recent rapid weight loss (or, in children, a failure to gain weight) and is associated with increased morbidity and mortality. Acute malnutrition is furthered distinguished

into moderate acute malnutrition (MAM), and severe acute malnutrition (SAM).

2. **Chronic malnutrition** develops as a result of inadequate nutrition, repeated infections or both. It is associated with poor cognitive development, poor learning and limited productivity. It accumulates over time, in particular during the first 1,000 days. One indicator of chronic malnutrition is stunting. Some negative outcomes associated with stunting may be irreversible, therefore stunting should be prevented.
3. **Micronutrient deficiencies (MNDs)** is a shortage of essential vitamins or minerals. People who suffer from MNDs may not show any signs or symptoms, so it is sometimes referred to as 'hidden hunger'. MNDs can take many forms depending on the micronutrient/s deficient in the diet. Worldwide, iron, vitamin A and iodine are the three most common MNDs. Pregnant and lactating women as well as children are often the most at risk for MNDs.

B. OVERNUTRITION

Over nutrition occurs when intake of one or more nutrients and/or energy is greater than required, to the point at which health is adversely affected. The most common form of over nutrition is when intake of energy is higher than needs, a situation that leads to increased body fat and may result overweight or obesity. A person is classified as overweight or obese based on their Body Mass Index (BMI). BMI is defined as body weight divided by the square of body height, expressed in units of kg/m2. An adult with a BMI greater than or equal to 25 is considered overweight, while an adult with a BMI greater than or equal to 30 is considered obese18. Overweight and obesity makes a person more vulnerable to both immediate and longer-term risks to health, defined as non-communicable diseases. Among the immediate risks of overweight or obesity are metabolic abnormalities including: raised cholesterol, triglycerides and glucose; and high blood pressure. Longer-term risks include: cardiovascular diseases (heart diseases and stroke), type II diabetes and certain types of cancer (such as gastrointestinal cancer). Overweight or obese children are more likely to become overweight or obese adults. As with

undernutrition, optimum growth in the first 1,000 days is essential for prevention of overweight.

Other common forms of over nutrition include overconsumption of sodium (most commonly found in salt and many soy and fish sauces), which can cause high blood pressure and cardiovascular diseases; and overconsumption of trans-fatty acids, which is also correlated with cardiovascular diseases. Changes in dietary and physical activity patterns are often the result of environmental and societal changes associated with development, and lack of supportive policies in sectors such as health, agriculture, transport, urban planning, environment, food processing, distribution, marketing and education.

C. THE CONVERGENCE OF DIFFERENT TYPES OF MALNUTRITION

A growing body of evidence has shown that different types of malnutrition can occur at the same time. Wasting, stunting, MNDs and, increasingly, overweight/obesity coexist in the same vulnerable populations, communities, households and, at times, individuals. This coexistence of undernutrition and over nutrition is termed the double burden of malnutrition. The double burden of malnutrition can be seen at population level as well as household level, for example, an overweight mother with a stunted child. The double burden can also occur at the individual level. For instance, an overweight or obese person can have iron deficiency anemia or be deficient in zinc or vitamin A (among other micronutrients). This phenomenon often occurs as a result of unhealthy diets, characterized by consumption of food that is high in energy and/or salt, sugars and fats, but low in vitamins and minerals.

Drivers of Malnutrition:

Different types of malnutrition share a number of determinants including: poor diet, poor maternal nutrition, infectious diseases, and inadequate infant/child care and complementary feeding practices. The nutritional status of an individual is the outcome of a wide range of factors.

1. Immediate determinants are disease and inadequate diet at the individual level.

2. Underlying determinants are inadequate food security, care practices, health care and health environment at the household level.
3. Basic determinants are attributed to social and cultural practices at the community or societal level, due to the socio-political environment, governance, leadership capacity and financial resources, and knowledge and evidence. In order to understand the drivers of malnutrition, it is useful to use a conceptual framework, such as WFP's Food and Nutrition Security Framework.

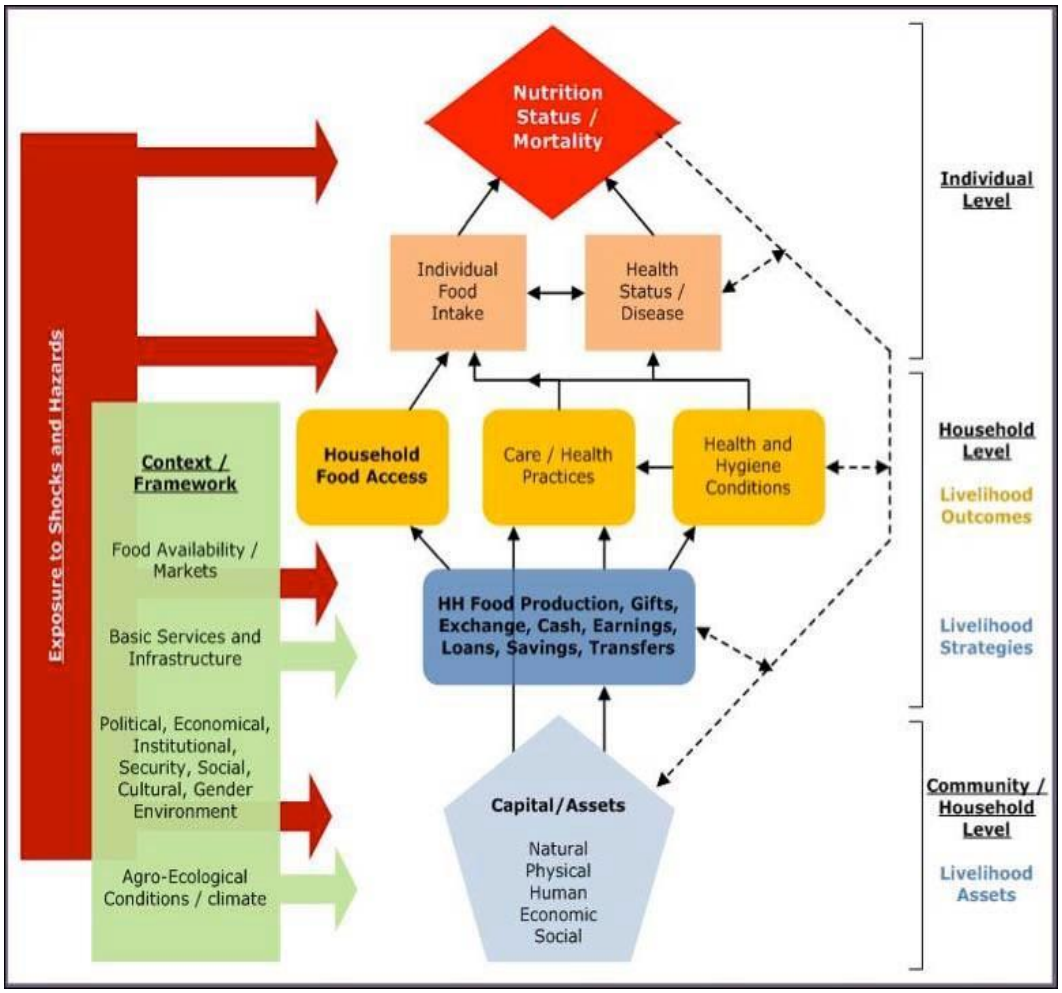

Figure: 01-03. Food and Nutrition Security Framework

(Source: UNICEF conceptual framework. WFP. 2016.)

MULTIPLE CHOICE QUESTIONS

1) Due to deficiency of Vitamin A which of the following disease may occur?

a) Color Blindness

b) Night Blindness

c) Cataract

d) Sterility

2) Which of the following is the good source of vitamin D?

a) Eggs

b) Milk

c) Butter

d) All of these

3) Acute malnutrition occurs due to

a) recent rapid weight loss

b) recent rapid weight gain

c) first rapid weight loss and then weight gain

d) no change in weight.

Answers: 1) b) Night Blindness 2) d) All of these 3) a) recent rapid weight loss

SHORT ANSWER QUESTIONS WITH MODEL ANSWER

1) Explain any one type of Malnutrition in detail.

Answer: Undernutrition is the result of insufficient intake of energy, protein and/or micronutrients; or poor absorption or rapid loss of nutrients due to illness or increased energy expenditure. Undernutrition contributes to poor health, mortality, and long-term negative impacts. Children who are undernourished are more vulnerable to infection, and face impaired cognitive development. Undernutrition in childhood can have long-term consequences, including reduced school readiness, poor school performance and lower earning as adults – all of which reduce contribution to a country's economy. Ensuring adequate nutrition during the first 1,000 days from conception to a child's 2nd birthday – also known as the 'window of opportunity' – can have particularly high potential for both short- and long-term impact.

2) What is the role of Fats in Good Nutrition or Healthy Nutrition?

Answer: Fats and oils are concentrated sources of energy. Fats are substances that our body stores for future use. These are classified as simple lipids (e.g. triglycerides), compound lipids (e.g. phospholipids), and derived lipids (e.g. cholesterol). Fats may be obtained from animal or vegetable sources. The major sources of animal fats are ghee, butter, milk, cheese, eggs, fish and meat. The sources of vegetable oils are groundnut, mustard, sesame, coconut, etc. Excess

carbohydrates are converted into fats. Fast food items like pizza, samosas, burgers are rich sources of fat. Therefore, children who consume only fast food items tend to become obese.

01-01-03: Balance Diet: Basics of Meal Planning

A balanced diet is one which includes a variety of foods in adequate amounts and correct proportions to meet the day's requirements of all essential nutrients such as proteins, carbohydrates, fats, vitamins, minerals, water, and fibre. Such a diet helps to promote and preserve good health and also provides a safety margin or reserve of nutrients to withstand short durations of deprivation when they are not supplied by the diet.

Recommended Dietary Allowances = Requirements + Margin of safety

A balanced diet takes care of the following aspects.

1. Includes a variety of food items
2. Meets the RDA for all nutrients
3. Includes nutrients in correct proportions

The safety margin takes care of the days we fast, or the short-term deficiency of certain nutrients in the daily diet. If the balanced diet meets the Recommended Dietary Allowances (RDAs) for an individual, then the safety margin is already included since RDAs are formulated keeping extra allowances in mind.

Figure: 01-04. Healthy Source of Six Essential Nutrients

(**Source:** https://www.google.co.in/imgres?imgurl=https%3A%2F%2Fi.pinimg.com%2F736x%)

One of the simplest ways to plan a balanced diet is to divide foods into groups and then make sure that each group is included in the meals. A food group consists of different foods which have common characteristics. These common features may be the source of food, the physiological function performed, or the nutrients present.

Foods can be grouped on the basis of the predominant nutrients present in them. This classification varies from one country to another depending on many factors. The five food group classification is used in India as a guide to meal planning. Many factors have been considered while compiling these groups such as availability of food, cost, meal pattern, and deficiency diseases prevalent. Not all foods in each group are equal in their nutrient content. That is why a variety of foods from each group should be included in the diet.

A classification based on nutrients present will ensure that all nutrients are made available to the body and offer greater variety within the group.

There are five basic food groups suggested by the Indian Council of Medical Research (ICMR). These include:

- Cereals, grains and products
- Pulses and legumes Milk and meat products
- Fruits and vegetables
- Fats and sugars

Figure: 01-05. Pyramid of Nutrition

(**Source:** https://images.app.goo.gl/L7TeCCDXefQAz8UR6)

Table 01-01: Food & Nutrition

Groups	Food	Nutrients
Basic Four	a) Cereals, millets and pulses	Carbohydrates, proteins, B-vitamins
	b) Vegetables and fruits	Vitamins, minerals and fibre
	c) Milk, milk products and animal foods	Protein, calcium, B-vitamins, phosphorus
	d) Oils, fats, nuts and oilseeds	Fat and protein
Basic Five	a) Cereals, grains and products	Carbohydrates, protein, invisible fat, thiamine, riboflavin, folic acid and fibre
	b) Pulses and legumes	Carbohydrates, protein, invisible fat, thiamine, riboflavin, folic acid, iron, calcium, and fibre
	c)Milk and meat products	Protein, calcium, fat, riboflavin and phosphorus
	d) Fruits and vegetables	Carotenoids, Vitamin C, riboflavin, folic acid, iron, calcium and fibre
	e) Fats and sugars	Essential fatty acids, iron, vitamin A, D, E and K
Basic Seven	a) Green and yellow vegetables	Carotenoids, ascorbic acid and iron
	b) Oranges, grapes, tomatoes, raw cabbage	Ascorbic acid
	c) Potatoes, other vegetables and fruits	Vitamins, minerals, fibre
	d) Milk and milk products	Calcium, phosphorus, protein, vitamins,

	e) Meat, poultry, fish and eggs	Protein, phosphorus, iron, B-vitamins
	f) Bread, flour and cereals	Thiamine, niacin, riboflavin, carbohydrates, fibre
	g) Butter or fortified margarine	Vitamin A and fat

Balanced Diet at Different Stages of Life

1. **Nutritional requirements during infancy:**

During early infancy, much of the nutrient requirements are met by breast milk whereas after 6 months 70% of the needs can be achieved by breast feeding and 30% by supplementary foods. The energy requirements for infants are higher than adults per unit body weight i.e., infants require 108 Kcal/kg body weight whereas adults require 40Kcal/kg body weight. The protein, calcium and phosphorus needs are also higher than adults per unit body weight since the demand for skeletal and muscle growth is higher in infants. The protein requirements are 2 g/kg body weight. Diluted and strained vegetable and fruit juices, milk (120-180 ml/day), sprouted and dried cereals gruels, sprouted and dried pulse porridge can be supplemented during late infancy. Germinated cereal and pulses are rich in enzyme amylase which aids in digestion.

2. **Nutritional requirements for school children (1-12 Yrs):**

During schooling, the nutritional requirements for protein, iron and pyridoxine increases. There is an increase in total body size along with muscle mass and bone growth. Energy, protein, calcium and iron deficiencies are the most common nutrient deficiencies observed during schooling. Hence milk, egg, greens, pulses and cereals should be provided sufficiently in the diet. The protein requirement is 1.5-2g/kg body weight. Energy dense, body building and protective foods are important for children of 1-12 years of age. Protective foods such as fruits help in fighting infections which is common among school going children.

3. **Nutritional requirements during adolescence (13-18 Yrs):**

Adolescence is the time period between childhood and adulthood. The major change in the physiology includes influence of hormones which result in

physical, biochemical and emotional development. During this period the final accelerated growth spurt occurs with respect to height and weight and the maximum height is attained. These changes demand for nutrients such as energy, protein, minerals and vitamins. The energy requirements for adolescents range between 2000-2500 Kcal, protein requirements are 1.5g/kg body weight and calcium of 600-800mg/day. Adolescent girls are at greater physiological stress than boys because of menstruation. Therefore, for growth, maturation and bone development; body building, protective foods and foods rich in calcium and iron are essential during adolescence.

4. Nutritional requirements for adults:

The energy and protein requirements per unit body weight are lesser for adults than infants and children aged 1-12 years. The protein requirement for an adult is 1g/kg body weight and requires around 60g of protein per day. The RDA for fat is 20-25g/day. The portion sizes of different food groups to be included in the diet to meet the nutritional requirements of adults per day are given in detail in table.

Table: 01-01: Nutritional Requirements for adults

Food groups	**Portion size (g)**	**Man (No. of portions)**	**Woman (No. of portions)**
Carbohydrates	100	5	3
Pulses (Vegetarians)	30	2	2
Pulses (Non-vegetarians)	30	1	1
Milk and milk products	100	3	3
Vegetables	100	3	3
Fruits	100	1	1
Fats and oils	5	5	4
Sugars	5	5	4

MULTIPLE CHOICE QUESTIONS

1) Which of the following does not include in 5 food groups?

a) Fats and sugars

b) Cereals, grains and products

c) Legumes and Pulses

d) Vitamins and Minerals

2) What is RDA

a) Recommended Dietary Allowances

b) Reduced Dietary Actions

c) Revised Dietary Actions

d) Regular Dietary Allowances

3) The protein requirement for an adult is 1g/kg body weight and requires

a) 50 gm

b) 60gm

c) 70 gm

d) 80gm

Answers: 1) **d) Vitamins and Minerals**, 2) **a) Recommended Dietary Allowances,** 3) **b) 60gm**

SHORT ANSWER QUESTIONS WITH MODEL ANSWER

1) What is Balanced Diet?

Answer: A balanced diet is one which includes a variety of foods in adequate amounts and correct proportions to meet the day's requirements of all essential nutrients such as proteins, carbohydrates, fats, vitamins, minerals, water, and fibre. Such a diet helps to promote and preserve good health and also provides a safety margin or reserve of nutrients to withstand short durations of deprivation when they are not supplied by the diet.

Recommended Dietary Allowances = Requirements + Margin of safety

A balanced diet takes care of the following aspects.

1. Includes a variety of food items
2. Meets the RDA for all nutrients
3. Includes nutrients in correct proportions

2) Explain Dietary plan for adolescence.

Answer: Adolescence is the time period between childhood and adulthood. The major change in the physiology includes influence of hormones which result in physical, biochemical and emotional development. During this period the final accelerated growth spurt occurs with respect to height and weight and the maximum height is attained. These changes demand for nutrients such as energy, protein, minerals and vitamins. The energy requirements for adolescents' range between 2000-2500 Kcal, protein requirements are 1.5g/kg body weight and calcium of 600-800mg/day.

SUMMARY

Consumption of nutritious diet in right (ideal) amount and proportion helps in maintenance of good health. Therefore, a good knowledge and understanding of the food sources of these various nutritional components, their metabolism, and their requirements for different age and physiological groups is an essential prerequisite for maintaining good health. This course is an attempt to provide this knowledge and skills. The last three decades has seen a tremendous progress in nutrition. Although the importance of nutrition in growth, development and the prevention of nutritional deficiency diseases was well recognized it is only in the last three decades that the frontiers of nutritional science has expanded to include newer and more dimensions of health such as prevention of chronic degenerative diseases, retardation of ageing and promotion of mental wellbeing. Human beings require a large number of nutrients, about 40, for many of which the requirements are well established. In addition, recent advances have shown that the diet components like carotenoid pigments, phenolic compounds, flavonoids, anthocyanins, lignins etc.are bioactive compounds with a potential role in the prevention of degenerative diseases and in detoxification. The earlier dictum that if the diet provided adequate energy to meet our requirements, then it is likely to be adequate in other respects, is no longer true. We have to make conscious efforts to have a healthy diet. If we are a nutrition professional or a dietitian, then we also 'have the responsibility of planning diets for others both for health and in diseases and in addition, we will be counseling a large number of people on appropriate diets.

END OF UNIT EXERCISES

1. Define nutrition. Discuss its significance in maintaining health and preventing disease. How does nutrition impact physical and mental development?
2. Explain the difference between good nutrition and malnutrition. Describe the causes, types, and consequences of malnutrition.
3. What is a balanced diet? Describe its components and explain how it varies according to age, gender, physical activity, and health condition.
4. Discuss the importance of meal planning. What factors should be considered while planning meals for different age groups and socio-economic settings?

5. How does poor nutrition affect growth, immunity, and productivity? Illustrate with examples from vulnerable populations such as children and pregnant women.
6. Describe the relationship between dietary habits and lifestyle diseases. How can proper nutrition serve as a preventive measure for non-communicable diseases?
7. What are the basic principles of a balanced diet according to the Indian dietary guidelines? How can these be applied in daily life to ensure adequate nutrition?

KEY WORDS

Diet, Nutrients, Nutrition, BMI, RDA

REFERENCES

- **MOOCs**

1. https://swayam.gov.in/nd2/ugc19-hs15
2. https://onlinecourses.nptel.ac.in/noc24_hs07
3. https://www.edx.org/course/nutrition-and-health
4. https://www.coursera.org/learn/food-and-health
5. https://www.futurelearn.com/courses/human-nutrition

- **YOUTUBE VIDEOS**

1. https://www.youtube.com/watch?v=NqV1Ig4_nfI
2. https://www.youtube.com/watch?v=DcF7Y1hNX0Y
3. https://www.youtube.com/watch?v=CIAllVC7aww
4. https://www.youtube.com/watch?v=rtFhFPFoY8I
5. https://www.youtube.com/watch?v=wlbQ_jR7eJQ
6. https://www.youtube.com/watch?v=RqrL3b9bSVY

- **WIKIPEDIA**

1. https://en.wikipedia.org/wiki/Nutrition **(**who.int**,** en.wikipedia.org**)**
2. https://en.wikipedia.org/wiki/Malnutrition **(**en.wikipedia.org**)**
3. https://en.wikipedia.org/wiki/Diet_(nutrition) **(**en.wikipedia.org**)**
4. https://en.wikipedia.org/wiki/Healthy_diet **(**en.wikipedia.org**)**
5. https://en.wikipedia.org/wiki/Eatwell_Guide **(**en.wikipedia.org**)**
6. https://en.wikipedia.org/wiki/MyPlate **(**en.wikipedia.org**)**

- **OER**

1. Byrd-Bredbenner, C., Moe, G., Beshgetoor, D. & Berning, J. (2020). ***Human Nutrition – 2020 Edition***. University of Hawai‘i at Mānoa. Available at: **https://pressbooks.oer.hawaii.edu/humannutrition/** [Accessed 24 Jun. 2025].
2. Stephenson, T.J. (2022). ***Nutrition: Science and Everyday Application – 2nd Edition***. Open Oregon Educational Resources. Available at: **https://openoregon.pressbooks.pub/nutritionscience2/** [Accessed 24 Jun. 2025].
3. OER Commons. (n.d.). ***Metabolism and Nutrition***. OER Commons. Available at: **https://www.oercommons.org/courses/metabolism-and-nutrition** [Accessed 24 Jun. 2025].
4. OER Commons. (n.d.). ***Nutrition and Aging (FN 211)***. OER Commons. Available at: **https://www.oercommons.org/courses/nutrition-and-aging** [Accessed 24 Jun. 2025].
5. OER Commons. (n.d.). ***General Nutrition Modules***. OER Commons. Available at: **https://www.oercommons.org/hubs/nutrition** [Accessed 24 Jun. 2025].
6. OER Commons. (n.d.). ***Nutrition Collection***. OER Commons. Available at: **https://www.oercommons.org/curated-collections/256** [Accessed 24 Jun. 2025].
7. OER Commons. (n.d.). ***OER Commons Library: Nutrition Resources***. Available at: **https://www.oercommons.org/browse?f.general_subject=nutrition** [Accessed 24 Jun. 2025].

- **REFERENCE BOOKS**

1. Introduction to Human Nutrition, Michael J Gibney, Susan A Lanham-New, Aedin Cassidy and Hester H Vorster, 2nd Edition, Wiley-Blackwell, A John Wiley & Sons, Ltd., Publication, 2009
2. Food, Nutrition, Health and Fitness, Chapter3, NCERT, New Delhi.
3. Food and Nutrition, Handbook, World Food Programme, Nutriition Division (OSN) Via Cesare Giulio Viola, 68 **nutrition@wfp.org**, wfp.org/nutrition, December 2018.

4. Nutrition and Malnutrition, Unit 1, IGNOU, People's University.
5. Food, Nutrition and Health, Basic Concepts of Nutrition-I, Egyankosh.
6. Diet for Healthy Living, Health and Physical Education- Class-I

UNIT 01-02: BASICS OF NUTRITION

LEARNING OBJECTIVES

After successful completion of this unit, you will be able to

- ❖ Identify macronutrients and micronutrients and describe their functions.
- ❖ Classify dietary sources of essential nutrients.
- ❖ Analyze the effects of nutrient deficiencies.

INTRODUCTION

As students of nursing and as health care practitioners you already know the essentials of nutrition. We would like to build on this foundation in order to give you more in-depth knowledge that you will find useful in clinical settings and in your interactions with patients. This unit focuses on this basic principle. It explores several interesting facts about the role of food in health and disease. Food is important as a source of certain substances which are essential for our body. These substances, as you may know, are called nutrients. What are the functions of these nutrients? How does the body utilize them? This unit will give you a bird's eye view of these aspects as well as the clinical interrelationship between food and health. We hope it will convince you of the crucial importance of good food in promoting health. You will also be introduced to the role of food and specific nutrients as a form of therapy. In other words, the treatment of certain diseases requires the use of food and nutrients. This is an issue that you are often directly connected with when you give a patient vitamin pills or dispense intravenous glucose solution. Wouldn't you like to know more about these aspects? This unit will introduce you to some underlying principles so that you can better appreciate the details that follow.

This section should present an open ended question or discuss some interesting information along with relevant image so as to arouse curiosity of learners about this unit topic.

FOOD AS A SOURCE OF NUTRITION:

The body ingests, assimilates, and utilizes the nutrients in food to meet its needs for macronutrients and micronutrients. The body's physical and chemical process of breaking down food and converting it into a useful form of energy is called metabolism. The energy produced by metabolism is essential to maintain the

body's functions and daily activities. The ability to metabolize food may vary from person to person and may be affected by illness or disease. Balancing the body's ability to metabolize food with an appropriate quantity of nutrients and food types will help ensure good health. Each person processes and uses nutrients differently. The body responds either positively or negatively when it absorbs a nutrient or group of nutrients. The response affects the body's condition and health status. The body's response to nutrients and the subsequent outcome is called nutritional status. The amount and type of food and drink a person eats is called the diet. A nutritious or balanced diet includes a variety of foods and the proper nutrients in the correct amounts and combinations to meet the body's functional needs. A healthy and balanced diet should contain food free of harmful substances and in the optimal amounts and mixtures. Eating a variety of foods is key to good health, especially for people with special needs, such as infants and young children, pregnant and lactating women, and the elderly. Eating a wide assortment of foods increases the likelihood of getting the necessary nutrients. Except for breastmilk, no single food provides all the nutrients the body needs to function properly.

In summary, good nutrition involves eating a variety of safe and appropriate foods in the correct quantities to meet the body's needs for health and well-being. The essential nutrient groups. To function properly, the body must maintain a proper balance of the following key nutrients:

- Carbohydrates
- Proteins
- Fats
- Vitamins
- Minerals
- Water

As mentioned earlier, these nutrients are divided into macronutrients and micronutrients. People must eat the appropriate amount of all these nutrients to be well nourished. Macronutrient and Micronutrient Food Sources, Functions, and Manifestations of Deficiencies lists the essential nutrients and their sources, functions, and deficiencies.

01-02-01: MACRONUTRIENT: FOOD SOURCES, FUNCTIONS AND DEFICIENCIES; CARBOHYDRATES, LIPIDS, PROTEINS

The word macro means big. Human requires macronutrients in large quantities. Each macronutrient has its specific pathways and functions. It provides energy to our bodies. The total energy intake of macronutrients are carbohydrates (60-80 %), fats (10-30 %), and proteins (7-15 %).

Table: 01-02: Types of Nutrients and their Functions

Nutrients	Major Functions
Carbohydrates	Supply Energy
Fats	Supply Energy
Proteins	Build new tissues and repair worn out tissues
Vitamins and Minerals	Protect the body from infection and regulate body processes

It is important to emphasize that the functions mentioned here are major functions. Each nutrient category is also associated with other functions. For example, the major role of proteins in our body is to build new tissues i.e. to promote growth. When we grow, new cells are added and existing cells increase in size. This process cannot take place without proteins. Similarly, when tissues get worn out they cannot be replaced without proteins. However, proteins also have other functions such as protecting the body from infection and regulating body processes. The following discussion indicates some specific functions of nutrients as well as other interesting details.

Carbohydrates: Dietary Sources and Functions:

Food contains three distinct types of carbohydrates—sugars, starches and fibre. Sugars and starches can be digested in the body and the end products of their digestion are absorbed by it. They can therefore be utilised and in this sense are "available" to the body. This is why they are called available carbohydrates. The chief function of available carbohydrate is to furnish energy for performing work and sustaining body processes. One gram of carbohydrate is to furnish energy for performing work and sustaining body processes. One gram of carbohydrate provides about 4 kilocalories (4 Kcal). Energy is measured in kilocalories. One kilocalorie is the amount of heat required to raise

the temperature of one kilogram of water by one degree centigrade. Carbohydrates have a protein-sparing action. If the diet contains sufficient carbohydrates, proteins will be spared for their body-building action. Otherwise, they will be broken down to release energy. Carbohydrate is also essential for proper breakdown of fat, i.e. fat catabolism. In the absence of enough carbohydrate, excessive fat breakdown takes place resulting in accumulation of by-products of fat metabolism. These by-products are toxic. On the other hand, insoluble fibre cannot be digested and is therefore "not available". Cellulose and other complex carbohydrate molecules are forms of fibre. However, this does not mean that fibre serves no useful purpose. Fibre swells in the intestine by absorbing water. This helps the easy passage of stools and therefore prevents constipation. You may already be aware of this function. In fact, recent research suggests that specific forms of fibre help in controlling blood, sugar and cholesterol levels. We also now know that lack of fibre probably causes several diseases like diabetes mellitus, cardiovascular and obesity.

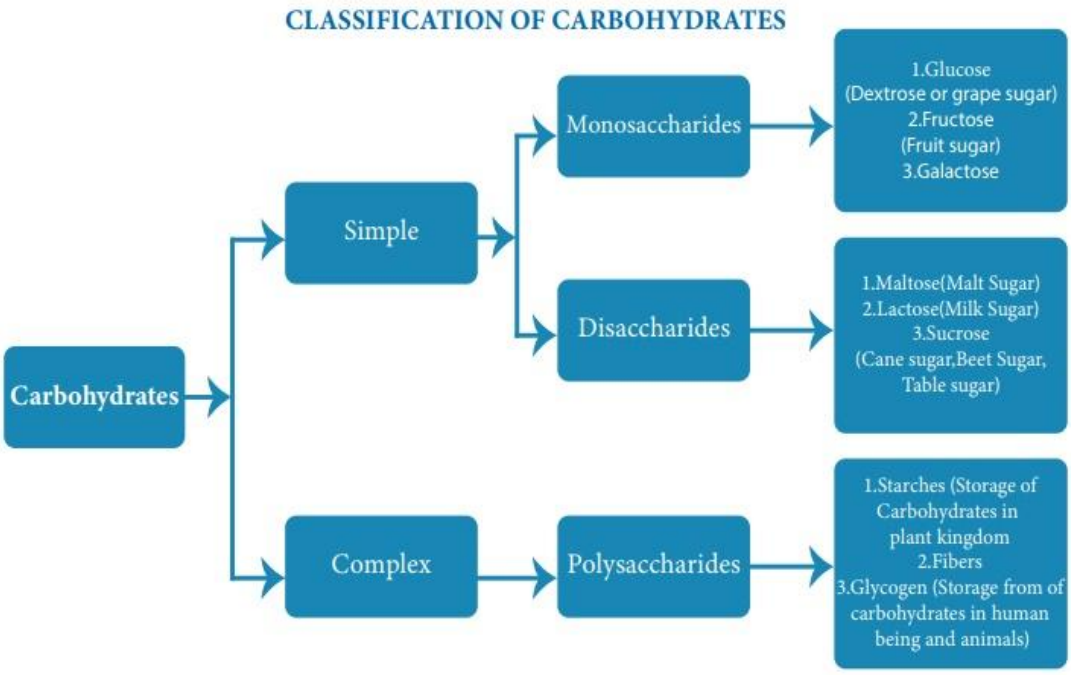

Figure: 01-06. Classification of Carbohydrates

(Source: https://img.brainkart.com/imagebk38/jQV794i.jpg)

Carbohydrates can be divided into 2 basic categories: simple and complex. Simple carbohydrates include monosaccharides and disaccharides, sometimes called ‘sugars,’ and polyols, called ‘sugar alcohols.’ These include both natural and refined substances. See figure of carbohydrates classes above. They tend to have sweet flavours and while mono and disaccharides are easily absorbed within the digestive tract, polyols are notoriously difficult to absorb. Complex carbohydrates, also known as polysaccharides, include both starchy polysaccharides (starches) and non-starchy polysaccharides (insoluble and soluble fibre). These are found in plants, while glycogen, another form of polysaccharides, is found in most animal tissues. In plants, starch is the storage form of glucose created during photosynthesis. Foods such as potatoes, wheat, corn, rice, and cassava contain a large percentage of starch. In humans, glucose is stored in the liver and muscles as glycogen.

Effects of Deficiency of Carbohydrates:

Generally, there is no lack of carbohydrates in our food because carbohydrates are found in most food. Still, if there is a lack of it, the later mentioned conditions will lead for the diseases,

- There is a loss of body weight.
- Excess use of protein for energy causes the body not to build up, which slows down physical growth.
- Excess of fat for energy causes a disease called ketosis.
- Lack of carbohydrates causes weakness in the body form which the person to experience fatigue and lethargy.
- The skin starts dry and loose.
- Disorders occur in the digestive system. Due to which constipation is complained.

Fats: Dietary Sources and Functions:

Fats provide more than double the energy supplied by carbohydrates, 9 Kcal per gram. This makes them concentrated sources of energy. Foods rich in fat provide satiety and are more palatable. Fat which is not used by the body is stored by a specific tissue called adipose tissue. Adipose tissue is present under the skin and around vital organs such as the kidney and heart. The fat layers under the skin prevent excessive heat loss and keep the body warm. On the

other hand, the padding around the vital organs protects them from damage and injury. One of the major functions of the fats aside from these is their role as sources of essential fatty acids. Fatty acids, as you know, are composed of a chain of carbon atoms with other elements such as hydrogen and oxygen. You have been introduced to the properties of fatty acids in Block 1. Fatty acids are of two types: saturated and unsaturated. The saturated fatty acids we mentioned earlier have to be provided by the diet. They cannot by synthesized by the body. This fact is the reason why they are called “Essential”. The essential fatty acids called linoleic and linolenic acids are unsaturated in nature. Depending on the position of double bonds in their molecules, fatty acids can be classified as n-3 and n-6 fatty acids. Linoleic acid is an n-6 fatty acid whereas linolenic acid is an n-3 fatty acid. Fats are also important as a vehicle for carrying fat-soluble vitamins and also aid in their absorption.

The evolution of cultivated plants that has been shaped to the needs of modern humans is a major source of oils. Most of the annual plants cultivated are used either as a source of oil or as protein-rich foods. Another source of vegetable oil is oil-bearing trees. Olive, coconut and palm oils are extracted from the fruit pulp rather than the seed of the fruit. Palm also has seeds, which provide palm kernel oil. Most of the oil bearing tree fruits and kernels provide the highest oil yields. Vegetable fats and oils are found in greatest abundance in fruits and seeds. While fats and oils do occur in the roots, stalks, branches, and leaves of plants, they are rarely present in these organs in quantities large enough for commercial purposes. In some seeds and fruits, however, the fat content is large and in several cases as high as 35 per cent; in dried coconuts 65%. These are the commercial sources of vegetable fats. In some seeds the fat is practically confined to the germ or embryo; this is the fact in most of the cereals. Within the sources of vegetable oils it is useful to distinguish three different types.

1. **Byproducts:** like Cotton and corn are grown primarily for fibre and for cereal respectively and the oil is a byproduct. Soybean can also be included in this category because it yields two products—oil and meal—which represent approximately 18% and 79% respectively of the dried bean. It could also be argued that peanuts (groundnuts) should also be

included, since only about one half of the crop is crushed (for oil and meal) and the rest is consumed as nuts.

2. **Tree crops:** Palm, palm kernel, coconut and olive oils are obtained from trees that have to be planted and mature before they give a useful crop. The olive contains a large amount of fat in the pulp surrounding the kernel and only a smaller amount in the kernel itself, while in the oil palm both the pulp and the kernel contain large amounts. The fat from the pulp may have characteristics quite different from those of the fat in the kernel.
3. **Annual crops:** The third category is annual crops such as rape, sunflower and linseed. Another major source of fats and oils is from the edible meat fats which are supplied almost entirely by three kinds of domesticated animals such as lard from pigs, tallow from cattle and sheep, and of course milk fat or butter from cows.

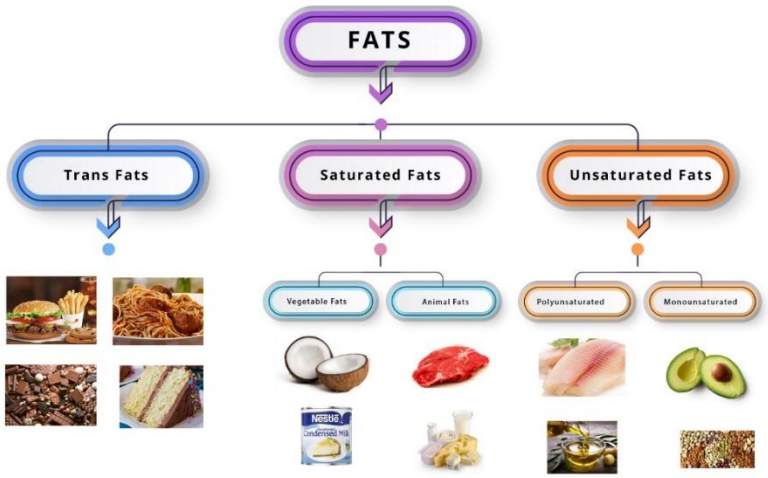

Figure: 01-07. Classification of Fats

(**Source:** n.images.search.yahoo.com/yhs/search)

Effects of Deficiency of Fats and Oils:

Essential fatty acids are essential for the proper functioning of the human body. Deficiency in such fats can show up in your body in many ways such as:

1. **Skin problems:** The organ skin is the most affected by liquid deficiency. Dermatitis often causes skin inflammation and swelling along with dry and scaly rashes on the skin.

2. **Hair loss:** The human body produces prostaglandins a fatty chemical encouraging hair growth in sufficient fat me change your hair texture and increase your chances of hair fall.

- **Hormonal issues:** The endocrine system produces hormones and for those hormones to function properly needs enough minerals Selenium and vitamins if you fail to get enough of such nutrients, you probably have out-of-balance hormones. Fat deficiency affects the power of absorption of vitamins and minerals.
- **Fatigue:** Fat deficiency directly impacts the body's ability to absorb minerals, vitamins and antioxidants, which can result in problems such as fatigue not having enough of these essential minerals and not feeling full due to fat deficiency can lead to tiredness both mentally and physically.
- **Low immunity:** if you Prone to falling sick despite consuming vegetables fruits and sufficient quantities of carbohydrates, it might be a sign to check if your body is getting sufficient fat. Your immune system may become weak because your body fails to absorb the nutrients you consume, which happens when you are not getting enough fat.

Proteins: Dietary Sources and Functions:

Known as body-building foods, proteins form the main structural components of cells and, apart from water, make up the bulk of tissues and organs. The body needs additional protein from the diet to grow, develop, maintain, and repair tissues and muscles. Proteins are necessary for the following:

a. Growth and development
b. Maintenance and repair of tissues and replacement of worn-out or damaged tissues
c. Production of metabolic and digestive enzymes
d. Make up of certain hormones and all cells and tissues

There are two main types of protein: plant protein, which includes legumes (e.g., beans, lentils, soybeans, and chickpeas), groundnuts, and other nuts and animal protein, which includes meat, poultry, fish, insects, milk, cheese, and eggs. Proteins are made of amino acids, some of which are absolutely essential for humans. Not all proteins have the same quality and nutritional importance. Proteins in some foods do not contain the full range of essential amino acids

that the body needs. Foods such as milk and eggs contain high-quality, easily digested proteins with the essential amino acids. Foods such as maize and wheat contain protein with fewer essential amino acids and are less easily digested.

Do you recall the fact that proteins are built of amino acids?

Some of the amino acids that constitute proteins cannot be synthesised by the body. These are also called essential **amino acids**. Here is a list of essential amino acids:

- Isoleucine
- Leucine
- Lysine
- Methionine
- Phenylalanine
- Theronine
- Tryptophan
- Valine
- Histidine (for infants only)

There is another group of amino acids which can be synthesised by the body. These are called non-essential amino acids. Actually the word is a bit of a misnomer. May be these amino acids are so important for the body that nothing is left to chance. Some examples of non-essential amino acids: alanine, aspartic acid, cystine, cysteine, glutamic acid, glutamine, glycine, hydroxyproline, hydroxylysine, proline, serine and tyrosine. Proteins, as we mentioned earlier, have the chief function of sustaining growth and repair of body tissues. They are, however, remarkably versatile and the body uses them in several ways. As digestive enzymes, they help in the process of digestion. As metabolic enzymes, they regulate chemical reactions in the body. Further some of the hormones produced by the body are proteins. Proteins also play a protective role. Antibodies – a crucial link in our immune system - are proteins. In addition to all these functions, proteins serve as carriers in transporting certain substances from one part of the body to another usually through blood.

Nature of food proteins: The formation of body tissue in a growing organism requires a never ending supply of amino acids, for building new tissues as well

as for repairing the old worn out of the existing body tissues. The protein obtained naturally in our diet includes both plant & animal sources. Proteins contribute to the structure, texture & taste of food. They are often added to foods to enhance these properties. Example: Milk protein-casein is added to frozen dessert toppings. Gelatin is added to yogurt & fillings. Protein hydro lysates are added to many foods as thickeners, stabilizers, or flavor enhancers.

a. **Animal proteins:** Animal-derived proteins are easily digested and generally contain a mix of amino acids that is very similar to proteins found in human body (complete protein source). They are used up more rapidly than plant proteins in our body &are considered to be more complete because they contain all essential amino acids which are needed by the body to function effectively. Animal sources of protein include meat, milk, fish, eggs, poultry and dairy products.

b. **Plant proteins:** Plant sources of protein are not as easily digested and more than one source of plant protein is required in order to create an optimum amino acid profile or complete protein. The storage proteins of cereals & pulses are the major sources of food protein. They are divided into 2 groups – the reserve proteins of seeds & the functional proteins of the vegetative parts of the plants (leaves, stalks & roots). Plant protein foods include soy products such as soybeans, tofu, soy bean curd that are sources of high-quality protein. Others foods are cereal grains, nuts, oilseeds, oats, millets, legumes (dried beans & peas). One of the advantages of taking in plant protein is preventing the amount of unhealthy fatty acids often found in animal protein food source.

Effects of Deficiency of Proteins:

Due to deficiency of proteins, there are many nutritious related diseases or disorders can be form to the individual.

1. Kwashiorkor:

Kwashiorkor means sickness of the deposed child i.e. a disease the child gets when the next baby is born.

- **Occurrence and causes:** Kwashiorkor is predominantly found in children between 1-5 years of age. This is primarily due to insufficient intake of proteins, as the diet of a weaning child mainly consists of carbohydrates.

- **Clinical symptoms:** The clinical manifestations include stunted growth, edema (particularly on legs & hands), diarrhea, discoloration of hair & skin, anemia, apathy & moonfaced.
- **Biochemical manifestations:** Decreased plasma albumin concentration (<2 g/dl against normal 3-4.5 g/dl), fatty liver, deficiency of K+ due to diarrhea. Edema occurs due to lack of adequate plasma proteins to maintain water distribution between blood & tissues. Disturbances in the metabolism of protein, carbohydrate & fat. Several vitamin deficiencies occur. Plasma retinol binding protein is reduced. The immunological response of the child to infection is very low.
- **Treatment:** Ingestion of protein-rich foods or the dietary combinations to provide about 3- 4 g of protein/kg body weight/day will control kwashiorkor. The treatment can be monitored by measuring plasma albumin concentration, disappearance of edema & gain in body weight.

2. Marasmus:

Marasmus literally means 'to waste'. It mainly occurs in children under 1 year age. Marasmus is predominantly due to the deficiency of calories. This is usually observed in children given watery gruels (of cereals) to supplement the mother's breast milk.

Symptoms of marasmus include growth retardation, muscle wasting (emaciation), anemia & weakness. A marasmic child does not show edema or decreased concentration of plasma albumin.

MULTIPLE CHOICE QUESTIONS:

1) Which of the following is monosaccharide?

a) Glucose
b) Sucrose
c) Galactose
d) Starch

2) Which of the following is not the essential amino acid?

a) Tryptophan
b) Alanine
c) Phenylalanine
d) Valine

3) Which of the following is not the effect of deficiency of oils and fats?

a) Hair loss

b) Low Immunity

c) Skin Problems

d) Joint Pains

Answers: 1) a) Glucose 2) b) Alanine 3) d) Joint Pains

SHORT ANSWER QUESTIONS WITH MODEL ANSWER

1) Write a short note on Kwashiorkar.

Answer: Kwashiorkor means sickness of the deposed child i.e. a disease the child gets when the next baby is born. Kwashiorkor is predominantly found in children between 1-5 years of age. This is primarily due to insufficient intake of proteins, as the diet of a weaning child mainly consists of carbohydrates.

The clinical manifestations include stunted growth, edema (particularly on legs & hands), diarrhea, discoloration of hair & skin, anemia, apathy & moon face.

Decreased plasma albumin concentration (<2 g/dl against normal 3-4.5 g/dl), fatty liver, deficiency of K+ due to diarrhea. Ingestion of protein-rich foods or the dietary combinations to provide about 3- 4 g of protein/kg body weight/day will control kwashiorkor. The treatment can be monitored by measuring plasma albumin concentration, disappearance of edema & gain in body weight.

2) What are the effects of deficiency of carbohydrates?

Answer: Generally, there is no lack of carbohydrates in our food because carbohydrates are found in most food. Still, if there is a lack of it, the later mentioned conditions will lead for the diseases,

- There is a loss of body weight.
- Excess use of protein for energy causes the body not to build up, which slows down physical growth.
- Excess of fat for energy causes a disease called ketosis.
- Lack of carbohydrates causes weakness in the body form which the person to experience fatigue and lethargy.

01-02-02: Micronutrient: Food Sources, Functions and Deficiencies; Vitamins, Calcium, Potassium, Sodium, Iron, Iodine and Zinc

Micronutrients are needed in very small amounts but play an important role in the proper functioning of the body. Micronutrients include vitamins and minerals that the body needs to produce various hormones and enzymes to develop and maintain systems including the immune and reproductive systems. Micronutrients (vitamins and minerals) have numerous health benefits including tissue maintenance, bone and teeth formation and health, serving as cofactors and coenzymes to enzyme various enzyme systems, aiding the regulation and coordination of most body functions, and other biochemical and physiological functions in the body. Micronutrients are essentially required by human and other organisms in varying amounts throughout life to coordinate various physiological functions to maintain health. Humans and other animals require several vitamins and minerals. Micronutrient requirements in humans are in amounts generally below 100 mg/day, in contrast to macronutrients which are required in grams per day.

Vitamins: Dietary Sources and Functions:

Vitamins are organic compounds (or related set of molecules) which are essential micronutrients that organisms including humans require in minute quantities, usually within micrograms (millionths of a gram) to milligrams (thousandths of a gram), for proper functioning of their metabolism. Essential nutrients cannot be made or synthesized in the human body (organism), either at all or in insufficient amounts, and therefore must be obtained by the diet, just as some beneficial phytochemicals are not synthesized in the body. Vitamin C can be synthesized by a few species but not by others; in the first instance, it is not a vitamin, but is in the second instance. The term vitamin does not cover the three other groups of the essential nutrients: minerals, essential amino acids, and essential fatty acids. Most vitamins are not single molecules, rather they are groups of related molecules known as vitamers. For instance, vitamin E comprises of four tocopherols and four tocotrienols. Thirteen vitamins required by human metabolic functions are: vitamin A (as all-trans-retinyl-esters, all-trans-retinol, and all-trans-beta-carotene as well as other provitamin

A carotenoids), thiamine (vitamin B1), riboflavin (vitamin B2), niacin (vitamin B3), pantothenic acid (vitamin B5), pyridoxine (vitamin B6), biotin (vitamin B7), folic acid or folate (vitamin B9), cobalamins (vitamin B12), ascorbic acid (vitamin C), calciferols (vitamin D), tocopherols and tocotrienols (vitamin E), and quinones (vitamin K). Vitamins have various biochemical functions. Vitamin A functions as regulator of cells and tissue growth and differentiation. The B vitamins function as enzyme cofactors and coenzymes or their precursors. Vitamin D provides hormone-like functions, regulating mineral metabolism for the bones and other organs in the body. Vitamins C and E act as antioxidants (Bender, 2003), preventing cells oxidation by free radicals in the body. Both deficient and excessive intake of vitamins can potentially result in clinically significant illness, though excessive intake of water-soluble vitamins is unlikely to do so.

Effects of Deficiency of Vitamins:

The body's stores for different vitamins widely vary; vitamins B12 A, and D are stored in significant amounts, mostly in the liver, and adult's diet might be deficient in vitamins D and A for many months and vitamin B12 in certain cases for years, before developing deficiency condition. However, vitamin B3 (i.e., niacin and niacinamide) does not store in significant amounts, so the stores may last only a few weeks. For vitamin C, the first scurvy symptoms in experimental studies of thorough vitamin C deprivation in humans have widely varied, from one month to above six months, depending on the previous dietary history which determined body stores. Deficiencies of vitamins are classified into two; either primary or secondary. Primary deficiency occurs when human/organism does not get sufficient vitamin in from food. Secondary deficiency may be as a result of an underlying disorder which limits or prevents the absorption or use of vitamin, due to lifestyle factors, such as excessive alcohol consumption, smoking, or use of medications that interfere with absorption or use of vitamins. People who eat varied diet are not likely to develop severe primary deficiency of vitamins, but may be consuming below the recommended quantities; a national food and supplement survey done in the United States over 2003 to 2006 reported that at least 90% of people who did not consume the supplements of vitamins were found to have inadequate

amounts of some essential vitamins, especially vitamins D and E. Well-researched human deficiencies of vitamins involve niacin (pellagra), thiamine (beriberi), vitamin C (scurvy), vitamin D (rickets), and folate (neural tube defects). In much of the developed countries these deficiencies are rare because of an adequate food supply and the vitamins addition to common foods. Along with these classical vitamin deficiency diseases, a number of evidence has also linked vitamin deficiency to many different disorders.

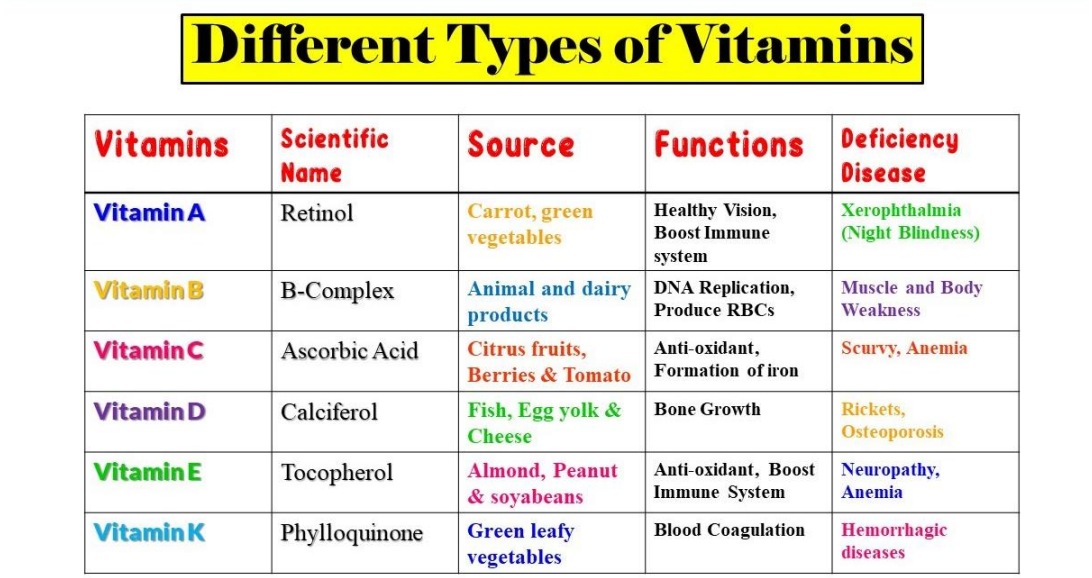

Figure: 01-08. Types of Vitamins

(Source: https://i.ytimg.com/vi/dtCvYfhzPQ0/maxresdefault.jpg)

Minerals: Dietary Sources and Functions:

In nutrition context, minerals are inorganic elements required as essential nutrients by organisms/humans to carry out functions necessary for life. However, four major structural elements in human body by weight (carbon, nitrogen, oxygen, and hydrogen), are normally not included in the lists of major nutrient minerals (but nitrogen is considered mineral for the plants, as it is often included in fertilizers). The four elements together compose around 96% of the weight of human body, and major minerals (called macro elements or microminerals) and minor minerals (called trace elements or microelements) make up the remainder. Being elements, minerals cannot be biochemically synthesized by living organisms/humans. Plants get their minerals from soil. Most of the minerals in human diets come from eating animals and plants or

from drinking water. Total minerals in food is referred to as ash. As a group, minerals are among the four groups of essential nutrients, others include vitamins, essential amino acids, and essential fatty acids. They are called essential nutrients because they cannot be synthesized in the body and therefore must be taken through foods or, in rare cases, supplements. The five major minerals (inorganic elements) in human body are calcium, sodium, magnesium, phosphorus, and potassium. All of the remaining inorganic elements in human body are known as trace elements. The trace elements with specific biochemical function in human body are zinc, manganese, molybdenum, iodine, selenium, sulfur, iron, chlorine, cobalt, and copper. At least 20 chemical elements (minerals) are known to be required by human to support biochemical processes by serving functional and structural roles as well as being electrolytes. Oxygen, hydrogen, carbon and nitrogen (O, H, C, and N) are the most abundant elements in human body by weight and make up around 96% of the weight of the human body. Calcium makes up 920 g to 1200 g of the body weight of an adult, with 99% of it contained in the bones and teeth. This is around 1.5% of body weight. Phosphorus occurs in amounts of around 2/3 of calcium, and makes up around 1% of an individual's body weight (National Library of Medicine, 2016). The other major minerals (sodium, chlorine, sulfur, magnesium, and potassium) make up only approximately 0.85% of the weight of human body. Together these 11 chemical elements (O, Ca, P, K, Na, H, C, N, Cl, Mg, S) make up 99.85% of the human body. The remaining ~18 ultra trace minerals consist of just 0.15% of the human body, or about 1 g in total for the average individual.

A. Calcium:

Almost all calcium in the body is in bones and the teeth, the skeleton serving as reservoir for calcium required in blood and elsewhere. During the childhood and the adolescence stages, adequate intake of calcium is critical for the bone growth and calcification. A low intake of calcium during childhood, and especially during adolescent growth spurt, may predispose individual to osteoporosis (a disease characterized by a reduced bone mass) later in life. As bones lose density, they develop fragility and inability to withstand ordinary strains; resulting fractures, mostly of the hip, may result in incapacitation and

even death. Osteoporosis is mainly common in postmenopausal women in industrialized societies. Some processes foods undergo reduce the nutrients in them, including calcium. Not a disease of calcium deficiency per se, osteoporosis is heavily influenced by heredity; the risks of the disease can be reduced by ensuring sufficient calcium intake all through life and doing regular weight-bearing exercise. Sufficient calcium intake in immediate postmenopausal years does seem to slow bone loss, though not to the same degree as do bone-conserving drugs.

B. Potassium:

Potassium is widely distributed in food and the deficiency in the diet is rarely. However, some diuretics used in treatment of hypertension usually deplete potassium. Potassium is also lost during sustained diarrhea or vomiting or with chronic use of laxatives. The symptoms of potassium deficiency include muscle cramps, confusion, weakness, and loss of appetite. Severe low blood potassium (hypokalemia) may result in cardiac arrhythmias. Potassium-rich foods, such as bananas and oranges, can help replace potassium losses, as can potassium chloride supplements, which ought to be taken under medical supervision.

C. Sodium:

Sodium is often provided in ample amounts by foods, even without additional table salt (sodium chloride). Additionally, the body's sodium-conservation mechanisms are greatly developed, and thus deficiency of sodium is rare, even for individuals on low-sodium diets. Sodium depletion may occur during persistent heavy sweating, diarrhea, or vomiting, or in cases of kidney disease. Symptoms of low blood sodium (hyponatremia), include muscle weakness, cramps, nausea, dizziness, and eventually shock and then coma. After protracted highintensity exertion in the heat, the sodium balance can be restored through drinking beverages containing sodium and glucose (referred to as sports drinks) and by consuming salted food. Drinking 1 liter of water containing 2 ml (one-third teaspoon) of the table salt also should meet one's requirements.

Table: 01-03, Sources, Deficiency and Need of Minerals

Mineral	Source	Deficiency	Needed for Health
Calcium	Dairy products, canned fish with bones (salmon, sardines), green leafy vegetables, eggs, nuts, tofu, thyme, oregano, dill, cinnamon, seeds.	Hypocalcaemia	Needed for heart, muscle, and digestive system health, builds bone, supports synthesis and function of blood cells.
Potassium	Sweet potato, tomato, potato, beans, seafood, banana, prune, lentils, dairy products, carrot, orange	Hypokalemia	A systemic electrolyte and is also essential in co-regulating ATP with sodium
Sodium	Table salt (sodium chloride, NaCl, the main source), milk, sea vegetables, and spinach.	Hyponatremia	A systemic electrolyte and is also essential in coregulating ATP with potassium

D. Iron:

Iron deficiency is the most commonly encountered among all nutritional deficiencies, with much of the population of the world being deficient in the mineral to some extent. Premenopausal women and young children are the most vulnerable to iron deficiency. The main function of iron is in hemoglobin formation, the red pigment of the blood which carries oxygen from lungs to other tissues in the body. Since every milliliter of blood contains 0.5 milligram of iron (as a hemoglobin component), bleeding drains the body's iron reserves. When iron stores get depleted a condition known as microcytic hypochromic anemia arises, characterized by small red blood cells which contain less hemoglobin than usual. Symptoms of severe iron deficiency anemia are pale skin, difficulty breathing on exertion, fatigue, weakness, apathy, and low resistance to cold temperatures. During childhood, iron deficiency can affect

the behavior and learning abilities as well as development and growth. Severe anemia increases the risks of maternal death and pregnancy complications. Iron deficiency anemia is mostly common during early childhood and late infancy, when iron stores present from birth have been exhausted and milk, which is very poor in iron, is a main food; during the adolescent growth spurt; as well as in women during childbearing years, due to blood loss during menstruation and the additional iron requirements of pregnancy. Intestinal blood loss and the subsequent iron deficiency anemia in adults can also stem from ulcers, tumors, hemorrhoids, or chronic use of some drugs such as aspirin. In developing nations, blood loss due to hookworm and some other infections, coupled with insufficient dietary iron intake, worsens iron deficiency in both adults and children.

E. Iodine:

Iodine deficiency disorders are the utmost common cause of preventable brain damage, affecting an estimated 50 million people all over the world. During pregnancy, severe deficiency of iodine may impair fetal development, and results in cretinism (an irreversible mental retardation with developmental abnormalities and short stature) as well as in miscarriage or stillbirth. Other more prevalent consequences of chronic deficiency of iodine are lower cognitive and neuromuscular deficits. Ocean is a reliable source of iodine, but further than coastal areas iodine in food varies and largely reflects the quantity in soil. In chronic deficiency of iodine the thyroid gland enlarges due to its attempts to trap more and more iodide (a form in which the iodine functions in the body) from blood for the synthesis of thyroid hormones; it eventually grows into a visible lump at the front of the neck, a condition known as a “goitre”. Many foods, such as cassava, sweet potato, certain beans, millet, and members of cabbage family, contain substances called goitrogens which interfere with thyroid hormone synthesis. The substances, although destroyed by cooking, may be a significant factor in people with coexisting deficiency of iodine who depend on goitrogenic foods as staples. Ever since the strategy of worldwide iodization of salt was adopted in the year 1993, there has been remarkable progress in the improvement of iodine status worldwide. Nonetheless, millions

of individuals living in iodine-deficient areas, mostly in Central Africa, Central and Southeast Asia, and even in Eastern and Central Europe, remain at risk.

F. Zinc:

Zinc is a constituent of numerous enzymes, and plays structural roles in proteins and also regulates gene expression. The deficiency of zinc in humans was first reported in 1960s in Iran and Egypt, where children and adolescent males with undeveloped genitalia and stunted growth responded to treatment with zinc. Deficiency of the micronutrient was attributed to the diet in the region, which was low in meat and high in unleavened breads, legumes, and whole-grain diets which contain phytic acid, fibre, and other anti-nutritive factors that inhibit the absorption of zinc. The practice of clay eating, which affects the absorption of zinc, iron, as well as other minerals also contributes to zinc deficiency. Severe deficiency of zinc has also been described in the patients fed intravenous solutions insufficient in zinc and in inherited zinc-responsive syndrome called acrodermatitis enteropathica. Symptoms of zinc deficiency may include diarrhea, increased susceptibility to infections, skin lesions, night blindness, poor appetite, hair loss, reduced taste and smell acuity, slow wound healing, impotence, and low sperm count. Zinc is highest in the protein-rich foods, particularly red meat and shellfish. Zinc status could be low in protein-energy malnutrition. In developed countries, young children, the elderly, strict vegetarians, pregnant women, people with alcoholism, and individuals with malabsorption syndromes are even vulnerable to deficiency of zinc.

Table: 01-04. Sources, Deficiency and Need of Minerals

Mineral	Source	Deficiency	Needed for Health
Iron	Meat, seafood, nuts, beans, dark chocolate	Iron deficiency	Required for many enzymes and proteins, notably the haemoglobin to prevent anemia
Iodine	Seaweed (kelp or kombu), eggs, iodized salt, grains	Iodine deficiency	Required for the synthesis of thyroid hormones,

			triiodothyronine and thyroxine and to prevent goiter: Iodine in biology
Zinc	Oysters, red meat, nuts, whole grains, poultry, dairy products	Zinc deficiency	Pervasive and required for many enzymes such as carboxypeptidase, car bonic anhydrase, and liver alcohol dehydrogenase

MULTIPLE CHOICE QUESTIONS

1) Scientific name of Vitamin A is

a) Retinal

b) Vinblastin

c) Ascorbic Acid

d) Calciferol

2) Scurvy causes due to

a) Vitamin A

b) Vitamin B

c) Vitamin C

d) Vitamin D

3) The symptoms of Potassium deficiency does not include.

a) Muscle cramps

b) Confusion.

c) Loss of Apetite

d) Stomach ache

Answers: 1) a) Retinal 2) c) Vitamin C 3) d) Stomach Ache

SHORT ANSWER QUESTIONS WITH MODEL ANSWER

1) Write a short note on Zinc as micronutrient.

Answer: Zinc is a constituent of numerous enzymes, and plays structural roles in proteins and also regulates gene expression. Deficiency of the micronutrient was attributed to the diet in the region, which was low in meat and high in

unleavened breads, legumes, and whole-grain diets which contain phytic acid, fibre, and other anti-nutritive factors that inhibit the absorption of zinc. Symptoms of zinc deficiency may include diarrhea, increased susceptibility to infections, skin lesions, night blindness, poor appetite, hair loss, reduced taste and smell acuity, slow wound healing, impotence, and low sperm count. Zinc status could be low in protein-energy malnutrition. In developed countries, young children, the elderly, strict vegetarians, pregnant women, people with alcoholism, and individuals with malabsorption syndromes are even vulnerable to deficiency of zinc.

2) Explain the role of Vitamins as Dietary Sources and functions.

Answer: Vitamins are organic compounds (or related set of molecules) which are essential micronutrients that organisms including humans require in minute quantities, usually within micrograms (millionths of a gram) to milligrams (thousandths of a gram), for proper functioning of their metabolism. Vitamin C can be synthesized by a few species but not by others; in the first instance, it is not a vitamin, but is in the second instance. The term vitamin does not cover the three other groups of the essential nutrients: minerals, essential amino acids, and essential fatty acids. Thirteen vitamins required by human metabolic functions are: vitamin A (as all-trans-retinyl-esters, all-trans-retinol, and all-trans-beta-carotene as well as other provitamin A carotenoids), thiamine (vitamin B1), riboflavin (vitamin B2), niacin (vitamin B3), pantothenic acid (vitamin B5), pyridoxine (vitamin B6), biotin (vitamin B7), folic acid or folate (vitamin B9), cobalamins (vitamin B12), ascorbic acid (vitamin C), calciferols (vitamin D), tocopherols and tocotrienols (vitamin E), and quinones (vitamin K). Vitamins have various biochemical functions.

01-02-03: IMPORTANCE OF WATER

Water as a building material Water, present in each cell of our body and in the various tissues and compartments, acts first as a building material. This primary function leads to nutritional recommendations, as water needs are higher during the growth period of the body. Water has unique properties: it is an excellent solvent for ionic compounds and for solutes such as glucose and amino acids. It is a highly interactive molecule and acts by weakening electrostatic forces and

hydrogen bonding between other polar molecules. It has a high dielectric constant and it forms oriented solvent shells around ions, thus enabling them to move freely. Water as a macronutrient is involved in all hydrolytic reactions, for instance, in the hydrolysis of other macronutrients (proteins, carbohydrates, lipids and so on). Water is also produced by the oxidative metabolism of hydrogen-containing substrates in the body. Theoretically, for 1 g of glucose, palmitic acid and protein (albumin), 0.6, 1.12 and 0.37 ml water, respectively, is endogenously produced, or for 100 kcal of energy, 15, 13 and 9 ml water is produced.

A. Water as a carrier

Water is essential for cellular homeostasis because it transports nutrients to cells and removes wastes from cells maintains the vascular volume and allows blood circulation, which is essential for the function of all organs and tissues of the body. Thus, the cardiovascular and respiratory systems, the digestive tract, the reproductive system, the kidney and liver, the brain and the peripheral nervous system, all depend on adequate hydration to function effectively. Severe dehydration therefore affects the function of many systems and is a life-threatening condition.

B. Water and thermoregulation

Water has a large heat capacity, which contributes to limiting changes in body temperature in a warm or cold environment. Water has a large capacity for vaporization of heat, which allows a loss of heat from the body even when ambient temperature is higher than body temperature. When sweating is elicited, evaporation of water from the skin surface is a very efficient way to lose heat.

C. Water as a lubricant and shock absorber

Water, in combination with viscous molecules, forms lubricating fluids for joints; for saliva, gastric and intestinal mucus secretion in the digestive tract; for mucus in airways secretion in the respiratory system and for mucus secretion in the genito-urinary tract. By maintaining the cellular shape, water also acts as a shock absorber during walking or running. This function is important for the brain and spinal cord, and is particularly important for the fetus, who is protected by a water cushion.

Water Dehydration:

There are three types of dehydration (EFSA, 2008): (1) isotonic dehydration in which net salt and water loss is equal, (2) hypertonic dehydration characterized by loss of water in excess of salt and (3) hypotonic dehydration, characterized by loss of salt in excess of water.

1. In isotonic dehydration, salt may be lost isotonically from the gastrointestinal tract, such as after profuse diarrhoea. Only the ECF volume is reduced, and treatment is the prescription of isotonic salt solutions, such as the World Health Organization's rehydration solution for the treatment of diarrhoea, a solution that is widely used in developing countries.

2. Inadequate water intake and excessive water loss are the two mechanisms responsible for the development of hypertonic dehydration. Insufficient water intake may be caused by defective thirst or impaired consciousness, or by a lack of available water. Large water loss may result from osmotic diuresis or diabetes insipidus. Vomiting is accompanied by a loss of hydrochloric acid, which is almost equivalent to the loss of pure water because $NaHCO_3$ replaces it. Sweating can represent an important hypotonic fluid loss when exercising in a hot environment.

3. Hypotonic dehydration occurs when losses of gastrointestinal fluids (which are either hypotonic or isotonic in relation to plasma) are replaced by water, or by a solution that contains less Na+ and K+ than the fluid that has been lost. The reduced osmolarity of ECF causes a shift of water into the intracellular fluid to reach osmotic balance. Hence, cell volume increases in spite of a reduction in ECF. Treatment of hypotonic dehydration may need both hypertonic saline to restore the osmolarity of body fluids and isotonic saline to compensate the loss of ECF.

MULTIPLE CHOICE QUESTIONS

1) Which of the following is not the type of water dehydration?

a) Isotonic dehydration

b) Hypertonic dehydration

c) Hypotonic dehydration

d) Autotonic dehydration

2) Water is useful for

a) Transportation

b) Thermoregulation

c) Lubrication

d) All of the above

3) ECF Stands for

a) Extra Cellular Fluid

b) Extra Cellulosic Fluid

c) Every Cellular Fluid

d) Extra Cementing Fluid

Answers: 1) d) Autotonic dehydration 2) d) All of the above, 3) a) Extra Cellular Fluid

SHORT ANSWER QUESTIONS WITH MODEL ANSWER

1) Explain Water as Carrier.

Answer: Water is essential for cellular homeostasis because it transports nutrients to cells and removes wastes from cells maintains the vascular volume and allows blood circulation, which is essential for the function of all organs and tissues of the body. Thus, the cardiovascular and respiratory systems, the digestive tract, the reproductive system, the kidney and liver, the brain and the peripheral nervous system, all depend on adequate hydration to function effectively. Severe dehydration therefore affects the function of many systems and is a life-threatening condition.

2) Explain Water Dehydration.

Answer: In isotonic dehydration, salt may be lost isotonically from the gastrointestinal tract, such as after profuse diarrhoea. Only the ECF volume is reduced, and treatment is the prescription of isotonic salt solutions. Inadequate water intake and excessive water loss are the two mechanisms responsible for the development of hypertonic dehydration. Insufficient water intake may be caused by defective thirst or impaired consciousness, or by a lack of available water. Hypotonic dehydration occurs when losses of gastrointestinal fluids (which are either hypotonic or isotonic in relation to plasma) are replaced by water, or by a solution that contains less Na+ and K+ than the fluid that has been lost.

SUMMARY

The main points we covered in this unit are explaining the definition of Nutrition and Dietetics. Nutrition is defined as the science of foods, the nutrients and other

substances therein, their action, interaction and balance in relationship to health and disease; the processes by which the organism ingests, digests, absorbs, transports and utilizes nutrients and disposes of their end products in addition social, economic, cultural and psychological implications of food and eating are also important. Dietetics is defined as study of diet therapy deals with how to plan diets for individuals who are normal or who suffer from disease conditions. Dietetics is an application of basic principles and concepts which form a part of the study of nutrition. Further the role of food and nutrients in health and disease is also emphasised. Food and the nutrients have a very important role in promoting health and preventing disease, treating and controlling disease conditions. The unit also gave information about specific sources and functions of several nutrients. As nursing students, you would have found that this unit offered a basic rationale for using food as a means of preventing as well treating and controlling disease. It also highlights information on diet in normal conditions. The principle to be followed is inclusion of

1. Foods supplying energy.
2. Foods which are body-building.
3. Foods which are protective/regulatory in the diet. on how to use these foods to plan balanced diets for normal people.

END OF UNIT EXERCISES

1. Define carbohydrates and explain their types, functions, dietary sources, and the consequences of carbohydrate deficiency in the human body.
2. Discuss the role of lipids (fats) in human nutrition. What are their functions, sources, and the effects of lipid deficiency and excess?
3. Explain the importance of proteins in growth and maintenance of the body. Discuss their types, dietary sources, and health effects of protein deficiency.
4. What are vitamins? Classify them into fat-soluble and water-soluble categories. Discuss the functions, dietary sources, and deficiency diseases related to any four important vitamins.
5. What are minerals? Differentiate between macro minerals and microminerals. Explain their functions in the body with examples of deficiency disorders.

6. Describe the dietary sources, functions, and deficiency effects of the following macro minerals: Calcium, Potassium, and Sodium.
7. Write a detailed note on the dietary sources, requirements, and deficiency effects of Iron, Iodine, and Zinc in the human diet. How can these deficiencies be prevented?
8. Explain the role of water in human nutrition. Why water is considered essential for life? Describe the health impacts of water deficiency and dehydration.
9. Discuss how a balanced diet ensures the proper intake of carbohydrates, proteins, fats, vitamins, minerals, and water. Why is nutritional balance important for good health?
10. Evaluate the impact of micronutrient deficiencies (especially Iron, Iodine, Zinc) on vulnerable populations such as children and pregnant women. Suggest strategies to address these deficiencies at the community level.

KEY WORDS

Macronutrient, Micronutrient, Vitamins, Minerals

REFERENCES

- **MOOCS**

1. https://onlinecourses.swayam2.ac.in/cec19_ag02/preview
2. https://onlinecourses.swayam2.ac.in/aic22_ge01/preview
3. https://onlinecourses.nptel.ac.in/noc24_hs82/preview
4. https://study.com/academy/course/science-of-nutrition-course.html

- **YOUTUBE VIDEOS**

1. https://www.youtube.com/watch?v=dN7c2JniR8U
2. https://www.youtube.com/watch?v=a-084pqI05U
3. https://www.youtube.com/watch?v=kb146Y1igTQ
4. https://www.youtube.com/watch?v=92OequINNe0
5. https://www.youtube.com/watch?v=VLUyLeQlP4s
6. https://www.youtube.com/watch?v=TBNCqRCsSvY
7. https://www.youtube.com/watch?v=JGdrLpdriJE
8. https://www.youtube.com/watch?v=Z51bWG17m-Q

- **OER**

1. Byrd-Bredbenner, C., Moe, G., Beshgetoor, D. & Berning, J. (2020). ***Human Nutrition – 2020 Edition***. University of Hawai‘i at Mānoa. Available at: **https://pressbooks.oer.hawaii.edu/humannutrition/** [Accessed 24 Jun. 2025].
2. Stephenson, T.J. (2022). ***Nutrition: Science and Everyday Application – 2nd Edition***. Open Oregon Educational Resources. Available at: **https://openoregon.pressbooks.pub/nutritionscience2/** [Accessed 24 Jun. 2025].
3. OER Commons. (n.d.). ***Nutrition and Diet Therapy: Open RN***. Wisconsin Technical College System. Available at: **https://wtcs.pressbooks.pub/nutrition/** [Accessed 24 Jun. 2025].
4. OER Commons. (n.d.). ***Micronutrients: Vitamins and Minerals***. OER Commons. Available at: **https://www.oercommons.org/courses/micronutrients-vitamins-and-minerals** [Accessed 24 Jun. 2025].
5. OER Commons. (n.d.). ***Macronutrients – Introduction to Carbohydrates, Lipids and Proteins***. OER Commons. Available at: **https://www.oercommons.org/courses/macronutrients** [Accessed 24 Jun. 2025].
6. OER Commons. (n.d.). ***Water and Electrolyte Balance***. OER Commons. Available at: **https://www.oercommons.org/courses/water-and-electrolyte-balance** [Accessed 24 Jun. 2025].
7. OpenStax. (n.d.). ***Biology 2e – Nutrition and Elimination***. OpenStax, Rice University. Available at: **https://openstax.org/books/biology-2e/pages/34-introduction** [Accessed 24 Jun. 2025].

- **WIKIPEDIA**

1. https://microbenotes.com/food-and-nutrition/
2. https://scienly.com/carbohydrates/
3. https://ugcmoocs.inflibnet.ac.in/assets/uploads/1/123/4227/et/12%20Sources%20of%20fats200302050503034545.pdf
4. https://epgp.inflibnet.ac.in/epgpdata/uploads/epgp_content/S000444FN/P000552/M012207/ET/1533535589Q-I.pdf

5. https://ugcmoocs.inflibnet.ac.in/assets/uploads/1/127/4412/et/17%20Proteins-1200302070703035050.pdf
6. https://www.researchgate.net/publication/315693376_Micronutrients_and_Human_Health
7. https://foothill.edu/sustainability/docs/WaterAsEssentialNutrient.pdf

- **REFERENCE BOOKS**

1. Srilakshmi, B. (2019). ***Nutrition Science***. 6th ed. New Delhi: New Age International Publishers.
2. Mudambi, S.R., Rao, S.M. & Rajagopal, M.V. (2012). ***Food Science***. 2nd ed. New Delhi: New Age International Publishers.
3. Bamji, M.S., Krishnaswamy, K. & Brahmam, G.N.V. (2009). ***Textbook of Human Nutrition***. 3rd ed. New Delhi: Oxford & IBH Publishing Co. Pvt. Ltd.
4. Wardlaw, G.M. & Smith, A.M. (2020). ***Contemporary Nutrition: A Functional Approach***. 6th ed. New York: McGraw-Hill Education.
5. Whitney, E. & Rolfes, S.R. (2021). ***Understanding Nutrition***. 16th ed. Boston: Cengage Learning.
6. Gopalan, C., Ramasastri, B.V. & Balasubramanian, S.C. (2007). ***Nutritive Value of Indian Foods***. Hyderabad: National Institute of Nutrition, ICMR.

UNIT 01-03: HEALTH

LEARNING OBJECTIVES

After successful completion of this unit, you will be able to

- ❖ Define health and describe its key determinants.
- ❖ Explain public health indicators and their relevance.
- ❖ Summarize the goals and methods of health education.

INTRODUCTION

You must be familiar with the famous saying "health is wealth". When we are healthy, we enjoy our work and live our life to the fullest. To attain good health, we need to develop certain habits. Hygiene is an integral part of healthy living and deals with cleanliness of our body and our surroundings. We normally relate the terms diseases and illness interchangeably in relation to health, even though these words do not mean the same. Health is the general condition of a person in respect to all aspects of life. It is also a level of functional and/or metabolic efficiency of an organism. The word metabolic is the adjective of the term metabolism which means the whole range of big chemical processes that occur within us or any living organism to produce energy and basic materials needed for important life processes. Diseases and illness adversely affect these processes. And thus health, diseases and illness are inter-related. However, health is not just being free from diseases, illness or injury. As defined by World Health Organisation (WHO), health is "a state of complete physical, mental and social well-being and not merely an absence of disease or infirmity".

01-03-01: HEALTH AND DETERMINANTS OF HEALTH

Health is defined as:

- A series of successful and continuous adaptation to a continuously changing environment.
- The conditions of being sound in body, mind or spirit and especially free from physical disease or pain (Webster).
- Soundness of body or mind; that condition in which their functions are duly and efficiently discharge (Oxford English Dictionary).
- "A state of relative equilibrium of body, form and function which result from its successful dynamic adjustment to forces tending to disturb it. It is

not passive. interplay between body substance and forces impinging upon it but an active response of body forces working towards readjustment." (Perkin)

- Health is a relative concept; this may be due to ecological conditions and the fact that standards of health vary among cultures; social classes and age groups.

This implies that health is not an ideal state and there are no international standards fixed for health. We cannot say that individuals of the same age, belonging to different countries and cultures will have the same health standard. There may be variations in weight and height of an individual belonging to different countries and socioeconomic groups but both are healthy. We can further clarify this concept by the following example: The above-mentioned definitions give varied views of health. We shall now try to look into the most widely accepted definition of health given by World Health Organization (WHO) which states that, "Health is a state of complete physical, mental and social well-being and not merely an absence of disease or infirmity".

If you look at the definitions carefully, you will realize that four aspects or dimensions emerge from it. These are: (a) Physical (b) Mental (c) Social.

Physical well-being means having the physical strength, endurance and energy to work towards your goals. Mental well-being is ability to cope with the world in a way that brings you satisfaction; social well-being means development of relationships with others – both with people in your immediate surroundings and with the larger community through cultural, spiritual and political activities. This also implies that goal of health now calls for not only the cure or alleviation of disease. It calls for even more than prevention of disease. Rather it looks beyond to strive for maximum physical, mental social and spiritual efficiency for the individual, for his family, and for the community.

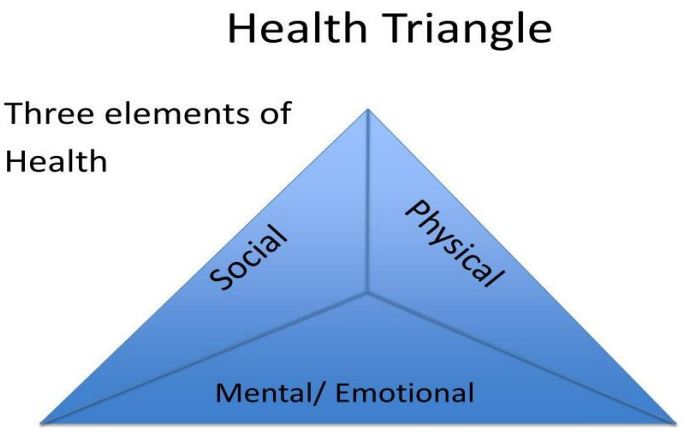

Figure: 01-09. Health Triangle

(**Source:** https://r.search.yahoo.com/_ylt)

1. Physical Dimension:

Physical dimension refers to the ability of a human body to function properly. It involves exercises, healthy habits, balanced diet, bone health, and body mass index. We can maintain a healthy body by taking proper nutrition, exercising, and avoiding harmful habits such as substance abuse. It is better to consume nutritious foods and beverages that enhance good health rather than those which impair it. Physical wellness is the ability to maintain the quality of life that allows one to get through daily activities without undue fatigue or physical stress. Optimal physical health consists of building physical strength, flexibility, coordinative ability, and endurance while taking safety precautions including medical self-care and appropriate use of a medical system, as well as protecting oneself from injuries and harm. It involves personal responsibility, disease prevention, and care for minor illnesses and also knowing when professional medical attention is needed. Being physically fit and feeling physically well often leads to the psychological benefits of enhanced self-esteem, self-control, determination and a sense of direction.

Signs of physical health: If you have good physical health you

- Shall be energetic and alert.
- Have weight which is normal for your age and height.
- Have bright and shining eyes.
- Have all the body organs functioning normally and fall sick less often.
- Have clean and clear skin.

- Have normal growing hair of natural colour and texture.
- Have odourless breath.
- Have good appetite and
- Get sound sleep.

B. Mental Dimension:

Mental health refers to the cognitive aspects of health that includes thinking, reasoning, remembering, imagining, and learning words. Cognitive aspect is related to the processes of perception, memory, judgment, and reasoning, as contrasted with emotional processes. It refers to the ability of individuals to use their brain and think, process information and act properly. It is our capacity to master new skills, embrace humour, and creativity. A sound mental health plays an important role in shaping our daily activities. It helps individuals in making a complete person. To stimulate our mental health, we can engage in various activities such as questioning critically, involving ourselves in creative, and problem solving activities. Mental health leads to an increase in self-esteem, and thereby leads to confidence in social situations. A sound mental health depends primarily on increased physical activities. Engaging in games and sports regularly keeps us mentally active.

Signs of mental health: If you have good mental health, you shall have

- Control over your emotions.
- Balanced feelings, desires, ambitions and ideas.
- The ability to accept the realities of life and face them.
- Confidence in yourself.
- The ability to cope with the normal stresses of life.
- Sensitivity towards needs of others.
- The ability to give and seek help when needed.
- The ability to cope with conflict and disagreement

C. Social Dimension:

This dimension of health refers to the ability of individuals to interact with others in the socio-cultural environment. A sound social health helps us in maintaining healthy relationships with others. Good social health includes not only having positive relationships but behaving appropriately and maintaining socially acceptable standards. It focuses on creating and maintaining healthy, and

supportive relationships with family, neighborhood, friends, peers, teachers, and community members. Good communication skills help in establishing sound relationships. These relationships impact a person's life the most. Social health also affects the other dimensions of health in many ways. A bad social life, many a times, lead individuals to question their purpose in life or feel isolated and unwanted. Such feelings can de-motivate individuals from physical activity and push them towards depression.

Signs of social health: If you have good social health, you shall

- Have a positive attitude towards life.
- Get along well with others.
- Have a pleasant personality.
- Fulfil responsibility/duties towards others.
- Have healthy interpersonal relationships.
- Be able to express disagreement positively

MULTIPLE CHOICE QUESTIONS:

1) **Which of the following component is not form the Health Triangle?**
   a) Physical
   b) Social
   c) Mental
   d) Spiritual
2) **According the WHO health can be stated as a complete well - being in physical, ----- and social.**
   a) Mental
   b) Emotional
   c) Spiritual
   d) None of the above
3) **Optimal physical health consists of:**
   a) Building physical strength, flexibility, coordinative ability, and endurance
   b) Building mental strength, flexibility, coordinative ability, and endurance
   c) Building social strength, flexibility, coordinative ability, and endurance
   d) All of the above

Answers: 1) d) Spiritual, 2) a) Mental 3) a) building physical strength, flexibility, coordinative ability, and endurance

SHORT ANSWER QUESTIONS WITH MODEL ANSWER

1) Illustrate "The Concept of health"

Answer: When we are healthy, we enjoy our work and live our life to the fullest. To attain good health, we need to develop certain habits. Hygiene is an integral part of healthy living and deals with cleanliness of our body and our surroundings. We normally relate the terms diseases and illness interchangeably in relation to health, even though these words do not mean the same. Health is the general condition of a person in respect to all aspects of life. It is also a level of functional and/or metabolic efficiency of an organism. The word metabolic is the adjective of the term metabolism which means the whole range of big chemical processes that occur within us or any living organism to produce energy and basic materials needed for important life processes.

2) Explain various definitions of Health:

Answer: Health is defined as:

- A series of successful and continuous adaptation to a continuously changing environment.
- The conditions of being sound in body, mind or spirit and especially free from physical disease or pain (Webster).
- Soundness of body or mind; that condition in which their functions are duly and efficiently discharge (Oxford English Dictionary).
- "A state of relative equilibrium of body, form and function which result from its successful dynamic adjustment to forces tending to disturb it. It is not passive. interplay between body substance and forces impinging upon it but an active response of body forces working towards readjustment." (Perkin)
- Health is a relative concept; this may be due to ecological conditions and the fact that standards of health vary among cultures; social classes and age groups.

01-03-02: KEY HEALTH INDICATORS & PUBLIC HEALTH

Health cannot be measured in exact measurable forms. Hence measurement have been framed in terms of illness (or lack of health), consequences of ill-health (morbidity, mortality) and economic, occupation and domestic factors that promote ill health-all the antithesis of health.

1. Indicators of Health:

Indicator also termed as Index or Variable is only an indication of a given situation or a reflection of that situation. Health indicator is variable, susceptible to direct measurement that reflects the state of health of persons in a community. Indicators help to measure the extent to which the objectives and targets of a programme are being attained. Numerical indication of the health of a given population derived from a specified composite formula. Health status indicators measure different aspects of the health of a population. Examples include life expectancy, infant mortality, disability or chronic disease rates. Health determinant indicators measure things that influence health. Examples include diet, smoking, water quality, income and access to health services. Following are the characters of health indicators.

- Valid: they should actually measure what they are supposed to measure.
- Reliable: the results should be the same when measured by different people in similar circumstances.
- Sensitive: they should be sensitive to changes in the situation concerned.
- Specific: they should reflect changes only in the situation concerned.
- Feasible: they should have the ability to obtain data when needed.
- Relevant: they should contribute to the understanding of the phenomenon of interest.

Uses of Indicators of Health:

- Measurement of the health of the community.
- Description of the health of the community.
- Comparison of the health of different communities.
- Identification of health needs and prioritizing them.
- Evaluation of health services.
- Planning and allocation of health resources.

- Measurement of health successes.

B. Role of Vital Statistics in Public Health:

There are many ways in which vital statistics can be of use. In fact, changes in vital rates help to monitor the progress in overall socio-economic development of a community/country. Fertility and mortality rates in a community are indicators of overall health and nutrition (i.e. quality of life) of a community and hence show the level of socio-economic development and the need to improve and accelerate the same. Analysis of vital statistics helps the Government (policy and programme planners) to plan for health services for reaching the general population and improving health related socio-economic conditions. One can set objectives for achieving targets (like reducing mortality among children, reducing maternal deaths during child birth etc.) and vital rates/statistics can help in finding out whether targets are achieved or not. Another reason for collecting vital statistics is that it helps to compare the health and nutritional status of people of two communities/countries and also the same community/country over a period of time. Thus, knowledge on various vital events during different five years plan periods and census decades will help programme managers, planners and administrators to know the impact of developmental programmes particularly their successes over time.

The main sources of data on vital statistics are:

1. Census
2. Population Registers
3. Sample Registration Scheme
4. National Sample Surveys
5. Health Services Records
6. Special Surveys
7. Disease Registers

As you know lower mortality rates in a community often indicate better nutritional status. How would you interpret lower fertility rates in a community? Do they indicate a good or bad state of nutrition? In India, high fertility rates and insufficient food availability at the household level for a sizeable section of the population, results in poor nutritional status especially of women. Lowering fertility rate is important not only for population control but also, for improving

women's health and nutrition. Let us now learn about the various fertility rates which are computed from the point of public health significance.

C. Crude Birth Rate (CBR)

The number of live births per 1000 estimated mid-year population of a community in a given calendar year. It can be calculated by using the following formula.

Birth Rate = (Number of live births in a year in a given area/ Estimated mid-year population) x1000

The average population is ordinarily taken as the mid-year population. Census counts are used for the calculation in the census year. It is one of the major determinants of population growth in any country. Birth rates are observed to be higher in the developing countries when compared to the developed world.

The causes of high birth rate are:

- Early puberty: Indian girls attain puberty early, i.e. between 12 and 14 years.
- Early marriages.
- Poverty and low standard of living with its implications for child.
- Survival is associated with high birth rates and vice-versa.
- Low literacy rates especially the low female literacy level is associated with high birth rate.
- Value of children: Children are viewed as labour and economic assets leading to high fertility.
- Low prevalence of family planning and adoption: The use of family planning methods to adopt a small family norm is yet to make a substandard impact on the population explosion.

D. General Fertility Rate (GFR)

This is a measure of fertility. It is defined as the number of live births per 1000 women in the reproductive age group (15-49 years) in a given year

GFR= (Number of live births in an area during the year/ Mid- year female population in the age group of 15 49 years in the same) x 1000

GFR is considered to be a better indicator of fertility than the crude birth rate as only the women in child bearing ages are included in the denominator. However,

you may note that all the women included in the denominator need not bear children.

A more precise measure of fertility is available which is known as Age specific fertility rate where the number of live births are computed per 1000 women in a specific age group. This gives a better picture of fertility pattern and serves as a sensitive indicator of the achievements of the family planning programme.

E. Crude Death Rate (CDR):

Crude Death Rate is defined as the deaths per 1,000 population per year in a given Community. CDR serves as an indicator of the health status of people though it is not considered as a perfect measure of health status, a decline in death rate indicates improvement in health status of the population. A sharp decline in death rate due to control of certain communicable diseases by improved health services without a similar decline in birth rate in our country is leading to a high growth rate.

F. Infant Mortality Rate (IMR):

Infant Mortality Rate is defined as deaths under one year per 1000 live births in a given year.

IMR= (Number of deaths of infants under the age of 12 months in one year/ Total live births in the same area in the same year) x1000

Infant Mortality Rate is considered as a sensitive index of health status and living standard of people. When you compare the mortality figures, you will observe that deaths below one year will be the highest when compared with any other age group. You will also see that the immediate causes of death among infants are different from that of adults. There are several other determinants of mortality which vary for different age groups, regions and communities. Major determinants of mortality include poverty, poor

nutrition, illiteracy, poor sanitation, life style factors, pollution and adulteration, age at marriage, large family size and short spacing of births. The decline in infant mortality can be achieved, as has been seen in the developed countries, by Improvement of standard of living;

a. Control of communicable diseases.
b. Availability of better medicines like various antibiotics and their utilization.

c. Availability of better health care facilities including safe deliveries and balanced diet and safe drinking water.

These are certain high priority interventions to control infant and child mortality. But many more are needed.

G. Public Health:

Public health is defined as the science and art of preventing diseases, prolonging life, promoting health and efficiencies through organized community effort. It is concerned with the health of the whole population and the prevention of disease from which it suffers. It is also one of the efforts organized by society to protect, promote, and restore the peoples' health. It is the combination of sciences, skills and beliefs that is directed to the maintenance and improvement of the health of all the people through collective social actions.

- **Major Disciplines in Public Health:**

1. **Nutrition:** is the science of food, the nutrients and other substances therein, their action, interaction and balance in relation to health and disease.
2. **Reproductive health:** is a state of complete physical, mental and social being not only absence of disease or infirmity, in all matters relating to reproductive system and to its functions and process.
3. **Environmental Health:** The basic approach to environmental control is first to identify specific biologic, chemical, social and physical factors that represent hazards to health or well-being and to modify the environment in a manner that protects people from harmful exposures. The principal components of environmental health are water sanitation, waste disposal, etc.
4. Health Education is defined as a combination of learning experiences designed to facilitate voluntary actions conducive to health. It is an essential part of health promotion.
5. Epidemiology is the study of frequency, distribution, and determinants of diseases and other related states or events in specified populations. The application of this study to the promotion of health and to the prevention and control of health problems is evident.

6. Health Economics is concerned with the alternative uses of resources in the health services sector and with the efficient utilization of economic resources such as manpower, material and financial resources.
7. Biostatistics is the application of statistics to biological problems; application of statistics especially to medical problems, but its real meaning is broader.
8. Health Service Management is getting people to work harmoniously together and to make efficient use of resources in order to achieve objectives.
9. **Ecology:** is the study of relationship among living organisms and their environment. It is the science, which deals with the inter-relationships between the various organisms living in an area and their relationship with the physical environment. Human ecology means the study of human groups as influenced by environmental factors, including social and behavioral factors.
10. Research is a conscious action to acquire deeper knowledge or new facts about scientific or technical subjects. It is a systematic investigation towards increasing knowledge. It aims at the discovery and interpretation of facts, revision of accepted theories, or laws in the light of new facts or practical application of such new theories or laws.
11. Demography is the study of population, especially with reference to size and density, fertility, mortality, growth, age distribution, migration, and the interaction of all those with social and economic conditions.

- **Core Activities in Public Health:**

1. Preventing epidemics.
2. Protecting the environment, work place, food and water.
3. Promoting healthy behavior.
4. Monitoring the health status of the population.
5. Mobilizing community action.
6. Responding to disasters.
7. Assuring the quality, accessibility and accountability of medical care.
8. Reaching to develop new insights and innovative solutions.
9. Leading the development of sound health policy and Planning.

Community health refers to the health status of a defined group of people and the actions and conditions both private and public (governmental) to promote, protect and preserve their health. Whereas Public health refers to the health status of a defined group of people and the governmental actions and conditions to promote, protect and preserve their health. Clinical medicine is concerned with diagnosing and treating diseases in individual patients. It has evolved from primarily a medical and nursing service to involve a highly complex team of professionals. The overall objective of both public health and clinical medicine is better health for individual and for society. Both of them are vital and interdependent to improve individual and public health. Ready access to high quality health care services is a right of the population and a requirement of good public health. This requires the availability of high quality providers of clinical and preventive care. Public health involves both direct and indirect approaches. Direct measures in public health include immunization of children, modern birth control, hypertension, and diabetes case findings. Indirect methods used in public health protect the individual by community – wide means, such as raising standards of environmental safety, assurance of a safe water supply, sewage disposal, and improved nutrition. In public health practice, both the direct and indirect approaches are relevant.

MULTIPLE CHOICE QUESTIONS

1) **Which of the following are the characters of health indicators?**
   a) Valid
   b) Sensitive
   c) Reliable
   d) None of the above
2) **Reproductive Health is a major discipline of**
   a) Public Health
   b) Communal Health
   c) Individual health
   d) Women Health
3) **MMR stands for**
   a) Mass Mortality Rate
   b) Major Mortality Rate

c) Maternal Mortality Rate

d) Mega Mortality Rate

Answers: 1) d) None of the above 2) a) Public Health 3) c) Maternal Mortality Rate

SHORT ANSWER QUESTIONS WITH MODEL ANSWER

1) Write a short note on core activities in public health.

Answer: Community health refers to the health status of a defined group of people and the actions and conditions both private and public (governmental) to promote, protect and preserve their health. Whereas Public health refers to the health status of a defined group of people and the governmental actions and conditions to promote, protect and preserve their health. Clinical medicine is concerned with diagnosing and treating diseases in individual patients. It has evolved from primarily a medical and nursing service to involve a highly complex team of professionals.

2) Explain General Fertility Rate (GFR):

Answer: This is a measure of fertility. It is defined as the number of live births per 1000 women in the reproductive age group (15-49 years) in a given year

GFR= (Number of live births in an area during the year/ Mid- year female population in the age group of 15 49 years in the same) x 1000

GFR is considered to be a better indicator of fertility than the crude birth rate as only the women in child bearing ages are included in the denominator. However, you may note that all the women included in the denominator need not bear children.

01-03-03: HEALTH EDUCATION; DEFINITION, OBJECTIVES, PRINCIPLES AND METHODS OF HEALTH EDUCATION

The first question coming to, your mind will be “What is Health Education.” If we take the layman’s meaning – it is a kind of education aware us towards our health, health of our family and society. Thus health education focuses on creating environment which may enables us to live the best and serve the best. It is an action or process which affects changes in our practices, knowledge and attitudes related to changes in Health and its retention and promotion. If we go with the core definition, it is “an art of living”. We practice it in order to have a

sound body and sound mind. It is closely related with the principles of hygiene. Thus in order to keep us healthy, we inculcate the habit of cleanliness or hygiene in us a well as other people in the community. It also educates us for maintaining and developing our physical and mental health. Through health education we can acquire and practice the information of different principles of hygiene in our daily lives. This definition gives us the general definition of health education for all. You may be thinking how it should be placed in schools and specially in primary school's role, as health is everybody's concern. In schools it is seen as a compulsory action oriented programme. It is defined as a systematic programme for developing the habits, attitudes and knowledge that will contribute to physical, mental and emotional health. The present meaning of health education has extended its definition, not only up to providing information of health and health related illness but also inculcation of healthy attitudes among the people. Therefore, health education helps others and us in the society to acquire knowledge and behavior related to health in order to maintain one's health and meet emerging health problems successfully in future life. Thus the school health programme helps to improve the health of all school going children and through them the health of the community and the world. In other words, health education is a process, which prepares an individual to know and understand 'how' and 'why' details relating to health.

Scope:

Health is everybody's concern, our health closely affects our other activities like economy, prosperity, our relationship with others and so on. Thus, health education includes:

- The balanced and nutritive diet and how one should prepare it.
- The need for fresh air, water, ventilation, light, physical exercise, recreation, rest and sleep, etc.
- The habit of cleanliness with regard to body, bodily organs, dress and dwelling place.
- Knowledge of the structure and functioning of various organs and systems of the body.

- Information about common diseases, their causes, symptoms, precautionary measure and cure.
- Sanitation of home, school, neighborhood, community, slums, overcrowded cities, factory areas, markets, villages, etc.
- The sewage system, arrangements for fresh water supply, the sanitary arrangement in the city, health centers and their functioning.

The above points reflect its wide scope and also its inter-linkages with our personal, school and community life.

Major Objectives:

Major aims of health education are listed here under:

- To provide information about health and its value as a community asset.
- To maintain norms of good health.
- To take precautionary and preventive measures against communicable diseases.
- To develop and promote mental and emotional health.
- To develop a sense of civic responsibility.
- To enable the children to develop an objective point of view of health with respect to traditional and modern concepts of health,
- To enable the children to identify health problems and understand their own role of health and medical agencies in meeting those problems.
- To enable the children to take interest in the latest events related to health,
- To enable the children to set an example of desirable health behavior,
- To prepare the children to understand the causes of the various types of pollutions and their means of prevention,

Principles of Health Education

1. **Credibility:** it is the degree by which the message to be communicated is perceived as trustworthy by the receiver. It should be scientifically proven, based on facts and should be compatible with local culture and goals.
2. **Interest:** it is a psychological principle that people are unlikely to listen to those things which are not to their interest. If the health education topic

is of interest to the people, they will listen to it. Health educator should identify the "felt needs" of the people and then prepare a program that they can actively participate in to make it successful.

3. **Participation:** It is based on psychological principle of active learning, create a sense of involvement, personal acceptance and decision making: provides maximum feedback. Health education should aim at encouraging people to work actively with health workers and others in identifying their own health problems and also in developing solutions and plans to work them out. Health Educator should encourage people to participate in the programme. Once the people are given a chance to take part in the programme it leads to their acceptance of the programme. Methods like group discussion, panel discussion etc. provide opportunities for people's participation.
4. **Motivation:** The need for incentives is a first step in learning to change. It is contagious. It is "the fundamental desire for learning in an individual". Health education can be facilitated by the motivation provided by the desire to achieve individual goals.
5. **Comprehension:** Health educator should always communicate in the language people easily understand. Principle of comprehension involve: understanding level of the people who receive health education., Level of literacy of the audience., Use of word familiar word instead of strange or new word., Limited use of medical or technical term
6. **Reinforcement:** This is the principle that refers to the repetition needed in health education. It is not possible for the people to learn new things in a short period of time. So, repetition is a good idea. This can be done at regular intervals and it helps people to understand new ideas or practice better. It acts like "Booster Dose" in Health Education.
7. **Feedback:** For any programme to be successful it is necessary to collect feedback to find out if any modification is needed to make the programme more effective.

8. **Learning by Doing:** If the learning process is accompanied by doing new things it is better instilled in the minds of people. “If I hear, I forget; if I see, I remember; if I do, I know”.

9. **Known to Unknown:** Before the start of any Health Education programme, Health Educator should find out how much the people already know and then give them the new knowledge. The existing knowledge of the people can be used as the basic step up on which new knowledge can be placed.

10. **Good Human Relations:** This principle states that the health educator should have good personal qualities and should be able to maintain friendly relations with the people. The Health Educator should have a kind and sympathetic attitude towards the people and should always be helpful to them in clarifying doubts or repeating what is not understood.

11. **Setting an Example:** The health educator should follow what he preaches. He should set an example to others to follow.

12. **Community Leaders:** Community leaders can be used to reach the people of the community and to convince them about the need for Health Education. Leaders can also be used to educate the people as they will have a rapport and will be familiar with the people of their community. The leader will have an understanding of the needs of the community and advice and guide them.

Figure: 01-10. Categories of Health Education

(**Source:**https://r.search.yahoo.com/_ylt=AwrKEYP50LpnXPwz4vdu9olQ;_ylu=c2VjA2ZwLWF0dHJpYgRzbGsDcnVybA--)

Individual Health Education:

Doctors and nurses, who are in direct contact with patients and their relatives, have opportunities for much individual health education. The topic selected should be relevant to the situation. For instance, a mother who has come for delivery should be told about child birth-not about malaria eradication. The biggest advantage of individual health teaching is that we can discuss, argue and persuade the individual to change his behaviour. The disadvantage is that the numbers we reach are small

Group Health Education:

The groups are many – mothers, school children, patients, industrial workers – to whom we can direct health teaching. The choice of subject in group health teaching is very important; it must relate directly to the interest of the group. For instance, mothers may be taught about baby care; school children about oral hygiene; a group of TB patients about tuberculosis, and industrial workers about accidents.

Methods of Group Teaching

These have been classified as below: One – way or didactic methods:

- Lecture
- Films
- Charts
- Flannel graph
- Exhibits
- Flashcards

Lectures: Lectures are the most popular method of health teaching. In this, communication is mostly one-way, i.e., the people are only passive listeners; there is no active participation on their part in learning. How impressive and effective the lecture is, depends upon the personality and reputation of the speaker. A lecture does provide basic information on the subject, but it may fail

to change the health behavior of the people. Nevertheless, lectures have an important place in the health education of small groups.

Two-way or Socratic Methods:

- Group discussion
- Panel Discussion
- Symposium
- Workshop
- Role playing
- Demonstration

Education of General Public:

For the education of the general public, we employ "mass media of communication' – Posters, health magazines, films, radio, television, health exhibitions and health museums. Mass media are generally less effective in changing human behavior than individual or group methods. But however, they are very useful in reaching large numbers of people with whom otherwise there could be no contact. For effective health education mass media should be used in combination with other methods.

MULTIPLE CHOICE QUESTIONS

1) The core definition of health education is

a) The art of nutrition

b) The art of living

c) The art of maintaining health

d) The art if balanced diet

2) Individual approach, group approach and ------- approach are the methods of health education.

a) General Approach

b) Mass Approach

c) Both a and b

d) None of the above

3) Which of the following are the core objectives of health education?

a) to develop and promote mental and emotional health.

b) to develop a sense of civic responsibility

c) to maintain norms of good health

d) All of the above

Answers: 1) b) The art of living 2) c) Both a and b 3) d) All of the above

SHORT ANSWER QUESTIONS WITH MODEL ANSWER

1) Write a short note on scope of health education

Answer: Health is everybody's concern, our health closely affects our other activities like economy, prosperity, our relationship with others and so on. Thus, health education includes:

1. The balanced and nutritive diet and how one should prepare it.
2. The need for fresh air, water, ventilation, light, physical exercise, recreation, rest and sleep, etc.
3. The habit of cleanliness with regard to body, bodily organs, dress and dwelling place.
4. Knowledge of the structure and functioning of various organs and systems of the body.
5. Information about common diseases, their causes, symptoms, precautionary measure and cure.

2) Explain any three principles of health education.

Answer: Credibility: it is the degree by which the message to be communicated is perceived as trustworthy by the receiver. It should be scientifically proven, based on facts and should be compatible with local culture and goals. Interest: it is a psychological principle that people are unlikely to listen to those things which are not to their interest. Participation: It is based on psychological principle of active learning, create a sense of involvement, personal acceptance and decision making: provides maximum feedback.

SUMMARY

In this unit on the Health Concepts, we have defined and explained the meaning of health and illness. Changing concepts of health i.e. Biomedical, Ecological, Psychosocial and Holistic concepts were discussed. Various models of health and illness were explained. Further the health dimensions were described. Determinants of health i.e. heredity/human biology, environment, life style and resources are discussed. You have also learnt about the various indicators of health and health promotion practices. You also going to know or understand

about the health education, importance of health education, the scope of health education, major objectives, principles and methods which are useful in health education.

END OF UNIT EXERCISES

1. Define health as per the World Health Organization (WHO). Discuss the various dimensions of health and explain why health is considered a dynamic concept.
2. What are the determinants of health? Explain how factors such as environment, lifestyle, socio-economic conditions, and genetics influence individual and community health.
3. Describe the key health indicators used to assess the health status of a population. Explain the importance of indicators like infant mortality rate, life expectancy, and morbidity rate in public health planning.
4. Define public health. Discuss the objectives and importance of public health in a developing country like India. Mention any major public health initiatives.
5. What is health education? Discuss its objectives and the role it plays in promoting individual and community health.
6. Explain the principles of health education. How can these principles be applied effectively in schools and communities to bring about behavioral change?
7. Discuss various methods of health education. Compare traditional methods (lectures, posters) with modern approaches (digital media, social campaigns), and explain their relevance.
8. Evaluate the role of health education in disease prevention and health promotion. How can it be integrated into national health programs to improve public health outcomes?

KEY WORDS

Maternal Mortality Rate (MMR), Crude Death Rate (CDR), Infant Mortality Rate (IMR)

REFERENCES

- **MOOCs**

1. https://onlinecourses.swayam2.ac.in/ini25_hc04/preview
2. https://onlinecourses.nptel.ac.in/noc25_hs197/preview
3. https://www.coursera.org/learn/social-determinants-health
4. https://www.coursera.org/specializations/social-determinants-health

- **YOUTUBE VIDEOS**

1. https://www.youtube.com/watch?v=jrmRFFhR5G8
2. https://www.youtube.com/watch?v=s_mgWJbblqg
3. https://www.youtube.com/watch?v=utBlfjihvAs
4. https://www.youtube.com/watch?v=8PH4JYfF4Ns
5. https://www.youtube.com/watch?v=3G3xbf0Dfzw
6. https://www.youtube.com/watch?v=qaJpyz6i-z0
7. https://www.youtube.com/watch?v=mW2YbHJ_eCY
8. https://www.youtube.com/watch?v=o72-MhV0tn0

- **OER**

1. World Health Organization. (2023). ***Health topics: Public health***. [online] WHO. Available at: **https://www.who.int/health-topics/public-health**
2. Centers for Disease Control and Prevention. (2022). ***Social Determinants of Health: Know what affects health***. [online] CDC. Available at: **https://www.cdc.gov/social-determinants/index.htm**
3. World Health Organization. (2018). ***Health indicators: A toolkit***. [online] WHO Regional Office for Europe. Available at: **https://www.euro.who.int/__data/assets/pdf_file/0010/376851/hindicators-eng.pdf**
4. OpenLearn. (2020). ***Public health and promotion***. [online] The Open University. Available at: **https://www.open.edu/openlearn/ocw/mod/oucontent/view.php?id=67174**
5. World Health Organization. (2012). ***Health education: theoretical concepts, effective strategies and core competencies***. [online] WHO EMRO. Available at: **https://applications.emro.who.int/dsaf/EMRPUB_2012_EN_1362.pdf**

6. CDC. (2021). ***Effective health education strategies***. [online] CDC Healthy Schools. Available at: **https://www.cdc.gov/healthyschools/wscc/health_education.htm**
7. Rice, M. and Carey, C. (2016). ***Introduction to Health Education***. [online] LibreTexts. Available at: **https://med.libretexts.org/Bookshelves/Public_Health/Education_and_Health_Promotion**
8. Jones, B. and Bartlett Learning. (2021). ***Introduction to Community and Public Health***. [online] Open Textbook Library. Available at: **https://open.umn.edu/opentextbooks/textbooks/introduction-to-community-and-public-health**

- **WIKIPEDIA**

1. https://ncert.nic.in/textbook/pdf/iehp101.pdf
2. https://egyankosh.ac.in/bitstream/123456789/31063/1/UNIT-2.pdf
3. https://www.gfmer.ch/GFMER_members/pdf/Concept-health-Rai-2016.pdf
4. https://ncert.nic.in/textbook/pdf/kehp102.pdf
5. https://www.cdc.gov/training-publichealth101/media/pdfs/introduction-to-public-health.pdf
6. https://www.slideshare.net/slideshow/indicators-of-health/48927698
7. https://egyankosh.ac.in/bitstream/123456789/7846/1/Unit-1.pdf
8. https://www.snggdcg.ac.in/pdf/study-material/food-and-nutrition/PRINCIPLES-OF-HEALTH-EDUCATION.pdf
9. https://gyansanchay.csjmu.ac.in/wp-content/uploads/2022/04/Helth-Edu-Methods.pdf

- **REFERENCE BOOKS**

1. Park, K. (2021). ***Park's textbook of preventive and social medicine***. 26th ed. Jabalpur: Banarsidas Bhanot.
2. Gupta, M.C. and Mahajan, B.K. (2017). ***Textbook of preventive and social medicine***. 4th ed. New Delhi: Jaypee Brothers Medical Publishers.
3. Kishore, J. (2022). ***National health programs of India: National policies and legislations related to health***. 13th ed. New Delhi: Century Publications.

4. Ghosh, B.N. (2015). ***Health economics: Theory, practice and cases***. New Delhi: Himalaya Publishing House.
5. Bhalwar, R. (2019). ***Textbook of community medicine***. 2nd ed. Pune: Elsevier India.
6. Suryakantha, A.H. (2021). ***Community medicine with recent advances***. 5th ed. New Delhi: Jaypee Brothers Medical Publishers.
7. Rao, G.V. (2015). ***Health education and community pharmacy***. 2nd ed. Hyderabad: Pharma Med Press.
8. Pandya, R. (2012). ***Principles of health education and communication***. 1st ed. New Delhi: Sumit Enterprises.

UNIT 01-04: MENTAL HEALTH

LEARNING OBJECTIVES

After successful completion of this unit, you will be able to

- Recall definitions of mental health as per WHO.
- Explain common mental health disorders and symptoms.
- Apply basic stress management techniques like yoga.
- Explain the Stress reduction and management system with special emphasis on importance of yoga.

INTRODUCTION

Figure: 01-11. Mental Health

(**Source:** drsafehands.com)

Majority of psychologists and social workers have agreed that "complete maturity" terms may be used as mental health. Physical, sexual, and intellectual maturity is achieved generally around the chronological age of 20 years. It is also well known that after this age, much changes are not observed in these areas as far as growth is concerned. But attaining maturity in physical, sexual and intellectual areas only is not the complete maturity. Besides these areas, the inclusion of emotional, social and role understanding are of utmost importance, which together could be considered complete or comprehensive maturity or mental health.

This section should present an open ended question or discuss some interesting information along with relevant image so as to arouse curiosity of learners about this unit topic.

01-04-01: Definition by WHO and Necessity of Mental Wellbeing

Psychologist, social workers and psychiatrist have defined mental health in different ways. H.B. English, a Psychologist defined as "mental health is a relatively enduring state wherein the person is well adjusted, has a zest for Workers living, and is attaining self-actualization or self-realization; it is a positive state and not mere absence of mental disorder". Karl Merringer, a Psychiatrist says that "let us define mental health as the adjustment of human beings to the world and to each other with a maximum of effectiveness and happiness. Not just efficiency, or just contentment - or the grace of obeying the rules of the game cheerfully, it is all of these together. It is the ability to maintain an ever temper, an alert intelligence, socially considerate behavior, and a happy disposition. This, I think, is a healthy mind". W.W Boehm, a social worker defined as “Mental Health is a condition and level of social functioning which is socially acceptable and personally satisfying". In general, such definitions emphasize both the individual and the social setting in which he functions. However finally we can define mental health as "the optimal development and functioning of the individual consistent with the long-term well-being and progress of the group". This definition implies the development of adequate, integrated persons who have sound attitudes and values and high degree of stress tolerance. Those who live in good living conditions tend to think of health in the context of enjoying life, while those who do not live in so comfortable circumstances may consider essentials in daily life as health. The World Health Organization (WHO) has defined health as “a state of complete physical, mental and social well-being and not merely absence of disease or infirmity”. A number of factors may enhance or threaten an individual’s or community’s health status. Some of these may be under the control of an individual (e.g., smoking) and others may not be, such as social class, ethnicity, access to education, gender, quality of housing, presence of supportive relationship etc.

Characteristic of a Mentally Healthy Person:

There are three main characteristics of a mentally healthy person:

1) He feels comfortable about himself, that is, he feels reasonably secure and adequate. He neither underestimates nor overestimates his own ability. He accepts his shortcomings. He has self-respect.

2) He is aware of his rights towards others. This means that he is interested in others. He develops friendship that is satisfying and lasting. He considers himself a part of a group without being submerged by it. He has the ability to trust others. He takes responsibility for his neighbors and his fellow-men.

3) A mentally healthy person is able to meet the demands of life. He reacts to the problems as they arise. He is able to think for himself and takes his own decisions. He sets reasonable goals for himself. He shoulders his daily responsibilities. He is not bowled over by his own emotions of fear, anger, love or guilt.

Psychiatry has been preoccupied only with mental illness for long and that there is a lack of attention given to the study of positive mental health. Mental health is not just the absence of negatives (psychopathology or symptoms of illness), but the presence of positives. To further elaborate, mental health is conceptualized as a multifaceted construct. Defining mental health is not very easy as it includes several issues that need to be considered carefully. Mental health may be conceptualized along the following six constructs or the models

- Mental health is above normal
- Mental health as maturity
- Mental health as positive or spiritual emotions
- Mental health as socio-emotional intelligence
- Mental health as subjective well-being
- Mental health as resilience

Model A: Mental Health as Above Normal

According to this model, mental health is something above normal. Normality is perceived as being on a continuum, encompassing the major portion of the adults on the continuum, while abnormality is the remainder. Thus, the normal refers to the reasonable, rather than optimum level of functioning.

- One should be in touch with his/her identity and feelings.

- One should be oriented towards the future and overtime should be fruitfully invested in life.
- One's psyche should be integrated and provide him/her resistance to stress.
- One should possess autonomy and recognize what suits one's needs.
- One should perceive reality without distortion and yet possess empathy.
- One should be master of one's environment. One should able to work, love and play and be efficient in problem-solving.

Model B: Mental Health as Maturity

This model conceptualizes mental health as a state of maturity. The model is based on the eight stages of human development, as described by Erik Erikson in 1950 and the Harvard's Study of Adult Development. The association of mental health to maturity is probably mediated not only by progressive brain myelinisation, as a person grows older, but also by the evolution of emotional and social intelligence through experience. In the Indian family system, looking to the elderly for advice in case of any crisis is an example of looking to the mature mind (i.e. the perfectly healthy mind) for finding a solution to the difficult situation

This model of mental health as maturity includes 6 components: identity, intimacy, generativity and integrity (4 concepts borrowed from Erikson), career consolidation and keeper of the meaning (derived from the Harvard's Study of Adult Development). The concepts are further discussed as below:

Model C: Mental Health as Positive or Spiritual Emotions

This model defines both mental and spiritual health as the amalgam of the positive emotions that bind us to other human beings. Recent advances in neuroscience and in the biological understanding of positive emotions have brought out the significance of positive psychology. This model comprises eight important positive emotions: love, hope, joy, forgiveness, compassion, faith, awe and gratitude. They all involve human connections and do not have anything to do just with self. All major religious faiths emphasise the importance of these emotions. Positive emotions have an effect on our autonomic (visceral) nervous system, similar to the relaxation achieved with meditation.

Model D: Mental Health as Socio-Emotional Intelligence

This model conceptualizes mental health with socio-emotional intelligence. Socio-emotional intelligence refers to accurate conscious perception and monitoring of one's emotions and ability to modify emotions so that the expression of emotions is appropriate. This would also include an accurate recognition of others' emotions and an appropriate response. One should have skills in negotiating close relationship with others and a capacity for focusing emotions towards a desired goal. High socio-emotional intelligence reflects above average mental health. Emotional intelligence lies at the heart of positive mental health. The capacity to identify the different emotions in ourselves and in others has an important role in the social interactions and relationships, and hence in mental health.

Model E: Mental Health as Subjective Well-Being

The capacity for subjective well-being is an important component of mental health. Positive mental health is not just being a joy to others but also experiencing subjective well-being. Subjective well-being is a complicated concept, because mental health issues are influenced by value judgment and illusion. What may be subjective well-being for a person may not be same for another person. The primary function of positive emotions is to facilitate self-care. However, the primary functions of subjective negative emotions can also be healthy, reminding one to seek environmental safety.

Model F: Mental Health as Resilience

Resilience is the ability to be flexible and to get back to normalcy when faced with stressful situations. One needs to have an adaptive reactions pattern. There are three broad classes of coping mechanisms for developing resilience:

- One may consciously seek social support in an appropriate manner.
- One may employ conscious cognitive strategies (thinking patterns) to master the stressful situations.
- One may have adaptive involuntary coping mechanisms called defense mechanisms that distort perceptions of internal and external reality in order to reduce subjective distress. Although it may appear that these defense

mechanisms are maladaptive patterns, these are normal coping reactions to reduce conflict and cognitive dissonance. This helps in maintaining internal homeostasis in mental health of an individual.

MULTIPLE CHOICE QUESTIONS

1) Mental Health is a condition and level of social functioning which is socially acceptable and personally satisfying

a) True

b) False

c) Does not say

d) None of the above

2) Which of the following are not the components of mental health as maturity?

a) Intimacy

b) Identity

c) Generativity

d) Abstract

3) Majority of psychologists and social workers have agreed that ---------- terms may be used as mental health

a) Complete maturity

b) Complete innocence

c) Complete Physical growth

d) Complete well being

Answers: 1) a) True 2) d) Abstract 3) a) complete maturity

SHORT ANSWER QUESTIONS WITH MODEL ANSWER

1) Explain mental health as positive or spiritual emotions.

Answer: This model defines both mental and spiritual health as the amalgam of the positive emotions that bind us to other human beings. Recent advances in neuroscience and in the biological understanding of positive emotions have brought out the significance of positive psychology. This model comprises eight important positive emotions: love, hope, joy, forgiveness, compassion, faith, awe and gratitude. They all involve human connections and do not have anything to do just with self. All major religious faiths emphasise the importance of these

emotions. Positive emotions have an effect on our autonomic (visceral) nervous system, similar to the relaxation achieved with meditation.

2) Explain characters of mentally healthy person

Answer: Characteristic of a Mentally Healthy Person: He feels comfortable about himself, that is, he feels reasonably secure and adequate. He is aware of his rights towards others. This means that he is interested in others. He develops friendship that is satisfying and lasting. He considers himself a part of a group without being submerged by it. A mentally healthy person is able to meet the demands of life. He reacts to the problems as they arise. He is able to think for himself and takes his own decisions. He sets reasonable goals for himself.

01-04-02: MAJOR DEPRESSIVE DISORDERS

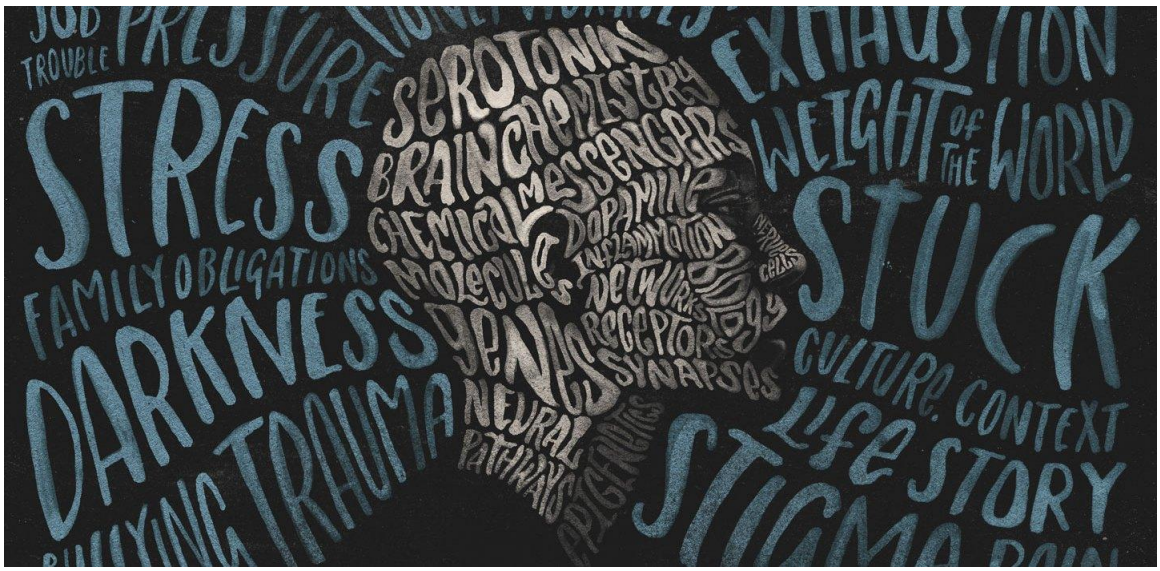

Figure: 01-12. Mental Depression

(**Source:** https://www.google.co.in/search?sca_)

Major depressive disorder, also referred to here as depression, is a serious medical illness that disrupts a person's mood, behavior, thought processes, and physical health. Major depressive disorder should not be mistaken for the passing feelings of unhappiness that everyone experiences, nor should it be confused with the intense grief brought about by the death of a loved one. Sadness and grief are normal reactions to life stresses. With time, and usually without medical treatment, sadness and grief lift, and people go on with their lives. By contrast, without specialized medical treatment, depression often persists. But with

effective treatment, a large majority of people improve significantly. In most instances, major depressive disorder is a recurrent, episodic illness. This means that a person who has been depressed once and has recovered is likely to have one or more episodes of depression in the future, often within 2 to 3 years. When depression is not treated, or is treated inappropriately, it is potentially fatal: nearly one in six people with severe, untreated depression commits suicide. However, seeking help and receiving an accurate diagnosis from a psychiatrist or other health care professional is a crucial and often decisive step toward recovery. Many people with major depressive disorder do not recognize that they are ill. They, and others around them, may consider depression a sign of personal weakness. Some depressed people, faulting themselves for having the moods and feelings associated with their illness, purposely do not seek medical help. The symptoms experienced in depression are not a cause for shame, but a signal that medical help is needed. Doctors in all medical specialties are becoming more and more aware that depression is a commonplace, serious, and real illness. The course of an episode of major depressive disorder is predictable, and there are many treatments that address different aspects of the illness and, in the vast majority of cases, produce a positive effect. Major depressive disorder is one form of depressive illness, or mood disorder. Other forms include bipolar disorder (manic-depressive illness) and dysthymia. In bipolar disorder, episodes of depression alternate with episodes of mania, a condition in which inappropriate or extreme “high” feelings may lead to dangerous, destructive behavior. Dysthymia involves symptoms similar to those of major depressive disorder. The symptoms are milder but longer lasting, and although they might not be disabling, they prevent a person from feeling good or operating at “full steam.” Occasionally, a person with dysthymia may also have major depressive disorder, a condition referred to as double depression. This guide focuses on major depressive disorder.

Symptoms:

Although depression may occur only once during your life, people typically have multiple episodes. During these episodes, symptoms occur most of the day, nearly every day and may include:

1. Feelings of sadness, tearfulness, emptiness or hopelessness.
2. Angry outbursts, irritability or frustration, even over small matters.
3. Loss of interest or pleasure in most or all normal activities, such as sex, hobbies or sports.
4. Sleep disturbances, including insomnia or sleeping too much.
5. Tiredness and lack of energy, so even small tasks take extra effort.
6. Reduced appetite and weight loss or increased cravings for food and weight gain.
7. Anxiety, agitation or restlessness.
8. Slowed thinking, speaking or body movements.
9. Feelings of worthlessness or guilt, fixating on past failures or self-blame.
10. Trouble thinking, concentrating, making decisions and remembering things.
11. Frequent or recurrent thoughts of death, suicidal thoughts, suicide attempts or suicide.
12. Unexplained physical problems, such as back pain or headaches.

For many people with depression, symptoms usually are severe enough to cause noticeable problems in day-to-day activities, such as work, school, social activities or relationships with others. Some people may feel generally miserable or unhappy without really knowing why.

- **Causes:**

It's not known exactly what causes depression. As with many mental disorders, a variety of factors may be involved, such as:

i. **Biological differences.** People with depression appear to have physical changes in their brains. The significance of these changes is still uncertain, but may eventually help pinpoint causes.

ii. **Brain chemistry.** Neurotransmitters are naturally occurring brain chemicals that likely play a role in depression. Recent research indicates that changes in the function and effect of these neurotransmitters and how

they interact with neurocircuits involved in maintaining mood stability may play a significant role in depression and its treatment.

iii. **Hormones.** Changes in the body's balance of hormones may be involved in causing or triggering depression. Hormone changes can result with pregnancy and during the weeks or months after delivery (postpartum) and from thyroid problems, menopause or a number of other conditions.

iv. **Inherited traits.** Depression is more common in people whose blood relatives also have this condition. Researchers are trying to find genes that may be involved in causing depression.

- **Management and Treatment:**

Depression is one of the most treatable mental health conditions. Approximately 80% to 90% of people with depression who seek treatment eventually respond well to treatment. Treatment options include:

i. **Psychotherapy:** Psychotherapy (talk therapy) involves talking with a mental health professional. Your therapist helps you identify and change unhealthy emotions, thoughts and behaviors. There are many types of psychotherapy — cognitive behavioral therapy (CBT) is the most common. Sometimes, brief therapy is all you need. Other people continue therapy for several months or years.

ii. **Medication:** Prescription medicine called antidepressants can help change the brain chemistry that causes depression. There are several different types of antidepressants, and it may take time to figure out the one that's best for you. Some antidepressants have side effects, which often improve with time. If they don't, talk to your healthcare provider. A different medication may work better for you.

iii. **Complementary medicine:** This involves treatments you may receive along with traditional Western medicine. People with mild depression or ongoing symptoms can improve their well-being with therapies such as acupuncture, massage, hypnosis and bio feedback.

iv. **Brain Stimulation Therapy:** Brain stimulation therapy can help people who have severe depression or depression with psychosis. Types of brain

stimulation therapy include electroconvulsive therapy (ECT), transcranial magnetic stimulation (TMS) and vagus nerve stimulation (VNS).

1. Schizophrenia:

Schizophrenia also sometimes called as split personality disorder. It is a chronic, severe, debilitating mental illness which affects about two percent of the population. It is one of the psychotic mental disorders and is characterized by behavioral and social abnormalities. The individual with this disorder also develop disorganized speech, disorganized rigid or lax behavior, significantly decreased appropriate behaviors or feelings as well as development of delusions. Delusions are false beliefs which for example believe someone is out to kill him while actually there is no such person who has any intention to kill the person. It is thus a false belief. The person however believed in it as such a reality that he is unable to distinguish between what is real and unreal. Thus based on the delusions his behavior becomes highly bizarre. Sometimes such persons may attack another without reason based on his delusions. Most cases of schizophrenia appear in the late teens or early adulthood. This is a disease of the brain and one of the most disabling and emotionally devastating illness and for a long time has not been properly diagnosed and quite often misjudged and misunderstood. Persons with this illness are stigmatized and are generally avoided by everyone. In severe condition they are sent to hospitals for mental diseases. Like cancer and diabetes, schizophrenia has a biological basis. It is relatively a common disease affecting one to two percent of the population.

1. Symptoms:

Some of the following symptoms are mentioned for Schizophrenia:

1. Social withdrawal
2. Flat expressionless gaze
3. Inappropriate laughter or crying
4. Depression
5. Insomnia or oversleeping
6. Delusions – Delusions of persecution – Delusions of reference – Delusions of grandeur – Delusions of control

7. Hallucinations – Auditory hallucinations – Visual hallucinations in some cases • Disorganized speech
8. Disorganized behavior
9. Clumsy in motor functions
10. Rigidity, tremor, jerking arm movements, or involuntary movements of the limbs
11. Awkward Walking
12. Unusual gestures and postures
13. Inability to experience joy or pleasure from activities (called anhedonia)
14. Appearing desire less or seeking nothing
15. Feeling indifferent to important events
16. Low motivation or No motivation
17. Suicidal thoughts in some cases
18. Rapidly changing mood.

2. Management and Treatment

1. **Psychosocial Treatment for Schizophrenia** While medication is almost always a necessary component of schizophrenia treatment, it does not offer a complete solution. People with schizophrenia also need psychosocial treatments to help them cope with their illness, obtain services, and become more independent. People who receive psychosocial treatment for schizophrenia are more likely to take their medication regularly and avoid relapse and hospitalization.

2. **Supportive Therapy** The goal of supportive therapy for schizophrenia is to help people adjust to their illness and navigate the challenges of daily living. Individual and group therapy provide the much needed emotional support for people with schizophrenia, while simultaneously teaching them how to solve problems in their daily lives, improve their relationships, and participate in their own recovery.

3. **Illness Management** A primary focus of supportive therapy is patient education. Patients learn about common schizophrenia symptoms and problems, treatment options, and the importance of medication. This knowledge helps them take an active role in treatment and better manage their illness. People with schizophrenia can learn to monitor their progress, watch

for signs of relapse, take their medication regularly, and deal with side effects.

4. **Coping with Symptoms** Supportive therapy can also teach people how to cope with symptoms of schizophrenia that persist despite medication and treatment. Using cognitive behavioral techniques, patients learn to challenge delusional beliefs, ignore the voices in their heads, or motivate themselves.

5. **Rehabilitation** Vocational and social rehabilitation teaches basic life skills to people with schizophrenia so they can function in their families or communities. There are many different types of rehabilitation programs, but the shared focus is on helping patients take care of themselves and make the most of their capabilities. Depending on the individual's personal goals and degree of illness, rehabilitation may include training in handling finances, using public transportation, communicating with others, and finding living arrangements. For those who want to work, vocational rehabilitation includes work assessment, job skills training, and assistance finding full or part-time employment.

6. **Family Education and Support** Family support makes a difference in the outlook for people with schizophrenia. When family members are involved in treatment, patients are more likely to avoid relapse and achieve a higher level of functioning. If you have a family member with schizophrenia, educating yourself about the illness will give you a clearer understanding of your loved one and the challenges of treatment and recovery.

7. **Antipsychotic Drugs** The most common medical treatment for schizophrenia is the use of antipsychotic medication. 70% of people using medications for schizophrenia improve, and medicine can also cut the relapse rate for the disorder by half, reducing it to 40%. Classic schizophrenia medication includes Thorazine, Fluanxol, and Haloperidol. These medications are effective in treating the positive symptoms of schizophrenia. Newer "atypical" medications include Risperdal, Clozaril, and Aripiprazole. These medications are recommended for first-line treatment and are excellent at reducing negative symptoms.

8. **Antidepressant Drugs** Antidepressants are recommended for those suffering from schizoaffective disorder. Antidepressants can successfully reduce the symptoms of depression in these patients.

2. Obsessive-Compulsive Disorder:

Figure: 01-13. Obsessive-Compulsive Disorder

(**Source:**
https://www.google.co.in/search?q=obsessive+compulsive+disorder+images)

Obsessive-compulsive disorder is a type of mental disorder associated with anxiety, characterized by illogical (and obsessive) thoughts and fears that lead to compulsory repetition of certain behaviors, impeding daily life. Sometimes people with obsessive-compulsive disorder are aware of the fact that their obsessive behaviors are illogical and try to ignore or change them. However, these attempts increase feelings of malaise and anxiety. Therefore, they are compulsory to alleviate anxiety.

I. Symptoms:

OCD symptoms, which are annoying thoughts and compulsive behaviors, vary among people, most common annoying thoughts:

1. Fear of dirt or contamination.
2. Fear of incurring diseases.
3. Fear of harming oneself or others
4. Fear of making mistakes
5. Fear of embarrassment or of failure and involvement in inappropriate public behavior.
6. Fear of bad thoughts or feeling of sin.

7. Exaggerated need for organization, integration, and accuracy.
8. **Most Common Compulsive behaviors**
9. Repetitive ablution and praying.
10. Bathing more than once, or washing hands frequently.
11. Refraining from shaking hands with others or touching the door knob.
12. Excessive checking on things, such as locks or gas stoves.
13. Counting continuously - either silently or loudly - during normal daily chores.
14. Stressing the order and organization of personal items permanently and consistently.
15. Eating a certain and fixed set of foods, in a consistent order.
16. Stuttering during conversation, coupled with disturbing imaginations and thoughts that do not disappear on their own, and would cause sleep disorders.
17. Repeating certain words or terms.
18. Feeling the need to do the same tasks several times (such as prayer and ablution).
19. Collecting and keeping items that have no apparent value.

II. Management and Treatment:

Treatment varies according to the severity of the condition and the extent of its effect on the life of the patient. There are two basic types followed in the treatment, namely, psychotherapy and pharmacotherapy.

- **Psychotherapy for obsessive-compulsive disorder**: In non-severe cases, the method of (exposure and response prevention) will be used, by having the patient experience obsession triggers and preventing them from correcting or putting them properly. Another method called educational / cognitive behavioral therapy is the most successful among children and adults alike. In severe cases treatment may take several months to be effective.
- **Pharmacotherapy for obsessive-compulsive disorder:** Medications may be used in advanced cases, often starting with antidepressants, and as the condition progresses, sedatives are used to address the effects of anxiety. Be careful not to stop medications without consulting your doctor even if there is

an improvement in the condition, and be careful to use them as prescribed by your doctor.

3. Childhood Mental Disorders and Illness:

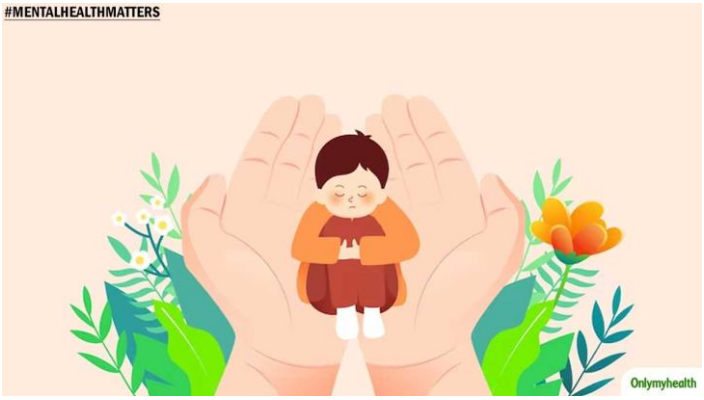

Figure: 01-14. Childhood Mental Disorder and Illness

(**Source:** https://www.google.co.in/search?q=childhood+mental+disorders+and+illness+image)

The term "pervasive development disorders," also called PDDs, refers to a group of conditions that involve delays in the development of many basic skills, most notably the ability to socialize with others, to communicate, and to use imagination. Children with these conditions often are confused in their thinking and generally have problems understanding the world around them. Because these conditions typically are identified in children around 3 years of age, a critical period in a child's development, they are called developmental disorders.

I. General symptoms that may be present to some degree in a child with a PDD include:

- Difficulty with verbal communication, including problems using and understanding language.
- Difficulty with non-verbal communication, such as gestures and facial expressions.
- Difficulty with social interaction, including relating to people and to his or her surroundings.
- Unusual ways of playing with toys and other objects.
- Difficulty adjusting to changes in routine or familiar surroundings.
- Repetitive body movements or patterns of behavior, such as hand flapping, spinning and head banging.

- Changing response to sound (The child may be very sensitive to some noises and seem to not hear others).
- Temper tantrums.
- Difficulty sleeping.
- Aggressive behavior.
- Fearfulness or anxiety (nervousness).

II. Management and Treatment:

Each treatment program is modified according to the symptoms, but involves:

- relaxation training, with progressive muscle relaxation and breathing exercises which can then be used to cope with greater exposure to anxiety-provoking or stressful situations
- modelling and reinforcement of confident behaviours to help reduce anxiety and improve self-esteem
- formulating more positive thoughts (cognitions) and self-attributions to alter maladaptive beliefs and self-appraisal, and to relieve anxiety, depression and angry antisocial thoughts
- the experience of rewarding structured tasks, and activities using operant conditioning to develop pro-social behaviour and improve social skills, particularly in delinquent youths. The evidence for the effectiveness of cognitive–behavioural treatment approaches is now so substantial that these should be used as the first option.

- **Play and psychodynamic psychotherapy** These approaches rely on using play, discussion and the relationship with the therapist to help children develop insight into their problems and learn to understand and cope with their emotional distress. There is growing evidence that these approaches do work, but they are generally not as efficient and effective as cognitive–behavioral therapy. The more recent structured approach referred to as "interpersonal psychotherapy" is providing results that are more equivalent to cognitive–behavioral therapy when applied to the treatment of internalizing conditions.
- **Family therapy:** There are a variety of different approaches to working with families, but most are based on working with the family as a group, improving communication and problem-solving skills, developing more

effective methods of discipline of behavioral control and the expression of emotion, and encouraging new patterns of interaction. Studies of family therapy often have methodological problems, but, overall, it has been shown to be useful in treating a range of child psychiatric problems including conduct disorder and delinquency, anxiety and depression and bereavement.

- **Pharmacotherapy**: Drugs have a limited role in managing psychopathology in children. Even in cases where they have a clear therapeutic benefit, they should be used as an adjunct to a more broadly based management plan which involves the parents and, when appropriate, the school.
- **Internalizing disorders:** The role of drug treatment for anxiety and depression in childhood has still to be firmly established by controlled trials. There is limited evidence that imipramine may reduce symptoms of anxiety in separation anxiety disorder and school refusal.21 Some case reports indicate a positive response to tricyclic antidepressants in the treatment of depression in children and adolescents, but systematic controlled studies have failed to demonstrate significant efficacy compared with placebo.22 A recent placebo-controlled outpatient study of young people (aged 7–17 years) with non-psychotic major depression found significant improvement in depression rating scale scores and clinical assessment in a group treated with the selective serotonin reuptake inhibitor fluoxetine (20mg morning dose for eight weeks).
- **Externalising disorders Conduct disorder**: There is virtually no indication for the use of drugs in the treatment of conduct disorder unless the child also suffers from ADHD or a depressive disorder.

MULTIPLE CHOICE QUESTIONS

1) Schizophrenia many a times also called as ------

a) Dual Personality Disorder

b) Split Personality Disorder

c) Multiple Personality Disorder

d) Numb Personality Disorder

2) Psychotherapy (talk therapy) involves ----------

a) Talking with a mental health professional

b) Talking with general physician

c) Psychological sessions with experts

d) None of the above

3) Which of the following is not the symptom of the Obsessive Compulsive Disorder (OCD)?

a) Fear of dirt or contamination.

b) Fear of diseases.

c) Fear of harming oneself or others

d) Fear of making mistakes

Answers: 1) b) Split Personality Disorder, 2) a) talking with a mental health professional 3) b) Fear of diseases.

SHORT ANSWER QUESTIONS WITH MODEL ANSWER

1) Write a short note on Depression.

Answer: Although depression may occur only once during your life, people typically have multiple episodes. During these episodes, symptoms occur most of the day, nearly every day and may include:

- Feelings of sadness, tearfulness, emptiness or hopelessness
- Angry outbursts, irritability or frustration, even over small matters
- Loss of interest or pleasure in most or all normal activities, such as sex, hobbies or sports
- Sleep disturbances, including insomnia or sleeping too much
- Tiredness and lack of energy, so even small tasks take extra effort etc.

2) Explain any five management and treatment methods for Schizophrenia.

Answer: Psychosocial Treatment for Schizophrenia While medication is almost always a necessary component of schizophrenia treatment, it does not offer a complete solution. People with schizophrenia also need psychosocial treatments to help them cope with their illness, obtain services, and become more independent. **Supportive Therapy** The goal of supportive therapy for schizophrenia is to help people adjust to their illness and navigate the challenges of daily living. **Illness Management** A primary focus of supportive therapy is patient education. Patients learn about common schizophrenia symptoms and problems, treatment options, and the importance of medication. **Coping with Symptoms** Supportive therapy can also teach people how to cope

with symptoms of schizophrenia that persist despite medication and treatment. Using cognitive behavioral techniques, patients learn to challenge delusional beliefs, ignore the voices in their heads, or motivate themselves.

01-04-03: Stress Reduction And Management (Importance Of Yoga)

Figure: 01-15. Stress Relieving Activities

(**Source:** https://www.google.co.in/search?q=stress+reduction+image)

Stress is a psychological condition and body discomfort. Stress is a common phenomenon. Every individual experiences stress at some or other time. Employees experience stress in the process of meeting the targets and working for long hours. When the person experiences a constraint inhibiting the accomplishment of desire and demand for accomplishment, it leads to potential stress. Anxiety is converted into stress and ultimately it leads to job burnout. In fact, for most of the time individuals are responsible for stress. However, organizations also create stress in the individuals. Why one should be concerned about stress? The reason is that the stress has more negative consequences than positive. In this unit, you will learn the definition, causes and consequences of stress. You will be exposed to the techniques of managing stress. You will further learn the process of creating stress free environment.

Definition of Stress: Stress is a state of discomfort experienced by an individual. Loss of emotional stability is the general expression of stress. It is generally apparent when the individual experiences a biological disorder. Stress has a positive association with the age, life styles, time constraints and the nature

of occupation. Certain occupations are more prone to the stress than the others. For instance, drivers of vehicles, doctors, lawyers and managers are more likely to get stress than teacher, bankers and operating personnel. Individuals feel stress when the needs or desires are not accomplished in the normal expected ways. This is because of the natural constraints operated on the individuals.

1. Stress is both psychological and physical aspect.
2. It is common to both the genders.
3. It results from the deviation of expectations from actual situation.
4. It is symptomatic. Potential stress appears with the symptoms. If the potential stress is ignored it leads to actual stress.
5. Stress is treated to be negative. Nevertheless, it has positive consequences. This is called as eustress.
6. Stress is an interactive concept. It does not spring from the internal organs of the individual. It comes from the interaction of the human being with the environment. Thus, environment has a profound influence on the stress.
7. Stress is generic term. If it is applied to the context of organization, it is known as work stress or job stress.
8. Stress occurs only when the human being feels mediation of the internal or external factors.
9. Stress is related to the attitude of the person. Stress does not occur when the person is having an indifferent attitude to the opportunity.
10. Stress is associated with certain common biological disorders such as heart attack, stroke, diabetic, blood pressure, neurological disorders etc.

- **Techniques of Managing Stress:**

Stress management has assumed greater importance in the modern organizations. More than organizations, individuals are concerned with the stress reduction. As the saying goes ‘prevention is better than cure’, prevention of stress is better than attempting to cure stress. This is because stress once experienced has negative consequences. Though employee possesses negative perception of stress, there is a need to induce moderate levels of stress for better performance. The question arises what should be the acceptable levels of stress? Moreover, there is a wide gap between theoretical and actual practice of stress management. For instance, practicing yoga early in the morning and doing exercise is

considered very effective way of fighting stress. However, how many people really sacrifice morning comfortable sleep for the sake of yoga and exercises. When a problem occurs, people resort to yoga. Otherwise, they feel that taking allopathic medicine is easy than yoga and exercises. Individual and organizational stimuli cause stress, and the implications are more negative at individual and organizational levels. It needs to be managed both by adopting individual and organizational strategies. The individual management techniques are more popular than organizational management techniques. Let us learn the strategies of stress management in detail.

- **Individual Management** Individuals assume automatic responsibility and look for ways and means of dealing with their stress. Individuals are more concerned about their health. There is an increasing rate of health clinics and health consciousness observed in recent times. Following are some of the techniques which individuals can adopt for reducing stress:

1. **Time Management**: Time management and stress are inversely related. Improper and poor management of time are the root cause of a greater degree of stress. Improper and inadequate utilization of time cause anxiety. The following principles of time management can help in combating stress.
    - Identifying and listing of daily activities in a logical order.
    - Arranging the activities of the day based on importance and urgency.
    - Preparing logical schedule of activities.
    - Analyzing and understanding the daily cycle and nature of the job.
    - Allocating time properly to various activities based on time demands.
    - Delegating minor tasks to the subordinates in order to make use of the time in a better manner. • Discouraging unwanted visitors.
    - Setting unfinished tasks on the top of list for tomorrow.
2. **Physical Management**: Management of stress relates to understanding one's own biological and body conditions. Examining hereditary characteristics habits like smoking and drinking, life styles and body conditions help in understanding one's physiological conditions. Overcoming stress is possible

with managing physiological relaxation. Physical exercises greatly help in relieving tension and stress. When body is conditioned with physical exercise, oxygen is inhaled properly and blood circulation increases. This promotes healthy secretions from glands and the supply of blood to all the parts of the body keeps every organ active. Consequently, immunity to withstand stress increases. Physical exercises could be reactive or proactive. Noncompetitive physical exercises like walking, jogging, swimming, riding, aerobics and playing games considerably increases heart capacity, provide mental diversion from work pressures and increases heart capacity to withstand stressful situations. The chances of heart attack, adverse blood pressure and diabetics reduce.

3. **Psychological Management:** Most of the stresses arise because of psychological tensions. Therefore, it is suggested that managing psychological activities lead to effective management of stress. The following are some of the psychological management techniques.

    i. **Relaxation:** Relaxation of mind through meditation, hypnosis and biofeedback can effectively reduce mental tensions. Meditation involves silently sitting on the ground taking deep inhalation and chanting mantra.

    ii. **Behavioural Self-control:** Stress also results from behavioural disorders. Exercising proper control over behaviour in dealing with others can bring down the chance of stress.

    iii. **Cognitive Therapy:** It is a technique of clinical psychology. Cognitive therapy involves knowing ones' own emotions to release anxiety and tension. In this technique, people are made to understand the reasons causing stress in them by the process of self-observation.

    iv. **Yogic Management:** In recent times, yoga is an effective technique of relieving stress. Yoga practice involves Asana, Pranayama, Mudra and Kriya. Practicing a number of yogasana relaxes muscels, reduces blood pressure, controls asthma, relieves neurological problems, improves lung capacity, enhances proper flow of blood and helps relax tensions and strains.

4. **Social Management:** Developing good social networks involves grouping of people who are good listeners and confidence builders. This increases social support to individuals. Encouraging informal groups to share information without inhibitions, developing free exchange of ideas, views and distasteful experiences, promoting confidence of social support decrease tensions and stress. Social clubs, recreation clubs, friendship clubs, informal gatherings, birthday parties, and family are some of the social networks that increase social support and reduce stress.

5. **Self-awareness Management:** Self-awareness is similar to self-audit or personal audit. Managers are required to understand themselves in a free and fair manner. They should encourage open communication and willing to listen to others especially on their deficiencies. Being aware of self is a difficult task, as individuals are unprepared to accept their defects. Self-awareness management involves three stages.

6. **Inter Personal Management:** One of the most successful techniques of stress management is developing inter personal understanding. Inter- personal communication, inter personal attraction and inter personal knowledge improve understanding of others behaviour. Most of the organizational stresses are created due to misunderstanding, organizational politics, setting one self-aloof from others and encouraging unreliable comments. Thus, maintaining openness of communication and valuing proper comment enable development of inter personal understanding. Transactional Analysis, Johari Window and Grid techniques help in the development of inter personal understanding and consequent relief from stress.

- **Concept and Importance of Yoga:**

Figure: 01-16. Yoga and Pranayama

(**Source:** https://www.google.co.in/search?q=yoga&sca)

The word 'Yoga' is not unfamiliar to us. We have some ideas about it, though the ideas may be wrong or right. At one time, yoga was confined to very few dedicated people, initiated to that order by their Gurus, most of whom were ascetics and hermits. The general belief, even among the educated people, was that yoga was meant only for those people who had left their worldly life and started living in hermitage, and not for the householders. But, after it has been popularised among the masses by yogis like Swami Ramdev, Shri Ravi Shankar and others, through mass-media, particularly through television and mass-yoga-camps, it is now widely practised by the common people, irrespective of gender, religion, caste, birth, age and profession, in order to gain relief from ailments and to lead a healthy, happy and prosperous life. Much before it was popularised in India, the land of its origin, Yoga had gained popularity in the developed countries of the west and the east. After Yoga has been considered by the United Nations Organisation one of the most essential means for bringing peace and unity among the nations of the world, and with the declaration of International Day of Yoga to be observed on June 21 every year, Yoga education has gained importance in the academic curriculum of a large number of countries of the world, including India. Yoga has been defined variously in different scriptures and treatises on yoga. Though the definitions vary, the goal of all the definitions are one and the same, i.e., to know the Self, to unfold the divinity within and to merge the individual self with the universal consciousness, experience the 'Existence, Knowledge and Bliss Absolute' and thereby to free oneself from the pains and sufferings that emerge from mundane life. Some important definitions of yoga are given below:

1. The 'Yog-Vasistha Ramayana' mentions two definitions. The first one is on the 'state' and, that is, 'Yoga' is the maintenance of equilibrium between the individual soul and the universal soul (Yoga Samatavastha Jivatma Paaramatmano). The second definition is about the 'method' and, that is, 'Yoga is the means for controlling the mind' (Manah Prasamanopayah Yoga Ityavirdhiyate).

2. The 'Maha-Nirvan Tantra' defines yoga as 'Union of the individual soul with the universal soul' (Yoga Jivatma Paramatmano Eikyam).

3. In the 'Srimad Bhagawad Gita' two definitions of yoga can be found. One is – a) 'Maintenance of equanimity or balance is yoga' (Samattwam Yoga Uccyate). The other is b) 'Yoga is skill in action' (Yoga Karmasu Kausalam).

4. Sage Patanjali in the' Yoga Sutra' defines yoga as the inhibition or restraint of modifications of the mind (Yoga Chitta Vritti Nirodhah).

In Indian civilisation and culture, yoga occupies a highly esteemed place, from time immemorial. In the ancient times, the practitioner of yoga was regarded thousand times superior to the house-holder and the celibate, and hundred times superior to the hermit. Because of its importance felt by the people in different ages, the practice of yoga is being continued since the pre-historic days to the present day. Day by day, its importance and popularity is increasing, and now, it has become a universal phenomenon. Our worldly lives are always full of pain and suffering. We give in our endless efforts in order to gain or overcome relief from such sufferings and also to gain happiness. And as a result of our efforts, pleasure comes to our lives, although for a temporary period.

MULTIPLE CHOICE QUESTIONS

1) International Yoga Day is celebrated on

a) 21 July

b) 21 March

c) 21 June

d) 21 April

2) Stress is a state of ------ discomfort experienced by an individual.

a) Social

b) Mental

c) Physical

d) All of the above

3) ------ Practices, not only improve health but also increase mental concentration.

a) Exercise

b) Physical

c) Yogic

d) General

Answers: 1) c) 21 June, 2) b) Mental, 3) c) Yogic

SHORT ANSWER QUESTIONS WITH MODEL ANSWER

1) Explain time management technique for stress reduction to any individual.

Answer: Time Management: Time management and stress are inversely related. Improper and poor management of time are the root cause of a greater degree of stress. Improper and inadequate utilization of time cause anxiety. The following principles of time management can help in combating stress.

- Identifying and listing of daily activities in a logical order.
- Arranging the activities of the day based on importance and urgency.
- Preparing logical schedule of activities.

2) Explain the importance of yoga for stress reduction.

Answer: It is found to be the best means of leading a tension-free life, which keeps men free from physical, mental, as well as, psycho-somatic disorders. Yoga education is a holistic education which includes physical, mental, emotional, intellectual, moral, spiritual, social as well as environmental education, due to which the practitioner of yoga becomes healthy in the true sense of the term. Other than yoga, there is no such system which prepares a man holistically and therein lies the importance of yoga. Yogic practices, not only improve health but also increase mental concentration, due to which memory-power increases. Moreover, due to an achievement of tranquility of mind and increase of power of concentration, analytical power develops and the practitioner understands things quickly and better.

SUMMARY

Mental health, as defined by the World Health Organization, is the "state of well-being in which the individual realizes his or her or their own abilities, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community." Mental health is best

understood as a resource, one that allows individuals to recognize and understand their skills and potential that they may use to pursue their passions and dreams within sport. Mental health allows individuals to work in constructive ways either by themselves or collectively as a group or a community. Social health is an integral component of mental health, where individuals can integrate into society, feel accepted and trusted, contribute to collective efforts, and work toward strengthening their community for the future. Mental health also allows individuals to recognize, understand, and address challenges as they may arise. For athletes, this may mean stressors within sport as well as outside of sport. Holistic life perspectives challenge athletes to critically reflect, explore, and understand their identities and self-concepts. Such perspectives ask athletes to examine the many facets of their lives, including family, friendships, scholastic pursuits, hobbies, leisure activities, and non-athletic jobs and careers, in addition to training for and performing within their chosen sport. A holistic life perspective allows individuals to be able to recognize where stressors originate, how they may affect multiple areas of their lives, and how they may be addressed and managed. Overall, mental health is an essential part of one's health.

END OF UNIT EXERCISES

1. Define mental health according to the World Health Organization (WHO). Why mental well-being is considered essential for overall health and development?
2. Discuss the causes, symptoms, and treatment approaches for Major Depressive Disorder. How does depression affect personal and social functioning?
3. What is Schizophrenia? Explain its characteristics, possible causes, symptoms, and current management or treatment options.
4. Describe Obsessive Compulsive Disorder (OCD). Discuss its types, symptoms, impact on daily life, and available therapies.
5. What are childhood mental disorders? Describe the common mental health conditions in children, their warning signs, and the importance of early diagnosis and support.

6. Explain the importance of stress management in maintaining mental health. Discuss different strategies for reducing stress, with a focus on the role of yoga.
7. How does modern lifestyle contribute to mental health problems? Discuss in relation to urbanization, digital overload, academic pressure, and social isolation.
8. Evaluate the role of education, family, and community in promoting positive mental health and supporting individuals with mental illnesses. Suggest ways to reduce stigma and increase awareness.

KEY WORDS

Major Depressive Disorder, Schizophrenia, Obsessive Compulsive Disorder (OCD), Stress Reduction, Yoga

REFERENCES

- **MOOCS**

1. https://onlinecourses.nptel.ac.in/noc21_hs34/preview
2. https://onlinecourses.swayam.gov.in/nd2_cec19_hs03/preview
3. https://onlinecourses.nptel.ac.in/noc20_ge18/preview
4. https://onlinecourses.nptel.ac.in/noc22_hs46/preview
5. https://onlinecourses.nptel.ac.in/noc23_ge19/preview

- **YOUTUBE VIDEOS**

1. https://www.youtube.com/watch?v=z8vZxDa2KPM
2. https://www.youtube.com/watch?v=1JIG7EcyzT4
3. https://www.youtube.com/watch?v=XiCrniLQGYc
4. https://www.youtube.com/watch?v=V-d1C5nImZw
5. https://www.youtube.com/watch?v=9FXaY8UXiCY
6. https://www.youtube.com/watch?v=d2-sfUljZBE
7. https://www.youtube.com/watch?v=DhlRgwdDc-E
8. https://www.youtube.com/watch?v=tZz_o9qTn5A

9. https://www.youtube.com/watch?v=Bb3HHHX1_zE
10. https://www.youtube.com/watch?v=8KqJhwD7pB0
11. https://www.youtube.com/watch?v=H4ua8_5Wk-c
12. https://www.youtube.com/watch?v=smNBD8dPiys
13. https://www.youtube.com/watch?v=OBwjKqv_l9o
14. https://www.youtube.com/watch?v=hJbRpHZr_d0

- **OER**

1. World Health Organization. (2022). ***mental health: Strengthening our response***. [online] WHO. Available at: **https://www.who.int/news-room/fact-sheets/detail/mental-health-strengthening-our-response**
2. World Health Organization. (2022). ***Mental health and well-being***. [online] WHO. Available at: **https://www.who.int/health-topics/mental-health#tab=tab_1**
3. National Institute of Mental Health. (2023). ***Depression***. [online] NIH. Available at: **https://www.nimh.nih.gov/health/topics/depression**
4. Mental Health Literacy Project. (2021). ***Depression: Learn the signs***. [online] Openly Licensed at TeenMentalHealth.org. Available at: **https://teenmentalhealth.org/learn/mental-disorders/depression/**
5. National Institute of Mental Health. (2023). ***Schizophrenia***. [online] NIH. Available at: **https://www.nimh.nih.gov/health/topics/schizophrenia**
6. OpenStax. (2020). ***Psychological disorders – Schizophrenia***. In: ***Introduction to Psychology***. [online] Available at: **https://openstax.org/books/psychology/pages/15-5-schizophrenia**
7. Centre for Addiction and Mental Health. (2020). ***Understanding OCD***. [online] Available at: **https://www.camh.ca/en/health-info/mental-illness-and-addiction-index/obsessive-compulsive-disorder**
8. Open University. (2019). ***OCD in everyday life***. [online] OpenLearn. Available at: **https://www.open.edu/openlearn/ocw/mod/oucontent/view.php?id=81765**
9. Centers for Disease Control and Prevention. (2022). ***Children's Mental Health***. [online] CDC. Available at: **https://www.cdc.gov/childrensmentalhealth/index.html**

10. WHO. (2021). ***Adolescent mental health***. [online] Available at: **https://www.who.int/news-room/fact-sheets/detail/adolescent-mental-health**
11. Canadian Mental Health Association. (2021). ***Stress management workbook***. [online] Available at: **https://cmha.ca/brochure/stress**
12. University of Minnesota. (2022). ***Stress management strategies***. [online] Available at: **https://www.takingcharge.csh.umn.edu/stress-management**
13. National Center for Complementary and Integrative Health. (2021). ***Yoga: What you need to know***. [online] NIH. Available at: **https://www.nccih.nih.gov/health/yoga-what-you-need-to-know**
14. Ministry of AYUSH, Govt. of India. (2021). ***Common Yoga Protocol (CYP)***. [online] Available at: **https://yoga.ayush.gov.in/YogaProtocol**

- **WIKIPEDIA**

1. https://egyankosh.ac.in/bitstream/123456789/17264/1/Unit-2.pdf
2. https://egyankosh.ac.in/bitstream/123456789/39788/3/Unit-1.pdf
3. https://catalogimages.wiley.com/images/db/pdf/1861564139.01.pdf
4. https://nios.ac.in/media/documents/secpsycour/English/Chapter-19.pdf
5. https://egyankosh.ac.in/bitstream/123456789/23900/3/Unit-1.pdf
6. https://en.wikipedia.org/wiki/Major_depressive_disorder
7. https://www.moh.gov.sa/en/awarenessplateform/VariousTopics/Documents/Obsessive-Compulsive%20Disorder%20(OCD).pdf
8. http://www.dronet.org/lineeguida/ligu_pdf/depre_di.pdf
9. https://egyankosh.ac.in/bitstream/123456789/21112/1/Unit-4.pdf
10. https://timeforafuture.com.au/downloads/child-mental-health_tonge.pdf
11. https://www.ttcb.co.in/Diglib/DELED/S5/unit1YOGA.pdf

- **REFERENCE BOOKS**

1. Ahuja, N. (2011). ***A short textbook of psychiatry***. 7th ed. New Delhi: Jaypee Brothers Medical Publishers.
2. Basavanthappa, B.T. (2007). ***Psychiatric mental health nursing***. 1st ed. New Delhi: Jaypee Brothers Medical Publishers.

3. Kala, A.K. and Kala, R. (2013). ***Mental health in India: Issues and concerns***. New Delhi: Manak Publications.
4. Verma, S.K. and Pattanayak, R.D. (2015). ***Psychiatry for general practitioners***. New Delhi: CBS Publishers & Distributors.
5. Trivedi, J.K., Dhyani, M. and Sinha, P.K. (2011). ***Depression: A clinician's guide***. New Delhi: Jaypee Brothers Medical Publishers.
6. Andrade, C. and Rao, T.S.S. (2009). ***Clinical practice guidelines for the management of schizophrenia***. Bangalore: Indian Psychiatric Society.
7. Malhotra, S. (2009). ***Child and adolescent psychiatry***. New Delhi: Jaypee Brothers Medical Publishers.
8. Singh, A. (2015). ***Child psychology and development***. 2nd ed. New Delhi: Shipra Publications.
9. Bhavanani, A.B. (2013). ***Understanding the science of yoga***. Pondicherry: Dhivyananda Creations.
10. Telles, S. and Naveen, K.V. (2008). ***Yoga for depression***. New Delhi: New Age Books.
11. Sharma, H. (2014). ***Yoga and mental health***. New Delhi: Global Vision Publishing House.

CREDIT 02

UNIT 02-01: HEALTH HAZARDS

LEARNING OBJECTIVES

After successful completion of this unit, you will be able to,

- Identify common communicable diseases and their causes.
- Explain modes of transmission, symptoms, and preventive strategies.
- Analyze the effects of lifestyle choices on health.
- Explain the effect of exercise on body and mind.

INTRODUCTION

Health is a broad concept that includes a broad range of meanings that ranges from narrow technical definitions to all embracing philosophical definitions. Health is often described as “devoid of illness” and as a state of wellbeing. These are created and maintained by a set of factors, which are known as determinants of health. In this Unit we will discuss in detail about different determinants of health. Different population group has different health status, for example if we take the case of life expectancy as an indicator of health, a person born in Japan has an average life expectancy of 88 years where as Indian average life expectancy is 68.56 years. If you consider only Indians, then for men it is 67.3 years and women it is 69.6 years. This section should present an open ended question or discuss some interesting information along with relevant image so as to arouse curiosity of learners about this unit topic.

02-01-01: DEFINING HEALTH AND ITS EFFECT ON SOCIO-ECONOMIC DEVELOPMENT

We will begin the discussion with a positive and comprehensive definition of health. According to World Health Organisation (WHO, 1948) “Health” is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity”. In the context of Medical Anthropology, David Landy (1997) defined health as the condition of an organism that permits it to adapt to its environmental situation with relative minimal pain and discomfort, achieve at least some physical and psychic gratification and possess a reasonable probability of survival. Health is not just the physical well-being of an individual but also the social, emotional and cultural well-being of the whole country in which each individual is able to achieve their full potential as a human being,

thereby bringing about the total well-being of their community (Aboriginal Health and Medical Research Council of New South Wales, 2012). Different medical systems conceptualize health in different ways. For example, Ayurveda considers health as a balance between body, mind, spirit and social wellbeing.

Table: 02-01, Definitions of Health

(**Source:** Procter S 2000, Caring for Health, Macmillan Press, London)

Selective Definition of Health	• Health as absence of disease. • Health as socio psychological adaptation or adjustment to circumstances. • Health as a functional capacity to fulfil essential life functions.
Universal Definition of health	• Health as growth. • Health as independence, the exercise of autonomy and self-determination. • Health as independence, the exercise of autonomy and self determination • Health as well being. • Health as the realization of potential. • Health as empowerment • Health as wholeness.

If we consider the broad comprehensive definitions of health, we can identity that it covers not only physical health but also include mental, social and even spiritual dimensions of well-being. Hence it is developed and maintained by a number of determinants.

A. Health as A Medium of Socio-Economic Development:

Social Determinants of Health:

Social determinants of health can be defined as the conditions in the social, physical and economic environment in which people are born, live, work and this include access to health care. They consist of policies, programmes and institutions and other aspects of the social structure including the government and private sectors as well as the community factors. Social determinants affect the health of the population through the social and physical environment (Healthy People, 2000) They are considered as the life-enhancing resources such as food supply, housing, economic and social relationships, transportation, education and health care whose distribution across the population effectively determines the length and quality of life. Let us see some examples on how social determinants of health increase or decrease health inequality:

Education: Mother education emerges as the single most important determinant of child health care utilization in India when the influences of other intervening factors are controlled. The empirical results show that a higher level of maternal education results in improved child survival because health services that effectively prevent fatal childhood diseases are used to a greater extent by mothers with higher education than by those with little or no education.

Sex Ratio: According to NITI Aayog Data Number of females per 100 males in Haryana is 831 whereas for Kerala it is 967. The reason for this stark difference is attributed to education of women, employment of women, patriarchal status that is followed in the society etc., over all India's sex ratio is on decline where women are at disadvantage over the last few decades. Following figure explains about various determinants of health in a comprehensive manner. This model is developed by Whitehead M and Dahlgren G and first appeared in their article titles "What can be done about inequalities in Health" in the Lancet in 1991.

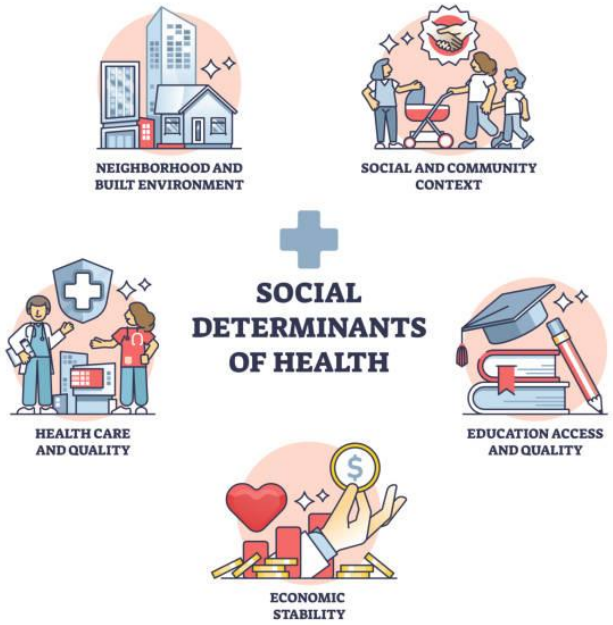

Figure: 02-01. Social Determinants of Health

(Source: https://www.google.co.in/search?q=determinants+of+health+image)

We shall discuss eight social determinants of health in detail in this section.

1. **Family, Friends and Communities:** Studies show that social isolation and loneliness are associated with increase in the risk of heart disease and stroke. People who are socially connected to their family, friends and community are generally happier and live healthier lives with fewer physical and mental health problems than people who are less well connected.
2. **Money and Resources:** An inadequate income can cause poor health because poor access to resources bring in stress and it affects physical and mental health. Money is essential to have access to good food, water, and immunization etc., poverty damages health.
3. **Housing:** Studies show children living in congested rooms and houses have more than twice likelihood to suffer from respiratory problems rather than children living in spacious- aired houses.
4. **Education and Skills:** Good education and skills can help build strong foundations for support. Accessing good work, lifelong problem-solving ability, develop lifelong healthy habits, afford good quality of life, live and

work in healthy environment all this is possible only if good education is ensured to the people.

5. **Good Work/ Employment:** Employability offers stability, security and regular income. It provides good wages and in turn ensures access to quality health care system. Good employment ensures that the person can afford basic living standard, ensure feel of self-esteem and worthiness, which all in turn has impact on the health of the person.
6. **Transport:** A healthy transport system can provide opportunities to improve air quality; also help people travel and access health care services like hospitals.
7. **Physical Surroundings:** Clean surroundings, spaces and buildings are essential for people's physical and mental health. For example, well maintained and easy to access green spaces in a city makes it easy for the people to be physically active.
8. **Access to Food:** Poor diet is one of the biggest risks for ill health. Healthy food needs to be affordable, available and accessible within the available resources at disposal.

B. Commission of Social Determinants of Health:

Commission on Social Determinants of Health was formed by World Health Organization in 2003. The Commission released its final report in 2008, and this document serves as a guiding principle to policy makers in developing countries like India to shape health policies and programmes that acknowledge the role of social determinants of health. It acknowledged and identified that marked inequities in health care caused by a) Structural Determinants (for example: unequal distribution in power, money, goods and services globally, nationally and locally) and b) Conditions of Daily Life (for example: consequent unfairness in the immediate conditions in people's lives — access to school, education, health care, conditions of work, leisure time etc.) The Commission made three major recommendations as follows:

1. Improve daily living conditions.
2. Tackle the unequal distribution of power, money and resources.

3. Measure and understand the problem of health inequality and assess the impact of interventions continuously.

Another Important work in this area by Micheal Marmot and his team (2010) suggest that reducing health inequalities requires a series of objectives to be met and they are as follows:

a) Giving every child the best possible start in life

b) Creating job opportunities and fair working conditions for all

c) Ensuring healthy standard of living for whole of the population

d) Develops pro-healthy physical environment

e) Empowering communities.

f) Strengthening disease prevention.

C. Economic Determinants of Health:

Different countries/continents of the world are not equally developed; this is because of the difference in resources, differences in culture, and differences in political and economic systems of the country. The health of a person is primarily dependent up the level of socio-economic development. Examples are per capita income, Gross National Product, employment and housing conditions have tremendous impact on an individual's life. The economic progress of many countries has been a major factor in reducing the mortality, morbidity rates; it also increased life expectancy, family size reduced drastically and there was a decrease in the communicable disease rates. Health is closely linked with the economic system of a country. Often the main obstacles to the implementation of superior technology in health care in a country are not technical but are economic and political hurdles. The economic system and economic stability of a country decides whether to make health care free for all or it should be charged. What per cent of Gross Domestic Product is to be spending on public health is also dependent upon the economic system and economic prospectus of that country. For example in the USA, health care is predominantly based on health insurance coverage. Hence health care is too expensive in that country. India, though devote only 1.5% of GDP into health we have, both government and private health care coexisting and people are free to choose from these available health care systems. Hence health care seems to be more accessible and affordable, though technology wise it is not as superior as in the USA.

D. Globalization and Its Impact on Health:

Globalization impacted on the trade relations and movements between countries. The competition and search for new markets, technological developments and agreements and cooperation between countries through international organizations (World Trade Organisation, World Bank) mediations make this process a reality. Globalization is defined as the processes that are changing the ways in which people interact across boundaries, notably physical (such as the nation-state), temporal (such as instantaneous communications) and cognitive (such as cultural identity). The result is a redefining of human societies across many spheres, economic, political, cultural, and technological and so on. Health achievements are critical international development goal. Globalization is helping to develop new knowledge and skills; promote policy coherence. This also contributes to global public goods for health, global health funds, international standards/ rules are developed for health. However, some of the specific concerns in a globalized world that has direct/ indirect impact on health are:

1. Food Safety
2. Environmental degradation and its impact on health
3. Access to drugs
4. Health care service availability
5. Emerging issues like Genetically Modified Food's impact on Health
6. Increasing life style disease burden.

Globalization has left negative impact on local knowledge, local resources and traditional whereby global knowledge, resources exert hegemony in the power system. The increase in Food chains like MacDonald, KFC and its popularity over Indian food among adolescents/ urban folks is an example to mention. This fast food culture leave impact on health and life style diseases like PCOD and obesity is on increase amongst this age group.

MULTIPLE CHOICE QUESTIONS

1) **Globalization is defined as the processes that are changing the ways in which people interact across boundaries, notably physical, temporal and**

a) Cognitive

b) Definite

c) Qualitative

d) Quantitative

2) Money and Resources are ------- type of determinants of health.

a) Cultural

b) Social

c) Economic

d) Behavior

3) Health is often described as-------

a) Disease free condition

b) State of well being

c) Devoid of illness

d) Both b and c

Answers: 1) a) Cognitive, 2) b) Social, 3) d) both b and c

SHORT ANSWER QUESTIONS WITH MODEL ANSWER

1) Discuss eight social determinants of health in detail.

Answer:

1. **Family, Friends and Communities:** Studies show that social isolation and loneliness are associated with increase in the risk of heart disease and stroke.
2. **Money and Resources:** An inadequate income can cause poor health because poor access to resources bring in stress and it affects physical and mental health.
3. **Housing:** Studies show children living in congested rooms and houses have more than twice likelihood to suffer from respiratory problems rather than children living in spacious- aired houses.
4. **Education and Skills:** Good education and skills can help build strong foundations for support.
5. **Good Work/ Employment:** Employability offers stability, security and regular income. It provides good wages and in turn ensures access to quality health care system.

6. **Transport:** A healthy transport system can provide opportunities to improve air quality; also help people travel and access health care services like hospitals.
7. **Physical Surroundings:** Clean surroundings, spaces and buildings are essential for people's physical and mental health.
8. **Access to Food:** Poor diet is one of the biggest risks for ill health.

2) Write a short note on impact of globalization on health.

Answer: Globalization impacted on the trade relations and movements between countries. The competition and search for new markets, technological developments and agreements and cooperation between countries through international organizations (World Trade Organisation, World Bank) mediations make this process a reality. Globalization is defined as the processes that are changing the ways in which people interact across boundaries, notably physical (such as the nation-state), temporal (such as instantaneous communications) and cognitive (such as cultural identity).

02-01-02: Diseases: Gastroenteritis, Cholera, Typhoid, Dengue, Rat Fever (Leptospirosis), Jaundice (Mode of transmission, causative agents, symptoms, prevention and control)

1. Gastroenteritis:

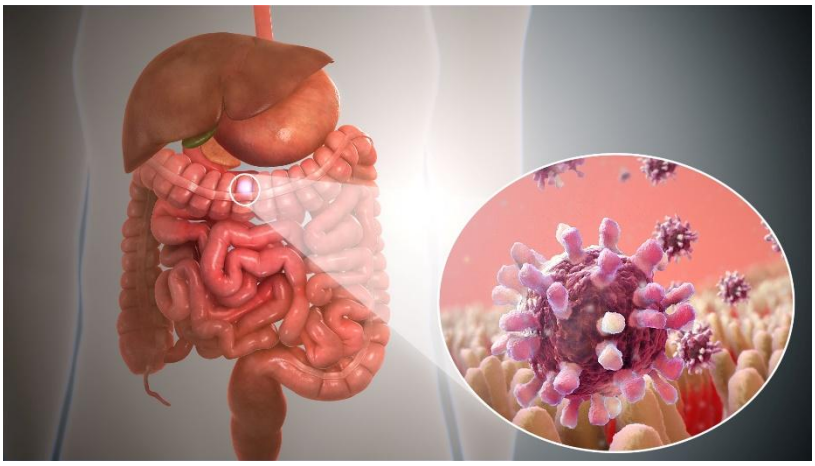

Figure: 02-02. Gastroenteritis or Stomach Flu

(Source: www.parashospital.com)

1. Mode of Transmission:

- **Fecal-oral route**: Most common, especially via contaminated food or water.

- **Person-to-person contact**: Touching infected individuals or surfaces contaminated with stool or vomit.
- **Aerosolized particles**: From vomiting, especially in closed environments (e.g., cruise ships).
- **Consumption of contaminated food or beverages**: Such as raw or undercooked seafood, unpasteurized dairy, or improperly handled food.

2. Causative Agents:

I. **Viruses**:
- Norovirus (most common cause)
- Rotavirus (common in children)
- Adenovirus
- Astrovirus

II. **Bacteria**:
- Escherichia coli (E. coli)
- Salmonella spp.
- Shigella spp.
- Campylobacter jejuni
- Vibrio cholerae (cholera)
- Clostridium difficile (in healthcare settings)

III. **Parasites**:
- Giardia lamblia
- Cryptosporidium spp.
- Entamoeba histolytica

3. Symptoms:

- Diarrhea (can be watery or bloody)
- Nausea and vomiting
- Abdominal cramps and pain
- Fever (mild to moderate)
- Dehydration (dry mouth, dizziness, reduced urination)
- Fatigue and weakness

4. Prevention:

- **Good hygiene**: Frequent handwashing with soap and water and by using alcohol-based hand sanitizers when soap isn't available.
- **Safe food handling**: Proper cooking of food (especially seafood and meat). Avoiding unpasteurized dairy products. Washing fruits and vegetables thoroughly.
- **Safe drinking water**: Drink bottled or treated water in areas with unsafe water supplies.
- **Vaccination**: **Rotavirus vaccine** for infants helps reduce rotavirus infections.

5. Control:

- **Isolation** of infected individuals (especially in hospitals or group settings).
- **Proper sanitation**: Clean contaminated surfaces with bleach-based disinfectants.
- **Oral rehydration therapy (ORS)**: To prevent and treat dehydration.
- **Medical treatment**: Antiemetics and antidiarrheals (in some cases). Antibiotics (only for certain bacterial infections, e.g., severe shigellosis). Antiparasitic drugs (for parasitic causes like Giardia).
- **Public health measures**: Surveillance and reporting of outbreaks. Food and water safety regulations.

2. CHOLERA:

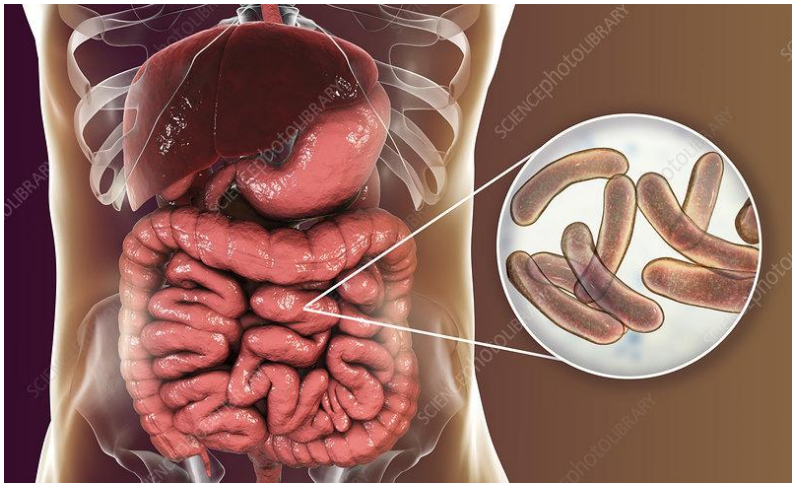

Figure: 02-03. Cholera Infection

(**Source:** Science Photo Library)

1. Mode of Transmission:

- **Fecal-oral route**: The most common mode.
- **Contaminated water**: Drinking or using water that contains ***Vibrio cholerae*** bacteria.
- **Contaminated food**: Consuming food washed with contaminated water or handled by an infected person.
- **Person-to-person transmission** is rare but possible via direct contact with fecal matter.

2. Causative Agent:

- **Bacteria**: ***Vibrio cholerae*** (mainly serogroups O1 and O139)
- It produces a cholera toxin that causes the intestines to secrete large amounts of water, leading to severe diarrhea.

3. Symptoms:

- **Profuse watery diarrhea** (often described as "rice-water stools")
- **Vomiting**
- **Rapid dehydration** (sunken eyes, dry mouth, low blood pressure)
- **Muscle cramps**
- **Thirst**
- **Weakness or shock** (in severe cases)
- **Death** can occur within hours if untreated due to severe dehydration.

4. Prevention:

- **Safe drinking water**: Boil, filter, or treat water before drinking.
- **Proper sanitation**: Use of toilets or proper disposal of human waste. Clean and disinfect areas contaminated with feces.
- **Food safety**: Eat thoroughly cooked food. Wash fruits and vegetables with safe water.
- **Personal hygiene**: Regular handwashing with soap and clean water.
- **Vaccination**: **Oral cholera vaccines** are available for people in high-risk areas or during outbreaks.

5. Control:

- **Rapid rehydration therapy**: Oral rehydration salts (ORS) for mild to moderate dehydration. Intravenous (IV) fluids for severe cases.

- **Antibiotics**: Used in severe cases to reduce the duration of diarrhea (e.g., doxycycline, azithromycin).
- **Public health response**: Identify and contain outbreaks. Improve water, sanitation, and hygiene (WASH) facilities in affected areas. Educate communities on hygiene practices.

3. TYPHOID:

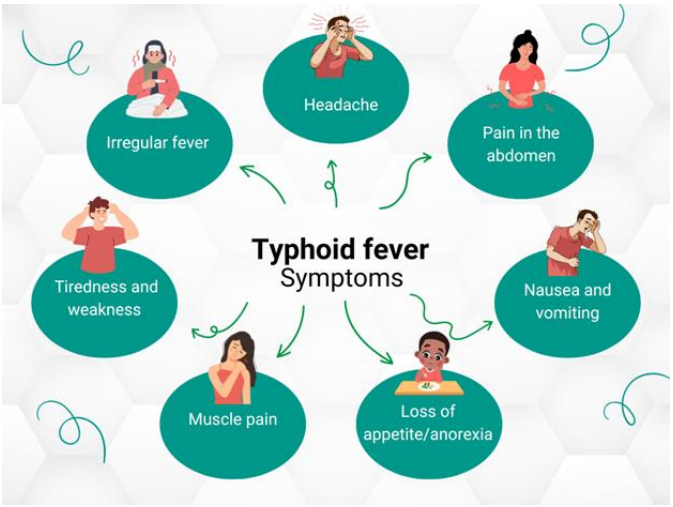

Figure: 02-04. Typhoid Fever Symptoms
(**Source:** Well health)

1. Mode of Transmission:

- **Fecal-oral route**: Ingestion of food or water contaminated with feces or urine from an infected person.
- **Contaminated food & water**: Street food, unclean drinking water, raw fruits/vegetables washed with dirty water.
- **Person-to-person contact**: Rare, but possible through poor hand hygiene after using the toilet.

2. Causative Agent:

- **Bacterium**: ***Salmonella enterica*** serotype **Typhi** (commonly called ***Salmonella Typhi***).
- ***Salmonella Paratyphi*** causes a milder illness called paratyphoid fever.

3. Symptoms:

- **High fever** (step-ladder pattern or continuous fever)
- **Weakness** and fatigue
- **Abdominal pain** and discomfort
- **Headache**
- **Constipation** or **diarrhea** (varies)
- **Loss of appetite**
- **Rose spots** (pink rash on the trunk/chest in some cases)
- **Enlarged spleen and liver**
- **Delirium** or confusion (in severe cases)
- If untreated, can lead to **intestinal perforation** or **sepsis**.

4. Prevention:

- **Safe drinking water**: Drink treated, boiled, or bottled water.
- **Proper sanitation**: Adequate waste disposal. Avoid open defecation.
- **Good food hygiene**: Eat hot, freshly cooked meals. Wash fruits and vegetables thoroughly.
- **Personal hygiene**: Handwashing with soap, especially after using the toilet and before eating.
- **Vaccination**: Typhoid vaccines (injection or oral) are available and recommended for travelers or people in endemic areas.

5. Control:

- **Antibiotic treatment**: Common antibiotics include ciprofloxacin, azithromycin, or ceftriaxone (depending on resistance patterns).
- **Hydration**: Oral or IV fluids to prevent dehydration.
- **Isolation** of infected individuals in healthcare settings to prevent spread.
- **Health education**: Promote hygiene and sanitation awareness.
- **Screening carriers**: Chronic carriers (e.g., "Typhoid Mary" cases) may continue to spread the disease and need monitoring.

4. DENGUE:

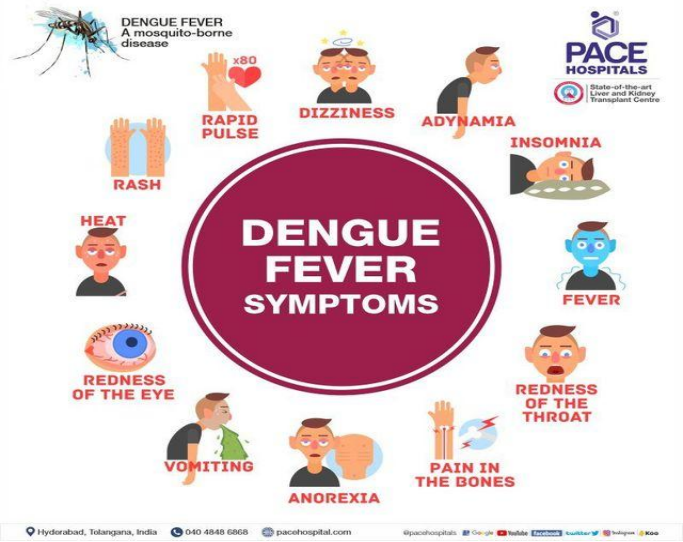

Figure: 02-05. Dengue Fever Symptoms

(**Source:** www.pacehospitals.com)

1. Mode of Transmission

- Dengue is transmitted **primarily by the bite of infected female** *Aedes aegypti* **and** *Aedes albopictus* **mosquitoes**.
- These mosquitoes become infected when they bite a person already infected with the dengue virus.
- The mosquitoes are **day-biting**, with peak biting periods early in the morning and before dusk.
- Rare modes include **blood transfusion, organ transplantation, and from mother to fetus (vertical transmission)**.

2. Causative Agent

- The causative agent of dengue is the **dengue virus (DENV)**, which belongs to the genus ***Flavivirus*** in the family ***Flaviviridae***.
- There are **four serotypes** of dengue virus:
- **DENV-1**
- **DENV-2**
- **DENV-3**
- **DENV-4**

3. Symptoms

- **Incubation period**: 4 to 10 days after mosquito bite.
- **Common symptoms**: Sudden high fever, Severe headache, Pain behind the eyes, Muscle and joint pain (breakbone fever), Nausea and vomiting, Skin rash (appears 2-5 days after fever starts), Mild bleeding (e.g., nose or gum bleed, easy bruising)
- **Severe dengue (dengue hemorrhagic fever/dengue shock syndrome)** symptoms: Severe abdominal pain, Persistent vomiting, Bleeding (gums, nose, internal), Fluid accumulation (ascites, pleural effusion), Difficulty breathing, Sudden drop in blood pressure (shock)

4. Prevention

- **Mosquito control**: Eliminate stagnant water (flower pots, tires, open containers), Use insecticides and larvicides., Fogging in outbreak areas.
- **Personal protection**: Use mosquito repellents (DEET-based, etc.)., Wear long-sleeved clothing., Use mosquito nets, especially during daytime naps.
- **Community participation**: Encourage neighborhood cleanup drives., Educate communities on mosquito breeding habitats.
- **Vaccine**: **Dengvaxia** (for individuals who have previously had a dengue infection and live in endemic areas).

5. Control

- **Early detection and case management**: Hydration (oral or intravenous fluids), Symptomatic treatment (acetaminophen for fever)., Monitor for warning signs of severe dengue.
- **Public health measures**: Surveillance of mosquito populations and dengue cases., Rapid response to outbreaks (vector control, public advisories)., Health education campaigns.

5. CHIKUNGUNYA:

Figure: 02-06. Chikungunya Symptoms

(Source: RxDx Healthcare)

1. Mode of Transmission

- Transmitted mainly through the bite of infected **female** *Aedes aegypti* **and** *Aedes albopictus* **mosquitoes**.
- These mosquitoes bite **during the daytime**, similar to dengue.
- The virus can also be spread **rarely from mother to newborn during childbirth** or **through infected blood products**.

2. Causative Agent

- The causative agent is the **Chikungunya virus (CHIKV)**.
- It belongs to the genus ***Alphavirus*** and family ***Togaviridae***.

3. Symptoms

- **Incubation period**: 3 to 7 days after the mosquito bite.
- **Common symptoms:** Sudden high fever**,** **Severe joint pain** (most characteristic symptom; can last for weeks or months)**,** Muscle pain**,** Headache**,** Fatigue**,** Skin rash (commonly appears on the trunk and limbs)**,** Swelling of joints (in some cases)
- **Chronic symptoms**: Some people may suffer from **persistent joint pain (arthralgia)** lasting for months or even years.

4. Prevention

- **Mosquito control:** Remove standing water (where mosquitoes breed)., Apply insecticides to mosquito breeding sites., Fogging in areas with outbreaks.
- **Personal protection:** Use mosquito repellents., Wear protective clothing (long sleeves, pants)., Use mosquito nets, particularly in high-risk areas.

- **Community measures:** Conduct public awareness campaigns., Promote environmental sanitation to reduce mosquito habitats.

5. Control

- **No specific antiviral treatment, only symptomatic management.**
- **Supportive care:** Rest, Drink plenty of fluids to prevent dehydration., Use paracetamol to reduce fever and pain., Avoid NSAIDs (like ibuprofen) until dengue is ruled out (to prevent bleeding risks).
- **Chronic joint pain management:** Physical therapy, Anti-inflammatory medications under medical supervision
- **Public health response:** Early detection and mosquito control in affected areas., Education campaigns about preventing mosquito bites.

6. RAT FEVER (*Leptospirosis*)

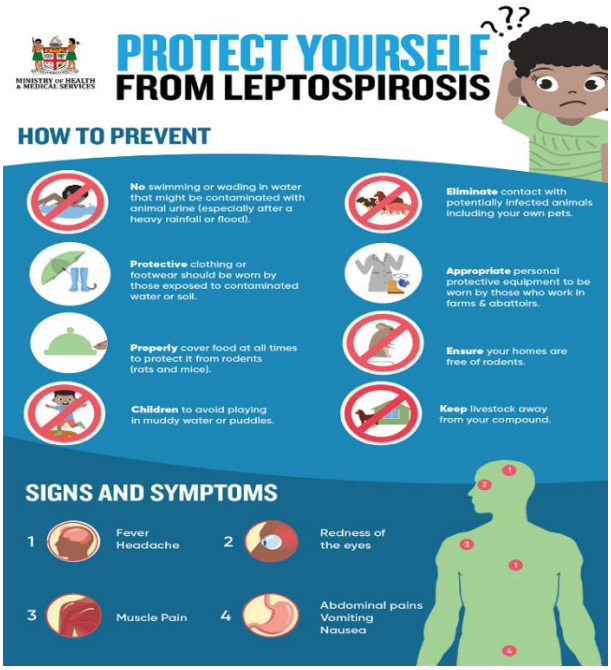

Figure: 02-07. Rat Fever (*Leptospirosis* Signs and Symptoms)

(**Source:** MHMS FIJI)

1. Mode of Transmission

- Caused by contact with **water, soil, or food contaminated with the urine of infected animals**, especially rats.

- **Can enter the body through:** Cuts or abrasions on the skin**,** Mucous membranes (eyes, nose, mouth)**,** Occasionally through ingestion of contaminated water or food.
- More common in **flood-prone areas** or where sanitation is poor.

2. Causative Agent

- Caused by **Leptospira interrogans**, a type of spiral-shaped bacteria (spirochete).

3. Symptoms

- **Incubation period**: 4 to 14 days after exposure.
- Symptoms range from mild to severe:
- **Mild symptoms**: High fever, Headache, Muscle aches (especially calves and lower back), Red eyes (conjunctival suffusion), Chills, Vomiting and diarrhea
- **Severe form (Weil's disease)**: Jaundice (yellowing of skin and eyes), Kidney failure, Liver damage, Bleeding (from lungs or other organs), Meningitis (inflammation of the brain's lining), Respiratory distress, without treatment, severe leptospirosis can be **fatal**.

4. Prevention

- **Avoid exposure** to contaminated water (wear boots and gloves if working in wet or muddy areas).
- Control rodent populations (improved sanitation, traps, rodenticides).
- Boil water or drink safe bottled water in high-risk areas.
- Properly clean wounds immediately.
- Personal hygiene and protective clothing during outdoor work (e.g., farming, sewage work).
- **Vaccination** for animals (pets and livestock) in some areas to reduce risk.

5. Control

- **Early diagnosis and antibiotic treatment**: Antibiotics like **doxycycline** or **penicillin** are effective., Severe cases may require hospitalization, IV fluids, and supportive care.

- **Public health actions**: Educate at-risk populations (farmers, sewage workers)., Improve urban sanitation to reduce rodent breeding., Community rodent control programs.

7. JAUNDICE:

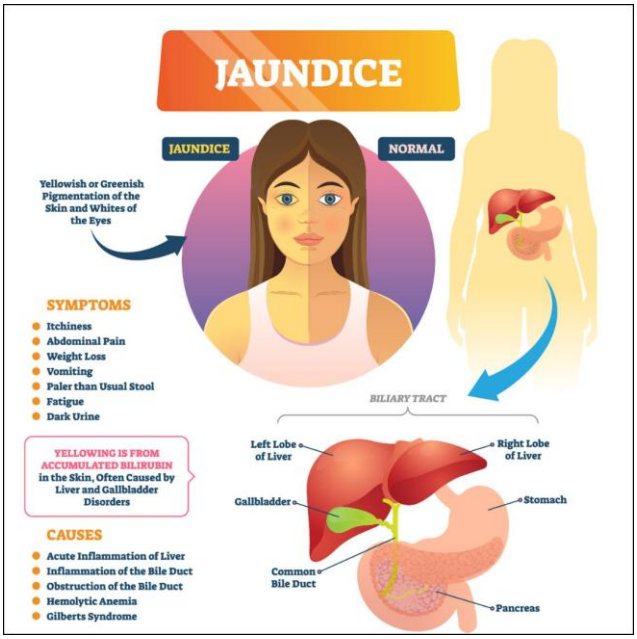

Figure: 02-08: Jaundice Symptoms

(**Source:** Continental Hospitals)

1. Definition

- **Jaundice** is a condition characterized by the **yellowing of the skin, mucous membranes, and the whites of the eyes** due to elevated levels of **bilirubin** in the blood.
- Bilirubin is a yellow pigment produced from the breakdown of red blood cells.

2. Causes

Jaundice itself is a symptom, not a disease. It can result from various underlying conditions:

a) Pre-hepatic causes (before the liver):

- Hemolytic anemia (excessive breakdown of red blood cells)
- Malaria
- Sickle cell anemia

- Thalassemia

b) Hepatic causes (liver-related):

- Hepatitis (A, B, C, D, E)
- Cirrhosis of the liver
- Alcoholic liver disease
- Fatty liver
- Liver cancer

c) Post-hepatic causes (after the liver/obstructive jaundice):

- Gallstones blocking bile ducts
- Pancreatic cancer
- Bile duct tumors
- Biliary atresia (in newborns)

3. Symptoms

- Yellowing of skin and eyes
- Dark-colored urine
- Pale-colored stools
- Itching (pruritus)
- Fatigue
- Abdominal pain (especially in liver or gallbladder region)
- Loss of appetite
- Nausea and vomiting
- Fever (in infectious causes like hepatitis)

4. Prevention

- **For infectious causes** (like hepatitis A and E): Maintain good hygiene (handwashing)., Drink clean, safe water., Avoid consuming contaminated food.
- **For hepatitis B and C**: Practice safe sex., Avoid sharing needles., Ensure safe blood transfusions., Get vaccinated for **Hepatitis B**.
- **For liver health**: Avoid excessive alcohol consumption., Maintain a healthy diet and weight., Avoid exposure to toxins and certain harmful medications.

5. Control & Treatment

- Depends on the underlying cause:
- Hepatitis: Antiviral or supportive treatment.
- Gallstones: May require surgical removal.
- Hemolytic anemia: Treat the cause of red blood cell breakdown.
- Liver cirrhosis: Lifestyle changes, medication, or liver transplant in severe cases.
- General supportive care: Adequate hydration., Nutritional support., Rest.
- Medical follow-up: Regular liver function tests (LFTs) to monitor bilirubin and liver enzymes.

MULTIPLE CHOICE QUESTIONS

1) The causative agent for dengue is -------- virus

a) DENV

b) DHNV

c) DTNV

d) DBNV

2) Chikunguniya is mainly spread through------

a) Female *Anopheles*

b) *Aedes aegypti*

c) *Culex quinquefasciatus*

d) None of the above

3) Cholera is transmitted by ------

a) Infected air

b) Infected food

c) Infected water

d) Infected person to person

Answers: 1) a) DENV**, 2) b)** *Aedes aegypti* **3) c) inf**ected water

SHORT ANSWER QUESTIONS WITH MODEL ANSWER

1) What are the symptoms of Gastroenteritis?

Answer: Symptoms of Gastroenteritis:

- Diarrhea (can be watery or bloody)
- Nausea and vomiting
- Abdominal cramps and pain

- Fever (mild to moderate)
- Dehydration (dry mouth, dizziness, reduced urination)
- Fatigue and weakness

2) What are the preventive measures for Rat fever?

Answer: Prevention necessarily taken against Rat Fever is

- **Avoid exposure** to contaminated water (wear boots and gloves if working in wet or muddy areas).
- Control rodent populations (improved sanitation, traps, and rodenticides).
- Boil water or drink safe bottled water in high-risk areas.
- Properly clean wounds immediately.
- Personal hygiene and protective clothing during outdoor work (e.g., farming, sewage work).
- **Vaccination** for animals (pets and livestock) in some areas to reduce risk.

02-01-03: Lifestyle Habits: Excessive usage of T.V., Computer, Mobile phones, Two wheelers, and their impacts on health

Excessive Usage of TV, Computer, Mobile Phones, and Two-Wheelers & Their Health Impacts

1. Excessive TV Watching

Health Impacts:

- Sedentary lifestyle leading to obesity and weight gain.
- Increased risk of heart disease and diabetes due to physical inactivity.
- Eye strain and dry eyes from prolonged screen time.
- Poor posture leading to neck and back pain.
- Sleep disturbances due to blue light affecting melatonin production.
- Mental health issues like depression and anxiety due to social isolation or exposure to negative content.

2. Excessive Computer Usage

Health Impacts:

- **Computer Vision Syndrome (CVS)**: eye strain, headaches, blurred vision.

- **Carpal tunnel syndrome** or **repetitive strain injuries (RSI)** from prolonged typing or mouse use.
- **Postural issues**: neck pain, back pain due to poor ergonomics.
- **Mental fatigue** and burnout, especially in work-from-home or prolonged study scenarios.
- Sedentary behavior leading to **obesity** and metabolic disorders.
- **Sleep issues** if used late at night.

3. Excessive Mobile Phone Usage

Health Impacts:

- **Digital eye strain** and dry eyes.
- **"Text neck" syndrome**: neck pain from constantly looking down.
- Increased risk of **addiction** and **reduced attention span**.
- **Sleep disturbances** due to blue light and late-night usage.
- **Hearing issues** from prolonged headphone use at high volumes.
- **Increased anxiety and stress** due to constant notifications and social media.

4. Excessive Two-Wheeler Usage

Health Impacts:

- **Air pollution exposure**: inhalation of harmful pollutants leading to respiratory issues like asthma and bronchitis.
- **Noise pollution** affecting mental well-being and hearing over time.
- Risk of **accidents and injuries**, especially without proper safety gear (helmets, etc.).
- **Postural strain**: back and neck pain due to poor riding posture or long hours of riding.
- **Reduced physical activity**: preference for two-wheelers over walking or cycling contributes to a sedentary lifestyle.

General Recommendations to Reduce Health Risks

- Take **regular breaks** from screens (20-20-20 rule: every 20 minutes, look 20 feet away for 20 seconds).
- Maintain **proper posture** and use ergonomic chairs/desks.

- Limit screen time, especially before bed, to avoid sleep issues.
- Engage in **physical activity/exercise** regularly.
- Practice **safe driving habits** and use **protective gear** when riding two-wheelers.
- Stay **hydrated** and practice **eye care** to reduce strain.
- Create a balanced schedule for **digital detox** to reduce over-dependence on gadgets.

MCQ

1. Which of the following is a common effect of prolonged mobile phone use?

a) Improved sleep quality

b) Increased attention span

c) Digital eye strain and "text neck"

d) Stronger bones

2. What is the 20-20-20 rule used to reduce?

a) Hearing loss

b) Eye strain

c) Neck pain

d) Obesity

3. Which health condition is most commonly associated with prolonged computer use?

a) Osteoporosis

b) Computer Vision Syndrome

c) Anemia

d) Bronchitis

4. What is one major health risk of excessive two-wheeler usage in urban areas?

a) Scurvy

b) Asthma due to air pollution

c) Color blindness

d) Improved lung capacity

Answers: 1) c) Digital eye strain and "text neck", **2) b)** Eye strain **3) b)** Computer Vision Syndrome **4) b)** Asthma due to air pollution

SHORT ANSWER QUESTIONS WITH MODEL ANSWER

1. What are the major physical and mental health effects of excessive TV watching?

Answer: Excessive TV watching can lead to a sedentary lifestyle, obesity, heart disease, eye strain, poor posture, and mental health issues like depression due to isolation or negative content exposure.

2. Explain "text neck" and its causes.

Answer: "Text neck" refers to neck pain and strain caused by frequently looking down at mobile devices for prolonged periods. It results from poor posture during device use.

02-01-04: LACK OF PHYSICAL EXERCISE & ITS HARMFUL EFFECTS ON THE BODY AND MIND

1. Effects on the Body

- **Obesity and Weight Gain**
  Reduced calorie burning leads to fat accumulation and obesity.
- **Cardiovascular Diseases**
  Increased risk of high blood pressure, heart attack, stroke, and clogged arteries.
- **Type 2 Diabetes**
  Sedentary lifestyle reduces insulin sensitivity, leading to insulin resistance.
- **Weak Muscles and Bones**
  Muscle atrophy (loss of muscle mass) and reduced bone density, increasing the risk of **osteoporosis**.
- **Poor Posture and Joint Problems**
  Leads to back pain, neck pain, and joint stiffness due to weak core muscles.
- **Weakened Immune System**
  Less physical activity weakens the body's defense against infections.
- **Digestive Problems**
  Slower metabolism and increased risk of constipation or digestive disorders.

2. Effects on the Mind

- **Increased Stress and Anxiety**

  Lack of exercise reduces endorphin ("feel-good hormone") release, increasing stress levels.
- **Depression and Mood Disorders**

  Regular exercise boosts serotonin and dopamine, improving mood and emotional well-being.
- **Cognitive Decline**

  Higher risk of memory problems and reduced concentration over time.
- **Low Self-Esteem**

  Weight gain, poor fitness, and unhealthy appearance can lower confidence and self-image.
- **Poor Sleep Quality**

  Inactivity is linked to insomnia and poor sleep patterns.

3. Other Associated Risks

- **Metabolic Syndrome**

  A cluster of conditions like increased blood pressure, high blood sugar, and abnormal cholesterol levels.
- **Cancer Risk**

  Sedentary lifestyle is associated with a higher risk of colon, breast, and endometrial cancers.
- **Reduced Life Expectancy**

  Inactive individuals have a shorter lifespan compared to active people.

4. Solutions

- Aim for at least **30 minutes of moderate physical activity** most days of the week.
- Include **aerobic exercise**, **strength training**, and **stretching** in your routine.
- Reduce **screen time** and break sedentary periods with short walks or standing breaks.
- Make physical activity part of daily life (e.g., taking stairs, walking/cycling to work).

MULTIPLE CHOICE QUESTIONS:

1) Due to lack of physical exercise the effects on body are -----

a) Obesity

b) Type 2 Diabetes

c) Cardiovascular disease

d) All of the above

2) Text-Neck Syndrome is caused due to -----

a) Due to excessive use of TV

b) Due to excessive use of Mobile

c) Due to excessive use of Motor cycle.

d) None of the above

3) Postural strain is due to ----

a) Excessive Two wheeler usage

b) Excessive TV usage

c) Excessive Mobile usage

d) Excessive Computer usage

Answers: 1) d) All of the above 2) b) Due to Excessive use of Mobiles 3) a) Excessive Two Wheeler usage

SHORT ANSWER QUESTIONS WITH MODEL ANSWER

1) What are the general recommendations to reduce health risks?

Answer:

- Take **regular breaks** from screens (20-20-20 rule: every 20 minutes, look 20 feet away for 20 seconds).
- Maintain **proper posture** and use ergonomic chairs/desks.
- Limit screen time, especially before bed, to avoid sleep issues.
- Engage in **physical activity/exercise** regularly.
- Practice **safe driving habits** and use **protective gear** when riding two-wheelers.

2) What are the impacts on the health of excessive using of Computer?

Answer:

- Computer Vision Syndrome (CVS): eye strain, headaches, blurred vision.
- Carpal tunnel syndrome or repetitive strain injuries (RSI) from prolonged typing or mouse use.
- Postural issues: neck pain, back pain due to poor ergonomics.

- Mental fatigue and burnout, especially in work-from-home or prolonged study scenarios.
- Sedentary behavior leading to obesity and metabolic disorders.
- Sleep issues if used late at night.

SUMMARY

Many factors combine together to affect the health of individuals and communities. These include determinants of health and his/ her biological/ genetic characteristics. Whether people are healthy or not, is determined by their circumstances and environment. The determinants of health include the social and economic environment, the physical environment, and the person's individual characteristics and behaviors. The context of people's lives determines their health, and so blaming individuals for having poor health or crediting them for good health is inappropriate (WHO, 2019). Individuals are unlikely to be able to directly control many of the determinants of health and hence it is the responsibility of society, state and health care workers to develop determinants of health to such a level that they influence people's lives in a positive way, promoting health and well-being.

Health hazards refer to any physical, chemical, biological, or lifestyle-related factors that can negatively affect human health. Common health hazards include poor hygiene, exposure to pollution, sedentary lifestyles, poor dietary habits, excessive screen time, and occupational risks. These hazards can lead to a variety of diseases such as obesity, heart disease, diabetes, respiratory problems, infections, and mental health disorders like stress and depression. Prevention involves adopting a healthy lifestyle, engaging in regular physical activity, maintaining proper hygiene, using protective measures, and reducing exposure to harmful substances in the environment.

END OF UNIT EXERCISES

1. Define health hazards. Discuss the major biological, environmental, and lifestyle-related factors that influence human health. Provide examples.
2. Explain how health is both a consequence and a driver of socio-economic development. Give relevant examples to support your answer.

3. Describe the causes, transmission, symptoms, prevention, and control of waterborne diseases such as gastroenteritis, cholera, and typhoid. How can public health interventions reduce their incidence?
4. Write a detailed account of viral diseases like dengue, chikungunya, and rat fever. Explain their mode of transmission, symptoms, causative organisms, and strategies for prevention and control.
5. What is jaundice? Discuss its types, causes, symptoms, and preventive measures. Why is public awareness important in its control?
6. Examine the impact of modern lifestyle habits such as excessive use of TV, mobile phones, computers, and two-wheelers on physical and mental health. How can such effects be mitigated?
7. Discuss the role of lack of physical exercise in contributing to non-communicable diseases and mental health issues. What measures can be adopted to promote physical activity in daily life?
8. How does urbanization and poor sanitation contribute to the spread of communicable diseases? Discuss with reference to common health hazards in Indian cities.
9. Evaluate the role of public health education and community participation in the prevention and control of health hazards. Provide suitable examples.
10. Describe the interconnectedness between unhealthy lifestyle habits and the increase in communicable and non-communicable diseases. Suggest preventive strategies at the individual and community level.

KEY WORDS

Health, Diseases, Effects of Lifestyle habits on human body

REFERENCES

- **MOOCs**

1. https://onlinecourses.swayam2.ac.in/aic24_ge39/preview
2. https://onlinecourses.nptel.ac.in/noc23_ge19/preview
3. https://onlinecourses.swayam2.ac.in/aic24_ge39/preview
4. https://onlinecourses.nptel.ac.in/noc22_hs46/preview
5. https://onlinecourses.nptel.ac.in/noc19_ge18/preview

- **YOUTUBE VIDEOS**

1. https://www.youtube.com/watch?v=dDFKNrLwWRg
2. https://www.youtube.com/watch?v=p3VjEczmG2s
3. https://www.youtube.com/watch?v=7PH7cmT_BME
4. https://www.youtube.com/watch?v=J6T9y84J8bQ
5. https://www.youtube.com/watch?v=bY0APROhv28
6. https://www.youtube.com/watch?v=4aHtdYEX6Og

- **OER**

1. World Health Organization. (2022). ***Vector-borne diseases***. [online] WHO. Available at: **https://www.who.int/news-room/fact-sheets/detail/vector-borne-diseases**
2. Centers for Disease Control and Prevention. (2023). ***Waterborne Diseases and Climate Change***. [online] CDC. Available at: **https://www.cdc.gov/healthywater/disease/index.html**
3. OpenLearn. (2021). ***Health education and promotion***. [online] The Open University. Available at: **https://www.open.edu/openlearn/ocw/mod/oucontent/view.php?id=85957**
4. Tones, K. and Green, J. (2004). ***Health promotion: Planning and strategies***. London: Sage.

- **WIKIPEDIA**

1. https://egyankosh.ac.in/bitstream/123456789/71445/1/Unit-5.pdf
2. https://nios.ac.in/media/documents/secpsycour/English/Chapter-19.pdf
3. https://egyankosh.ac.in/bitstream/123456789/23900/3/Unit-1.pdf
4. https://en.wikipedia.org/wiki/Major_depressive_disorder
5. https://www.moh.gov.sa/en/awarenessplateform/VariousTopics/Documents/Obsessive-Compulsive%20Disorder%20(OCD).pdf
6. http://www.dronet.org/lineeguida/ligu_pdf/depre_di.pdf
7. https://egyankosh.ac.in/bitstream/123456789/21112/1/Unit-4.pdf
8. https://timeforafuture.com.au/downloads/child-mental-health_tonge.pdf
9. https://www.ttcb.co.in/Diglib/DELED/S5/unit1YOGA.pdf

- **REFERENCE BOOKS**

1. K. Park, ***Park's Textbook of Preventive and Social Medicine***, 27th edn (Jabalpur: Banarsidas Bhanot, 2023).
2. A.C. Guyton and J.E. Hall, ***Guyton and Hall Textbook of Medical Physiology***, 14th edn (Philadelphia: Elsevier, 2021).
3. V. Kumar, A.K. Abbas and J.C. Aster, ***Robbins and Cotran Pathologic Basis of Disease***, 10th edn (Philadelphia: Elsevier, 2020).
4. B.R. Walker and N.R. Colledge, ***Davidson's Principles and Practice of Medicine***, 23rd edn (Edinburgh: Churchill Livingstone/Elsevier, 2018).
5. S. Sivasankari, ***Essentials of Community Medicine: A Practical Approach***, 2nd edn (New Delhi: Jaypee Brothers Medical Publishers, 2020).
6. C. Guest, W. Ricciardi, I. Kawachi and I. Lang (eds), ***Oxford Handbook of Public Health Practice***, 3rd edn (Oxford: Oxford University Press, 2013).
7. L.S. Joseph, ***Textbook of Human Diseases***, 5th edn (New York: McGraw-Hill, 2017).
8. World Health Organization, ***Global Action Plan on Physical Activity 2018-2030: More Active People for a Healthier World*** (Geneva: WHO Press, 2018).

UNIT 02-02: HEALTH POLICY AND HEALTH ORGANIZATIONS

LEARNING OBJECTIVES

After successful completion of this unit, you will be able to

- ❖ Describe the features of India's National Health Policy.
- ❖ Identify the roles of national and international health organizations.
- ❖ Evaluate disaster and epidemic management strategies.

INTRODUCTION

Figure: National Health Policy

(**Source:** https://www.google.com/search?q=national+health+policy+image)

Health Policy in India

1. **National Health Policy (NHP)**

- **First NHP (1983):** Focused on achieving universal primary health care.
- **Second NHP (2002):** Emphasized decentralization and the role of the private sector.
- **Current NHP (2017):** Aims to achieve universal health coverage (UHC) and deliver quality healthcare services to all, especially the underprivileged. Key goals include: Increase health expenditure to 2.5% of GDP. Reduce maternal mortality ratio (MMR) to below 100 per 100,000 live births. Reduce infant mortality rate (IMR) to below 28 per 1,000 live births. Strengthen health infrastructure and workforce. Promote Ayushman Bharat for health protection.

2. **Ayushman Bharat Program**

- Launched in 2018.
- Two components:
- **Health and Wellness Centres (HWCs):** To provide comprehensive primary healthcare.
- **Pradhan Mantri Jan Arogya Yojana (PM-JAY):** A health insurance scheme offering up to ₹5 lakh per family per year for secondary and tertiary care.

3. Other Key Initiatives:

- **National Rural Health Mission (NRHM) (2005):** Improve healthcare delivery in rural areas.
- **National Urban Health Mission (NUHM) (2013):** Focus on urban poor.
- **Integrated Disease Surveillance Programme (IDSP):** For epidemic-prone diseases.
- **National Nutrition Mission (POSHAN Abhiyaan):** To tackle malnutrition.
- **Revised National Tuberculosis Control Programme (RNTCP):** To eliminate TB by 2025.

- **Major Health Organizations in India**

1. **Ministry of Health and Family Welfare (MoHFW)**
   Apex body responsible for health policy formulation and implementation.
2. **National Health Authority (NHA)**
   Implements PM-JAY under Ayushman Bharat.
3. **Indian Council of Medical Research (ICMR)**
   Apex body for the formulation, coordination, and promotion of biomedical research.
4. **National Centre for Disease Control (NCDC)**
   Works on disease surveillance and control of communicable diseases.
5. **All India Institute of Medical Sciences (AIIMS)**
   A group of autonomous public medical universities offering tertiary care and medical education.
6. **State Health Departments**
   Implement health programs at the state level in alignment with central policies.
7. **National Institute of Health and Family Welfare (NIHFW)**

Provides training and research in public health and family welfare.

8. **Medical Council of India (MCI) (Replaced by National Medical Commission - NMC)**
   NMC now regulates medical education and practices in India.
9. **AYUSH Ministry**
   Promotes Ayurveda, Yoga, Naturopathy, Unani, Siddha, and Homeopathy systems.
10. **National AIDS Control Organization (NACO)**
    Coordinates HIV/AIDS control program.

02-02-01: National Health Policy of Govt. of India-2017

The **National Health Policy 2017** was launched by the Ministry of Health and Family Welfare to address the emerging healthcare challenges and improve the health system in India.

Vision:

- To attain the **highest possible level of health and well-being for all** at all ages.
- Emphasis on **preventive and promotive healthcare** while providing universal access to quality healthcare services.

Key Goals & Objectives:

1. Achieve **Universal Health Coverage (UHC)**.
2. Improve **availability, accessibility, affordability, and quality** of healthcare services.
3. Strengthen **public health systems** with focus on the poor, vulnerable, and underprivileged.
4. Promote **wellness and healthy lifestyles**.

Targets by 2025:

1. **Reduce Maternal Mortality Ratio (MMR)** to less than 100 per 100,000 live births.
2. **Reduce Infant Mortality Rate (IMR)** to 28 per 1,000 live births.
3. **Reduce Under-Five Mortality Rate (U5MR)** to 23 per 1,000 live births.
4. **Premature mortality from Non-Communicable Diseases (NCDs)** reduced by 25%.
5. **Increase life expectancy** to 70 years.

6. **Eliminate Leprosy, Kala-azar, Filariasis, and Measles** by 2025.
7. Achieve and maintain a **Total Fertility Rate (TFR)** of 2.1 at national and sub-national levels.
8. **Increase health expenditure** by Government to **2.5% of GDP** by 2025.
9. **Increase government health spending** from current 1.15% to 2.5% of GDP.
10. Ensure **availability of free essential drugs, diagnostics, and emergency healthcare** in all public health facilities.

Key Policy Principles:

- **Equity**: Reduce inequities in access to healthcare.
- **Affordability**: Focus on reducing out-of-pocket expenditure.
- **Accountability**: Strengthen governance and regulation.
- **Pluralism**: Integrate AYUSH systems into the mainstream healthcare.
- **Quality of Care**: Improve patient satisfaction and standardization.
- **Preventive and Promotive Health**: Health and wellness centers, behavioral change communication.

Major Strategies:

1. **Strengthening Primary Healthcare**:
   Establishing **Health and Wellness Centres (HWCs)**.
2. **Expanding Insurance Coverage**:
   Leveraging **Ayushman Bharat - PM-JAY** scheme.
3. **Human Resources for Health**:
   Addressing shortages and improving skills of health professionals.
4. **Public Health Management Cadre**:
   Create a specialized cadre for public health services.
5. **Technology in Healthcare**:
   Promote **eHealth** and **National Digital Health Mission**.
6. **Partnership with the private sector**:
   Develop **Public-Private Partnerships (PPPs)** for service delivery.
7. **Regulation and Quality Assurance**:
   Introduce standards for facilities, practitioners, and services.

Innovative Features of NHP 2017:

- Focus on **comprehensive primary healthcare**.
- Shift from **sick-care to wellness-care**.
- Emphasis on **prevention of diseases** and health promotion.

- Prioritizing **non-communicable diseases (NCDs)** alongside communicable diseases.
- Adoption of a **multi-sectoral approach** to address social determinants of health.

MULTIPLE CHOICE QUESTIONS

1) MMR Stands for

a) Maternal Mortality Rate

b) Matured Mortality Rate

c) Male Mortality Rate

d) None of the above

2) The National Health Policy 2017 was launched by the

a) Ministry of Defense

b) Ministry of Child Health Care

c) Ministry of Health and Family Welfare

d) Ministry of Home Affairs

3) PM-JAY scheme is launched for

a) Availing Insurance to Individuals

b) Availing Health facilities to Individuals

c) Availing Insurance to Companies

d) Availing Health facilities to insured companies

Answers: 1) a) Maternal Mortality Rate **2) c)** Ministry of Health and Family Welfare **3) a)** Availing Insurance to Individuals

SHORT ANSWER QUESTIONS WITH MODEL ANSWER

1) What are the major strategies of National Health Policy 2017?

Answer:

1. **Strengthening Primary Healthcare**:
   Establishing **Health and Wellness Centres (HWCs)**.
2. **Expanding Insurance Coverage**:
   Leveraging **Ayushman Bharat - PM-JAY** scheme.
3. **Human Resources for Health**:
   Addressing shortages and improving skills of health professionals.
4. **Public Health Management Cadre**:
   Create a specialized cadre for public health services.

5. **Technology in Healthcare**:
   Promote **eHealth** and **National Digital Health Mission**.
6. **Partnership with the private sector**:
   Develop **Public-Private Partnerships (PPPs)** for service delivery.
7. **Regulation and Quality Assurance**:
   Introduce standards for facilities, practitioners, and services.

2) What are the targets for National Health Policy 2017 for 2025?

Answers:

1. **Reduce Maternal Mortality Ratio (MMR)** to less than 100 per 100,000 live births.
2. **Reduce Infant Mortality Rate (IMR)** to 28 per 1,000 live births.
3. **Reduce Under-Five Mortality Rate (U5MR)** to 23 per 1,000 live births.
4. **Premature mortality from Non-Communicable Diseases (NCDs)** reduced by 25%.
5. **Increase life expectancy** to 70 years.

02-02-02: Functioning of Various Nutrition and Health Organizations in India. (NIN, FNB, ICMR, IDA, WHO & UNICEF-India)

India, with its vast population and diverse health challenges, has established a wide network of organizations dedicated to improving public health and nutrition. These organizations function at national, state, and local levels, working towards the common goal of enhancing the health and nutritional status of the population, especially the vulnerable sections.

The functioning of these organizations involves policy formulation, implementation of programs, capacity building, service delivery, research, and regulation. Key ministries such as the Ministry of Health and Family Welfare **(MoHFW)** and the **Ministry of Women and Child Development (MWCD)** play a central role, supported by specialized bodies like the **Indian Council of Medical Research (ICMR)**, **Food Safety and Standards Authority of India (FSSAI), and National Health Authority (NHA).**

These organizations also manage large-scale health and nutrition initiatives such as **POSHAN Abhiyaan, Integrated Child Development Services (ICDS), Ayushman Bharat**, and **National Health Mission (NHM).** They work together

to ensure that essential health services, nutrition interventions, disease control measures, and health research reach every corner of the country.

The collaboration between these organizations is critical for addressing India's dual burden of malnutrition and rising non-communicable diseases, while also ensuring the availability of safe food, preventive care, and affordable medical services.

1. National Institute of Nutrition (NIN)

(Figure: 02-10. National Institute of Nutrition- NIN)

(Source: ICMR: National Institute of Nutrition)

The **National Institute of Nutrition (NIN)** is one of the premier research organizations in India under the **Indian Council of Medical Research (ICMR)**, Ministry of Health and Family Welfare, Government of India.

Introduction:

- Established in **1918** in Coonoor (Tamil Nadu) as the "Beri-Beri Enquiry Unit" and later relocated to **Hyderabad** in 1958.
- It is a leading institute for research in nutrition and serves as a center for training and advocacy in public health nutrition.

Vision:

- To achieve optimal nutrition and health status for all Indians by generating scientific knowledge and translating it into policies and programs.

Objectives:

1. Conduct basic and applied research in human nutrition.
2. Provide technical advice to government bodies on public health nutrition programs.
3. Promote food and nutrition security through research, training, and education.
4. Contribute to policymaking for national nutrition and food safety guidelines.

Key Functions of NIN:

1. **Nutrition Research:**

- Studies on **macronutrient and micronutrient deficiencies** (e.g., protein-energy malnutrition, anaemia, vitamin A deficiency).
- Research on the impact of diet on **non-communicable diseases** (e.g., diabetes, obesity).
- Investigating social determinants of malnutrition and undernutrition.

2. **Dietary Guidelines Development:**

- Periodically updates the **Recommended Dietary Allowances (RDA)** for Indians.
- Provides **balanced diet guidelines** suited to different age groups and special populations.

3. **Public Health and Policy Support:**

- Technical input for government programs like **POSHAN Abhiyaan**, **ICDS**, **Mid-Day Meal Scheme**, and **National Nutrition Mission**.
- Nutritional surveillance and monitoring of national health programs.

4. **Food Safety and Fortification:**

- Collaborates with **FSSAI** to promote and research food fortification (iodized salt, fortified wheat flour, etc.).
- Conducts studies on food contaminants and toxicology.

5. **Training and Capacity Building:**

- Offers training for healthcare professionals, researchers, policymakers, and program managers in public health nutrition.
- Organizes national and international workshops and seminars on nutrition-related topics.

6. **Nutritional Assessment and Surveillance:**

- Conducts **dietary surveys** and **nutrition monitoring** across India.

- Analyzes food consumption patterns and nutritional status in different population groups.

7. Publications and Outreach:

- Publishes scientific reports, guidelines, and journals related to nutrition and health.
- Conducts **nutrition education campaigns** to create public awareness.

Key Divisions of NIN:

- Biochemistry Division
- Clinical Division
- Food and Drug Toxicology Division
- Public Health Nutrition Division
- Micronutrient Research
- Social and Behavioral Science Unit

Significance of NIN:

- NIN has been instrumental in shaping India's nutrition and public health strategies for over a century.
- It plays a crucial role in bridging the gap between **scientific research** and **policy implementation**.
- Its evidence-based findings have contributed to **reducing malnutrition**, improving **maternal and child health**, and advancing **food security policies** in India.

2. Food and Nutrition Board (FNB)

(Figure: 02-11. Food and Nutrition Board-FNB**)**

(Source: Siasat.com)

The **Food and Nutrition Board (FNB)** is a key technical wing under the **Ministry of Women and Child Development (MWCD), Government of India**.

It plays a crucial role in promoting nutritional well-being and food security across the country through research, education, and policy support.

Introduction:

- Established in **1948**, the Food and Nutrition Board aims to address the problems of **malnutrition**, **nutritional deficiencies**, and to improve the general nutrition standards of the Indian population.
- It provides **technical assistance** to various national programs related to maternal and child nutrition.

Objectives of FNB:

1. To create awareness on the importance of proper nutrition for health and well-being.
2. To assist in the implementation of national nutrition and food-related policies.
3. To provide nutrition education to the public, especially vulnerable groups such as women and children.
4. To support various nutrition interventions under **POSHAN Abhiyaan** and **Integrated Child Development Services (ICDS)**.

Key Functions of FNB:

1. **Nutrition Education and Awareness:**

- Organizes **Nutrition Education and Extension** activities such as exhibitions, workshops, training, and campaigns to spread knowledge about balanced diets and healthy eating habits.
- Conducts **community outreach programs** focusing on maternal and child nutrition, adolescent girls, and rural and urban poor.

2. **Training Programs:**

- Provides capacity-building programs and **technical training** for health workers, Anganwadi workers, and field staff under schemes like **ICDS** and **Mid-Day Meal Scheme**.
- Develops training modules and educational materials on nutrition.

3. **Food Standards and Quality Control:**

- Collaborates with other agencies (e.g., **FSSAI**) to promote food quality control and fortification of staple foods such as salt, wheat flour, rice, and edible oils.

4. **Nutritional Surveillance and Evaluation:**

- Assists in **monitoring and evaluation** of nutrition programs by collecting data on food consumption patterns, nutritional status, and program coverage.
- Supports the development of **nutrition profiles** at state and national levels.

5. **Research and Development:**

- Conducts applied research related to **food processing**, **low-cost nutritious recipes**, **food preservation**, and **nutrient retention** in cooking and storage.

6. **Coordination with Other Agencies:**

- Works closely with the **Ministry of Health and Family Welfare (MoHFW)**, **ICDS**, **National Institute of Nutrition (NIN)**, and **National Health Mission (NHM)** to implement integrated nutrition programs.

Divisional Structure of FNB:

FNB has its **headquarters in New Delhi** and operates through:

- **Four Regional Offices**: Located in Delhi, Mumbai, Kolkata, and Chennai.
- **43 Community Food and Nutrition Extension Units (CFNEUs)** spread across various states for grassroots-level activities.

Major Contributions:

- FNB has been instrumental in promoting **nutrition literacy** in India through **celebration of Rashtriya Poshan Maah (National Nutrition Month)** and other initiatives under **POSHAN Abhiyaan**.
- Development of **nutrition education materials**, such as posters, booklets, leaflets, and audiovisual aids, in multiple regional languages.

Significance:

- FNB acts as a **bridge between scientific knowledge and the general public**, especially marginalized and undernourished populations.
- Its focus on **preventive nutrition** helps reduce the burden of malnutrition-related illnesses in India.

3. Indian Council of Medical Research (ICMR)

(Figure: 02-12. Indian Council of Medical Research- ICMR**)**

(**Source:** Wikipedia)

The **Indian Council of Medical Research (ICMR)** is the apex body in India responsible for formulating, coordinating, and promoting **biomedical research**. Established in **1911** as the **Indian Research Fund Association (IRFA)**, it was restructured as ICMR in **1949**. It operates under the **Department of Health Research (DHR), Ministry of Health and Family Welfare, Government of India**.

- **Vision of ICMR**

"To improve the health and well-being of the Indian population through innovative and high-quality medical research."

ICMR aims to advance knowledge in **biomedical and health research** while addressing public health challenges and promoting medical advancements.

- **Objectives of ICMR**

1. **Promote Medical Research:** Conduct and fund cutting-edge biomedical research.
2. **Enhance Disease Surveillance:** Monitor and study **infectious and non-communicable diseases**.
3. **Support Public Health Programs:** Collaborate with government and private organizations to address health issues.
4. **Develop Healthcare Guidelines:** Formulate **clinical, ethical, and research guidelines** for medical practice.
5. **Encourage Innovations:** Support vaccine development, diagnostics, and new treatment methods.
6. **Strengthen Research Infrastructure:** Establish and support medical research institutions across India.
7. **Capacity Building:** Train young scientists, researchers, and healthcare professionals.

- **Key Functions of ICMR**

Medical Research & Innovation:

- Conducting studies on communicable & non-communicable diseases.
- Supporting **vaccine development** (e.g., Covaxin for COVID-19).
- Encouraging the use of **AI and biotechnology** in healthcare.

Health Policy & Guidelines:

- Developing national guidelines for **disease control, public health, and bioethics**.
- Advising the government on medical policies.

Epidemiology & Disease Control:

- Running surveillance programs for **tuberculosis, malaria, HIV/AIDS, etc.**
- Managing pandemic and outbreak responses.

Collaboration & Capacity Building:

- Partnering with WHO, CDC, and other international organizations.
- Funding **PhD & postdoctoral research**.

Key Divisions of ICMR

ICMR operates through a network of **26 research institutes** across India, focusing on different diseases and health domains.

Major Divisions:

1. **Division of Epidemiology and Communicable Diseases (ECD):** Handles infectious disease outbreaks.
2. **Division of Non-Communicable Diseases (NCD):** Focuses on cancer, diabetes, and heart diseases.
3. **Division of Reproductive and Child Health:** Researches maternal and child health issues.
4. **Division of Basic Medical Sciences:** Advances genetic and molecular research.
5. **Division of Nutrition & Public Health:** Studies malnutrition and dietary guidelines.
6. **Division of Biomedical Informatics:** Uses AI & data analytics for research.

Significance of ICMR

- **Healthcare Advancement:** ICMR's research has led to breakthroughs in disease treatment and prevention.

- **Pandemic Response:** Played a crucial role in **COVID-19 management, vaccine trials, and testing**.
- **Public Health Impact:** Helps in **policy-making, national health programs, and improving medical education**.
- **Medical Research Infrastructure:** Strengthens India's position as a global leader in healthcare research.
- **International Recognition:** Collaborates with WHO, CDC, and NIH to advance medical science.

4. Indian Dietetic Association (IDA)

(Figure: 02-13, Indian Dietetic Association- IDA**)**

(**Source:** idaindia.com)

The **Indian Dietetic Association (IDA)** is a **professional organization** for **dietitians, nutritionists, and health professionals** in India. Established in **1962**, IDA works towards promoting the **science and practice of dietetics and nutrition** to improve public health.

Vision of IDA

"To promote evidence-based nutrition and dietetics for improving the health and well-being of individuals and communities in India."

Objectives of IDA

1. **Advance Nutrition Science:** Promote research and knowledge sharing in dietetics and nutrition.
2. **Standardize Dietetic Practices:** Establish guidelines and best practices for clinical dietitians.
3. **Public Health Nutrition:** Contribute to government policies related to food, nutrition, and health.
4. **Education & Training:** Support professional development, certification, and training for dietitians.

5. **Advocate Healthy Lifestyles:** Conduct awareness programs on **balanced diets, disease prevention, and wellness**.
6. **Collaborate with Organizations:** Partner with **WHO, ICMR, FSSAI, NIN, and the Ministry of Health** to promote better nutrition.

Key Functions of IDA

Professional Certification:

- Offers **Registered Dietitian (RD) certification** to qualified professionals.
- Sets ethical and professional standards for dietitians.

Nutrition Research & Policy Making:

- Supports **ICMR, FSSAI, and government initiatives** in food and nutrition policy.
- Provides scientific input for **nutrition labeling and dietary guidelines**.

Health Awareness Programs:

- Conducts workshops, seminars, and public health campaigns on **malnutrition, obesity, diabetes, and heart disease**.

Education & Training:

- Organizes **annual conferences, webinars, and workshops** for continuous learning.
- Provides **internships and mentorship** for aspiring dietitians.

Key Divisions of IDA

IDA has **several regional chapters** across India, including in cities like **Delhi, Mumbai, Kolkata, Chennai, Hyderabad, Bengaluru, and Pune**.

Specialized Interest Groups:

1. **Clinical Nutrition & Dietetics** – Focuses on hospital-based diet therapy.
2. **Community Nutrition** – Works on nutrition education and outreach programs.
3. **Sports & Fitness Nutrition** – Promotes diet strategies for athletes and fitness enthusiasts.
4. **Food Science & Safety** – Collaborates with **FSSAI and food industries** for food safety and labeling policies.

Significance of IDA

- **Professional Growth:** Recognized as the leading body for dietitians in India.
- **Public Health Impact:** Works to combat **malnutrition, obesity, diabetes, and lifestyle diseases**.

- **Policy Influence:** Collaborates with **ICMR, FSSAI, and NIN** to set national dietary guidelines.
- **Scientific Research:** Encourages **evidence-based nutrition** and dietary recommendations.
- **Education & Training:** Provides **certification and workshops** to enhance dietitians' skills.

5. World Health Organization (WHO) – India

(Figure: 02-13, World Health Organization- WHO**)**

(**Source:** WHO)

The **World Health Organization (WHO)** is a specialized agency of the **United Nations (UN)** responsible for international public health. WHO **India Country Office (WHO India)** works in collaboration with the **Government of India**, health institutions, and other stakeholders to strengthen the country's healthcare system and promote public health initiatives.

Vision of WHO India

"To support India in achieving universal health coverage and ensuring health for all."

WHO India aligns with the **Government of India's health policies and Sustainable Development Goals (SDGs)** to improve healthcare services, disease control, and public health programs.

Objectives of WHO India

1. **Strengthen Healthcare Systems:** Support **Ayushman Bharat (Universal Health Coverage), National Health Mission, and digital health initiatives**.
2. **Control & Prevent Diseases:** Assist in **polio eradication, tuberculosis (TB) elimination, malaria control, and COVID-19 response**.
3. **Improve Maternal & Child Health:** Support immunization programs like **Mission Indradhanush**.

4. **Enhance Nutrition & Food Safety:** Collaborate with **FSSAI, ICMR, and MoHFW** to promote food safety and healthy diets.
5. **Monitor Health Trends:** Provide technical support for disease surveillance and response.
6. **Promote Mental Health & Well-being:** Advocate policies for **suicide prevention, stress management, and mental healthcare**.

Key Functions of WHO India

Disease Surveillance & Public Health Programs:

- Works with the **National Centre for Disease Control (NCDC)** to monitor and respond to health threats.
- Supports vaccination programs like **Measles-Rubella (MR) elimination**.

Health Policy & Technical Assistance:

- Assists in implementing health policies under the **Ministry of Health and Family Welfare (MoHFW)**.
- Develops guidelines for **antimicrobial resistance (AMR), sanitation, and air pollution control**.

Emergency Preparedness & Response:

- Provides rapid response during **pandemics, disease outbreaks, and natural disasters**.
- Played a key role in **COVID-19 testing, vaccine rollout, and healthcare support**.

Collaboration & Capacity Building:

- Partners with **ICMR, AIIMS, NITI Aayog, and state governments** to strengthen healthcare infrastructure.
- Conducts **training programs for healthcare workers**.

Key Divisions of WHO India

WHO India has several divisions focusing on different health areas:

Major Divisions:

1. **Communicable Diseases (CDS):** Focuses on **HIV/AIDS, tuberculosis (TB), malaria, and vaccine-preventable diseases**.
2. **Non-Communicable Diseases (NCDs):** Addresses **diabetes, hypertension, cancer, and mental health issues**.
3. **Maternal & Child Health (MCH):** Works on **safe childbirth, newborn care, and nutrition programs**.

4. **Environmental Health & Food Safety:** Collaborates with **FSSAI & ICMR** on air pollution and food safety.
5. **Emergency Response & Epidemic Control:** Manages **COVID-19, polio, and disaster response initiatives**.

- **Significance of WHO India**
- **Public Health Leadership:** Guides India in **disease prevention, treatment, and healthcare policy-making**.
- **Vaccination & Disease Eradication:** Helped eliminate **smallpox, polio, and progress towards TB & malaria control**.
- **Technical & Financial Assistance:** Supports national health programs through expertise and funding.
- **Global Health Collaboration:** Connects India with **WHO global health strategies, research, and innovations**.
- **Emergency Support:** Provides rapid assistance in **health crises, outbreaks, and disaster management**.

6. UNICEF India

(Figure: 02-14, UNICEF- India**)**

(**Source:** UNICEF)

The **United Nations International Children's Emergency Fund (UNICEF)** is a **UN agency** dedicated to improving the lives of children and mothers worldwide. **UNICEF India** works in partnership with the **Government of India, NGOs, and other organizations** to promote child health, nutrition, education, and overall well-being.

Vision of UNICEF India

"A world where every child survives, thrives, and has a fair chance in life."

UNICEF India focuses on **children's rights, healthcare, nutrition, education, water & sanitation, and protection from violence and exploitation.**

- **Objectives of UNICEF India**

1. **Child Survival & Health:** Improve maternal and child healthcare, immunization, and disease prevention.
2. **Nutrition & Food Security:** Reduce malnutrition and promote healthy eating habits.
3. **Quality Education:** Ensure access to **inclusive, equitable, and quality education** for all children.
4. **Water, Sanitation & Hygiene (WASH):** Promote clean drinking water, sanitation, and hygiene practices.
5. **Child Protection:** Protect children from **violence, abuse, child labor, and trafficking**.
6. **Emergency Response & Disaster Relief:** Support children during **pandemics, natural disasters, and conflicts**.

Key Functions of UNICEF India

Health & Immunization:

- Supports **Mission Indradhanush** for child vaccination.
- Works to eliminate **measles, polio, and newborn infections**.

Nutrition & Child Development:

- Partners with **ICMR, FSSAI, and the Ministry of Health** to address **malnutrition, anemia, and stunting**.
- Promotes **breastfeeding and complementary feeding practices**.

Education & Skill Development:

- Strengthens government programs like **Samagra Shiksha Abhiyan (SSA)** to improve education.
- Focuses on **girls' education, digital learning, and school retention rates**.

Water, Sanitation & Hygiene (WASH):

- Supports **Swachh Bharat Abhiyan** to improve sanitation in schools and communities.
- Promotes **handwashing campaigns and menstrual hygiene awareness**.

Child Protection & Rights:

- Works to end **child marriage, child labor, trafficking, and violence against children**.
- Partners with **government and NGOs** to enforce the **POSCO Act & Juvenile Justice Act**.

Disaster & Humanitarian Response:

- Provides rapid support during **COVID-19, natural disasters, and conflicts**.
- Distributes **food, medical aid, and education resources** in crisis-affected areas.

Key Divisions of UNICEF India

UNICEF India operates across **state and district levels**, working closely with **government bodies like NITI Aayog, MoHFW, and MoWCD**.

Major Focus Areas:

1. **Health & Nutrition** – Improves maternal and child healthcare.
2. **Education & Gender Equality** – Promotes school enrollment and girls' education.
3. **Child Protection** – Prevents exploitation and abuse of children.
4. **WASH (Water, Sanitation & Hygiene)** – Ensures clean water and sanitation access.
5. **Social Policy & Advocacy** – Influences national child welfare policies.

Significance of UNICEF India

- **Child Health & Nutrition:** Reduced **infant mortality and malnutrition** in India.
- **Universal Education:** Helped increase **school enrollments and digital learning opportunities**.
- **WASH Improvements:** Played a role in **sanitation & hygiene programs under Swachh Bharat Abhiyan**.
- **Emergency Support:** Provided aid during **COVID-19, cyclones, and other disasters**.
- **Policy Impact:** Influenced government policies on **child protection, education, and healthcare**.

MULTIPLE CHOICE QUESTIONS

1) What is the full form of NIN?

a) National Institute of Nutrition

b) National Institute of Nourishment

c) National Institute of Numerology

d) National Institute of Narcotics

2) IDA is established in

a) 1958

b) 1968

c) 1978

d) 1988

3) Which act is useful for child protection and Rights?

a) POCSO Act and Juvenile Justice Act

b) Child Welfare Act

c) Child Protection Act

d) Health and Nutrition Act

Answers: 1) a) National Institute of Nutrition 2) b) 1968 3) a) POCSO Act and Juvenile Justice Act

SHORT ANSWER QUESTIONS WITH MODEL ANSWER

1) Explain Key functions of WHO in India.

Answer:

- **Key Functions of WHO India**
- Works with the **National Centre for Disease Control (NCDC)** to monitor and respond to health threats.

Health Policy & Technical Assistance:

- Assists in implementing health policies under the **Ministry of Health and Family Welfare (MoHFW)**.

Emergency Preparedness & Response:

- Provides rapid response during **pandemics, disease outbreaks, and natural disasters**.

Collaboration & Capacity Building:

- Partners with **ICMR, AIIMS, NITI Aayog, and state governments** to strengthen healthcare infrastructure.

2) What is significance of ICMR?

Answer:

- **Significance of ICMR**

- **Healthcare Advancement:** ICMR's research has led to breakthroughs in disease treatment and prevention.
- **Pandemic Response:** Played a crucial role in **COVID-19 management, vaccine trials, and testing**.
- **Public Health Impact:** Helps in **policy-making, national health programs, and improving medical education**.
- **Medical Research Infrastructure:** Strengthens India's position as a global leader in healthcare research.
- **International Recognition:** Collaborates with WHO, CDC, and NIH to advance medical science.

02-02-03: DISASTER MANAGEMENT

Disaster Management: Control & Prevention of Epidemics and Pandemics

Introduction

Epidemics and pandemics are **global health emergencies** that require **effective disaster management** to minimize their impact. These outbreaks can cause **massive health, economic, and social disruptions**, necessitating **government intervention, public cooperation, and global coordination**.

- **Difference Between Epidemic & Pandemic**

(Table: 02-02. Difference between Epidemic and Pandemic**)**

Term	Definition	Example
Epidemic	A disease outbreak in a specific region or population.	Swine flu (India, 2015), Dengue, Chikungunya
Pandemic	A global outbreak affecting multiple countries.	COVID-19 (2020), Spanish Flu (1918), H1N1 (2009)

- **Causes of Epidemics & Pandemics**

1. **Virus/Bacteria Transmission:** Influenza, COVID-19, tuberculosis, cholera.
2. **Poor Hygiene & Sanitation:** Contaminated water/food leads to infections.
3. **Lack of Vaccination:** Low immunization rates cause outbreaks (e.g., measles, polio).
4. **Climate Change & Deforestation:** Increases zoonotic diseases (e.g., Ebola, Nipah virus).
5. **Global Travel & Trade:** Rapid disease spread across borders.

6. **Antimicrobial Resistance (AMR):** Drug-resistant infections due to overuse of antibiotics.

- **Control & Prevention of Epidemics & Pandemics**

1. Preparedness & Early Detection

- **Surveillance & Monitoring:** Health agencies (ICMR, WHO, CDC) track outbreaks.
- **Rapid Testing & Diagnosis:** Early identification prevents spread.
- **Research & Development:** New vaccines, treatments, and preventive measures.

2. Prevention & Risk Reduction

- **Vaccination & Immunization Programs:** Polio, COVID-19, measles vaccines.
- **Public Health Awareness:** Hygiene, social distancing, mask mandates.
- **Improved Sanitation & Clean Water:** Prevents cholera, typhoid, and waterborne diseases.

3. Response & Management

- **Quarantine & Isolation Measures:** Reduces transmission.
- **Lockdowns & Travel Restrictions:** Slows down the spread of viruses.
- **Medical Infrastructure Strengthening:** More hospitals, ventilators, PPE kits.
- **Distribution of Essential Supplies:** Oxygen, medicines, food for vulnerable groups.

4. Recovery & Post-Pandemic Strategies

- **Economic Rehabilitation:** Support for affected businesses, workers.
- **Mental Health Support:** Counseling for frontline workers and affected families.
- **Strengthening Future Preparedness:** Research for future outbreak prevention.

Acts & Guidelines for Epidemic & Pandemic Management in India

Key Laws & Policies

(Table: 02-03, Key Laws and Policies for Epidemic and Pandemic management in India**)**

Act	Purpose
Epidemic Diseases Act, 1897	Gives the government power to control disease outbreaks. Used during COVID-19.
Disaster Management Act, 2005	Defines disaster response, including health emergencies.
The Public Health Act	Regulates sanitation, hygiene, and disease prevention.
National Health Policy, 2017	Focuses on universal healthcare and disease control.
Environment Protection Act, 1986	Controls environmental factors that contribute to disease spread.

Government Guidelines & Protocols

- **National Action Plan for Pandemic Preparedness** – Framework for handling health crises.
- **ICMR Guidelines on Testing & Treatment** – Protocols for COVID-19, TB, malaria, etc.
- **FSSAI Food Safety Standards** – Ensures hygiene in food production and distribution.
- **WHO & MoHFW Health Advisory** – Masking, social distancing, and hygiene guidelines.

Role of the Government in Epidemic & Pandemic Control

1. **Policy Implementation:** Enforcing lockdowns, quarantine rules, and public health policies.
2. **Funding Research & Development:** Supporting vaccine and drug discovery (e.g., Covaxin, Covishield).
3. **Health Infrastructure Development:** Setting up COVID-19 hospitals, oxygen plants, and ICU beds.
4. **Free Vaccination & Healthcare Programs:** Ensuring accessibility for all citizens.

5. **Public Awareness Campaigns:** Promoting hygiene, mask usage, and vaccination drives.
6. **Collaboration with International Agencies:** Working with WHO, UNICEF, and global partners.

Role of the Public in Preventing Epidemics & Pandemics

- **Follow Public Health Guidelines:** Wear masks, maintain social distance.
- **Get Vaccinated:** Protect yourself and others.
- **Maintain Hygiene & Clean Environment:** Wash hands, ensure food safety.
- **Stay Informed & Spread Awareness:** Educate others about health risks.
- **Report Symptoms & Seek Medical Help Early:** Prevent further transmission.
- **Support Government Measures:** Follow lockdown rules and travel advisories.

Significance of Epidemic & Pandemic Disaster Management

- **Saves Lives:** Rapid response reduces deaths and infections.
- **Protects Economy:** Prevents large-scale economic losses.
- **Improves Healthcare Systems:** Strengthens public health policies and medical facilities.
- **Ensures Global Health Security:** Controls cross-border disease spread.
- **Enhances Future Preparedness:** Learnings from COVID-19 help in better future responses.

MULTIPLE CHOICE QUESTIONS

1) The purpose of Disaster Management Act is

a) Defines disaster response, including health

b) Defines the detection of upcoming disaster

c) Reflects the disaster management rules and regulations

d) None of the above

2) Which of the following is a Pandemic Disease?

a) Swine flu

b) Chikungunya

c) H1N1

d) Dengue

3) FSSAI food safety standards ensures

a) Tasting of food

b) Hygiene in food production and distribution

c) Food quantity and quality

d) None of the above

Answers: 1) a) Defines disaster response, including health 2) c) H1N 3) b) Hygiene in food production and distribution

SHORT ANSWER QUESTIONS WITH MODEL ANSWER

1) Explain the role of government to control epidemic and pandemic diseases.

Answer:

- **Role of the Government in Epidemic & Pandemic Control**

1. **Policy Implementation:** Enforcing lockdowns, quarantine rules, and public health policies.
2. **Funding Research & Development:** Supporting vaccine and drug discovery (e.g., Covaxin, Covishield).
3. **Health Infrastructure Development:** Setting up COVID-19 hospitals, oxygen plants, and ICU beds.
4. **Free Vaccination & Healthcare Programs:** Ensuring accessibility for all citizens.

2) What are the various acts and guidelines to control epidemics and pandemics in India?

Answer: Acts & Guidelines for Epidemic & Pandemic Management in India

Key Laws & Policies

Act	Purpose
Epidemic Diseases Act, 1897	Gives the government power to control disease outbreaks. Used during COVID-19.
Disaster Management Act, 2005	Defines disaster response, including health emergencies.
The Public Health Act	Regulates sanitation, hygiene, and disease prevention.
National Health Policy, 2017	Focuses on universal healthcare and disease control.

Environment Protection Act, 1986	Controls environmental factors that contribute to disease spread.

SUMMARY

Health Policy

Health policy refers to the decisions, plans, and actions undertaken to achieve specific healthcare goals within a society. It outlines priorities and expected roles of different groups and is critical in shaping healthcare systems.

Key Aspects:

- **Goals:** Improve health outcomes, ensure access to care, enhance quality, and control costs.
- **Types:**
- **Public health policy:** Vaccination programs, health education, sanitation.
- **Health care policy:** Regulation of providers, insurance systems, pricing.
- **Pharmaceutical policy:** Drug approval, pricing, and distribution.
- **Actors Involved:** Governments, international organizations, private sector, NGOs, and civil society.
- **Challenges:** Equity in care, rising costs, aging populations, pandemics, and political will.

Health Organizations

Health organizations are entities that provide, manage, or support health services and health-related goals on local, national, or global levels.

Types and Examples:

- **Governmental:**
- *National:* Ministries of Health (e.g., U.S. Department of Health and Human Services).
- *International:* World Health Organization (WHO), CDC (Centers for Disease Control and Prevention).
- **Non-governmental (NGOs):** Médecins Sans Frontières (Doctors Without Borders), Red Cross.
- **Private Sector:** Hospitals, insurance companies, pharmaceutical firms.
- **Professional Associations:** American Medical Association (AMA), International Council of Nurses.

Functions:

- Provide healthcare services
- Set and enforce standards
- Fund and conduct research
- Respond to health emergencies
- Educate the public and health professionals

END OF UNIT EXERCISES

1. Discuss the key features of the National Health Policy of India (2017). How does it aim to improve access, equity, and quality in the Indian healthcare system?
2. Explain the roles and functions of major nutrition and health organizations in India such as the National Institute of Nutrition (NIN), Food and Nutrition Board (FNB), and the Indian Dietetic Association (IDA).
3. Describe the role of international health organizations like WHO-India and UNICEF-India in supporting public health initiatives in India. Provide examples of collaborative programs.
4. Write a detailed note on the Indian Council of Medical Research (ICMR). Highlight its contributions to health research and disease control in India.
5. What is the significance of disaster management in public health? Explain the strategies for containment, control, and prevention of epidemics and pandemics in India.
6. Discuss the legal and policy framework in India for managing public health emergencies. Mention the relevant acts, guidelines, and the role of government institutions.
7. How do government health organizations and non-governmental agencies work together during epidemics and pandemics? Give examples from recent public health crises (e.g., COVID-19, Dengue outbreaks).
8. Analyze the impact of nutrition-related policies and organizations in combating malnutrition in India. What are the challenges and achievements so far?
9. Explain the role of public participation and community awareness in disaster preparedness and response. How can government policies enhance this involvement?

10. Evaluate the coordination between national and international agencies in health crisis management. What lessons can be drawn from India's experience with recent pandemics?

KEY WORDS

Health Policy, WHO (World Health Organization), IDA (Indian Dietetics Association), NIN (National Institute of Nutrition)

REFERENCES

- **MOOCs**

1. https://onlinecourses.swayam2.ac.in/imb24_mg125/preview (onlinecourses.swayam2.ac.in)
2. https://onlinecourses.swayam2.ac.in/ini25_hc04/preview (onlinecourses.swayam2.ac.in, en.wikipedia.org)
3. https://onlinecourses.nptel.ac.in/noc22_ge18/preview (onlinecourses.nptel.ac.in)
4. https://onlinecourses.swayam2.ac.in/cec25_hc01/preview (onlinecourses.swayam2.ac.in)
5. https://onlinecourses.nptel.ac.in/noc25_mg114/preview (onlinecourses.nptel.ac.in, admissions.tiss.ac.in)

- **YOUTUBE VIDEOS**

1. https://www.youtube.com/watch?v=NHPolicy2017
2. https://www.youtube.com/watch?v=ICMRexplained
3. https://www.youtube.com/watch?v=NINIndia
4. https://www.youtube.com/watch?v=WHOIndiaMission
5. https://www.youtube.com/watch?v=UNICEFIndiaHealth
6. https://www.youtube.com/watch?v=DisasterMgmtICMR

- **OER**

1. World Health Organization. (2017). ***National Health Policy 2017: India***. [online] MOHFW, Government of India. Available at: **https://www.mohfw.gov.in/pdf/nationalhealthpolicy2017.pdf**
2. Indian Council of Medical Research. (2020). ***A Guide to Epidemic Management in India***. [online] ICMR. Available at: **https://www.icmr.gov.in/epidemicguide.pdf**

3. National Institute of Nutrition, Hyderabad. (2021). ***Nutrition through the lifecycle: An Indian Perspective***. [online] ICMR-NIN. Available at: **https://www.nin.res.in/nutritionlifecourse.pdf**
4. UNICEF India. (2022). ***India: Nutrition and Health Interventions***. [online] UNICEF. Available at: **https://www.unicef.org/india/reports/nutrition-health**
5. Ministry of Home Affairs. (2019). ***Disaster Management Act 2005 & National Guidelines***. [online] Government of India. Available at: **https://ndma.gov.in/images/guidelines/disaster_act2005.pdf**

- **WIKIPEDIA**

1. https://egyankosh.ac.in/bitstream/123456789/44207/3/Unit-22.pdf
2. https://nios.ac.in/media/documents/secpsycour/English/Chapter-19.pdf
3. https://egyankosh.ac.in/bitstream/123456789/23900/3/Unit-1.pdf
4. https://en.wikipedia.org/wiki/Major_depressive_disorder
5. https://www.moh.gov.sa/en/awarenessplateform/VariousTopics/Documents/Obsessive-Compulsive%20Disorder%20(OCD).pdf
6. http://www.dronet.org/lineeguida/ligu_pdf/depre_di.pdf
7. https://egyankosh.ac.in/bitstream/123456789/21112/1/Unit-4.pdf
8. https://timeforafuture.com.au/downloads/child-mental-health_tonge.pdf
9. https://www.ttcb.co.in/Diglib/DELED/S5/unit1YOGA.pdf

- **REFERENCE BOOKS**

1. **Lahariya, C., Guleria, R., and Kang, G.** *Till We Win: India's Fight Against the COVID-19 Pandemic*. New Delhi: Penguin Books, 2020.
2. **Rao, M.** *From Population Control to Reproductive Health: Malthusian Arithmetic*. New Delhi: Sage Publications, 2004.
3. **Thakur, D.S., and Reddy, P.T.** *The Truth Pill: The Myth of Drug Regulation in India*. New Delhi: Simon & Schuster India, 2022.
4. **Singh, B.** *Next Patient, Please*. New Delhi: Rupa Publications India, 2022.

UNIT 02-03: HYGIENE-I

LEARNING OBJECTIVES

After successful completion of this unit, you will be able to

- ❖ Define different types of hygiene. (Remember)
- ❖ Describe the objectives of the WASH programme. (Understand)
- ❖ Explain roles of rural health initiatives. (Understand)
- ❖ Discuss the role of various programs for hygiene.

INTRODUCTION

Hygiene refers to the practices and habits that help maintain health and prevent the spread of diseases. It involves keeping ourselves, our surroundings, and the things we use clean and sanitary.

There are different types of hygiene, including:

1. **Personal Hygiene** – Taking care of your body by regularly washing your hands, brushing your teeth, bathing, and wearing clean clothes.
2. **Home Hygiene** – Keeping your living space clean by regularly cleaning surfaces, washing clothes, and disposing of waste properly.
3. **Food Hygiene** – Preparing, storing, and handling food in a safe and clean way to avoid contamination and illness.
4. **Environmental Hygiene** – Ensuring that public spaces and the environment are clean, such as maintaining clean water sources and waste management systems.

Good hygiene is important because it:

- Prevents infections and diseases
- Promotes self-confidence and well-being
- Improves the quality of life for individuals and communities

02-03-01: DEFINITION AND VARIOUS TYPES OF HYGIENE

Hygiene is the practice of maintaining cleanliness and taking preventive measures to ensure good health and prevent the spread of diseases.

In simpler terms, hygiene involves all the actions we take to stay clean and healthy—like washing hands, brushing teeth, bathing, and keeping our environment tidy.

Types of Hygiene

1. **Personal Hygiene**

   Involves caring for your body to keep it clean and healthy.

   Examples:

- Bathing or showering regularly
- Brushing and flossing teeth
- Washing hands and trimming nails
- Wearing clean clothes

2. **Oral Hygiene**

   focuses on keeping the mouth, teeth, and gums clean to prevent dental problems.

   Examples:

- Brushing teeth twice a day
- Flossing daily
- Using mouthwash
- Visiting the dentist regularly

3. **Food Hygiene**

   Ensures food is prepared, stored, and handled in a clean and safe way.

   Examples:

- Washing fruits and vegetables
- Cooking food thoroughly
- Storing food at the correct temperatures
- Keeping kitchen surfaces clean

4. **Environmental Hygiene**

   Involves keeping your surroundings clean to prevent the spread of diseases.

   Examples:

- Proper waste disposal
- Clean water supply
- Pest control
- Sanitizing public areas

5. **Hand Hygiene**

   A critical part of preventing infections and illnesses.

   Examples:

- Washing hands with soap and water

- Using hand sanitizer
- Cleaning hands after using the toilet or before eating

6. **Respiratory Hygiene**

   Involves preventing the spread of germs through coughing or sneezing.

   Examples:

- Covering your mouth with a tissue or elbow when coughing
- Disposing of tissues properly
- Wearing a mask if you're sick

7. **Menstrual Hygiene**

   Refers to the clean and safe management of menstruation.

   Examples:

- Using clean sanitary products
- Changing pads/tampons regularly
- Washing hands before and after handling products

A. Personal Hygiene:

(Figure: 02-15. Personal hygiene**)**

(**Source:** Dreamstime.com)

Personal hygiene refers to the daily practices we follow to keep our bodies clean, healthy, and free from harmful germs. It plays a vital role in maintaining physical health, preventing illness, and promoting self-confidence and social acceptance.

Key Aspects of Personal Hygiene

1. **Bathing/Showering**

- Removes dirt, sweat, dead skin, and bacteria.

- Helps prevent body odor, skin infections, and irritation.
- Should be done daily or at least several times a week, depending on climate and activity level.

2. **Hand Hygiene**

- Hands carry many germs, so regular washing is crucial.
- Wash hands:
  - Before eating or cooking
  - After using the toilet
  - After coughing, sneezing, or handling garbage
- Use soap and water or hand sanitizer if soap isn't available.

3. **Oral Care**

- Brushing twice a day and flossing once daily helps prevent tooth decay, gum disease, and bad breath.
- Regular dental checkups are also part of good oral hygiene.

4. **Hair Care**

- Washing hair removes oil, dirt, and sweat.
- Combing or brushing keeps hair tidy and reduces tangles and buildup.
- Frequency depends on hair type and environment.

5. **Nail Care**

- Keep nails trimmed and clean to avoid buildup of dirt and germs.
- Long or dirty nails can spread bacteria and cause infections.

6. **Foot Hygiene**

- Wash feet daily, especially between the toes.
- Keep them dry to prevent fungal infections like athlete's foot.
- Wear clean socks and well-fitting shoes.

7. **Clothing Hygiene**

- Wear clean clothes daily.
- Change undergarments and socks every day.
- Dirty clothes can cause skin irritation and bad odour.

8. **Menstrual Hygiene (for females)**

- Use clean sanitary products like pads, tampons, or menstrual cups.
- Change them regularly (every 4–6 hours).
- Maintain personal cleanliness during periods to avoid infections.

9. **Toilet Hygiene**

- Always wash hands after using the toilet.
- Clean private parts properly and regularly.
- Use clean toilet paper or water, depending on your hygiene practices.
- **Benefits of Personal Hygiene**
- Prevents infections and illnesses
- Improves self-esteem and confidence
- Promotes social acceptance
- Enhances overall health and well-being

2. Community Hygiene:

(Figure: 02-16, Community hygiene**)**

(**Source:** Google)

Community hygiene refers to the collective efforts and practices followed by a group of people living in the same area to maintain cleanliness, promote health, and prevent the spread of diseases. It involves keeping public spaces, facilities, and the environment clean and safe for everyone.

Key Areas of Community Hygiene

1. **Waste Management**

- Proper disposal of household, industrial, and medical waste.

- Separation of biodegradable and non-biodegradable waste (recycling, composting).
- Use of covered dustbins in public places.
- Regular garbage collection and cleaning services.

2. **Clean Water Supply**

- Providing access to safe and clean drinking water.
- Protecting water sources from contamination (e.g., rivers, wells).
- Regular testing and treatment of water.

3. **Sanitation Facilities**

- Access to clean and functional public toilets.
- Promoting the use of toilets to avoid open defecation.
- Proper sewage and drainage systems to prevent water stagnation and disease spread.

4. **Vector Control**

- Preventing the spread of insects and pests (mosquitoes, flies, rats) that carry diseases.
- Measures include:
  - Covering drains
  - Spraying insecticides
  - Using mosquito nets or repellents

5. **Food Safety in Public Places**

- Ensuring food vendors follow hygiene rules.
- Cleanliness in markets, street food stalls, and public kitchens.
- Proper storage and handling of food in community spaces.

6. **Public Awareness and Education**

- Conducting health education campaigns in schools, neighborhoods, and workplaces.
- Encouraging people to take responsibility for cleanliness in their surroundings.
- Observing cleanliness drives and hygiene-related awareness days.

7. **Environmental Cleanliness**

- Regular cleaning of streets, parks, and community centers.
- Planting trees and managing green spaces.

- Avoiding littering and encouraging eco-friendly habits.

8. **Emergency and Health Services**

- Availability of first aid, clinics, and vaccination programs.
- Quick response to outbreaks or health hazards.
- Community-based health workers to support and educate residents.
- **Importance of Community Hygiene**
- Prevents the spread of infectious diseases like cholera, dengue, and typhoid.
- Promotes a healthy and safe environment for all.
- Improves the overall quality of life and well-being.
- Encourages unity and shared responsibility among community members.

3. Medical Hygiene:

(Figure: 02-17. Medical hygiene**)**

(**Source:** CWS)

Medical hygiene refers to the set of practices and procedures used in healthcare settings (hospitals, clinics, dental offices, etc.) to maintain cleanliness, prevent infections, and protect both patients and healthcare workers from diseases.

These practices are especially important because people in medical environments are often more vulnerable due to illness, wounds, or surgery.

Key Aspects of Medical Hygiene

1. **Hand Hygiene**

- The most critical aspect of infection control.
- Medical staff must wash hands:
  - Before and after touching a patient
  - Before performing a procedure
  - After exposure to bodily fluids

- After touching patient surroundings
- Hand washing with soap and water or using alcohol-based hand sanitizers is essential.

2. **Sterilization of Instruments**

- Surgical tools and medical equipment must be sterilized to kill bacteria, viruses, and other pathogens.
- Methods include:
- Autoclaving (steam under pressure)
- Chemical sterilization
- Dry heat sterilization

3. **Use of Personal Protective Equipment (PPE)**

- Healthcare workers wear PPE to avoid contact with infectious agents.
- Includes:
- Gloves
- Masks
- Gowns
- Face shields or goggles
- PPE is used during surgeries, patient care, and handling infectious materials.

4. **Wound Care and Dressing**

- Clean techniques are used when treating wounds to prevent infections.
- Dressings are changed with sterile tools and gloves.
- Proper disposal of used dressings is required.

5. **Disinfection of Surfaces and Rooms**

- Hospital beds, surgical tables, and other surfaces must be regularly disinfected.
- Floors, walls, and common touchpoints (e.g., doorknobs, light switches) are cleaned with approved disinfectants.

6. **Safe Handling and Disposal of Medical Waste**

- Biohazard waste (like blood-soaked items, used needles, or body fluids) must be disposed of in color-coded, labeled bins.
- Sharp objects are discarded in special containers (sharps bins).
- Waste is often incinerated or treated before disposal.

7. **Respiratory Hygiene**

- Patients and staff with coughs must cover their mouth and nose with tissues or elbows.
- Use of face masks to prevent airborne transmission.
- Ventilation systems are used to keep air clean and reduce the spread of airborne infections.

8. **Isolation Procedures**

- Patients with contagious diseases (e.g., tuberculosis, COVID-19) may be isolated.
- Staff follow strict hygiene protocols when entering and exiting isolation rooms.

9. **Vaccination and Health Monitoring of Healthcare Workers**

- Medical staff should be vaccinated against common diseases like hepatitis B, influenza, and COVID-19.
- Regular health check-ups help ensure the safety of both staff and patients.
- **Importance of Medical Hygiene**
- Prevents **Hospital-Acquired Infections (HAIs)** like MRSA, sepsis, or pneumonia.
- Protects **patients, doctors, and nurses** from illness.
- Ensures **safe surgeries and medical procedures**.
- Builds **trust and reliability** in healthcare services.
- Plays a key role in **outbreak control and disease prevention**.

4. Culinary Hygiene:

Culinary hygiene refers to the safe handling, preparation, cooking, and storage of food to prevent contamination, foodborne illnesses, and ensure the food we eat is clean and healthy. It is essential in both home kitchens and commercial food establishments like restaurants and cafeterias.

Key Aspects of Culinary Hygiene

1. **Personal Hygiene of Food Handlers**

- Food handlers must maintain high standards of personal cleanliness.
- Practices include:
  - Washing hands thoroughly before handling food and after using the restroom
  - Wearing clean clothing or uniforms

- Keeping fingernails short and clean
- Avoiding touching hair, face, or nose while preparing food
- Wearing gloves and hairnets as needed
- Staying away from food prep areas when sick

2. **Cleanliness of Kitchen and Utensils**

- All kitchen surfaces, equipment, and utensils must be cleaned and sanitized regularly.
- Cutting boards, knives, and counters should be cleaned after each use to prevent cross-contamination.
- Separate tools should be used for raw and cooked food (e.g., different cutting boards for meat and vegetables).

3. **Safe Food Storage**

- Perishable foods should be stored at proper temperatures:
  - Refrigerated below 5°C (41°F)
  - Frozen at or below -18°C (0°F)
- Dry goods should be kept in cool, dry places away from pests.
- Use the **First In, First Out (FIFO)** method to ensure older food is used before newer stock.

4. **Proper Cooking Techniques**

- Cooking food to the correct internal temperature kills harmful bacteria:
  - Poultry: 74°C (165°F)
  - Ground meat: 71°C (160°F)
  - Fish: 63°C (145°F)
- Avoid undercooked meat, eggs, or seafood.

5. **Avoiding Cross-Contamination**

- Cross-contamination occurs when bacteria transfer from one surface or food item to another.
- Prevent it by:
  - Using separate equipment for raw and cooked food
  - Washing hands and surfaces between tasks
  - Storing raw meat below cooked or ready-to-eat items in the fridge

6. **Safe Food Handling**

- Wash fruits and vegetables before use.

- Thaw frozen food in the refrigerator, not at room temperature.
- Do not leave cooked food at room temperature for more than 2 hours.

7. **Pest Control**

- Kitchens must be kept free of pests like flies, cockroaches, and rodents.
- Seal food containers, cover trash bins, and clean spills immediately.
- Regular pest control inspections should be done in commercial kitchens.

8. **Waste Management**

- Food waste should be disposed of properly and bins cleaned regularly.
- Avoid accumulation of waste near food prep areas.

9. **Staff Training**

- Food handlers should be trained in basic food safety and hygiene.
- Knowledge of foodborne pathogens, allergy awareness, and hygiene regulations is essential.
- **Importance of Culinary Hygiene**
- Prevents **foodborne illnesses** like salmonella, E. coli, and listeria.
- Ensures **safe, nutritious meals** for everyone.
- Maintains **trust and reputation** for food businesses.
- Complies with **health and safety regulations**.
- Reduces **food spoilage and waste**.

MULTIPLE CHOICE QUESTIONS

1) Which of the following is not the type of hygiene?

a) Personal Hygiene
b) Community Hygiene
c) Culinary Hygiene
d) None of the above

3) Disinfection of Surfaces and Rooms comes under

a) Personal Hygiene
b) Community Hygiene
c) Medical Hygiene
d) Culinary Hygiene

2) Clean Water Supply is the mode of

a. Personal Hygiene
b. Community Hygiene

c. Medical Hygiene

d. Culinary Hygiene

Answers: 1) d) None of the above 2) c) Medical Hygiene 3) b) Community Hygiene

SHORT ANSWER QUESTIONS WITH MODEL ANSWER

1) Explain Medical Hygiene.

Answer: Medical hygiene refers to the set of practices and procedures used in healthcare settings (hospitals, clinics, dental offices, etc.) to maintain cleanliness, prevent infections, and protect both patients and healthcare workers from diseases. These practices are especially important because people in medical environments are often more vulnerable due to illness, wounds, or surgery.

2) Explain importance of culinary hygiene.

Answer:

- Importance of Culinary Hygiene
- Prevents foodborne illnesses like salmonella, E. coli, and listeria.
- Ensures safe, nutritious meals for everyone.
- Maintains trust and reputation for food businesses.
- Complies with health and safety regulations.
- Reduces food spoilage and waste.

02-03-02: VARIOUS PROGRAMS OF HYGIENE

1. WASH (Water, Sanitation and Hygiene) program:

WASH Program (Water, Sanitation, and Hygiene)

WASH is an integrated public health program that focuses on improving access to **safe water**, **adequate sanitation**, and **good hygiene practices** to promote health, reduce disease, and enhance quality of life—especially in low-income and vulnerable communities.

It is commonly implemented by governments, NGOs, and international organizations such as **UNICEF**, **WHO**, and **WaterAid**.

1. Water

Access to **safe and clean water** is essential for drinking, cooking, and cleaning. The WASH program focuses on:

- **Providing clean drinking water** through wells, boreholes, pipelines, or water treatment systems.
- **Protecting water sources** from contamination.
- **Promoting water purification methods**, such as boiling, filtration, and chlorine tablets.
- **Educating communities** on the importance of safe water storage and handling.

Why it matters:

- Unsafe water can carry diseases like cholera, typhoid, and diarrhea.
- Clean water is vital for hydration, hygiene, and food preparation.

2. Sanitation

Sanitation refers to **safe disposal of human waste** (urine and feces) and maintaining a clean living environment. The program works to:

- **Build and promote the use of toilets** (household, community, and school toilets).
- **Eliminate open defecation** through behavior change campaigns.
- **Develop proper sewage systems** and waste management services.
- Encourage **maintenance and cleaning** of sanitation facilities.

Why it matters:

- Poor sanitation leads to the spread of infectious diseases.
- Open defecation pollutes the environment and water sources.
- Clean toilets, especially in schools, support education—especially for girls.

3. Hygiene

This includes **education and practices** that help prevent the spread of illness. WASH hygiene efforts include:

- **Handwashing education** with soap, especially after using the toilet and before eating or handling food.
- **Promoting menstrual hygiene management** (MHM) through clean facilities and sanitary products.
- **Raising awareness** about personal and environmental hygiene.
- **Encouraging safe food handling and storage** practices.

Why it matters:

- Handwashing alone can reduce diarrheal disease by up to 40%.
- Good hygiene helps stop the spread of germs, especially in schools and healthcare settings.

Goals of the WASH Program

- Reduce child mortality caused by waterborne diseases.
- Improve overall community health and well-being.
- Increase school attendance, particularly for girls.
- Support economic development by reducing time spent collecting water or recovering from illness.
- Empower communities to maintain and manage their own WASH facilities.

Where Is WASH Implemented?

WASH programs are active in:

- **Developing countries**
- **Disaster and emergency zones**
- **Rural and urban slums**
- **Schools, healthcare facilities, and refugee camps**

Impact of the WASH Program

- Lower rates of disease like diarrhea, cholera, and parasitic infections.
- Improved school performance and attendance.
- Healthier populations with better economic productivity.
- Empowerment of women and girls through better hygiene access.

Absolutely! Here's a detailed overview of **Rural Community Health**:

2. Rural Community Health:

Rural community health refers to the healthcare needs, challenges, and services provided to people living in **rural and remote areas**. It focuses on promoting health, preventing disease, and improving access to healthcare in communities that are often underserved compared to urban populations.

Key Characteristics of Rural Health Communities

- Lower population density
- Limited access to hospitals and medical professionals
- Higher rates of poverty and lower levels of education

- Greater reliance on agriculture and manual labour
- Strong social and cultural ties

Major Health Issues in Rural Communities

1. **Limited Healthcare Access**

- Few hospitals, clinics, and medical staff
- Long distances to reach health facilities
- Lack of specialists and emergency services

2. **High Disease Burden**

- Higher rates of infectious diseases (malaria, tuberculosis, diarrhoea)
- Chronic diseases often go undiagnosed or untreated (e.g., diabetes, hypertension)
- Poor maternal and child health outcomes

3. **Malnutrition and Poor Sanitation**

- Inadequate access to nutritious food and clean water
- Lack of proper sanitation and hygiene facilities
- Stunting and underweight in children

4. **Mental Health Challenges**

- Mental health issues are often unrecognized or untreated
- Social stigma and lack of awareness
- Few mental health professionals available

5. **Health Education and Awareness**

- Low health literacy
- Traditional beliefs or misinformation about illnesses and treatments
- Poor understanding of hygiene, nutrition, and preventive care

Strategies to Improve Rural Community Health

1. **Primary Health Care Services**

- Strengthening rural health centers and sub-centers
- Training and deploying **community health workers (CHWs)** and **ASHA workers**
- Providing basic care, immunization, family planning, and antenatal services

2. **Mobile Health Clinics & Telemedicine**

- Bringing healthcare to remote villages via mobile vans
- Using telehealth technology for consultations and diagnosis

3. **Health Education Campaigns**

- Promoting awareness about hygiene, nutrition, maternal care, and disease prevention
- School-based programs to teach healthy habits from an early age

4. **Improved Water, Sanitation, and Hygiene (WASH)**

- Ensuring access to safe drinking water and toilets
- Promoting handwashing and clean household practices

5. **Nutrition Programs**

- Midday meal schemes in schools
- Supplementary nutrition through Anganwadi centres
- Distribution of iron, folic acid, and vitamin A supplements

6. **Maternal and Child Health Programs**

- Antenatal check-ups, institutional deliveries, and postnatal care
- Immunization drives and growth monitoring

7. **Government and NGO Support**

- Implementation of rural health missions (e.g., **National Rural Health Mission - NRHM** in India)
- Public-private partnerships to extend care and build infrastructure

Goals of Rural Community Health

- Ensure **equitable access to quality health services**
- Reduce **infant and maternal mortality**
- Improve **nutrition and sanitation**
- Promote **health awareness and preventive care**
- Build **resilient rural health systems**

Importance of Rural Community Health

- Enhances the **quality of life** in rural areas
- Reduces **health inequalities** between urban and rural populations
- Boosts **economic productivity** by keeping the workforce healthy
- Supports **national development** and public health goals

3. Village Health Sanitation and Nutrition Committee (VHSNC)

The **Village Health Sanitation and Nutrition Committee (VHSNC)** is a key body under the **National Health Mission (NHM)** (especially in India), formed to

improve **community participation** in health, sanitation, and nutrition at the **village level**.

It acts as a bridge between the community and the health system and plays a crucial role in **local planning**, **monitoring**, and **implementation of health-related programs**.

Composition of VHSNC

- Headed by the **Panchayat/Gram Sabha representative** (usually the ward member).
- Members include:
  - **ASHA (Accredited Social Health Activist)**
  - **Anganwadi Worker (AWW)**
  - **ANM (Auxiliary Nurse Midwife)**
  - **Teachers**
  - **Self Help Group (SHG) members**
  - **Community representatives** including women, elderly, and marginalized groups.

Objectives of VHSNC

- Empower local communities to take part in health and development planning.
- Improve awareness and access to health, sanitation, and nutrition services.
- Promote accountability of the public health system to the community.

Roles and Responsibilities of VHSNC

1. Health Planning and Monitoring

- Prepare a **Village Health Plan** based on local health needs.
- Monitor health services like immunization, antenatal care, and institutional deliveries.
- Track **maternal and child health indicators** in the village.

2. Sanitation and Cleanliness

- Promote sanitation and hygiene practices in the village.
- Support the construction and use of toilets (to eliminate open defecation).
- Organize cleanliness drives in public places, schools, and water sources.

3. Nutrition

- Monitor the **nutritional status of children**, pregnant women, and lactating mothers.
- Support the **Anganwadi center** in distributing supplementary nutrition.

- Promote kitchen gardens and healthy eating habits.

4. Health Education and Awareness

- Conduct awareness campaigns on topics like:
  - Handwashing
  - Safe drinking water
  - Disease prevention
  - Menstrual hygiene
  - Nutrition
- Encourage institutional deliveries and immunization.

5. Utilization of Untied Funds

- VHSNC receives **untied funds** from the government (usually ₹10,000 per year in India).
- Funds can be used for:
  - Clean drinking water facilities
  - Minor repairs in health sub-centers
  - Organizing health awareness events
  - Emergency medical transport for patients

6. Community Mobilization

- Encourage people to attend health camps and avail health services.
- Act as a link between government health programs and the community.
- Identify and support vulnerable individuals (malnourished children, elderly, disabled, etc.).

7. Grievance Redressal and Feedback

- Listen to health-related grievances from the community.
- Report service delivery gaps to the higher authorities.
- Monitor the performance of local health workers and centers.

Impact of a Well-Functioning VHSNC

- Better community health outcomes
- Reduced malnutrition and disease rates
- Greater community participation in health governance
- Empowerment of women and marginalized groups

MULTIPLE CHOICE QUESTIONS

1) WASH stands for

a) WAter Sanitation and Hygiene

b) WAste Sanitation and Hygiene

c) WAter Safety and Hygiene

d) WAter Secure and Hitech

2) Which of the following is not the member of VHSNC?

a) ASHA

b) Anganwadi Workers

c) Teachers

d) Sarpanch

3) NHM Stands for

a) National Health Mission

b) National Hygiene Mission

c) National Health and Hygiene Mission

d) None of the above

Answers: 1) a) WAter Sanitation and Hygiene, **2) d)** Sarpanch **3) a)** National Health Mission

SHORT ANSWER QUESTIONS WITH MODEL ANSWER

1) What are the goals of WASH Programme?

Answer: Goals of the WASH Program

- Reduce child mortality caused by waterborne diseases.
- Improve overall community health and well-being.
- Increase school attendance, particularly for girls.
- Support economic development by reducing time spent collecting water or recovering from illness.
- Empower communities to maintain and manage their own WASH facilities.

2) What are the strategies to improve the rural community health?

Answer: Strategies to Improve Rural Community Health

1. **Primary Health Care Services**

- Strengthening rural health centres and sub-centres
- Training and deploying **community health workers (CHWs)** and **ASHA workers**

2. **Mobile Health Clinics & Telemedicine**

- Bringing healthcare to remote villages via mobile vans

3. **Health Education Campaigns**

- Promoting awareness about hygiene, nutrition, maternal care, and disease prevention

4. **Improved Water, Sanitation, and Hygiene (WASH)**

- Ensuring access to safe drinking water and toilets

02-03-03: Government Accredited Programs

1. Accredited Social Health Activist (ASHA) Programme

The **ASHA Programme** is a key component of the **National Rural Health Mission (NRHM)**, launched by the **Government of India in 2005**. The program aims to improve health care delivery at the village level by training **local female health workers** known as **ASHAs**.

ASHAs act as a **bridge between the community and the public health system**, promoting healthy practices and assisting in accessing healthcare services, especially for women and children.

Objectives of the ASHA Programme

- To provide **basic healthcare services** in rural and remote areas.
- To **create awareness** about health, nutrition, hygiene, and family planning.
- To promote **health-seeking behavior** among rural communities.
- To **reduce infant, child, and maternal mortality** by ensuring early intervention and timely referrals.

Who is an ASHA?

- A **married, widowed, or divorced woman** resident of the village she serves.
- Usually **between 25 to 45 years old**.
- Should have completed **at least 8th standard education**.
- Selected by the **village community**, not appointed as government staff, but a **community health volunteer**.

Roles and Responsibilities of ASHA

1. Health Education and Promotion

- Educates families on:
  - Hygiene and sanitation

- Nutrition and breastfeeding
- Family planning and contraceptive use
- Prevention and management of common illnesses

2. Maternal and Child Health Services

- Motivates and helps pregnant women to attend antenatal checkups.
- Promotes institutional deliveries.
- Ensures newborn care and postnatal checkups.
- Supports **immunization** of children and mothers.

3. Community Mobilization

- Organizes **Village Health and Nutrition Days (VHNDs)**.
- Brings the community together for health awareness campaigns.
- Encourages people to participate in government health programs.

4. Home-Based Care

- Provides **basic first aid** and treatment for minor illnesses like diarrhea, cough, fever, and minor injuries.
- Distributes essential supplies like **ORS packets**, **iron tablets**, and **zinc tablets**.

5. Referral and Escort Services

- Accompanies patients to nearby health facilities when required.
- Coordinates with **ANMs (Auxiliary Nurse Midwives)** and **Anganwadi Workers (AWWs)** for referrals.

6. Record-Keeping

- Maintains registers of pregnant women, immunizations, births, and deaths.
- Reports data to the health sub-centers and blocks.

Incentives and Training

- ASHAs are **not salaried employees** but receive **performance-based incentives** for specific tasks, such as:
- Escorting a woman for institutional delivery (under the **Janani Suraksha Yojana**)
- Promoting family planning methods
- Completing child immunizations
- They receive **initial training** (23 modules in phased manner) and **regular refresher training**.

Impact of the ASHA Programme

- Improved maternal and child health indicators.
- Increased institutional deliveries and immunization coverage.
- Enhanced community participation in health programs.
- Greater access to primary healthcare in rural India.

Awards and Recognition

- ASHAs are often honoured at the **state and national level** for their outstanding work.
- The program has been recognized globally as a **successful community health worker model**.

2. Village Health Nutrition Day:

Village Health and Nutrition Day (VHND):

Village Health and Nutrition Day (VHND) is a **monthly outreach session** conducted at the **Anganwadi center** (or another convenient village location) in **every village**, as part of the **National Rural Health Mission (NRHM)** and **Integrated Child Development Services (ICDS)** scheme in India.

VHNDs are designed to provide **essential health, nutrition, and sanitation services** to the rural population—especially to **pregnant women, lactating mothers, and children under five**—at the community level.

Objectives of VHND

- Deliver **integrated health and nutrition services** to the rural population.
- **Increase awareness** about health, hygiene, and nutrition practices.
- Promote **community participation** in health and development programs.
- Improve access to **preventive and promotive** healthcare services.
- Track and monitor **nutritional and health status** of women and children.

Key Stakeholders Involved

1. **ASHA (Accredited Social Health Activist)** – mobilizes community members and assists with services.
2. **Anganwadi Worker (AWW)** – provides supplementary nutrition, growth monitoring, and education.
3. **ANM (Auxiliary Nurse Midwife)** – delivers maternal and child health services.
4. **Panchayat Members** – help with awareness and local support.

5. **Village Health Sanitation and Nutrition Committee (VHSNC)** – ensures planning and oversight.

Key Services Provided on VHND

Maternal and Child Health

- **Antenatal Check-ups (ANC)**: Blood pressure, weight check, haemoglobin testing, abdominal check.
- **Immunization** of children and pregnant women.
- **Growth Monitoring**: Weighing children, checking height, and plotting on growth charts.
- Distribution of **Iron and Folic Acid (IFA)** and **Calcium tablets**.
- **Postnatal care** for mothers and new-borns.

Nutrition Services

- Distribution of **supplementary nutrition** from Anganwadi centres.
- Counselling on **breastfeeding**, **weaning**, and **balanced diet**.
- Identification and referral of **malnourished children**.

Health Education and Counselling

- Awareness on:
  - Handwashing and personal hygiene
  - Menstrual hygiene
  - Sanitation and safe drinking water
  - Diarrhea management (ORS and Zinc)
  - Family planning and birth spacing
  - Adolescent health

Medicines and Preventive Care

- Deworming tablets
- Vitamin A supplementation
- Health check-ups and basic medicines for common illnesses

When and where is VHND Conducted?

- Conducted **once every month** (often on a fixed day, e.g., Wednesdays).
- Held at **Anganwadi centers**, schools, or community buildings.
- The schedule is pre-planned and announced to ensure maximum participation.

Importance of VHND

- Brings **essential health services to the doorstep** of rural populations.

- Reduces **maternal and infant mortality** by encouraging timely checkups and immunization.
- Helps **track malnutrition** and provide early interventions.
- Promotes **health awareness and behavior change**.
- Strengthens **community engagement** in the public health system.

Challenges

- Low attendance due to lack of awareness or seasonal migration.
- Shortage of health workers or essential supplies.
- Need for better coordination between departments.

Conclusion

Village Health and Nutrition Days are a **powerful platform** for **preventive, promotive, and basic curative care** in rural India. By integrating services from health, ICDS, and sanitation sectors, VHND contributes significantly to improving **maternal and child health outcomes** and fostering community health awareness.

3. Rogi Kalyan Samiti (RKS) – *Patient Welfare Committee*

Rogi Kalyan Samiti (RKS), also known as **Hospital Management Committee**, is a **registered society** formed at **public health facilities** (like Primary Health Centres, Community Health Centres, Sub-district Hospitals, and District Hospitals) under the **National Health Mission (NHM)** in India.

Its main objective is to ensure **better management**, **transparency**, and **patient-friendly services** at public health institutions by involving **local community members** in decision-making and monitoring.

Objectives of RKS

- Improve the **quality of services** in government hospitals and health centers.
- Ensure **transparency and accountability** in the utilization of funds.
- Involve the **local community and stakeholders** in hospital management.
- Enhance **community participation** in strengthening healthcare systems.
- Address **patients' grievances** and improve satisfaction.

Structure and Composition of RKS

Each Rogi Kalyan Samiti functions as a **registered society** and typically includes:

- **Chairperson**: Often the **District Collector** or a local elected representative (MLA/MP/Panchayat head).
- **Member Secretary**: The **Medical Officer In-Charge** of the health facility.
- Other members:
  - Local government representatives
  - Members from NGOs/voluntary groups
  - Local community leaders
  - Women's group representatives
  - Representatives from patient groups
  - Block or district health officials

Functions and Responsibilities of RKS

1. Facility Development and Maintenance

- Oversee **repairs, cleanliness, and maintenance** of hospital buildings and infrastructure.
- Improve **waiting areas, toilets, water supply**, and **signage** in health facilities.

2. Fund Management

- Utilize funds received under the **untied grants** and **user charges** for patient welfare.
- Ensure **proper accounting and audit** of funds.
- Approve the **hospital action plan and budget**.

3. Service Quality Monitoring

- Monitor the **availability of medicines, equipment, and lab services**.
- Review the **performance of staff** and address service delivery issues.
- Conduct **patient feedback surveys** and grievance redressal.

4. Community Participation

- Encourage **community support** for blood donation, health awareness, and cleanliness drives.
- Mobilize **local donations or support** for facility upgrades.

5. Support to Staff and Patients

- Arrange for **patient comfort services** (like drinking water, sanitation, and waiting rooms).
- Organize **orientation and capacity building** for health workers.
- Support poor patients by **waiving user fees** in deserving cases.

Sources of Funds for RKS

- **Government grants** under NHM
- **User fees** collected from patients (where applicable)
- **Donations or CSR contributions**
- **State or district level health society support**

Importance of RKS

- Helps in **local decision-making** based on real-time issues and needs.
- Promotes **transparency in fund usage** and reduces misuse.
- Encourages **ownership of health facilities** by the community.
- Improves **patient satisfaction** and quality of care.
- Fosters **collaboration** between government, health staff, and the public.

Challenges Faced by RKS

- Irregular meetings or poor participation.
- Limited community awareness of RKS roles.
- Inadequate training for members.
- Delayed fund release or limited resources in some states.

Conclusion

Rogi Kalyan Samitis are an effective model for **decentralized, participatory health governance**. By involving community members and local stakeholders, RKS strengthens public health facilities, ensures better patient care, and builds trust between citizens and the health system.

MULTIPLE CHOICE QUESTIONS

1) NRHM was launched by Government of India in

a) 2004

b) 2005

c) 2006

d) 2007

2) RKS stands for

a) Rogi Kalyan Samiti

b) Rural Kalyan Samiti

c) Ragi Kalyan Samiti

d) Resting Kalyan Samiti

3) Promote to community participation is the objective of

a) VHND

b) RKS

c) NRHM

d) None of the above

Answers: 1) b) 2005, 2) a) Rogi Kalyan Samiti, 3) a) VHND

SHORT ANSWER QUESTIONS WITH MODEL ANSWER

1) What are the objectives of VHND?

Answer: Objectives of VHND

- Deliver **integrated health and nutrition services** to the rural population.
- **Increase awareness** about health, hygiene, and nutrition practices.
- Promote **community participation** in health and development programs.
- Improve access to **preventive and promotive** healthcare services.
- Track and monitor **nutritional and health status** of women and children.

2) What is the structure and composition of RKS?

Answer: Structure and Composition of RKS

Each Rogi Kalyan Samiti functions as a **registered society** and typically includes:

- **Chairperson**: Often the **District Collector** or a local elected representative (MLA/MP/Panchayat head).
- **Member Secretary**: The **Medical Officer In-Charge** of the health facility.
- Other members:
  - Local government representatives
  - Members from NGOs/voluntary groups
  - Local community leaders

SUMMARY

The **Hygiene-I** module provides a foundational understanding of hygiene and its role in individual and public health. Hygiene is defined as the set of practices and conditions that help to maintain health and prevent the spread of diseases. This unit covers various dimensions of hygiene, including **personal, community, medical, and culinary hygiene**. Personal hygiene involves individual practices such as bathing, oral care, handwashing, and grooming that help prevent infections. Community hygiene refers to the collective responsibility of maintaining cleanliness in shared environments like streets, public toilets, and

marketplaces. Medical hygiene focuses on the practices followed in healthcare settings to prevent hospital-acquired infections, including sterilization, use of personal protective equipment (PPE), and waste disposal. Culinary hygiene deals with safe food handling, preparation, and storage to prevent foodborne illnesses.

The syllabus also introduces the **WASH programme**, which stands for **Water, Sanitation, and Hygiene**. This global public health initiative emphasizes the importance of clean water supply, improved sanitation facilities, and hygiene education, particularly in low-resource settings. The WASH programme plays a crucial role in preventing diseases such as diarrhea, cholera, and other waterborne illnesses, especially among children and vulnerable populations.

Further, the syllabus focuses on **rural community health systems** and their grassroots implementation. The **Village Health, Sanitation, and Nutrition Committee (VHSNC)** is a key community-level institution responsible for planning and monitoring health and sanitation activities in villages. It ensures community participation, identifies local health issues, and works with health workers to implement government schemes. The **Accredited Social Health Activist (ASHA)** is another vital component of the rural health delivery system. ASHAs are trained female health workers who serve as the link between the community and the public health system, offering services like maternal and child health care, immunization support, and disease awareness.

Additionally, the syllabus covers important rural health initiatives such as the **Village Health and Nutrition Day (VHND)**, which is organized monthly to provide health checkups, immunization, and nutritional counseling in villages. **Rogi Kalyan Samitis (Patient Welfare Committees)** are community-led groups functioning at health facility levels, tasked with improving the quality and accountability of public health services through local management and decision-making.

Overall, this module equips learners with a comprehensive understanding of hygiene in different contexts, the role of grassroots health institutions, and the importance of participatory health governance in improving rural health outcomes.

End Of Unit Exercises

1. Define hygiene. Explain in detail the different types of hygiene, including personal, community, medical, and culinary hygiene, with suitable examples.
2. Discuss the objectives, components, and significance of the WASH (Water, Sanitation, and Hygiene) programme. How does it contribute to public health, especially in rural India?
3. What is the role of the Village Health Sanitation and Nutrition Committee (VHSNC) in promoting rural community health? Describe its structure, responsibilities, and challenges.
4. Who is an Accredited Social Health Activist (ASHA)? Discuss her role, responsibilities, and importance in the delivery of rural health services in India.
5. Write a detailed note on the Village Health and Nutrition Day (VHND). What are its objectives, activities conducted, and its impact on community health?
6. Explain the functioning and objectives of Rogi Kalyan Samitis. How do they improve the quality of health services at the grassroots level?
7. Illustrate the interrelationship between sanitation, hygiene, and disease prevention in rural communities. What measures can be taken to improve hygiene practices at the community level?
8. Describe the importance of community participation in rural health programs. How do VHSNCs and ASHAs help in strengthening this participation?

Key Words

Personal Hygiene, WASH (WAter Sanitation and Hygiene), RKS (Rogi Kalyan Samiti), NRHM (National Rural Health Mission)

References

- **MOOCs**

1. https://onlinecourses.swayam2.ac.in/aic22_ge07/preview
2. https://onlinecourses.swayam2.ac.in/ini25_hc04/preview

- **YouTube Videos**

1. https://www.youtube.com/watch?v=vAq92_ZdSaM

2. https://www.youtube.com/watch?v=example_comm_hygiene *(search SWAYAM Public Health lectures)*
3. https://iec.unicef.in/document/asha-ek-din-jindagi-ka-village-health-and-nutrition-day **(**iec.unicef.in**,** en.wikipedia.org**)**
4. https://www.youtube.com/watch?v=example_rks

- **WIKIPEDIA**

1. https://en.wikipedia.org/wiki/Sanitation
2. https://en.wikipedia.org/wiki/Health_Committee
3. https://en.wikipedia.org/wiki/Health_Committee
4. https://en.wikipedia.org/wiki/Village_Health_and_Nutrition_Day
5. https://en.wikipedia.org/wiki/Rogi_Kalyan_Samiti

- **OER**

1. World Health Organization. (2015). ***Water, sanitation, hygiene and health (WASH)***. [online] WHO. Available at: **https://www.who.int/water_sanitation_health/publications/2015-wash-health**
2. National Health Mission, India. (2017). ***Guidelines for Village Health, Sanitation and Nutrition Day (VHND)***. [online] NHM. Available at: **https://www.nhm.gov.in/images/pdf/guidelines/nrhm-guidelines/vhnd_guidelines.pdf** (**nhm.gov.in**)
3. National Health Systems Resource Centre. (2021). ***Induction Training Module for ASHA***. [online] NHSRC. Available at: **https://nhsrcindia.org/sites/default/files/2021-02/Induction-Training-Module-for-ASHA-English_0.pdf** (**nhsrcindia.org**)
4. UNICEF. (2023). ***Introducing water, sanitation, and hygiene systems strengthening***. [online] UNICEF WASH. Available at: **https://agora.unicef.org/course/view.php?id=37938** (**agora.unicef.org**)

- **REFERENCE BOOKS**

1. Park, K. (2023). *Preventive and Social Medicine*. 27th ed. Jabalpur: Banarsidas Bhanot Publishers.
2. Ghosh, B.N. (2011). *Health and Hygiene*. New Delhi: A.P.H. Publishing Corporation.

3. Chatterjee, A. and Ghosh, R. (2017). *A Textbook of Community Health Nursing-I*. New Delhi: Jaypee Brothers Medical Publishers.
4. Basavanthappa, B.T. (2008). *Community Health Nursing*. New Delhi: Jaypee Brothers Medical Publishers.
5. Gupta, P. and Menon, P.S.N. (2016). *Ghai Essential Pediatrics*. 9th ed. New Delhi: CBS Publishers & Distributors.
6. **Swachh Bharat: Swachh Vidyalaya – A National Mission**, **Publisher**: Ministry of Education, Government of India
7. **SOP on WASH in Schools, Publisher**: Department of School Education & Literacy
8. **Kayakalp Initiative – Implementation Guidelines, Publisher**: National Health Mission (NHM)
9. **Menstrual Hygiene Management Brochure, Publisher**: Swachh Bharat Mission (Gramin)
10. **Swachh Swasth Sarvatra Guidelines, Publisher**: National Health Mission (NHM)
11. **Swachh Bharat Mission – Grameen Phase II, Publisher**: Ministry of Jal Shakti

UNIT 02-04: HYGIENE-II

LEARNING OBJECTIVES

After successful completion of this unit, you will be able to

- Explain the concept of community and personal hygiene.
- Analyze the role of media in hygiene.
- Explain the Indian Hygiene Policy.
- Evaluate the concept of national programs of hygiene.

INTRODUCTION

Hygiene is a fundamental component of public health and personal well-being. In the context of modern society, hygiene extends beyond individual practices to include collective efforts in maintaining cleanliness and health standards in shared environments. **Hygiene-II** focuses on two key areas: **community and personal hygiene**, and **public health awareness through digital media**. Community hygiene refers to the organized efforts to promote health and prevent disease in public spaces through effective waste management, clean water supply, and proper sanitation facilities. Personal hygiene, on the other hand, involves daily practices such as hand washing, bathing, and oral care, which are essential for individual health.

A major concern in densely populated and urbanizing areas is **environmental sanitation**, which deals with the cleanliness and safety of public places such as markets, streets, transportation hubs, and public toilets. Lack of proper sanitation in such areas contributes to the spread of communicable diseases and undermines public health systems. Promoting sanitation in public spaces requires collaborative governance, community participation, and awareness.

To enhance awareness and citizen participation, the **Government of India** has developed several mobile applications that serve as public health communication tools. These apps aim to educate users, provide real-time health updates, and assist in disease prevention and control. Key examples include the **National Health Portal (NHP)** app, which offers access to verified health information; the **Swasth Bharat** app, which promotes health education and behavior change; **India Fights Dengue**, which provides alerts and preventive measures for vector-

borne diseases; and **Aarogya Setu**, which was widely used during the COVID-19 pandemic for contact tracing and self-assessment.

Together, these initiatives reflect the evolving nature of health promotion in India, combining traditional hygiene practices with modern digital tools to build healthier communities and foster an informed citizenry.

02-04-01: Community and Personal Hygiene

Introduction to Community and Personal Hygiene

Hygiene refers to practices and conditions that help maintain health and prevent the spread of diseases. It plays a vital role in promoting **individual well-being** and ensuring **public health safety**.

Hygiene is generally categorized into two main types:

1. Personal Hygiene

Personal hygiene involves the daily habits and practices that individuals follow to keep their body clean and healthy. It includes activities such as:

- Regular **bathing**
- **Handwashing** before meals and after using the toilet
- **Oral hygiene** (brushing teeth)
- Wearing **clean clothes**
- **Menstrual hygiene** for women and girls
- **Hair and nail care**

Practicing personal hygiene helps in:

- Preventing infections and diseases like diarrhoea, skin infections, flu, etc.
- Boosting self-confidence and social acceptance
- Maintaining overall physical and mental health

2. Community Hygiene

Community hygiene refers to the collective efforts of a community to maintain a clean and healthy living environment. It includes:

- **Proper waste disposal** and sewage management
- **Clean drinking water supply**
- **Sanitation facilities** like public toilets
- **Vector control** (preventing mosquito breeding, etc.)
- Public awareness on hygiene practices

3) Good community hygiene helps in:

- Controlling the spread of communicable diseases
- Reducing environmental pollution
- Ensuring a healthy and safe habitat for all residents

Importance of Hygiene

- Prevents illness and improves quality of life
- Reduces healthcare costs and disease outbreaks
- Encourages social responsibility and environmental care
- Supports development goals, especially in rural and low-income areas

Section text starts here with detail elaboration of the concepts to be covered from the syllabus.

MULTIPLE CHOICE QUESTIONS

1) Which of the following is not the activity of personal hygiene?

a) Regular bathing

b) Hand washing

c) Oral Hygiene

d) None of the above

2) Community Hygiene does not includes

a) Clean drinking water

b) Sanitation facilities

c) Hair and nail care

d) Vector control

3) Hygiene plays a vital role in

b) Individual well-being

c) Public Health Safety

d) Both a and b

e) None of the above

Answers: 1) d) None of the above**, 2) c)** Hair and Nail Care **3) c)** Both a and b

02-04-02: ENVIRONMENTAL SANITATION AND SANITATION IN PUBLIC PLACES

1. Environmental Sanitation

Definition:

Environmental sanitation is the practice of keeping our surroundings clean and healthy to prevent disease and promote well-being. It involves managing all the factors in the environment that can potentially affect health.

Key Components:

1. **Safe Disposal of Human Waste:**
- Proper toilets and sewage systems
- Avoiding open defecation

2. **Solid Waste Management:**
- Collection, segregation, recycling, and disposal of garbage
- Reducing plastic and non-biodegradable waste

3. **Wastewater Management:**
- Treatment and safe discharge of greywater and sewage
- Preventing waterlogging and stagnant water

4. **Clean Water Supply:**
- Access to safe, potable water for drinking and cooking
- Protecting water sources from contamination

5. **Vector Control:**
- Managing disease carriers like mosquitoes, flies, and rodents
- Using insecticide spraying, covering water containers, etc.

6. **Food Sanitation:**
- Safe handling, preparation, and storage of food
- Regular checks in markets and food stalls

7. **Environmental Cleanliness:**
- Clean streets, public places, and surroundings
- Proper drainage systems

Importance:

- Reduces risk of diseases like cholera, diarrhea, malaria, and typhoid
- Improves overall health and life expectancy
- Enhances productivity and learning, especially in children
- Promotes dignity and safety, particularly for women and girls
- Protects the environment and natural resources

Examples of Environmental Sanitation Practices:

- Building toilets under the **Swachh Bharat Abhiyan** in India

- Community clean-up drives in rural or urban areas
- Installation of water filtration systems in schools or public places
- Proper garbage disposal bins in neighbourhoods

2. Sanitation in Public Places

Definition:

Sanitation in public places refers to the maintenance of cleanliness, hygiene, and proper waste disposal in areas used by the general public. These include streets, markets, parks, bus stops, railway stations, schools, hospitals, and other public facilities.

Key Aspects of Public Place Sanitation:

1. **Public Toilets:**
   - Sufficient number of clean and accessible toilets
   - Separate facilities for men, women, and people with disabilities
2. **Waste Disposal:**
   - Availability of dustbins for wet and dry waste
   - Regular collection and proper disposal of garbage
3. **Street Cleaning:**
   - Daily sweeping and washing of roads and footpaths
   - Removal of litter and debris from public areas
4. **Drainage and Water Management:**
   - Clean and covered drains to prevent water stagnation
   - Regular maintenance to avoid overflow and blockage
5. **Food Safety in Public Areas:**
   - Cleanliness around food stalls, markets, and eateries
   - Health checks and hygiene training for food vendors
6. **Awareness and Signage:**
   - Informational signs promoting hygiene
   - Public awareness campaigns to discourage littering and spitting

Common Problems in Public Place Sanitation:

- Littering and lack of civic sense
- Insufficient or poorly maintained public toilets
- Overflowing garbage bins

- Open urination and defecation
- Blocked drains and waterlogging
- Inadequate cleaning staff and infrastructure

Solutions and Improvements:

- **Swachh Bharat Mission**: A national campaign in India to improve cleanliness and sanitation
- **Smart Bins and Waste Segregation**: Use of technology for better waste management
- **Public-Private Partnerships (PPP)**: Involving private companies in maintenance
- **Strict Enforcement**: Fines and penalties for littering and spitting
- **Community Engagement**: Encouraging local groups to adopt and maintain public areas

Why It Matters:

- Prevents spread of diseases
- Improves public health and well-being
- Boosts tourism and local business
- Enhances the image and livability of cities
- Ensures dignity, especially for women, children, and the elderly

MULTIPLE CHOICE QUESTIONS

1) Swachh Bharat Mission aims for

e) To improve cleanliness and sanitation in India

f) Develop technology for better waste management

g) To improve health sector

h) To encourage the local groups for sanitation

2) Which of the following are key aspects of public place sanitation?

a) Public Toilets

b) Waste Disposal

c) Street Cleaning

d) All of the above

3) Environmental sanitation is the practice of keeping our ------- clean and healthy

a) Body

b) Surrounding

c) Home

d) Office

SHORT ANSWER QUESTIONS WITH MODEL ANSWER

1) What are Common Problems in Public Place Sanitation?

Answer: Common Problems in Public Place Sanitation:

- Littering and lack of civic sense
- Insufficient or poorly maintained public toilets
- Overflowing garbage bins
- Open urination and defecation
- Blocked drains and waterlogging
- Inadequate cleaning staff and infrastructure

2) What is the importance of environmental hygiene?

Answer: Importance:

- Reduces risk of diseases like cholera, diarrhea, malaria, and typhoid
- Improves overall health and life expectancy
- Enhances productivity and learning, especially in children
- Promotes dignity and safety, particularly for women and girls
- Protects the environment and natural resources

02-04-03: PUBLIC AWARENESS THROUGH DIGITAL MEDIA

Public Awareness through Digital Media

What It Means:

Using digital platforms like social media, websites, mobile apps, and online videos to inform, educate, and influence the public on important issues—such as sanitation, hygiene, and environmental cleanliness.

Popular Digital Media Channels:

1. **Social Media Platforms:**

- **Facebook, Instagram, Twitter, YouTube, WhatsApp, TikTok**
- Used for sharing infographics, videos, reels, and awareness messages
- Can quickly reach a large audience and go viral

2. **Government Websites & Portals:**

- Official updates, sanitation campaigns, and online complaint systems

3. **Mobile Apps:**

- Apps like "Swachhata App" in India allow people to report sanitation issues directly

4. **Digital Billboards & Displays:**

- Found in bus stands, railway stations, airports, and public buildings

5. **Online Campaigns & Hashtags:**

- Campaigns like **#SwachhBharat**, **#CleanIndia**, or **#KeepItClean**
- Encourage people to participate, share, and spread messages

Benefits of Digital Awareness Campaigns:

- **Wide Reach:** Even remote areas are increasingly connected to mobile internet
- **Low Cost:** Much cheaper than traditional media (TV, radio, print)
- **Interactive:** People can engage, comment, like, share, and spread the message
- **Real-Time Updates:** Instant alerts or reminders during health emergencies
- **Targeted Messaging:** Ads and posts can be tailored for specific age groups, regions, or interests

Examples of Digital Awareness in Action:

- Animated videos showing the importance of handwashing
- Influencers promoting hygiene practices on Instagram
- YouTube ads explaining the need to use public toilets
- Government tweets reminding people to keep their surroundings clean
- Facebook groups organizing local clean-up drives

How to Make Digital Campaigns Effective:

- Use **simple language** and **eye-catching visuals**
- Include **real-life stories** and **before-after photos**
- Collaborate with **celebrities, influencers, and NGOs**
- Make it **shareable** – encourage challenges, hashtags, or competitions
- Provide **links or helplines** for people to take action.
-

Introduction to Mobile Apps of the Government of India

What Are Government Mobile Apps?

Government mobile apps are digital tools developed by various ministries and departments of the Government of India. These apps are designed to offer **citizen-centric services**, spread **awareness**, improve **governance**, and make public services **more accessible and transparent**—all through smartphones.

Objectives:

- **Ease of access** to government services and schemes
- **Promote transparency** and reduce red tape
- **Improve communication** between the government and citizens
- **Enable participation** in governance and development initiatives
- **Enhance digital literacy and digital governance**

Popular Government Apps in India:

(Table: 02-05. Popular Government Apps in India**)**

App Name	Purpose
UMANG	One-stop app for over 1,200 government services (EPFO, PAN, gas booking, etc.)
Aarogya Setu	COVID-19 contact tracing and health updates
mParivahan	Access to digital driving licenses and vehicle documents
DigiLocker	Store and access digital documents like Aadhaar, marksheets, licenses
BHIM	UPI-based digital payments promoted by NPCI and the government
Swachhata App	Report civic issues like garbage dumps, unclean areas, etc.
MyGov	Platform for citizen engagement, feedback, and participation in policies
ePathshala	Digital textbooks and learning materials for students and teachers
PM-Kisan App	Information and status of direct benefit transfer to farmers

Benefits of Using These Apps:

- Available 24/7 — anywhere, anytime

- Saves time by reducing the need to visit government offices
- Promotes paperless and contactless services
- Empowers citizens with accurate information
- Encourages digital and financial inclusion

Conclusion:

Government mobile apps are playing a key role in building a **Digital India** by making services faster, easier, and more transparent. They bridge the gap between citizens and government, bringing governance to the palm of every Indian.

1. NHP – National Health Portal Mobile App

(Figure: 02-18, National health Portal Mobile App- NHP**)**

(**Source:** National Health Portal on X)

What is NHP?

The **National Health Portal (NHP)** is an initiative by the **Ministry of Health and Family Welfare**, Government of India. It aims to provide **reliable, accessible, and up-to-date health information** to Indian citizens in multiple languages.

The **NHP Mobile App** brings this platform to smartphones, making health information and services available on-the-go.

Objectives of the NHP App:

- To **empower citizens** with accurate health-related information
- To promote **health literacy** and encourage preventive healthcare

- To offer **one-stop access** to various health services and schemes
- To help people make **informed health decisions**

Key Features of the NHP App:

1. **Health Information:**
- Trusted content on diseases, symptoms, causes, and prevention
- Information about healthy living, nutrition, and lifestyle tips
2. **Directory of Hospitals and Doctors:**
- Search nearby government hospitals, blood banks, and healthcare providers
3. **List of Government Health Schemes:**
- Details about programs like Ayushman Bharat, Janani Suraksha Yojana, etc.
4. **Emergency Numbers:**
- Quick access to ambulance, women's helpline, disaster helpline, and more
5. **Multilingual Support:**
- Available in **6 languages** including Hindi and English for wider reach
6. **Awareness Updates:**
- Notifications and alerts on health campaigns, vaccinations, and outbreaks

Who Can Use It?

- General public
- Students and health workers
- Doctors and medical professionals
- Policy makers and NGOs

Why It Matters:

- Encourages preventive healthcare
- Reduces misinformation about diseases and treatments
- Supports health services in rural and urban areas alike
- A step towards **Digital Health Mission** under **Digital India**

2. Swasth Bharat Mobile App

What is Swasth Bharat App?

The **Swasth Bharat Mobile App** is an initiative by the **Ministry of Health and Family Welfare, Government of India**. It was launched to create **awareness about health and hygiene** and to encourage **healthy habits** among the Indian population.

This app supports the broader vision of a **healthy and disease-free India** under the **Swasth Bharat (Healthy India)** mission.

Objectives:

- To provide **authentic health information** to citizens
- To **promote preventive healthcare** and healthy lifestyles
- To support national health programs through public awareness
- To act as a **bridge between the government and the people** for health-related updates

Key Features:

1. **Daily Health Tips:**
- Easy-to-understand tips on nutrition, fitness, hygiene, and mental well-being
2. **Information on Common Diseases:**
- Details on symptoms, prevention, and treatment of common illnesses
3. **News and Updates:**
- Latest information on national health programs and schemes
4. **Multilingual Support:**
- Available in different Indian languages to reach all sections of society
5. **Interactive Interface:**
- User-friendly design with videos, infographics, and quizzes for better engagement
6. **Support for Campaigns:**
- Promotes initiatives like **Clean India (Swachh Bharat)**, **Fit India Movement**, and **Ayushman Bharat**

Benefits:

- Empowers users with knowledge to take care of their health
- Promotes **self-care** and **preventive health practices**
- Reduces dependence on unreliable sources of health information
- Helps in creating a **health-conscious society**

Conclusion:

The **Swasth Bharat App** is a step toward making health education **accessible, interactive, and mobile-friendly**. It supports the vision of a **Digitally Healthy India**, where awareness and action go hand in hand.

3. India Fights Dengue – Mobile App by the Government of India

(Figure: 02-19, India Fights Dengue App**)**

(**Source:** MoHFW India's Video)

What is "India Fights Dengue"?

"India Fights Dengue" is a mobile application launched by the **Ministry of Health and Family Welfare**, Government of India. It is designed to **spread awareness**, provide **real-time information**, and encourage **community participation** in the fight against **dengue fever**, a mosquito-borne viral disease.

Objectives of the App:

- To educate citizens about **dengue prevention, symptoms, and treatment**
- To promote **community-level participation** in controlling mosquito breeding
- To offer **easy access to help and support** for dengue-related issues
- To support the government's efforts in **vector-borne disease control**

Key Features of the App:

1. **Information on Dengue:**

- Causes, symptoms, prevention methods, and treatment guidelines
- Myths and facts about dengue to bust misinformation

2. **Breeding Spot Reporting:**

- Citizens can report **mosquito breeding sites** in their locality through the app
- Helps authorities take quick action in high-risk areas

3. **Do's and Don'ts:**

- Easy checklists on what to do and avoid to protect against dengue

4. **Hospital and Lab Directory:**

- Find nearby hospitals and diagnostic labs for dengue testing and treatment

5. **Push Notifications & Alerts:**

- Get alerts during dengue outbreaks or in high-risk seasons (usually post-monsoon)

6. **Multilingual Interface:**

- Designed to reach a diverse audience across India in multiple languages

Why This App is Important:

- **Empowers citizens** with actionable information
- Reduces dengue cases through **early reporting and prevention**
- Supports **Digital India** and **public health infrastructure**
- Enhances **public participation** in fighting vector-borne diseases

Conclusion:

The **India Fights Dengue** app is a powerful digital tool that brings health awareness and public action together. By educating people and making it easy to report breeding sites, the app plays a key role in **controlling dengue outbreaks** and ensuring a healthier India.

4. Aarogya Setu – Mobile App by the Government of India

(Figure: 02-20, Aarogya Setu Mobile App**)**

(Source: Aarogya Setu: Transcending Digital Health Care)

What is Aarogya Setu?

Aarogya Setu is a mobile application launched by the **Ministry of Health and Family Welfare** and developed by the **Government of India**. It was introduced in **April 2020** during the **COVID-19 pandemic** as a **contact tracing, symptom checking, and health status app** to help control the spread of the virus.

The name "Aarogya Setu" means **"Bridge to Health.**

Objectives of the App:

- **Track and reduce the spread of COVID-19**
- Provide users with **real-time updates** on risk levels in their area
- Encourage **self-assessment** and health awareness
- Assist the government in **pandemic response and planning**

Key Features:

1. **Contact Tracing:**

- Uses **Bluetooth** and **GPS** to track users' interactions with others
- Alerts users if they have come in close contact with someone who tested positive

2. **Self-Assessment Tool:**

- Users can check their symptoms through a short questionnaire
- Provides guidance based on their risk level

3. **COVID-19 Updates:**

- Real-time stats on COVID-19 cases across India and in local areas
- Updates on government advisories and health tips

4. **E-Pass Integration:**

- Some states linked movement passes (e-passes) to the app during lockdown periods

5. **Multilingual Support:**

- Available in **over 10 Indian languages** to reach diverse users

6. **Information and Alerts:**

- Notifications about nearby hotspots, high-risk zones, and safety protocols

Data Privacy:

- Initially had concerns over privacy, but updates later addressed this
- Data is shared only with the Government of India for health protection
- Data is deleted after a specific time (e.g., 30 days for non-risk users)

Impact:

- Became the **fastest app in the world** to reach 50 million downloads
- Helped in early identification and isolation of COVID-19 cases
- Played a major role in India's **digital health response** during the pandemic

Conclusion:

The **Aarogya Setu app** is a successful example of how technology can support public health. It empowered citizens with information, helped track the virus, and supported the government's response. It remains a milestone in India's **Digital Health Mission** and **e-Governance initiatives**.

MULTIPLE CHOICE QUESTIONS

1) Aarogya Setu app introduced during

a) COVID-19 pandemic

b) Dengue Epidemic

c) Outbreak of Chikungunya

d) All of the above

2) NHP stands for

a) National Health Permit

b) National Health Pass

c) National Health Portal

d) National Health Policy

3) "India Fights Dengue" was launched by

a) Ministry of Home Affairs

b) Ministry of Child and Women Health Care

c) Ministry of Health and Family Welfare

d) Ministry of Communication

Answers: 1) a) COVID-19 pandemic, 2) c) National Health Portal, 3 c) Ministry of Health and Family Welfare

SHORT ANSWER QUESTIONS WITH MODEL ANSWER

1. What are the key features of key features of Swasth Bharat Mobile App?

Answer: Key Features:

1. **Daily Health Tips:**

- Easy-to-understand tips on nutrition, fitness, hygiene, and mental well-being

2. **Information on Common Diseases:**

- Details on symptoms, prevention, and treatment of common illnesses

3. **News and Updates:**

- Latest information on national health programs and schemes

4. **Multilingual Support:**

- Available in different Indian languages to reach all sections of society

5. **Interactive Interface:**

- User-friendly design with videos, infographics, and quizzes for better engagement

6. **Support for Campaigns:**

- Promotes initiatives like **Clean India (Swachh Bharat)**, **Fit India Movement**, and **Ayushman Bharat**.

2. What are the benefits of "Digital India"

Answer: Benefits of Using These Apps:

- Available 24/7 — anywhere, anytime
- Saves time by reducing the need to visit government offices
- Promotes paperless and contactless services
- Empowers citizens with accurate information
- Encourages digital and financial inclusion

SUMMARY

The concept of hygiene is central to maintaining both personal and public health. **Hygiene-II** covers the essentials of **community and personal hygiene**, with a particular focus on **environmental sanitation** and its application in **public places**. Personal hygiene involves individual practices such as bathing, handwashing, oral care, and cleanliness, which are crucial for preventing the spread of infectious diseases. In contrast, community hygiene includes collective measures such as waste disposal, sewage management, and ensuring clean water supply—all of which are essential to reducing environmental health risks in shared spaces.

A critical component of community hygiene is **environmental sanitation**, which involves the systematic management of environmental conditions that influence human health. This includes the maintenance of clean surroundings, safe public toilets, proper drainage systems, and garbage disposal, particularly in crowded public areas like railway stations, markets, schools, and bus terminals. Effective sanitation in such spaces is essential to prevent outbreaks of communicable diseases such as cholera, typhoid, and dengue, while also promoting a healthy and dignified living environment.

In recent years, **digital media** has emerged as a powerful tool in promoting hygiene awareness and health education. The **Government of India** has launched

several mobile applications to disseminate health information and encourage responsible hygiene practices. The **National Health Portal (NHP)** app provides authenticated health content and access to public health services. **Swasth Bharat** is an educational app promoting hygiene and wellness, particularly in rural and regional contexts. The **India Fights Dengue** app raises public awareness about vector-borne diseases by offering real-time updates and preventive measures. Additionally, **Aarogya Setu**, developed during the COVID-19 pandemic, serves as a digital contact tracing tool and provides health status updates to prevent disease spread.

Through the integration of traditional hygiene practices and modern digital innovations, the syllabus aims to develop a holistic understanding of hygiene in both personal and societal contexts. Learners are expected to recognize the critical role that hygiene and sanitation play in public health, and how technology can facilitate behavior change communication and community participation. Ultimately, this module equips students with the knowledge and tools to contribute to healthier environments and promote sustainable public hygiene practices.

END OF UNIT EXERCISES

1. Define community and personal hygiene. Discuss their importance in the prevention of diseases and promotion of public health. Provide relevant examples.
2. Explain the concept of environmental sanitation. What are the major challenges of maintaining sanitation in public places in India, and how can they be addressed?
3. Discuss the role of public awareness in improving hygiene and sanitation practices. How can digital media be effectively used for health education?
4. Describe the contribution of the Government of India in spreading health awareness through mobile applications. Explain the objectives and features of the following apps: NHP, Swasth Bharat, India Fights Dengue, and Aarogya Setu.
5. ‘Sanitation in public places is essential for a healthy society.’ Discuss this statement with reference to government initiatives and citizen responsibilities.

6. What is the significance of using mobile health (mHealth) technologies in India? Critically evaluate the effectiveness of mobile apps like Aarogya Setu and Swasth Bharat in disease prevention and health promotion.
7. Differentiate between personal hygiene and environmental sanitation. How do they complement each other in ensuring community health and well-being?
8. Explain the importance of integrating traditional hygiene practices with modern digital health solutions. What challenges might arise in rural and urban settings, and how can they be overcome?

KEY WORDS

Aarogya Setu App, NHP (National Health Portal), Digital India, India Fights Dengue.

REFERENCES

- **MOOCs**

1. https://onlinecourses.swayam2.ac.in/ini25_hc04/preview
2. https://onlinecourses.nptel.ac.in/noc24_hs80/preview
3. https://onlinecourses.swayam2.ac.in/cec22_ag01/preview

- **YOUTUBE VIDEOS**

1. https://www.youtube.com/watch?v=NUJMLjQf3A
2. https://www.youtube.com/watch?v=pudYlY6lRdo
3. https://www.youtube.com/watch?v=r8qd-U6zxgo
4. https://www.youtube.com/watch?v=oxubewQct3A

- **WIKIPEDIA**

1. https://en.wikipedia.org/wiki/Sanitation
2. https://en.wikipedia.org/wiki/Sanitation#Water,_sanitation_and_hygiene_(WASH)
3. https://en.wikipedia.org/wiki/Swachh_Bharat_Mission
4. https://en.wikipedia.org/wiki/Aarogya_Setu
5. https://en.wikipedia.org/wiki/Public_health#Environmental_health

- **OER**

1. World Health Organization. (2015). ***Water, sanitation, hygiene and health (WASH)***. [online] WHO. Available at: **https://www.who.int/water_sanitation_health/publications/2015-wash-health**
2. Ministry of Jal Shakti (2019). ***Swachh Bharat Mission*** guidelines. [online] GOI. Available at: **https://swachhbharatmission.gov.in**
3. National Health Mission. (2017). ***Guidelines for public sanitation and hygiene***. [online] NHM. Available at: **https://www.nhm.gov.in**
4. Food Safety and Standards Authority of India. (2022). ***Hygiene and Sanitation in Food Service Establishments***. [online] FSSAI. Available at: **https://www.fssai.gov.in**

- **REFERENCE BOOKS**

1. Park, K. (2023). *Preventive and Social Medicine*. 27th ed. Jabalpur: Banarsidas Bhanot Publishers.
2. Ghosh, B.N. (2011). *Health and Hygiene*. New Delhi: A.P.H. Publishing Corporation.
3. Chatterjee, A. and Ghosh, R. (2017). *A Textbook of Community Health Nursing-I*. New Delhi: Jaypee Brothers Medical Publishers.
4. Basavanthappa, B.T. (2008). *Community Health Nursing*. New Delhi: Jaypee Brothers Medical Publishers.
5. Gupta, P. and Menon, P.S.N. (2016). *Ghai Essential Pediatrics*. 9th ed. New Delhi: CBS Publishers & Distributors.
6. **Swachh Bharat: Swachh Vidyalaya – A National Mission**, **Publisher**: Ministry of Education, Government of India
7. **SOP on WASH in Schools, Publisher**: Department of School Education & Literacy
8. **Kayakalp Initiative – Implementation Guidelines, Publisher**: National Health Mission (NHM)
9. **Menstrual Hygiene Management Brochure, Publisher**: Swachh Bharat Mission (Gramin)

10. **Swachh Swasth Sarvatra Guidelines, Publisher**: National Health Mission (NHM)
11. **Swachh Bharat Mission – Grameen Phase II, Publisher**: Ministry of Jal Shakti
12. **Digital India Programme Brochure, Publisher**: Ministry of Electronics and Information Technology
13. **Preparing North East for Digital India, Publisher** MeiY
14. **IT (Intermediary Guidelines and Digital Media Ethics Code) Rules, 2021,** *Publisher*: Ministry of Information and Broadcasting (MB).

School of Sciences

Yashwantrao Chavan Maharashtra Open University,

Nashik – 422222

FEEDBACK SHEET FOR THE STUDENT

Dear Student,

You have gone through this book, it is time for you to do some thinking for us. Please answer the following questions sincerely. Your response will help us to analyse our performance and make the future editions of this book more useful. Your response will be completely confidential and will in no way affect your examination results. Your suggestions will receive prompt attention from us.

Please submit your feedback online at this QR Code or at following link

https://forms.gle/rpDib9sy5b8JEisQ9

or email at: director.ast@ycmou.ac.in

or send this filled "Feedback Sheet" by post to above address.

(Please tick the appropriate box)

Pl. write your Program Code: Course Code & Name:

Style

01. Do you feel that this book enables you to learn the subject independently without any help from others?

Yes No **Not Sure**

02. Do you feel the following sections in this book serve their purpose? Write the appropriate code in the boxes.

Code 1 for "Serve the purpose fully"

Code 2 for "Serve the purpose partially"

Code 3 for "Do not serve any purpose"

Code 4 for "Purpose is not clear"

Warming up ☐ Check Point ☐ Answer to Check Points ☐

To Begin With	☐	Summary	☐	References	☐
Objectives	☐	Key Words	☐		

03. Do you feel the following sections or features, if included, will enhance self-learning and reduce help from others?

	Yes	No	Not Sure
Index	☐	☐	☐
Glossary	☐	☐	☐
List of "Important Terms Introduced"	☐	☐	☐
Two Colour Printing	☐	☐	☐

Content

04. How will you rate your understanding of the contents of this Book?

☐ **Very Bad** ☐ **Bad** ☐ **Average** ☐ **Good** ☐ **Excellent**

05. How will you rate the language used in this Book?

☐ **Very Simple** ☐ **Simple** ☐ **Average** ☐ **Complicated** ☐ **Extremely Complicated**

06. Whether the Syllabus and content of book complement to each other?

☐ **Yes** ☐ **No** ☐ **Not Sure**

07. Which Topics you find most easy to understand in this book?

Sr. No.	Topic Name	Page No.

08. Which Topics you find most difficult to understand in this book?

Sr. No.	Topic Name	Page No.

09. List the difficult topics you encountered in this Book. Also try to suggest how they can be improved.

Use the following codes:

Code 1 for “Simplify Text”

Code 2 for “Add Illustrative Figures”

Code 3 for “Provide Audio-Vision (Audio Cassettes with companion Book)”

Code 4 for “Special emphasis on this topic in counseling”

Sr. No.	Topic Name	Page No.	Required Action Code

10. List the errors which you might have encountered in this book.

Sr. No.	Page No.	Line No.	Errors	Possible Corrections

11. Based on your experience, how would you place the components of distance learning for their effectiveness?

Use the following code.

Code 1 for “Most Effective” Code 3 for “Average” Code 5 for “Least Effective”

Code 2 for “Effective” Code 4 for “less Effective”

Printed Book	☐	Counseling	☐	Lab Journal	☐
Audio Lectures	☐	Home Assignment	☐	YouTube Videos	☐
Video Lectures	☐	Lab-Experiment	☐	Online Counseling	☐

12. Give your overall rating to this book?

1. ☆ 2. ☆☆ 3. ☆☆☆ 4. ☆☆☆☆ 5. ☆☆☆☆☆

13. Any additional suggestions:

Thank you for your co-operation!