UNIVERSITY GRANTS COMMISSION

Physical Education Code: 47

Unit–VI

Health Education and Physical Education

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Sub Unit – I

Health- its objectives and spectrum. Health education, its importance and principles . Role of genetics and environment in achieving health. Health-related physical fitness.

6.1.1 Definition of Health

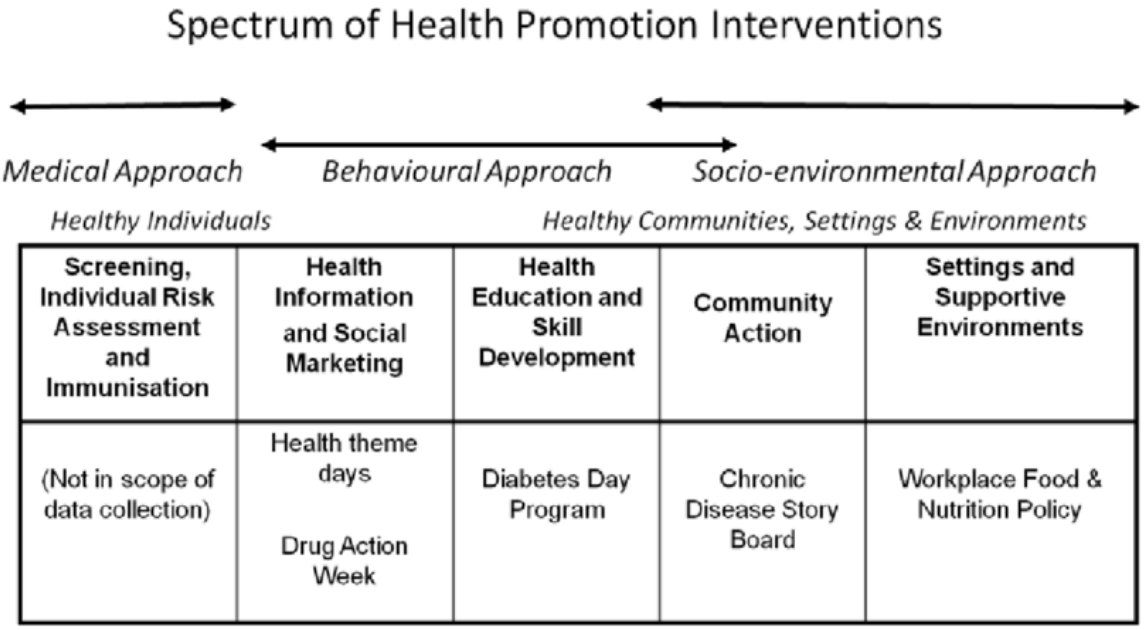
Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity. The enjoyment of the highest attainable standard of health is one of the fundamental rights of every human being without distinction of race, religion, political belief, economic or social condition. The health of all peoples is fundamental to the attainment of peace and security and is dependent on the fullest co-operation of individuals and States. The achievement of any State in the promotion and protection of health is of value to all. Unequal development in different countries in the promotion of health and control of diseases, especially communicable disease, is a common danger. Healthy development of the child is of basic importance; the ability to live harmoniously in a changing total environment is essential to such development. The extension to all peoples of the benefits of medical, psychological and related knowledge is essential to the fullest attainment of health. Informed opinion and active co-operation on the part of the public are of the utmost importance in the improvement of the health of the people. Governments have a responsibility for the health of their peoples which can be fulfilled only by the provision of adequate health and social measures. - WHO

6.1.2 Objectives of Health:

• disseminate concepts sound health knowledge in the community.
• enable people to identify their health problems and needs.
• help people in solving their health problems using their potential.
• Build normal health trends.
• establish proper health behavior and the wrong change to true healthy behavior.
• Improve the health of the individual and community level.
• reduce the incidence of disease.
• Reduction of disabilities and deaths.
• Improve the quality of life for the individual and society

Everyone needs health education to young and old, men and women, educated and illiterate as it works to improve the awareness and raise the level of interest and awareness among all segments of society. There is no limit to the topics that can be addressed by the health cultured, as can address any topic related to health, provided that the subject commensurate with the individual's need or targeted health education group.

6.1.3 Spectrum of Health



Screening, Individual Risk Assessment and Immunisation	Health Information and Social Marketing	Health Education and Skill Development	Community Action	Settings and Supportive Environments
(Not in scope of data collection)	Health theme days Drug Action Week	Diabetes Day Program	Chronic Disease Story Board	Workplace Food & Nutrition Policy

6.1.4 What is Health Education?

Health education is a profession of educating people about health. Areas within this profession encompass environmental health, physical health, social health, emotional health, intellectual health, and spiritual health, as well as sexual and reproductive health education. Health education can be defined as the principle by which individuals and groups of people learn to behave in a manner conducive to the promotion, maintenance, or restoration of health. However, as there are multiple definitions of health, there are also multiple definitions of health education. In America, the Joint Committee on Health Education and Promotion Terminology of 2001 defined Health Education as "any combination of planned learning experiences based on sound theories that provide individuals, groups, and communities the opportunity to acquire information and the skills needed to make quality health decisions." The World Health Organization defined Health Education as "compris[ing] [of] consciously constructed opportunities for learning involving some form of communication designed to improve health literacy, including improving knowledge, and developing life skills which are conducive to individual and community health."

6.1.5 Importance of Health Education

Community health education looks at the health of a community as a whole, seeking to identify health issues and trends within a population and work with stakeholders to find solutions to these concerns.

The importance of health education impacts many areas of wellness within a community, including:

- Chronic disease awareness and prevention
- Maternal and infant health
- Tobacco use and substance abuse
- Injury and violence prevention
- Mental and behavioral health
- Nutrition, exercise and obesity prevention

Community health educators work with public health departments, schools, government offices and even local nonprofits to design educational programs and other resources to address a community's specific needs.

Health education and preventive services offer the necessary support for the individuals of a community in maintaining their health and well-being. To assist in this purpose, health clinics provide various services and initiatives mask aimed at educating the individuals about their personal health.

The World Health Organization (WHO) defines health education as "comprise(ing) consciously constructed opportunities for learning and involving some form of communication designed to improve health literacy, including improving knowledge, and developing life skills, which are conducive to individual and community health."

Health education utilizes several of the effective educational tools available for spreading awareness among people regarding their personal health. In our community health care center, a team of medical professionals and support staff offers basic information to the patients concerning their health and those in their family. Health education relies on the principle of "prevention is better than cure" and therefore makes aware the patients about their overall health status and measures to maintain and improve it.

The importance of health education and preventive services lies in its valuable contribution to the education of the community. By adopting effective educational tools and resources available at our disposal, our health care providers aid in propagating the message of good health. Our holistic approach to health education extends to all the areas of wellness such as physical, psychological, social, and spiritual.

Efficient programs implemented through health education certainly influence the overall community, thereby prompting the individuals to become more conscious regarding their personal health. Some of the key services offered by health education and preventive services are:

• Conducting presentations and classes for patients covering a range of topics like sexual and reproductive health, disease prevention, general well-being, stress management, and nutrition.

• Special awareness programs for patients diagnosed with diabetes and hypertension that includes the numerous ways to cope with having the disease as well as in minimizing its effects on the body.

• Mental health initiatives for college students and elders that comprise of detailed presentations and exercises designed to boost the psychological well-being of an individual.

• Alcohol and drug prevention programs, offering a comprehensive review of the harmful effects in relying on such addictive substances. It also includes counseling and awareness programs aimed at vulnerable individuals like school and college students.

• Health education services to pregnant women pertaining to their pregnancy and the health of the infant.

6.1.6 Principles of Health Education

1. Credibility

1. It is the degree to which the message to be communicated is perceived as trustworthy by the receiver
2. Good health education must be consistent and compatible with scientific knowledge and also with the local culture, educational system and social goals

2. Interest

1. Health teaching should be related to the interests of the people
2. Health programme should be based on the **"FELT NEEDS"**, so that it becomes "people's programme

3. Felt needs are the real health needs of the people, that is needs the people feel about themselves

3. Participation

1. A high degree of participation tends to create a sense of involvement, personal acceptance and decision –making
2. It provides maximum feedback
3. The Alma- Ata Declaration states "The people have a right and duty to participate individually and collectively in the planning and implementation of their health care"
4. Health programmers are unlikely to succeed if community participation is not an integral part

4. Motivation

1. In every person, there is a fundamental desire to learn. Awakening this desire is called motivation
2. Two types of motives
    1. primary motives-are driving forces initiating people into action
    2. secondary motives –are created by outside forces or incentives
3. Need for incentives is a first step in learning to change
4. Incentives may be positive or negative
5. Main aim of motivation is to change behavior
6. Motivation is contagious: one motivated person may spread motivation throughout a group

5. Comprehension

1. Health educator must know the level of understanding, education and literacy of people to whom the teaching is directed
2. Always communicate in the language people understand .
3. Teaching should be within the mental capacity of the audience.

6. Reinforcement

1. Repetition of message at intervals is necessary
2. If the message is repeated in different ways, people are more likely to remember it.

7. Learning by doing

1. The importance of learning by doing can be best illustrated by the Chinese proverb "if I hear, I forget; if I see, I remember; if I do, I know"

8. Known to unknown

We must proceed

- "from the concrete to the abstract"
- "from the particular to the general"
- "from the simple to the more complicated"
- "from the easy to more difficult"
- "from the known to unknown"

Here health communicator uses the existing knowledge of the people as pegs on which to hang new knowledge

9. Feedback

1. The health educator can modify the elements of the system (e.g., message, channels) in the light of feedback from his audience
2. For effective communication, feedback is of paramount importance.

10. Leaders

- Leaders are agents of change and they can be made use of in health education work.
- The attributes of a leader are;
    - He understands the needs and demands of the community

- Provides proper guidance, takes the initiative, is receptive to the views and suggestions of the people;
- Identifies himself with the community;
- Selfless, honest, impartial, considerate and sincere;
- Easily accessible to the people;
- Able to control and compromise the various factors in the community;
- Possesses the requisite skill and knowledge of eliciting cooperation and achieving coordination of the various official and non-official organizations.

6.1.7 Role of genetics and environment in achieving health

Do you have the same eye and hair color as many of your family members? The same thing can happen with diseases—they can be passed down from one family member to another. The way this happens is through genes, the genetic information that you get directly from your parents. In most cases, diseases or other problems do not have one single cause. They come from a combination of your genes, your choices, and your environment. Most genes we get from our parents are copies that work the same way they do in our parents. But sometimes, a gene is not a perfect copy. Changes in genes are called mutations, and everyone has some. Some mutations work better than the original, and many make no difference at all. Some mutations cause problems. A condition that is caused by mutations in one or more genes is called a genetic disorder. There is a group of rare diseases caused by mutations in one gene at a time. These are called single-gene disorders. But most common diseases are caused by a combination of gene changes, lifestyle choices, and your environment. Mutations can be inherited from a parent to a child (“hereditary”) or they can happen during a person’s lifetime (“acquired”). Acquired mutations can be caused by environmental factors such as ultraviolet radiation from the sun. The acquired mutations you develop during your lifetime are in cells called somatic cells—the cells that make up most of your body. They may cause problems for you, such as skin cancer, but you cannot pass them to your children. Proteins do the work that builds the parts of your body and keeps it moving. When the genes that instruct the making of proteins have mutations and do not work properly, whole systems in the body can have problems. These upsets can be caused in a number of ways. A new copy of your genes is made in every new cell that your body creates throughout your life. If those copies have mistakes, this can cause problems. For example, some gene changes can make you more likely to get cancer. Your environment can also directly cause changes to DNA inside your cells. For example, the sun damages DNA in the cells that are exposed to it, and if the damage goes unrepaired, these gene changes will be copied as your body creates new cells. You might read about “a gene for” a condition. This is not quite right. When we describe genes that cause disease, we are really talking about a gene that has a genetic mutation. The gene should help create a normal, healthy state, but a mutation of that gene can cause problems. For example, everyone has a gene called CFTR, but only people with a mutation in the CFTR gene have cystic fibrosis (link is external) , a genetic disease. The cell’s system for making copies of genes is very good because it safeguards against many of the mistakes that are bound to happen as your body makes billions of new cells throughout your life. Even when your genes are not copied perfectly, they will usually still function correctly, or at least well enough that you will not notice a problem. Only a small number of mutations cause a genetic disorder. Sometimes, your body can repair the gene to help protect itself from disease. Mutations can sometimes even have a positive effect, such as resistance against disease, although this is rare. Heather and her friend, Hilary,

are like night and day. Hilary likes to play sports, while Heather would rather read a book. Hilary is tall and curvy, while Heather is short and slim. Heather is laid back and easygoing, whereas Hilary is competitive and driven. How can two people be so different? What could explain the differences between people who live in the same area?

Whether it's differences in people's physical bodies, like the height difference between Hilary and Heather, or in their personalities, like Hilary's competitiveness and Heather's easygoing nature, scientists believe that two things might contribute to making people unique. The first are **genes**, which are inherited traits encoded into a person's DNA. For example, perhaps Hilary just inherited the genes that made her tall and curvy, while Heather inherited genes that made her short and slim. The other possible contributor to differences in humans is **environment**, or the way the world acts upon a person's development. Take nutrition, for example: Hilary might be taller and curvier because she's had better nutrition, particularly when she was young, while Heather didn't get as well-balanced of a diet, and therefore, her development was stunted. So, which is correct? Do genes or environment influence how a person will turn out? Or is it down to both? Let's look closer at the way scientists view genes, environment, and the interaction of the two when it comes to human development.

During the past few years, experimental evidence has emerged to suggest that environmental factors may influence cellular proliferation attrition in an organ-specific manner. Mostly, transmission rates were significantly lower than expected. In such cases, and in disorders with no genetic background, environmental factors seem to influence and/ or cause disease onset, progression, and outcome. Traditional risk factors for breast cancer explain only a fraction of cases. Causes for trends in breast cancer incidence are not fully understood. Breast cancer incidence and mortality rates decrease with environmental conditions that promote Vitamin D synthesis in human skin including lower latitude and higher personal exposure to sunlight. Environmental factors are threats to health, and controlling them is public environmental health. They include.

• Environmental conditions favoring disease vectors (endemic and exotic vectors)
• Invasive biota (viruses, bacteria, etc), their hosts and vectors
• Environmental disruptions: floods, droughts, storms, fires, earthquakes, volcanoes
• Air quality: pollen and pollution leading to respiratory diseases or cancers
• Water quality: biotic and abiotic contaminants; integrity of water transport and treatment infrastructure
• Monitoring and management of municipal, agricultural, industrial outflows to the environment (gases, liquids, solid wastes)

A genetic syndrome is any disease that is caused by an abnormality in an individual’s genome. The abnormality can range from minor to major from a discrete mutation in a single base in the DNA of a single gene to a gross chromosome abnormality involving the addition or subtraction of an entire chromosome or set of chromosomes. A genetic disorder is an illness caused by abnormalities in genes or chromosomes. While some diseases, such as cancer, are due in part to genetic disorders, they can also be caused by environmental factors. Some types of recessive gene disorders confer an advantage in the heterozygous state in certain environments. Environmental factors such as the weather affect business interests. If a disease process is concluded to be the result of a combination of genetic and environmental factor influences, its etiological origin can be referred to as having a multifactorial pattern. Many cancers along with a plethora of other diseases, are thought to be a result of environmental triggers.

6.1.8 Health Related Physical Fitness

There are five components of health related fitness. They are heart and lung endurance or cardiovascular endurance, muscular strength, muscular endurance, flexibility, and body composition.

Heart and lung endurance or cardiovascular endurance is the ability to exercise the entire body for long periods of time. It requires a strong heart, healthy lungs, and clear blood vessels to supply the body with oxygen. Activities to improve fitness in this area include running, swimming and aerobic dance. A person must do the activity continuously for a minimum of 20 minutes within their target heart rate zone. Endurance/cardiovascular activity should be done a minimum of 3 days per week. Every other day is preferable. The mile or the pacer will measure fitness testing in this area.

Muscular Strength is the amount of force you can put forth with your muscles. It is often measured by how much weight you can lift. People with strength have fewer problems with backaches and can carry out their daily tasks efficiently. Examples of muscular strength include push-ups, weight lifting heavy weight with few repetitions, and pull-ups. Fitness testing will be measured by doing push-ups.

Muscular Endurance is the ability to use the muscles, which are attached to the bones, many times without getting tired. People with good muscular endurance are likely to have better posture, have fewer back problems, and be better able to resist fatigue than people who lack muscular endurance. You can improve muscular endurance by lifting weights with many repetitions or doing sit-ups. Measuring the number of sit-ups you can do correctly is used for fitness testing.

Flexibility is the ability to use your joints fully. You are flexible when the muscles are long enough and the joints are free enough to allow movement. People with good flexibility have fewer sore and injured muscles. Stretching before and after activities will help to improve flexibility. The sit-and-reach and the trunk lift are two tests used to measure flexibility.

Body Composition is the percentage of body weight that is fat compared to other body tissue, such as bone and muscle. People who have a high percentage of fat are more likely to be ill and have a higher death rate than lean people. Exercise and eating the right foods in the proper amounts can improve body composition. Body composition can be measured using an instrument called calipers, a specialized scale, or it can be calculated by using the body mass index (BMI) which uses height and weight to determine your BMI.

Sub Unit – II
Community health programme- Health appraisal & health instructions. International and national health promoting government & private agencies.

6.2.1 Definition of Community Health Programme

Community health programs are locally based education and treatment programs available typically to individuals who are living in poverty and/or do not have health insurance coverage. Community health programs are usually non-profit and seek funding through health department programs, donations, and government grants. Community-based health programs are typically found in communities where the services are needed the most, and the services are tailored to the populations of residents. Community health programs and clinics provide treatment, special clinics, education, and media campaigns that target a variety of issues affecting the health of a community. Many poor populations would have no other options for treatment without such neighborhood clinics and community health programs. Typical services include testing and treatment of **sexually transmitted diseases**; gynecological and obstetrical services; well-baby checks and immunizations; treatment of chronic diseases such as diabetes and high **blood pressure**; substance abuse programs; and general health promotion of good **nutrition** and weight management. This programme contributes to improving the health, wellbeing, and quality of life for the local community.

Programme activities:

- Reducing the threat posed by infectious diseases, contributing to reducing the risk of nosocomial infections, and creating safe environments for local people and medical professionals.
- Reducing the risk factors of non-communicable diseases and injuries and promoting a healthy lifestyle and environment.
- Empowering children and young people, with the support of their families and communities, by promoting social activities and supporting their upbringing.
- Strengthening the capacity of the local health sector by contributing to improving the accessibility and quality of medical care.

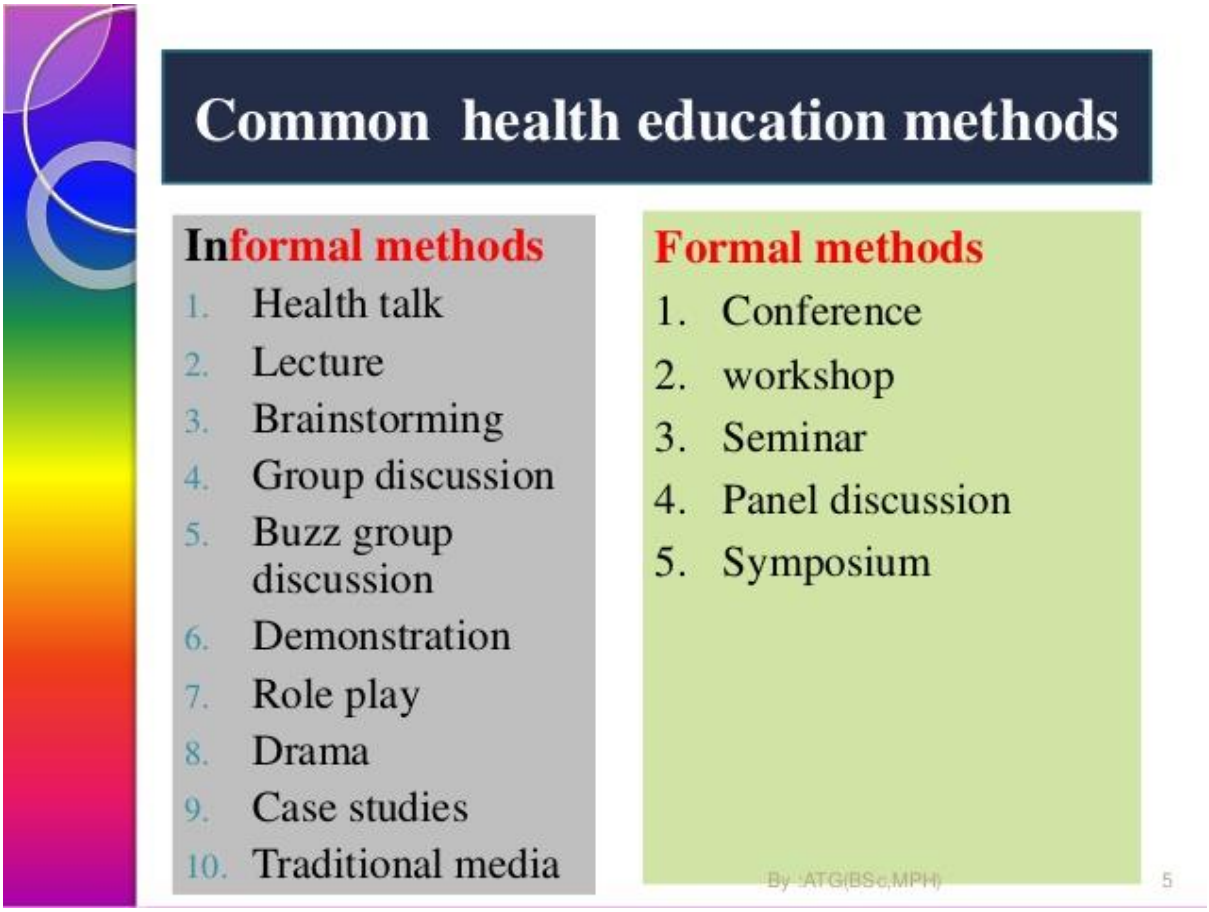
6.2.2 Health Appraisal

A health **appraisal** is an evaluation of an individual's health performed to gather information about both his current bodily fitness as well as his risk of developing various medical conditions. While a health appraisal can bear many similarities to a physical examination, it tends to place more emphasis on future medical risks than a physical traditionally does. Periodic health appraisals are often mandatory for students, and may also be offered by one's employer. Some health appraisal providers offer follow-up support services which assist individuals in controlling their risk of developing a certain medical condition in the future. Often, a health appraisal incorporates many of the same steps as a typical physical examination. For instance, during an appraisal a physician may weigh and measure a patient, check his vital signs, examine his ears, and observe his reflexes. The factor that typically sets an appraisal apart from a physical, however, is that while a physical tends to focus on a patient's current health, an appraisal seeks to determine the patient's risk of developing medical conditions in the future. This risk is usually determined by analyzing a patient's physical exam results in combination with a detailed questionnaire concerning his personal and family **medical history**, his behaviors, and his willingness to take an active role in maintaining his health. In many schools, students are required to receive a periodic health appraisal. Gathering information about a student's health can contribute to that student's educational success by reducing the

absenteeism and poor performance which can be caused by emerging medical conditions. Some **health care providers** also offer health appraisals to insured individuals. In this case, an appraisal benefits the individual by allowing him to take steps to limit his health risks. When the individual addresses his health issues before they develop into significant problems, the insurance provider in turn avoids the costly claims which can accompany chronic illnesses.

6.2.3 Health Instructions

Instruction given by health professional such as doctors, scientist, nurses and also teachers in school time to time to the students for developing and maintaining the good health is called school health instruction. That may be done before starting any season and after completing a lesson in a class by the teachers. Furthermore health instruction may be given by following methods:



Following health instructions are necessary to all students:

1. Make Sure Your Child Is Up to Date on All Vaccines:

Vaccines are the best way to prevent the spread of 16 different diseases, and during the pandemic there has been a steep drop in the number of children who are receiving all the vaccines they need on time. Since there is not yet a vaccine for COVID-19, it is critical to do everything possible to prevent other diseases. See your pediatrician to make sure your child has all the immunizations they need, including the seasonal flu vaccine. Everyone in your family should get it by the end of October.

2. Teach Your Child Proper Hand Washing: Hand washing is one of the most important ways we can prevent the spread of illness in the classroom and elsewhere. When kids come in contact with germs, they can easily spread those germs—especially if they rub their eyes or scratch their nose. Then, it's only a matter of time until the rest of the family is sick as well. But frequent hand washing can help slow this spread of germs. What's more, hand washing-along with wearing masks and social distancing—is the best way to stop the spread of the coronavirus. By teaching your kids how to wash their hands properly—and to especially wash after blowing their nose, using the bathroom, and before eating—you can help them reduce the risk of getting sick, and keep them from infecting others if they catch an infection or illness. Teaching Hand Washing to Preschoolers

3. Help the Immune System Function Well: There is no proven way to "boost" the immune system, but it is important to keep kids' bodies healthy so their immune systems can work properly. Getting enough sleep, maintaining a healthy diet, managing stress, exercising, making time to laugh, and emphasizing hand washing can help reduce your child's risk of getting colds, flu, and other infections. Even with preventative measures, most kids will get between six and eight colds per year as their immune systems continue to develop.[5] And with COVID-19, the need to prevent illnesses during the 2020–2021 school year is more important than ever. The most effective way to prevent disease is through vaccination. There is growing interest among parents in giving kids supplements like elderberry, or extra doses of vitamins such as vitamin C, but you should always consult with your child's doctor before giving them supplements of any kind. The American Academy of Pediatrics does not recommend vitamin supplements for healthy children who eat a varied diet. It's best that they get their vitamins from foods.

4. **Teach Your Child Healthy Habits:** Does your child know the importance of healthy habits to prevent colds, flu, and other infections? Healthy habits include remembering not to touch their eyes or share cups and utensils with friends. Kids need to learn not to share their face masks or to play with them while they are in school. Whether kids are attending school in person, learning online, or a hybrid, it's still important that they get a refresher on healthy habits like washing their hands frequently and avoiding touching their face. Some other things kids need to be reminded of is using tissues when they sniffle or sneeze, letting mom and dad know when they don't feel well, and avoiding close contact with their friends at school. Preventative behaviors like these can be very effective in reducing or slowing the spread of most infectious diseases, including stomach bugs.

5. Watch for Signs of Anxiety and Stress: Homework, tests, social pressures—kids can face a lot of stressful situations every day. Research shows that stress and anxiety can have a negative impact on kids' health, just like it can on the health of adults. For this reason, you need to learn how to spot symptoms of stress and find ways to manage anxiety. This is especially important this year as your child tries to navigate a school year that looks nothing like what they're used to. Not only is COVID-19 an extremely contagious virus, but it's also turning kids' lives upside down. So it's fairly common for kids to experience stress and anxiety. One thing you can do to help them deal with stress and anxiety is to help them identify things in their life that they can control, like what they wear and how they spend their free time. Also help them learn what helps them de-stress. For some kids this might mean writing in a journal while others might enjoy playing a board game or going for walk. The key is to personalize it to each child. What works for one may not work for the other. And if your child seems more distressed than what you think is normal, don't hesitate to contact your child's doctor. The doctor can make recommendations on ways to address your child's anxiety and stress.

6. Establish Good Sleep Hygiene: Making sure your children get enough sleep is a crucial part of keeping them healthy. In fact, studies show that missing sleep can impact kids in a number of ways. Lack of sleep can lead to poor concentration, obesity, depression, suicidal ideation, and injuries. Not only is sleep an important part of a child's physical and emotional health; it also can play a role role in how well they do in school, too. And to make matters worse, research suggests that kids are sleeping less than they did years ago. In fact, a meta-analysis of nearly 700,000 children from 20 different countries found that children's sleep has decreased by 0.75 minutes per year over the past century, with the rate of change being greatest on school days. Getting adequate sleep also can prepare kids for the stresses they experience throughout the day—particularly at school. Keep in mind though that living through a pandemic may hinder or interfere with sleep. So make sure you establish a schedule and stick to a bedtime. Even older kids can benefit from having a set bedtime. Also try to incorporate predictability into their schedules and give reassuring talks if stress or uncertainty is interfering with sleep.

7. Provide a Brain-Boosting Breakfast: Breakfast really is the most important meal of the day when it comes to school kids. A balanced breakfast of protein and complex carbohydrates has been shown to be important for brain function as well as for maintaining a steady level of energy throughout the day. According to one study, children who regularly have breakfast are more likely to take in the appropriate amounts of nutrients as well as consume less total fat and cholesterol. Likewise, iron, B vitamins and vitamin D are approximately 20% to 60% higher in kids who regularly eat breakfast compared with those who skip breakfast. Studies show that eating breakfast has a positive effect on cognitive performance, especially when it comes to memory and attention. Consequently, to give your kids an advantage amidst all the distractions of COVID-19, make sure you encourage your kids to eat a healthy breakfast.

8. Make Lunchtime Fun: Everyone knows that the cornerstone to a healthy immune system is eating nutritious food. One way to ensure your kids are eating healthy is to make sure their lunches-whether prepared at home or packed in a lunchbox—are more fun and enticing. Invite your kids to help you come up with ideas for yummy main dishes and sides dressed up in colorful combinations and shapes. You may even want to look into getting a bento lunchbox which allows you to present their food in a kid-friendly way. If your kids get lunch at school, encourage them to make healthy selections if they are given a choice. Talk about the importance of including lean proteins, whole grains, and fresh fruits and vegetables. When kids have a nutritious lunch, the food is more likely to sustain them throughout the school day unlike sugary snacks that are burned very quickly by their bodies. Keep in mind too that good nutrition in childhood lays the foundation for health in adulthood.

9. Offer Healthy Snacks: Kids are often ravenous after school. But you don't have to sacrifice good nutrition for convenience. Offer quick, easy, and healthy after-school snacks rather than resorting to overly processed convenience food. Snacks also are important because when included along with regular meals they help kids get the nutrients they need throughout the day. Plus, having small snacks spaced between meals reinforces that kids should eat small meals and when they are hungry. This helps them build healthy eating habits.

10. Choose the Right School Supplies: One of the highlights of back-to-school time is shopping for school supplies. From pencils and highlighters to notebooks and pencil cases, there are a lot of things to think about. But school backpacks in particular require careful selection. Backpacks today are heavier than ever, and using the wrong type of backpack and wearing it incorrectly can lead to back pain in kids. Make sure you prevent back problems in your child by choosing and using backpacks correctly. For instance, you should start with a backpack that has multiple compartments so that the weight can be distributed evenly throughout. The American Chiropractic Association says that the weight of the backpack should not be more than 5% to 10% of your child's body weight. The National Safety Council suggests making sure that your child's backpack is not wider than your child's torso and doesn't hang down below the waist. Likewise, they recommend looking for a backpack with compression straps to help stabilize the contents. Wheeled backpacks are also a good option, unless your child will need to carry the backpack up and down stairs or walk in snow with it.

6.2.4 International health promoting government and private agencies

Health and disease knew no boundary on the globe. Sir Paul. Russel Says Nothing on the earth is more international than disease. If the disease breaks in the form of epidemic in one part of the world, it is a treat to other parts of the world too. Some of the international health agencies are WHO, UNICEF, UNDP, International Redcross, CARE, Ford Foundations, Rock Feller foundation, Colombo plan. These all agencies help the world to prevent disease and promotion of health. Today the international health work is established on every solid scientific basis. It is essential to briefly consider some of the international agencies which are of great importance to India in promoting health process.

WORLD HEALTH ORGANIZATION [WHO]

WHO is one of the specialized agencies of United Nations, also it is a non-political health agency, with headquarters in Geneva.

The WHO is not the World Health Service, but helps governments at their request and in accordance with policies laid by world Health Assembly.

OBJECTIVES

The main objective of the WHO is “the attainment by all people of the highest level of health” which is set out in the preamble of the constitution. The preamble of the constitution states.

“Health is a State of complete, physical, mental and social well being and not merely the absence of disease or infirmity. The enjoyment of the highest attainable standard of health is one of the fundamental rights of every human being without distinction of race, religion, political belief, economic and social condition.

The health of all people is fundamental to the attainment of peace and security and is dependent upon the fullest co-operation of individuals and states.

The achievement is the promotion of health and control of disease.

FUNCTIONS

- Ø To assist in strengthening National Health Services.
- Ø It directs and co-ordinates the health rate throughout the world.
- Ø To maintain epidemiological statistical services.
- Ø To estimate sporadic, endomic and other diseases.
- Ø To promote the prevention of accidental injuries by improvement of nutrition, housing, sanitation, recreation and other aspects of environmental hygiene.
- Ø To propose international connection and regulation on health.
- Ø To see that people who travel from one country to another are protected against disease such as small pox.
- Ø Promote maternal and child health services.
- Ø To promote and conduct research to improve in standards of education in health promotion.
- Ø To promote international standards of food, biological and pharmaceutical products.
- Ø To bring about uniform standard of strength by purity of medical substances to drugs vaccine.
- Ø To assist in developing public opinion on health matters and health statistics.

WHO CONTRIBUTION TO INDIA

- Ø Control of communicable diseases.
- Ø Strengthening the public health administration.
- Ø Improving the environment sanitation.
- Ø Improving the quality of life of family by MCH care nutrition and health education.
- Ø Provision of education and training of all types of professional and auxiliary health workers.
- Ø Assist in Biomedical Research Programme including research in family planning methods.
- Ø WHO functions within the country, WHO works with and through the ministry of health.

CONTRIBUTIONS OF WHO IN THE DEVLEOPMENT OF NURSING SERVICES

The main objective of the WHO is the attainment of by all people of the highest level of health. The achievement is the promotion of health and control of disease so the

WHO helps the nursing services more. Some of its functions are promote maternal and child health services. To see that people who travel from one country to another are protected against disease such as small pox and also to estimate sporadic, endemic and other disease and to bring about uniform standard of strength by purity and medical substance to drug vaccine. So WHO help in the development of nursing services.

UNICEF (UNITED NATIONS INTERNATIONAL CHILDREN'S EMERGENCY FUND)

UNICEF was established in 1946 as United Nations International Children's Emergency Fund. To deliver post war relief to children, later renamed as United Nations Children Fund. It concentrates its assistance on developmental activities aimed at improving the quality of life for children. The headquarters of UNICEF are at New York in USA and regional office for South East Asia is established at New Delhi in India. UNICEF got close collaboration with WHO, UNO, UNDP, FAO and UNESCO.

In 1949 UNICEF begins work in India and is now in its fifth decade of co-operation with the government of India. India is UNICEF'S largest country programme.

FUNCTIONS OF UNICEF

1. UNICEF started functioning in close collaboration with other specialized agencies of UNO and assisted in the prevention and control of communicable diseases like malaria, tuberculosis, leprosy, trachoma etc which were more prevalent in children.
2. In India, UNICEF supported the BCG immunization program from the start. It also assisted in the manufacture of DPT vaccine. Subsequently, UNICEF shifted its attention to primary health care with focus on MCH services. It laid stress on immunization, supplementary feeding of children and control of deficiency diseases by the provision of vitamin A solution, iodized salt and iron and folate tablets.
3. UNICEF took considerable interest in the provision of piped water supply, basic sanitation and formal and non-formal education. It provided substantial aid to primary health centres in India, by way of equipment, vehicles, bicycles, delivery kits, drugs, milk and other supplies.

ACTIVITIES OF UNICEF

a) Child Health:

UNICEF has provided substantial aid for the production of vaccines and sera in many countries. UNICEF has supported India's BCG vaccination programme from its inception. It has also assisted in the erection of a pencillin plant, near Pune, donated a DDT plant, two plants, two plants for the manufacture of triple vaccine and iodized salt. UNICEF has also assisted environmental sanitation programmes emphasizing safe and sufficient water for drinking and household use in rural areas. The purpose is not only to reduce child illness and death, but to improve the quality of life in the villages. Currently, UNICEF is focusing attention on providing primary health care to mothers and children. Emphasis is placed on immunization, infant and young child care, family planning aspects of family health, safe water and adequate sanitation.

b) Child Nutrition:

UNICEF gives high priority to improving child nutrition. Its aid for child nutrition, which first took the form of supplementing child feeding began to expand in mid-1950s with the development of low cost protein rich food mixtures.

In collaboration with FAO, UNICEF also began aiding "Applied Nutrition" programmes through such channels as community development, agricultural extension, schools and health services so as to stimulate and help the rural population to grow and eat the foods it required for better child nutrition. The UNICEF has supplied equipment for modern dairy plants in various parts of India, viz. Maharashtra, Gujarat, Karnataka, Uttar Pradesh, West Bengal, Andhra Pradesh, specific aid is also given for intervention against nutritional deficiency diseases, viz. provision of large doses of vit A in areas where xerophthalmia is prevalent, enrichment of salt with iodine in areas of endemic goiter, provision of iron and folate supplements to combat anaemias and enrichment of foods. More recently FAO, UNICEF and WHO have been encouraging the development of national food and nutrition policies that make provision for child nutrition.

c) Family and Child Welfare:

The purpose is to improve the care of children, both within and outside their homes through such means as parent education, day care centres, child welfare and youth agencies and women's clubs. These services are carried out not as separate projects but as part of health, nutrition and education or home economics extension programmes.

d) Education:

Formal and non formal. In collaboration with UNESCO, UNICEF is assisting India in the expansion and improvement of teaching work shop tools, library books, audio visual aids are being made available to educational institutions. Emphasis is placed on the kind of schooling relevant to the environment and future life of the children.

STRATEGRY BY UNICEF

UNICEF is promoting a campaign known GOBI campaign to encourage 4 strategies for a "Child Health Revolution".

- G for growth charts to better monitor child development
- O for oral rehydration to treat all mild and moderate dehydration
- B for breast feeding
- I for immunization against measles, diphtheria polio, pertussis, tetanus and tuberculosis.

But now 3F has added to GOBI that;

F - Female Literacy
F - Family Planning
F - Food

CONTRIBUTION OF UNICEF IN THE DEVELOPMENT OF NURSING SERVICES

UNICEF concentrates its assistance on developmental activities aimed at improving the quality of life for children. UNICEF helps in the prevention and control of communicable disease like malaria tuberculosis, leprosy etc which were more prevalent in children, UNICEF supported the BCG immunization program and manufacture of DPT vaccine. It also control of deficiency diseases by the provision of vitamin A solution, iodized salt and iron and folate tablets. UNICEF is focusing attention on providing primary health care to mother and children.

FAO (FOOD & AGRICULTURE ORGANIZATION)

The Food and Agriculture Organization (FAO) was formed in 1945 with head quarters in Rome. It was the first United Nations Organization specialized agency created to look after several areas of world cooperation.

FAO's prime concern is to increases production of food to keep face with rising population.

Functions:

1. To help nations raise living standards
2. To improve nutrition of the people of all countries
3. To increase the efficiency of farming, forestry & fisheries
4. To better the condition of rural people and through all these means to widen the opportunity of all people for productive work.

The WHO & FAO carry out various activities such as;

- Nutritional Surveys
- Training Courses
- Seminars
- Research Programmes

The FAO has organized a world freedom from hunger campaign (FFHC) in 1960. The primary objective of FAO is towards ensuring that the food is consumed by the people who need it in sufficient quantities and in right proportions to develop and maintain a better state of nutrition through out the world.

UNDP (UNITED NATIONS DEVELOPMENT PROGRAMME)

UNDP was established in 1966. The basic objective of the UNDP is to help poorer nations to develop their human and natural resources more fully.

AIMS:

- Improve the agricultural committees
- Extension and modernization of industry
- Improve the basic essential facilities for education, health care, housing, employment, administrative and social services.
- Rural development and urban renewal.

CARE (CO-OPERATIVE FOR ASSISTANCE AND RELIEF EVERYWHERE)

CARE is a non-governmental organization which was started in 1946. It began working in India in 1950. CARE was founded in North America in the wake of the Second World War in the year 1945. It is one of the worlds largest independent, non-profit, non-sectarian international relief and development organization.

Objectives of CARE in India

The primary objective of CARE – India was to provide food for children in the age group of 6 to 11 years. From mid 1980's CARE – India focused its food support in the ICDS program and in development of programs in the areas of health and income supplementation.

Objectives

CARE India is helping the following projects;

1. Integrated nutrition and health project
2. Better health and nutrition project
3. Anaemia control project
4. Improving women's health project
5. Improved health care for adolescent girls project
6. Child survival project
7. Improving women's reproductive health and family spacing project
8. Konkan Integrated Development Project

It has been helping with the school midday meal scheme. Apart from this, it also provides help in the fields of medicine, literacy vocational training and agriculture.

CARE – India works in partnership with Government of India, State Governments, Non-governmental Organizations etc.

UNITED NATIONS EDUCATIONAL SCIENTIFIC AND CULTURAL ORGANIZATION

UNESCO came into being on 4th Nov 1946. The main purpose of UNESCO is contributes to peace and security by promoting close collaboration among nations through education, science and culture. If further universal respect for justices rule and law, human rights and fundamental freedoms.

Activities:

The activities of UNESCO fall under the following broad heads education, natural sciences, social sciences, human sciences, communication, co-operation with non governmental organization and publication. Typical activities of UNESCO includes the organization in various part of the world of conferences and meeting of experts, co-ordination of international scientific effort clearing house services, assistance to non governmental organizations a wide range of publication and the establishment of international agreements to which states are invited to adhere or confirm.

COLOMBO PLAN

Colombo plan was drawn in January 1950 at a meeting of common wealth foreign ministers at Colombo for cooperative economic development in South and South East Asia.

It assists in industrial and agricultural development and also in health promotion.

The plan provides for visits to countries by experts who can offer advice on local problems and train the local people.

Colombo plan seeks to improve living standards of the people of the area by reviewing developmental plans and coordinating development assistance. Canada is supplying Cobalt Therapy Units of India is an important aid under Colombo Plan.

SWEDISH INTERNATIONAL DEVELOPMENT AGENCY (SIDA)

Contribution in the Development of Nursing

The Swedish International Development Agency is assisting the National Tuberculosis Control Programme since 1979. The SIDA assistance is usually spent on procurement of supplies like X-ray unit, microscopes and anti-tuberculosis drugs. SIDA authorities are also supporting the short course chemotherapy drug regimens under pilot study, which were introduced in 18 districts of the country during 1983-84, and pilot phase-I of the Revised strategy of NTP in 5 sites namely Delhi, Bangalore, Mumbai, Kolkata and Mehsana (Gujarat) since 1993.

DANIDA

The Government of Denmark is providing assistance for the development of services under National Blindness Control Programme since 1978.

FORD FOUNDATION

Ford foundation started in 1936. It has been active in the development of rural health services and family planning. Ford foundation has helped India in the following project;

1. Orientation Training Centers

The orientation training centers at Singur, Poonamalle and Najafgarh. The centers provide training courses in public health for medical and paramedical personal from all over India.

2. Research cum Action Projects

These projects were aimed at solving some of the basic problems in environmental sanitation, eg. designing and construction of hand flushed acceptable sanitary latrines in rural areas.

3. Pilot project in rural health services, Gandhigram (Tamil Nadu)

4. Establishment of NIHAE (National Institute of Health Administration and Education): It provide training for health administration.

5. Calcutta Water Supply and Drainage Scheme

6. Family Planning Programme

The foundation is supporting research in reproductive biology and in the family planning fellowship programmes.

ROCKEFELLER FOUNDATION

The Rockefeller foundation is a philantheopic organization started in 1913 and endowed by Mr. John.D. Rockfeller. The work of Rock Feller foundation in India began in 1920 with a scheme for the control of hook worm diseases. The foundation has been associated with several medical and public health programmes in India. The establishment of All India Institute of hygiene and public health at Kolkata was in a large measure due to co-operation of Rockfeller Foundation.

Purpose of Rockfeller Foundation

The purpose of Rockfeller foundation are

1. To promote the well being of mankind throughout the world.
2. To include the advancement of life sciences, the social sciences, the humanities and the agricultural sciences.
3. Providing grants-in-aid to selected institutions
4. Development of medical college libraries
5. populations studies
6. Assistance of research projects and institutions
   Eg: National Institute of Virology at Pune
7. Support to the improvement of agricultural family planning and rural training as well as to medical education.

INTERNATIONAL RED CROSS

It was founded by Henry Dunant, a young Swiss businessman, who when travelling through North Italy in 1859. The Red Cross is a non-political non-official international humanitarian organization devoted to the service of mankind in peace and war. It was started in 7th August 1859 to help the neglected thousands of the wounded and dying soldiers.

Later in the work of the Red Cross was extended to other programme which would prevent human suffering. These comprise service to armed forces, service to war veterans, disaster service, first aid and nursing, health education and maternity and child welfare services.

Indian Red Cross

In 1920, the Red Cross society of India was established by an act of the Indian legislature with the three objectives of the improvement of health, prevention of disease and mitigation of suffering. And it also provide medicines and vitamin tablets.

INTERNATIONAL COUNCIL OF NURSING (ICN)

The international council of nursing is a federation of non political and self governing national nurses association. It was founded by Mrs.Bedford Fenwick in cooperation with nursing traders from many countries. In 1900, the council constitution

was adopted and the first meeting was held at the world exposition in Buffalo New York. Its head quarter is established at Geneva in Switzerland.

The aim of ICN

- To develop self governing principles among nurses under nurse leadership
- To develop a profession that would raise the ethical and social status of nurses

The purpose of ICN

The main purpose was to provide a means through which the national association can share there interest in the promotion of health and care of the sick.

The objective of ICN

- To promote the development of strong national nurses association
- To assist national nurses association to improve the standards of nursing and the competence of nurses
- To serve as authovitative voice for nurses and nursing internationally

The Governing Body

The council of national representations which consist of ICN honorary officers and president of the national member association. International exchange privileges for nurses have been provided through the ICN. This gives the individual nurse the opportunity to observe and obtain employment in other countries and also contributes to improvement of standards.

The activities of ICN

- Making the code of nurses
- The world wide accepted definition of a nurse
- A book of ethics the nurse Dilemma
- Policy statement on health and social issue
- Arrange exchange program for study and employment
- Maintain a register on professional qualification of people
- Conducting seminars around the world to maintain relationship.

The International Relationships

The international council of nursing has close relationship with many of the world's major international organizations such as WHO, ILO, UNESCO, UNICEF, RED CROSS and its allied leagues. This relationship helps ICN to have related concerns in the health care field and allows keeping abreast of trends affecting the future of nursing.

Functions of ICN

- The division of nursing education
- The division of nursing services
- The division of social and economic welfare

International health agencies are WHO, UNICEF, UNDP, International Red Cross, CARE, FORD FOUNDATION, ROCK FELLER FOUNDATION, COLOMBO PLAN. These all agencies help the world to prevent disease and promotions of health. Today the international work is established on every solid scientific basis. It is essential to briefly consider some of the international agencies which are of great importance to India in promoting health process.

6.2.5 National health promoting government and private agencies

Government agencies:

A. Department of Health

- National AIDS Control Organisation(NACO)
- Medical Council of India
- Indian Nursing Council (INC)
- Dental Council of India
- All India Institute of Speech and Hearing (AIISH), Mysore
- All India Institute of Physical Medicine and Rehabilitation (AIIPMR), Mumbai
- Hospital Services Consultancy Corporation Limited (HSCC)
- Pharmacy Council of India[PCI]

B. Department of Family Welfare

- National Institute of Health and Family Welfare (NIHFW), South Delhi
- International Institute for Population Sciences (IIPS), Mumbai
- Central Drug Research Institute (CDRI), Lucknow
- Indian Council of Medical Research (ICMR), New Delhi

C. Department of AYUSH

- Research
  - Central Council for Research in Ayurveda and Siddha (CCRAS)
  - Central Council for Research in Unani Medicine (CCRUM)
  - Central Council for Research in Homoeopathy (CCRH)
  - Central Council for Research in Yoga and Naturopathy (CCRYN)
- Professional councils
  - Central Council of Homoeopathy (CCH)

Type of voluntary health agencies:

National Agencies:

Working in the field of MCH: Family planning association of India, Indian council of child welfare & kasturba memorial fund.

Working for specific disease problem: Hind kushta nivaran sangh, Indian cancer society etc.

Working for general health care: Indian red cross society, central social welfare and all India women & apos;s conference Professional bodies: INC, IMA, IDA, TNAI etc.

Bilateral Single government agency: That provides aid to lesser developed countries. They usually deal directly with other government Eg. are USAID, DANIDA, Colombo plan, SIDA

Non-governmental: They include humanitarian (philanthropic agencies) and professional organizations concerned with global health. These are not under government sponsorships or control. Eg: International Red Cross, Rockefeller foundation, ford foundation, CARE etc.

Functions in general of VHA/NGO:

1. Direct services or assistance to individual. This includes the activities such as patient care, nursing, visiting service, provision of consultations. Training and supervision of voluntary workers, Preparation and dissemination of public information materials, provides materials for H.E and carries on mass health education works.
2. Supplementing the work of official agencies
3. Contributing the funds for special equipments or other supplementary assistance to service agencies.
4. Financial assistance through scholarships or training grants
5. Guide the work of official agencies and provides constructive ideas
6. Advances the health legislation

7. Exhibits demonstration and experimental project. Demonstration of Bore- hole latrine by RF to solve the problem of hookworm in India. RCA latrine has become essential part of environmental sanitation program
8. Supplement the effort of govt. During any disasters these agencies come forward and share the responsibility to solve the problem.
9. Effective policy formulation through interpretation of public opinions.
10. Carries on research to explore ways and means of doing new thing, autonomous board helps flexibility to adopt the program
11. Channelize human resources. Help in efficient program implementation.
12. Initiative and leadership.
VHA take initiation and believes in self help rather than help from outside, they encourage the local potential leaders to develop as agents of socio economic change. 13. Creating greater understanding and + ve attitude among the beneficiaries
Some of the well known voluntary health agencies in India are:
1. INDIAN RED CROSS SOCIETY
2. HIND KUSHT NIVARAN SANGH
3. INDIAN COUNCIL FOR CHILD WELFARE
4. TUBERCULOSIS ASSOCIATION OF INDIA
5. BHARAT SEVAK SAMAJ
6. CENTRAL SOCIAL WELFARE BOARD
7. THE KASTURBA MEMORIAL FUND
8. FAMILY PLANNING ASSOCIATION OF INDIA
9. ALL INDIA WOMEN'S CONFERENCE
10. PROFESSIONAL BODIES

INDIAN RED CROSS SOCIETY
It was established in 1920. It has 400 branches in India. Executing programmes are, promotion of health, prevention of disease and mitigation of suffering among the people. Activities a) Relief work b) Milk and Medical supplies c) Armed forces d) Maternal and child welfare services e) Family Planning f) Blood Bank and First Aid.
HIND KUSHT NIVARAN SANGH
It was founded in 1950. Its Headquarters is at New Delhi. Its precursor was the Indian Council of the British Empire Leprosy Relief Association which was dissolved in 1950. INDIAN COUNCIL FOR CHILD WELFAE
It was established in 1952. It is affiliated with the International union for Child Welfare. The services of I.C.C.W. are devoted to secure for India's children those "OPPORTUNITIES AND FACILITIES, BY LAW AND OTHER MEANS" which are necessary to enable them to develop physically, mentally, morally, spiritually and socially in a healthy and normal manner and in conditions of freedom and dignity. Activities a) Rendering of financial assistance to various leprosy homes and clinics, health education thro' publications and posters, training of medical workers and physiotherapists, conducting research and field investigations b) Organising All-India Leprosy Workers Conference and Publication of "LEPROSY IN INDIA", a quarterly journal.
TUBERCULOSIS ASSOCIATION OF INDIA (TAI)
It was formed in 1939. It has branches in all the states in India. Activities are Organising a T.B. seal campaign every year to raise funds, training of doctors, health visitors and social workers in anti T.B work, promotion of health education, promotion of consultations and conferences. Institutions under TAI a) The New Delhi Tuberculosis Centre, b) the lady Linlithgow Sanatorium at Kasauli c) The King Edward VII sanatorium at Dharampur d) Tuberculosis Hospital at Mehrauli

BHARAT SEVAK SAMAJ (BSS)

It is a non-political and non-official organization was formed in 1952. Primary aims are - Help people to achieve health by their own actions and efforts Improvement of sanitation in villages is one of the important activities of the B.S.S. CENTRAL SOCIAL WELFARE BOARD

It is an autonomous organisation under the general administrative control of the Ministry of Education. It was set up by the GOI in august 1953. Its functions are Surveying the needs and requirements of voluntary welfare organizations in the country Promoting and setting up of social welfare organizations on a voluntary basis Rendering of financial aid to deserving existing organizations and institutions. Activities Teaching of craft, social education, literacy classes, maternity aid for women, distribution of milk, balwadis, and organisation of play centres for children. It also started a scheme of Industrial cooperatives to help the lower-middle class women in urban areas supplement their income by doing paid work.

THE KASTHURBA MEMORIAL FUND

It was created in commemoration of kasturba gandhi, after her death in 1944. The fund was raised with the main object of improving the lot of women, especially in the villages, through gram-sevikas.

FAMILY PLANNING ASSOCIATION OF INDIA

It was formed in 1949, HQ in mumbai. Propagating the family planning in India These branches are running FP clinics. It has trained several hundred doctors, health visitors and social workers.

ALL INDIA WOMEN'S CONFERENCE

It is the only women's voluntary welfare organisation in the country. Established in 1926. Most of the branches are running M.C.H. clinics, medical centres, and adult education centres, milk centres and family planning clinics

THE ALL-INDIA BLIND RELIEF SOCIETY

Established in 1946. It organise eye relief camps and other measures for the relief of the blind.

PROFESSIONAL BODIES

The Indian Medical Association

All India Licentiates Association,

All India Dental Association,

TNA of India are all voluntary agencies of men and women who are qualified in their respective specialties and possess registerable qualifications.

Functions:

1. Conduction of annual conferences,
2. publish journals,
3. arrange scientific sessions and exhibitions,
4. foster research,
5. set up standards of professional education and
6. organize relief camps during periods of natural calamities

Sub Unit – III
School Health programme and personal hygiene

6.3.1 What is School Health Programme?

The School Health Program is defined as "the school procedures that contribute to the maintenance and improvement of the health of pupils and school personnel including health services healthful living and health education".

The objectives of school health service can be achieved through a comprehensive School Health Programme comprising the following activities:

1. Health appraisal of school children and school personnel;
2. Co-operation with the home and the community;
3. Healthful school environment;
4. Prevention of communicable diseases;
5. Nutritional services;
6. First aid and emergency care;
7. Psychological services;
8. Use of school health records;
9. Remedial measures and follow up;
10. Health instruction;

Objectives of a health promoting school:

- Fosters health and learning with all the measures at its disposal.
- Engages health and education officials, teachers, teachers' unions, students, parents, health providers and community leaders in efforts to make the school a healthy place.
- Strives to provide a healthy environment, school health education, and school health services along with school/community projects and outreach, health promotion programmes for staff, nutrition and food safety programmes, opportunities for physical education and recreation, and programmes for counselling, social support and mental health promotion.
- Implements policies and practices that respect an individual's well being and dignity, provide multiple opportunities for success, and acknowledge good efforts and intentions as well as personal achievements.
- Strives to improve the health of school personnel, families and community members as well as pupils; and works with community leaders to help them understand how the community contributes to, or undermines, health and education.

Health promoting schools focus on:

- Caring for oneself and others.
- Making healthy decisions and taking control over life's circumstances.
- Creating conditions that are conducive to health (through policies, services, physical / social conditions).
- Building capacities for peace, shelter, education, food, income, a stable ecosystem, equity, social justice, sustainable development.
- Preventing leading causes of death, disease and disability: helminths, tobacco use, HIV/AIDS/STDs, sedentary lifestyle, drugs and alcohol, violence and injuries, unhealthy nutrition.
- Influencing health-related behaviors: knowledge, beliefs, skills, attitudes, values, support.

6.3.2 Health Supervision

School health supervision was first introduced in this country in Boston in 1894 in an attempt to limit the spread of communicable disease. With a similar purpose, Philadelphia followed suit in 1896 and New York in 1897. Now we find that this work, enlarged in scope, is generally recognized as an important part of the school and public health program. There are at least three fundamental reasons why a city should assume the responsibility for the conservation of the health of the children in its public schools.

First: To protect the community from the spread of communicable disease. The public school brings together a large number of children who are lat a very susceptible age and it should, therefore, exercise active measures for the early detection of contagious disease. The possibilities of this original purpose of school health supervision, however, would not alone warrant our present expenditures for this activity.

Second: (a) To find and correct physical, mental and medical defects in the child before they affect his ability to learn and interfere with his school career. (b) When a community makes education compulsory, it must assume the responsibility for providing a healthful environment for the children. While many people still claim that it is not the duty of the state to supervise the personal health of each child, the writers believe that a community should exert every effort to create health conditions which give every child a fair chance and enable him to get the most out of the years he must spend at school.

Third: To educate the child in the Principles of healthful living, so that he may himself have sound health and thus safeguard the community in the future.

6.3.3 Health Instruction

School Health Instruction (SHI) represents the instructional aspect of School Health Programme and it involves well planned and organized learning experiences for the school children under the guidance and supervision of teachers or accredited health personnel. However, it‘s effectiveness depends on a number of factors such as: availability of instructional materials, skills and motivation of the instructor who may be the teacher or certified health personnel, use of appropriate teaching technique and the quality of the contents of the health instruction. The target of primary schools for effective SHI delivery is based on the fact that, primary school children are in their formative years and are likely to easily imbibe any health lessons learnt in such a way that their lives will be affected positively as they grow to become adults. It may be given by teachers, health professional, health workers, doctors and parents by using pyramid method or seasonal method time to time as required.

6.3.4 Health Service

Health service provision: • Screening, health care and referral: o Screening of general health, assessment of Anaemia/Nutritional status, visual acuity, hearing problems, dental check up, common skin conditions, heart defects, physical disabilities, learning disorders, behavior problems. o Basic medicine kit to be provided to take care of common ailments prevalent among young school going children. o Referral Cards for priority services at District / Sub-District hospitals.

• Immunization: o As per national schedule o Fixed day activity o Coupled with education about the issue • Micronutrient (Vitamin A & Iron Folic Acid) management: o Weekly supervised distribution of Iron-Folate tablets coupled with education about the issue o Vitamin-A as per national schedule. • De-worming o As per national guidelines o Biannually supervised schedule o Prior IEC with intimation to families to bring siblings to school on the fixed day o Siblings of students also to be covered • Health Promoting Schools o Counseling services,

Promotion of mental well-being. o Regular practice of Yoga, Physical education, health education o Peer leaders as health educators o Adolescent health education o Linkages with the out of school children o Health clubs, Health cabinets, Health jamborees o First Aid room/corners or clinics. • Capacity building of teachers and involved health personnel • Monitoring & Evaluation • Mid Day Meal

6.3.5 What is Personal Hygiene?

Personal hygiene is how you care for your body. This practice includes bathing, washing your hands, brushing your teeth, and more. Every day, you come into contact with millions of outside germs and viruses. They can linger on your body, and in some cases, they may make you sick. Personal hygiene practices can help you and the people around you prevent illnesses. They can also help you feel good about your appearance.

If you want to improve your personal hygiene or help a child develop better habits, these strategies might be helpful:

Set reminders

If you can't remember to do things like shower, wash your hair, clip your nails, or brush your teeth, set a reminder on your phone. The cue will push you to the activity, and over time, you'll begin to do it yourself.

Use signs

Hang a reminder in the bathroom to wash your hands after using the toilet. Put a little sign by the plates or bowls in the kitchen to cue yourself to wash your hands before eating. These signs can help jog your memory and improve your habits. They can help both you and your children.

Practice makes perfect

It takes time to learn a new habit. Start with a new habit at the beginning of the week and make it your priority. Practice it for a week or two. When you feel comfortable with it, add a new one. Overtime, you'll establish the habits you wish to have.

Good personal hygiene habits are directly related to less illnesses and better health. Poor personal hygiene habits, however, can lead to some minor side effects, like body odor and greasy skin. They can also lead to more troublesome or even serious issues.

For example, if you don't wash your hands frequently, you can easily transfer germs and bacteria to your mouth or eyes. This can lead to any number of issues, from stomach viruses to pink eye.

Not brushing your teeth can lead to teeth issues and plaque buildup. Poor dental care is also a risk factor for several serious health issues, including heart disease.

Poor hygiene habits can also affect your self-esteem. Looking and feeling presentable can give you a confidence boost and a sense of pride in your appearance.

Other conditions may be prevented or the risk minimized by practicing good personal hygiene. These are some examples:

- scabies
- pubic lice
- head lice
- body lice
- diarrhea
- athlete's foot
- ringworm
- pinworms
- swimmer's ear
- hot tub rash

Good personal hygiene will help your kids stay healthy, ward off illnesses, and build better self-awareness.

It's never too early to start teaching hygiene. You can wipe down your child's hands after changing their diapers or before eating, brush their teeth and gums before bed, and get them into a daily bath routine. This helps you begin the process and slowly teaches them as they grow and take over the process.

Here's a list of hygiene activities, how you can introduce them, and when is a good time to start:

Brushing teeth

You can begin brushing your baby's teeth and gums the moment the first tooth pops up. They can brush their own teeth by about 3 years old. However, you may have to stay with them to guarantee they're doing a good job and brushing long enough.

Play a 2-minute song when it's time to brush teeth. That will let your little one know how long they have to brush, and they'll get used to the process. Likewise, you may have to continue flossing for them until they're older and can handle that task better, around age 7.

Bathing

You'll be giving your baby baths regularly, but by about age 5, they should be able to handle this task on their own. As they're growing and you're supervising bath time, you should take the opportunity to teach about washing all the different body parts, especially:

- armpits
- groins
- neck
- belly
- knees
- elbows
- back
- feet

You can also use this time to teach them how to wash their hair without getting suds in their eyes — and what to do if they do.

Hand washing

Wipe your baby's hands with a warm washcloth before mealtime, after eating, and after changing a diaper. During potty training, make washing hands an integral step in the process.

You can teach your child to sing the ABC song while they wash — it's 20 seconds long, which is an ideal washing time.

Make it a priority to ask your child to wash their hands any time you'd like to encourage good hygiene, like before meals, after playing outside, after petting an animal, or after being near a sick friend.

Nail hygiene

You'll clip your child's nails when they're a baby, but as they grow older, you can help them care for their own nails. Encourage your children to wash under their nails at each shower — a fun nail brush will help. Then, sit down with them weekly after a shower for a trim. Your nails are softer and clip more easily after a shower.

6.3.6 Care of Eye

Eye Care Tips

There are things you can do to help keep your eyes healthy and make sure you are seeing your best:

- **Eat a healthy, balanced diet.** Your diet should include plenty or fruits and vegetables, especially deep yellow and green leafy vegetables. Eating fish high in omega-3 fatty acids, such as salmon, tuna, and halibut can also help your eyes.
- **Maintain a healthy weight.** Being overweight or having obesity increases your risk of developing diabetes. Having diabetes puts you at higher risk of getting diabetic retinopathy or glaucoma.
- **Get regular exercise.** Exercise may help to prevent or control diabetes, high blood pressure, and high cholesterol. These diseases can lead to some eye or vision problems. So if you exercise regularly, you can lower your risk of getting these eye and vision problems.
- **Wear sunglasses.** Sun exposure can damage your eyes and raise your risk of cataracts and age-related macular degeneration. Protect your eyes by using sunglasses that block out 99 to 100 percent of both UV-A and UV-B radiation.
- **Wear protective eye wear.** To prevent eye injuries, you need eye protection when playing certain sports, working in jobs such as factory work and construction, and doing repairs or projects in your home.
- **Avoid smoking.** Smoking increases the risk of developing age-related eye diseases such as macular degeneration and cataracts and can damage the optic nerve.
- **Know your family medical history.** Some eye diseases are inherited, so it is important to find out whether anyone in your family has had them. This can help you determine if you are at higher risk of developing an eye disease.
- **Know your other risk factors.** As you get older, you are at higher risk of developing age-related eye diseases and conditions. It is important to know you risk factors because you may be able to lower your risk by changing some behaviors.

- **If you wear contacts, take steps to prevent eye infections.** Wash your hands well before you put in or take out your contact lenses. Also follow the instructions on how to properly clean them, and replace them when needed.
- **Give your eyes a rest.** If you spend a lot of time using a computer, you can forget to blink your eyes and your eyes can get tired. To reduce eyestrain, try the 20-20-20 rule: Every 20 minutes, look away about 20 feet in front of you for 20 seconds.

6.3.7 Care of Nose

- Keep the humidity in your home at 55%.
- Avoid carpets to reduce contact with allergens.
- Clean your home regularly in order not to let dust accumulate on objects.
- Avoid smoking and second-hand smoke.
- Maintain a daily nasal cleaning routine with a saline solution. In case of a respiratory infection or allergies, clean your nose more frequently.

HEALTH—NOTHING TO THUMB YOUR NOSE AT

The nose has many very important functions. It warms, humidifies and purifies the air we breathe. Its mucous membrane protects airways against external threats by filtering particles present in the air. The nose helps project the sound our voice and, of course, is responsible for our sense of smell.

The mucous membrane intercepts external threats with its mucus, which blends with impurities. Then, the small nose hairs on the mucous membrane direct these impurities toward the throat and stomach. Stomach acids permanently eliminate them. Sneezing is another way of getting rid of impurities. Proper nasal hygiene helps the mucous membrane protect the body.

NASAL HYGIENE AND INFECTIONS

Millions of Canadians are affected by colds each year. On average, adults will suffer from one to two colds each year. Children will have an average of six to eight colds a year. There is no cure for the common cold, only ways of reducing symptoms (runny nose, cough, nasal congestion, etc.).

The use of saline water is a safe and effective way to relieve cold symptoms or sinusitis, as clearing nasal passages diminishes nasal congestion. This is all the more important for children, as they are unable to effectively blow their noses.

NASAL HYGIENE AND ALLERGIES

The nose is in constant contact with allergens (dust mites, pollen, and mould). Some people develop allergic reactions accompanied by nasal congestion and sneezing. In addition to reducing symptoms, the use of saline water eliminates allergens found in the mucous membrane.

CLEAN UP YOUR ENVIRONMENT

Preserving respiratory health begins with a healthy environment. Here are a few tips to reduce the number of threats in your environment:

- avoid carpets as much as possible
- don't let dust accumulate in your home

- clean your house regularly
- maintain proper humidity levels in your home, and
- avoid smoking or inhaling second-hand smoke

NASAL HYGIENE IN BABIES AND YOUNG CHILDREN

Just as for adults, it is not required to clean your child's or your baby's nose. However, it can be useful if their nose is stuffy and they find it difficult to suckle or sleep. Saline solutions can help to clear a stuffy nose. It is possible to use a commercial solution or simply to a make a homemade preparation. Steam from a bath or shower can also be effective to clear a child's stuffy nose. If needed, a nasal aspirator can be used. Speak to your pharmacist before purchasing this type of device and inquire about the right technique to use.

The pharmacist can also help you make the appropriate choice and tell you how to use a saline solution. There are several products available on the market in various formats: dropper, single-dose ampoules, sprays and nasal rinses. The choice of product depends on age, needs and personal preferences.

There are water-based formulations called "isotonic" or "hypertonic". Isotonic products contain the same concentration of salt as body fluids, while hypertonic solutions contain a higher concentration of salt. There are also sprays with a gentle to full stream, and certain products include eucalyptus.

To avoid the risks of contamination between family members, it is preferable that each person have their own bottle of saline solution. Remember to clean the dropper or nozzle that comes into contact with the nose to reduce the risk of contamination.

In short, it can be difficult to navigate through the wide range of products, but your pharmacist is there to help you make the choice best suited to your needs.

HOW DO YOU TEACH A CHILD TO BLOW THEIR NOSE?

Place a cotton ball on a flat surface. Ask the child to block one nostril. Then, ask them to blow through the second nostril while keeping their mouth closed. Check to see if the cotton ball moves! Once they have succeeded with one nostril, repeat the exercise using the other.

With the wide range of saline solutions available on the market, you shouldn't hesitate to ask the advice of your pharmacist, who will help you make the best choice for each family member. Use this opportunity to review the irrigation technique with them!

6.3.8 Care of Teeth

Healthy teeth and gums make it easy for you to eat well and enjoy good food. Several problems can affect the health of your mouth, but good care should keep your teeth and gums strong as you age.

Tooth Decay

Teeth are covered in a hard, outer coating called enamel. Every day, a thin film of bacteria called dental plaque builds up on your teeth. The bacteria in plaque produce acids that can harm enamel and cause cavities. Brushing and flossing your teeth can prevent decay, but once a cavity forms, to avoid further damage, a dentist must fix it with a filling.

Use fluoride toothpaste to protect your teeth from decay. If you are at a higher risk for tooth decay (for example, if you have a dry mouth because of a condition you have or medicines you take), you might need more fluoride. Your dentist or dental hygienist may give you a fluoride treatment during an office visit or may tell you to use a fluoride gel or mouth rinse at home.

Gum Disease

Gum disease begins when plaque builds up along and under your gum line. Plaque causes an infection that hurts the gum and bone that hold your teeth in place. A mild form of gum disease may make your gums red, tender, and more likely to bleed. This problem, called gingivitis, can often be fixed by brushing and flossing every day.

A more severe form of gum disease, called periodontitis, must be treated by a dentist. If not treated, this infection can lead to sore, bleeding gums, painful chewing problems, and even tooth loss.

To prevent gum disease:

- Brush your teeth twice a day with fluoride toothpaste.
- Floss regularly.
- Visit your dentist routinely for a checkup and cleaning. Tell the dentist about any medical conditions you have and medications you take.
- Eat a well-balanced diet.
- Quit smoking. Smoking increases your risk for gum disease.

How to Clean Your Teeth and Gums

There is a right way to brush and floss your teeth. Every day:

- Gently brush your teeth on all sides with a soft-bristle brush and fluoride toothpaste. Replace your toothbrush every 3 to 4 months.
- Use small circular motions and short back-and-forth strokes.
- Brush carefully and gently along your gum line.
- Lightly brush your tongue or use a tongue scraper to help keep your mouth clean.
- Clean between your teeth with dental floss, prethreaded flossers, a water flosser, or a similar product. This removes plaque and leftover food that a toothbrush can't reach.
- Rinse after you floss.

People with arthritis or other conditions that limit hand motion may find it hard to hold and use a toothbrush. Some helpful tips are:

- Use an electric or battery-operated toothbrush.
- Buy a toothbrush with a larger handle.
- Attach the toothbrush handle to your hand with a wide elastic band.

See your dentist if brushing or flossing causes your gums to bleed or hurts your mouth. If you have trouble flossing, a floss holder may help. Ask your dentist to show you the right way to floss.

Dentures

Sometimes, false teeth (dentures) are needed to replace badly damaged teeth or teeth lost because of gum disease. Partial dentures may be used to fill in one or more missing teeth. Dentures may feel strange at first. In the beginning, your dentist may want to see you often to make sure the dentures fit. Over time, your gums will change shape, and your dentures may need to be adjusted or replaced. Be sure to let your dentist handle these adjustments.

Be careful when wearing dentures because it may be harder for you to feel hot foods and drinks or notice bones in your food. When learning to eat with dentures, it may be easier if you:

- Start with soft, non-sticky food.
- Cut your food into small pieces.
- Chew slowly using both sides of your mouth.

Keep your dentures clean and free from food that can cause stains or bad breath. Avoid small crunchy foods that can get trapped under the dentures and hurt your gums. Brush dentures every day with a denture-care product, and soak them in water or a denture-cleansing liquid at night. Be sure to leave them out of your mouth while you sleep to prevent swollen gums.

Dry Mouth

Dry mouth happens when you don't have enough saliva, or spit, to keep your mouth wet. It can make it hard to eat, swallow, taste, and even speak. Dry mouth can increase your risk of tooth decay, fungal infections of the mouth, and cavities. Many common medicines can cause this problem. For example, medicines for high blood pressure, depression, and bladder-control issues often cause dry mouth.

There are things you can do that may help. Try sipping water or sugarless drinks. Don't smoke, and avoid alcohol, caffeine, soft drinks, and acidic fruit juices. Avoid spicy or salty foods. Sugarless hard candy or sugarless gum that is a little tart may help. Your dentist or doctor might suggest using artificial saliva to keep your mouth wet.

Oral Cancer

Oral cancer can start in any part of the mouth or throat, including the tongue. It is more likely to happen in people over age 40. A dental checkup is a good time for your dentist to look for signs of oral cancer. Pain is not usually an early symptom of the disease. Treatment works best before the disease spreads. Even if you have lost all your natural teeth, you should still see your dentist for regular oral cancer exams.

You can lower your risk of getting oral cancer in a few ways:

- Do not use tobacco products, such as cigarettes, chewing tobacco, snuff, pipes, or cigars.
- If you drink alcohol, do so only in moderation.
- Use lip balm with sunscreen.
- Electronic cigarettes (e-cigarettes) are relatively new, and scientists are still learning about their long-term health effects. However, we do know e-cigarette vapor contains cancer-causing chemicals.

6.3.9 Care of Skin

you may suspect you have dry, oily, or sensitive skin, but do you really know your skin type? Knowing your true skin type can help the next time you're in the cosmetics aisle. In fact, using the wrong products — or even popularized Internet hacks — for your skin type could worsen acne, dryness, or other skin problems.

Read on to learn:

- how to build your own skin care routine
- how to treat specific skin concerns like acne or scars
- which DIY skin hacks aren't healthy, even if they seem to work

Building a daily skin care routine

No matter what your skin type is, a daily skin care routine can help you maintain overall skin health and improve specific concerns like acne, scarring, and dark spots. A daily skin care routine has four basic steps you can do once in the morning and once before you sleep.

1. Cleansing: Choose a cleanser that doesn't leave your skin tight after washing. Clean your face no more than twice a day, or just once, if you have dry skin and don't wear makeup. Avoid washing for that squeaky-clean feeling because that means your skin's natural oils are gone. Cleansers known to work well for all skin types include Cetaphil and Banila Clean It Zero Sherbet Cleanser.

2. Serums: A serum with vitamin C or growth factors or peptides would be better in the morning, under sunscreen. At night, retinol or prescription retinoids work best. Makeup Artist's Choice has an effective vitamin C and E serum and retinol available.

3. Moisturizer: Even oily skin needs moisturizer, but use one that is lightweight, gel-based, and non-comedogenic, or doesn't block your pores, like CeraVe's facial lotion. Dry skin may benefit from more cream-based moisturizers like MISSHA Super Aqua Cell Renew Snail Cream. Most brands will label their products as gel or cream on their packaging.

4. Sunscreen: Apply sunscreen with at least 30 SPF 15 minutes before heading outdoors, as it takes a while for sunscreen to activate. Darker skin tones actually need more sun protection because hyperpigmentation is harder to correct. Try EltaMD's sunscreen, which offers broad-spectrum UVA/UVB protection and is recommended by the Skin Cancer Foundation.

Choose products that fit your skin type and sensitivity, and remember to read the labels. Some products, such as retinol or prescription retinoids, should only be applied at night.

For all skin types

- Stay hydrated.
- Change pillow cases at least once a week.
- Wash or wrap up hair before bed.
- Wear sunscreen every day and apply 15 minutes before going out.

Start with a basic and simple routine to see how your skin reacts. Once you're comfortable, you can then add extra products such as exfoliants, masks, and spot treatments to boost your skin's health.

And don't forget to patch test new products, especially if you suspect you have sensitive skin. This can help you identify potential allergic reactions.

To patch test a new product:

1. Apply a small amount of product on your skin in a discreet area, such as the inside of your wrist or your inner arm.
2. Wait 48 hours to see if there's a reaction.
3. Check the area at 96 hours after application to see if you have a delayed reaction.

An allergic reaction may include irritation, redness, small bumps, or itchiness. If you notice these symptoms, wash the area you tested with water and a gentle cleanser. Then return the product and try another that better suits your skin type.

DIY hacks to avoid (even if everyone does it)

People report wonders from using DIY hacks like lemon juice and toothpaste for common skin problems like acne bumps and dark spots. Even award-winning actress Emma Stone claims her skin care secret is baking soda. But the truth is these hacks may cause more long-term harm than benefit because they can damage your skin's barrier.

Avoid these DIY hacks

- **Lemon juice:** It may have citric acidic, but it's far too acidic and can cause dark spots to appear after sun exposure. It can also dry and irritate your skin.
- **Baking soda:** At a pH level of 8, baking soda will stress your skin, significantly decreaseTrusted Source your skin's water content, and cause dry skin.
- **Garlic:** In raw form, garlic can cause skin allergies, eczema, skin inflammation, and watery blisters.
- **Toothpaste:** The ingredients in toothpaste may kill germs and absorb oil, but they can also dry out or irritate your skin.
- **Sugar:** As an exfoliant, sugar is too harsh for the skin on your face.

- **Vitamin E:** Topical application of vitamin E can irritate your skin and is not proven to improve scar appearance.

Some of these ingredients may be all natural and cost-effective, but they aren't formulated for your skin. Even if you don't feel immediate side effects, these ingredients can cause delayed or long-term damage. It's best to use products formulated for your face. Talk to your doctor or dermatologist before trying DIY applications on your skin.

6.3.10 Care of Ear

Once your hearing is damaged, it's gone for good. That's why we raise awareness about the prevalence of hearing loss, the importance of early diagnosis, and the options for taking action to find the best hearing solution for your needs. Don't wait until it's too late to start taking care of your ears! Here are nine easy ways to protect your ears and your hearing health.

1. Use earplugs around loud noises:

Approximately 15% of Americans have noise-induced hearing loss because of loud work or leisure environments.

Clubs, concerts, lawnmowers, chainsaws, and any other noises that force you to shout so the person next to you can hear your voice all create dangerous levels of sound. Earplugs are convenient and easy to obtain. You can even have a pair custom fitted for your ears by your local hearing healthcare provider.

Musicians' earplugs are custom earplugs with filters that allow a person to hear conversations and music but still reduce harmful sound levels while maintaining the quality of the original sound as closely as possible.

2. Turn the volume down:

According to the World Health Organization, 1.1 billion teenagers and young adults worldwide are at risk for noise-induced hearing loss from unsafe use of audio devices.

If you like to enjoy music through headphones or earbuds, you can protect your ears by following the 60/60 rule. The suggestion is to listen with headphones at no more than 60% volume for no more than 60 minutes a day.

Earbuds are especially dangerous, as they fit directly next to the eardrum. If possible, opt for over-the-ear headphones.

Don't forget that any loud music, not just music played through headphones, presents a risk for noise-induced hearing loss. If you're hosting a social event, keep the music at a volume which won't force people to shout in order to hold a conversation.

3. Give your ears time to recover:

If you are exposed to loud noises for a prolonged period of time, like at a concert or a bar, your ears need time to recover. If you can, step outside for five minutes every so often in order to let them rest.

What's more, researchers have found that your ears need an average of 16 hours of quiet to recover from one loud night out.

4. Using cotton swabs to clean your ear:

It's common for people to use cotton swabs to clean wax out of their ear canal, but this is definitely not advisable. A little bit of wax in your ears is not only normal, but it's also important. The ears are self-cleaning organs, and wax stops dust and other harmful particles from entering the canal. Plus, inserting anything inside your ear canals risks damaging sensitive organs like your ear drum.

If you have excess wax, you can clean around the canal with a damp towel—gently. You could also use ear wax removal solution over the course of a few nights. This softens the wax so that it will eventually flow out on its own. The best solution is always to seek a professional opinion and care when possible.

5.Take medications only as directed:

Certain medications, such as non-steroidal anti-inflammatory drugs (NSAIDS) like aspirin, ibuprofen and naproxen, can sometimes contribute to hearing loss. Discuss medications with your doctor if you're concerned that they'll impact your hearing ability and take them only as directed.

6. **Keep your ears dry:**

Excess moisture can allow bacteria to enter and attack the ear canal. This can cause swimmer's ear or other types of ear infections, which can be dangerous for your hearing ability. Be sure you gently towel-dry your ears after bathing or swimming. If you can feel water in the ear, tilt your head to the side and tug lightly on the ear lobe to coax the water out.

You can also ensure that your ears stay dry and healthy by using custom-fit swimmers' earplugs, which block water from entering the ear canal. They're great for adults and kids alike, and they work wonders in preventing swimmer's ear. Make an appointment with your local hearing health professional to get fitted.

7. Get up and move:

Did you know that exercise is good for your ears? It's true. Cardio exercises like walking, running, or cycling gets the blood pumping to all parts of your body, including the ears. This helps the ears' internal parts stay healthy and working to their maximum potential.

Make sure to stay safe! When cycling, always wear a helmet. If you fall and hit your head, a concussion can harm your hearing.

8. Manage stress levels:

Stress and anxiety have been linked to both temporary and permanent tinnitus (a phantom ringing in the ears). High levels of stress cause your body to go into fight or flight mode, which is an instinctual reaction that fills your body with adrenaline to help you either fight or flee from danger. This process puts a lot of pressure on your nerves, blood flow, body heat, and more. It's commonly thought that this pressure and stress can travel up into your inner ear and contribute to tinnitus symptoms.

9. Get regular checkups:

Ask your primary care physician to incorporate hearing screenings into your regular checkups. Because hearing loss develops gradually, it's also recommended that you have annual hearing consultations with a hearing healthcare professional. That way, you'll be more likely to recognize signs of hearing loss and take action as soon as you do.

Taking action is important because untreated hearing loss, besides detracting from quality of life and the strength of relationships, has been linked to other health concerns like depression, dementia, and heart disease.

6.3.11 Care of Hair

1. Wash Your Hair Regularly
Washing your hair regularly ensures that your scalp and hair is free of dirt and excess oil. However, the right frequency depends on your hair type and personal preferences. If you have extremely dry hair, limit your washing to twice a week. If you have an oily scalp, washing your hair on alternate days can help.

2. Use Chemical Free Shampoos
You really can't control all the environmental factors that damage your hair, but what you can control is the kind of shampoos you use. Lesser the number of chemicals in your shampoo, healthier your hair. Go for gentle shampoos that suit your hair type. Sulfates and parabens in shampoos are used for lathering and preserving respectively, but they can cause skin irritation over time and increase the risk of hormonal disruptions.

3. Condition Correctly
Your conditioner contains ingredients that make the hair fall straight and manageable. It protects your hair from environmental aggressors and heat styling. However, it should be applied only on the tips of the hair and not on your scalp. Also, make sure to rinse it off thoroughly post application.

4. Dry Your Hair Naturally
We know. Blow drying makes your hair as beautiful as that of your on-screen idol. But excessive heat styling can damage your hair scalp. Limit it to important events, if you have to style. Air drying or towel drying after shampoo is the best way to go. Never sleep in wet hair or comb wet hair. Harsh rubbing with a towel can damage the cuticle of your hair. Be gentle.

5. Oil Your Hair Properly
Pre-shampoo treatments like oiling and massaging improve blood circulation on the scalp, relax your muscles, boost shine and nourish the hair. It also restores moisture content, enables hair growth and repairs split ends. You can choose from coconut oil, almond oil, olive oil, castor oil and the likes. Avoid using mineral oil on your hair.

6. Use A Wide-toothed Comb
Wet hair is fragile and prone to breakage. Let your hair dry and then use a wide-toothed comb to brush your hair. This kind of a comb prevents damage to your hair.

7. Style Your Hair Naturally
Who does not like those gorgeous curls or perfect waves? But you can achieve these without putting your hair through heat. Here's how:

If you still wish to use a curler or straightener or a blow dryer, invest in a good heat protectant serum first.

8. Trim Your Hair Regularly

Trim your hair every 6-8 weeks to get rid of split ends. Split ends form when the hair is damaged due to heat styling, pollution, smoking, stress and so on. Trimming does not magically make the hair grow faster. Hair growth happens at the scalp level, but trimming ensures healthy hair.

9. Drink More Water

Internal hydration coupled with external hydration is the key to well-balanced and healthy hair. You may be using hydrating hair care products and oils, but drinking at least 3 litres of water everyday ensures good hair health.

10. Eat Healthy

We will go on repeating 'you are what you eat' as long as we write about hair care and skin care. Your hair is made of proteins and amino acids. It needs the right nutrition to grow well and maintain itself. Eggs, berries, nuts, fish, green leafy vegetables, sweet potatoes are some of the many great foods for healthy hair.

11. Use Hair Caps/hats

Just as sunlight has a damaging effect on your skin, it applies to your hair too. Harsh sun rays can remove the moisture from your hair making it dry, brittle and damaged over the course of time. Use hats when you step out to protect your hair from this damage. Protect your hair with caps when you are in a swimming pool. Chlorinated water is bad for your hair.

12. Use Hair Bands
We love to flaunt our open hair, but do use hair bands to limit the hair exposure to environmental aggressors. Use fabric hair ties instead of the plastic ones. Don't pull your hair too tight when making a ponytail or any other hairstyle.

13. Use A Hair Wrap Or Old T-shirt To Dry
This one's new. Your t-shirt can be used to dry your wet hair without causing damage to the hair. Traditional towels are rough on your hair cuticles and damage your hair over time. Save up your soft, old t-shirts from now on!

Hair Care Don'ts

1. Hot Showers
Hot showers strip off the natural oils from your scalp leaving it dry and flaky. Cold showers are your best bet.

2. Stress
If you notice someone with healthy hair, we can bet our lives and say that they worry a little less. Stress can cause hair fall and unhealthy hair.

3. Chemicals
Chemicals from dying, perming and other hair treatments affect your hair follicles, disrupt hair growth and can also lead to hair fall.

4. Hair Styling Products
Heat styling using straighteners, blow dryers and curlers for prolonged periods changes hair texture, makes hair dry and prone to breakage.

5. Salt Water Hair Wash
Salt water damages the hair cuticle, irritates the scalp and makes the hair tangled. Avoid chlorinated water in swimming pools.

6.3.12 Care of Nail

To keep your fingernails looking their best:

- **Keep fingernails dry and clean.** This prevents bacteria from growing under your fingernails. Repeated or prolonged contact with water can contribute to split fingernails. Wear cotton-lined rubber gloves when washing dishes, cleaning or using harsh chemicals.
- **Practice good nail hygiene.** Use a sharp manicure scissors or clippers. Trim your nails straight across, then round the tips in a gentle curve.
- **Use moisturizer.** When you use hand lotion, rub the lotion into your fingernails and cuticles, too.
- **Apply a protective layer.** Applying a nail hardener might help strengthen nails.
- **Ask your doctor about biotin.** Some research suggests that the nutritional supplement biotin might help strengthen weak or brittle fingernails.

Fingernail care: Don'ts

To prevent nail damage, don't:

- **Bite your fingernails or pick at your cuticles.** These habits can damage the nail bed. Even a minor cut alongside your fingernail can allow bacteria or fungi to enter and cause an infection.
- **Pull off hangnails.** You might rip live tissue along with the hangnail. Instead, carefully clip off hangnails.
- **Use harsh nail care products.** Limit your use of nail polish remover. When using nail polish remover, opt for an acetone-free formula.
- **Ignore problems.** If you have a nail problem that doesn't seem to go away on its own or is associated with other signs and symptoms, consult your doctor or dermatologist for an evaluation.

Signs of Healthy Nails:

- Nail plates are a pinkish-white color
- Cuticles are existent (so don't cut them!)
- Nails and white tips are even lengths
- Prominent half-moon shaped white section (called the lunula) at nail base

Signs of Unhealthy Nails:

- Peeling or splitting nails could be dryness or the result of vitamin deficiency
- Tiny white spots usually mean you're biting your nails or painting them too often
- Horizontal grooves could be from stress, high fevers, or jamming your finger
- Red, swollen skin around nails could be from removing or biting cuticles
- Spoon-shaped nails could be a sign of iron deficiency or anemia

If you're concerned about your nail health, it's important to consult a dermatologist. Since your nails are super visible, it's easier to tell if an issue arises — meaning you can treat it early if you get help, says dermatologist and nail-care specialist Dr. Dana Stern. Now here's **how to get strong, healthy nails**:

1. Keep your hands very clean.

Before you do anything, it's important to make sure your nails and the skin around them are thoroughly dirt-free. Then remove all traces of your last color with an acetone-free remover (anything else unnecessarily dries out your nail). Dr. Ava Shamban, author of *Heal Your Skin*, recommends applying soap to a toothbrush, then gently scrubbing your nails and skin. This will remove dirt and exfoliate any dead skin without the need for harsh, drying chemicals or expensive scrubs.

2. Be gentle on your nails.

Your nails are delicate, and scrubbing them too roughly can actually expose you to infection. Another no-no: Using metal tools under the nail, as too much digging can cause the nail plate to separate from the skin (called onycholysis). It's a common problem for people over 50, according Dr. Stern, who is also the developer of the Dr. Dana Nail Renewal System. This could also lead to an irregular white, arching nail tip, explains NYC dermatologist Dr. Janet Prystowsky.

3. Clip your nails regularly.

Regular trims are as important to your nails as they are to your hair, says Dr. Prystowsky. So set aside time to clip them every two weeks, adjusting to more or less often once you see how your nails respond.

4. Prioritize nail health over length.
Long nails are beautiful, but if you're someone who has struggled with snags or breakage, Dr. Shamban recommends that you keep your nails short — at least to start out with. A shorter style with a rounded edge tends to be easier to manage and looks neater, so you can focus on building strength without worrying about anything else. As long as each nail is uniform in shape and matches its nine neighbors, you won't miss the added length.

5. Always keep a nail file on hand.
If you're someone whose work or gym routine causes a lot of wear and tear, Dr. Prystowsky suggests keeping a nail file handy to smooth away any rough edges that happen on the spot. The best way to do it? Work in one direction with the grain of your nail for a smoother finish.

And it turns out, the emery board that's been sitting in your drawer could be causing your nails to peel and snag. Instead, try a glass (also called crystal) nail file. "A glass file will create an even edge to the nail and can be used on the weakest, brittle, and damaged nails," says Dr. Stern.

6. Don't forget to take care of your nail tools, too.
Disinfecting your nail tools between uses is just as important as regularly cleaning your makeup brushes, and for the same reason — bacteria. To keep your nails happy and infection-free, Dr. Prystowsky advises washing metal tools with soap and water and then wiping down with rubbing alcohol. And don't forget to regularly replace disposable tools like emery boards. There's no reason to continue using a tattered tool when it's so easy to rotate in a new one for a few bucks.

7. Leave your cuticles alone.
The cuticle has a very important purpose to serve: It seals the area at the base of the nail. So when you cut or remove the cuticle, it breaks that seal of protection, leaving you vulnerable to bacteria and the possibility of infection. The better you are at leaving cuticles alone, the more your nails will thank you. Taking care of your cuticles also helps minimize those dreaded hangnails (try not to tear them to avoid infections), says Dr. Stern.

If you're dead-set on messing with your cuticles, Dr. Debbie Palmer, dermatologist and creator of Replere, recommends gently pushing back the cuticle once a week with a wooden orange stick after getting out of the shower, then massaging them with a cuticle oil or thick, creamy lotion.

8. Protect your nails with a base coat.
Painting your nails at home is no excuse to cut corners by skipping the base coat. Dr. Prystowsky points out that this step not only protects the nail from being stained by the polish, but also helps the color look more saturated and opaque with just one coat. And if you really want to take things to the next level, Dr. Shamban suggests adding a coat of clear gloss between each layer to add extra shine and protection.

9. Read the labels on your polish.
Just as with makeup and skincare, not all nail polish brands are created equal, so make sure you're buying or using a good product. Dr. Debbie Palmer urges you to steer clear of polishes containing toxic chemicals like dibutyl phthalate, formaldehyde, and toluene, as these toxins can contribute to brittleness, splitting, and cracking.

In a nutshell:

1. Keep Your Fingernails Dry And Clean
2. Stop Biting Your Nails
3. Tame Your Cuticles
4. Maintain Hygiene
5. Use A Moisturizer
6. Trim Regularly
7. Apply A Base Coat For Protection
8. Top It Up With A Top Coat
9. Never Scrape Off Your Nail Polish
10. Wear Gloves For Protection
11. Avoid Gel And Acrylics
12. File Your Nails In One Direction
13. Stop Opting For Water-Based Manicures
14. Avoid Harsh Polishes
15. Buff Instead Of Color
16. Use A Cuticle Softner To Avoid Brittle Nails
17. Make Your Nail Polish Last Longer
18. Cut Nails Straight Across
19. Choose A Good Remover
20. Try Natural Nail-Strengthening Treatments
21. Eat Well
22. Avoid Nail Hardeners
23. Stay Away From Acetone
24. Avoid Rough Emery Boards
25. Clean Extra Polish Off Cuticles

Sub Unit – IV

Communicable diseases: causes, symptoms, prevention through other means and Immunization.

6.4.1 What is Communicable Diseases?

Communicable diseases, also known as infectious diseases or transmissible diseases, are illnesses that result from the infection, presence and growth of pathogenic (capable of causing disease) biologic agents in an individual human or other animal host. Infections may range in severity from asymptomatic (without symptoms) to severe and fatal. The term infection does not have the same meaning as infectious disease because some infections do not cause illness in a host. Disease causing biologic agents include viruses, bacteria, fungi, protozoa, multicellular parasites, and aberrant proteins known as prions. Transmission of these biologic agents can occur in a variety of ways, including direct physical contact with an infectious person, consuming contaminated foods or beverages, contact with contaminated body fluids, contact with contaminated inanimate objects, airborne (inhalation), or being bitten by an infected insect or tick. Some disease agents can be transmitted from animals to humans, and some of these agents can be transmitted in more than one way. A communicable disease is one that is spread from one person to another through a variety of ways that include: contact with blood and bodily fluids; breathing in an airborne virus; or by being bitten by an insect. Reporting of cases of communicable disease is important in the planning and evaluation of disease prevention and control programs, in the assurance of appropriate medical therapy, and in the detection of common-source outbreaks. California law mandates healthcare providers and laboratories to report over 80 diseases or conditions to their local health department. Some examples of the reportable communicable diseases include Hepatitis A, B & C, influenza, measles, and salmonella and other food borne illnesses.

A communicable disease is any disease that passes between people or animals. People sometimes refer to communicable diseases as “infectious” or “transmissible” diseases.

Pathogens, including bacteria, viruses, fungi, and protists, cause communicable diseases.

A person may develop a communicable disease after becoming infected by the pathogen. This may happen through:

- direct contact with a person carrying the pathogen
- contact with contaminated fluids, such as blood, mucus, or saliva
- inhaling contaminated droplets from another person’s cough or sneeze
- receiving a bite from an animal or insect carrying the pathogen
- consuming contaminated water or foods

Once a pathogen has entered a person’s body, it will begin replicating. The individual may then begin to experience symptoms.

Some symptoms are a direct result of the pathogen damaging the body’s cells. Others are due to the body’s immune response to the infection.

Communicable diseases are usually mild, and symptoms pass after a few days. However, some can be serious and potentially life threatening.

How these diseases spread depends on the specific disease or infectious agent. Some ways in which communicable diseases spread are by:

1. physical contact with an infected person, such as through touch (staphylococcus), sexual intercourse (gonorrhea, HIV), fecal/oral transmission (hepatitis A), or droplets (influenza, TB)
2. contact with a contaminated surface or object (Norwalk virus), food (salmonella, E. coli), blood (HIV, hepatitis B), or water (cholera);

3. bites from insects or animals capable of transmitting the disease (mosquito: malaria and yellow fever; flea: plague); and
4. travel through the air, such as tuberculosis or measles.

6.4.2 Causes of Communicable diseases.

Communicable diseases in humans are caused by microorganisms including:

- Viruses that invade and multiply inside healthy cells
- Bacteria, or small, single-celled organisms capable of causing disease
- Fungi, which include many different kinds of fungus
- Parasites, which are organisms that live inside host bodies causing sickness

Infectious diseases spread in multiple ways. In many cases, direct contact with a sick individual, either by skin-to-skin contact (including sexual contact) or by touching something another person touches, transmits the disease into a new host. Contact with body fluids, such as blood and saliva, also spreads infectious diseases.

Some diseases spread through droplets discharged from a sick person's body when they cough or sneeze. These droplets linger in the air for a short period of time, landing on a healthy person's skin or inhaled into their lungs.

In some cases, infectious diseases travel through the air for long periods of time in small particles. Healthy people inhale these particles and later become sick. Only certain diseases spread with airborne transmission, including tuberculosis and the rubella virus.

6.4.3 Symptoms of Communicable diseases

Four main types of pathogens cause infection: Viruses, bacteria, fungi, and protists.

Viruses

Viruses are tiny pathogens that contain genetic material. Unlike other pathogens, they lack the complex structure of a cell. To replicate, they must enter the cells of other living beings. Once inside, they use the cell's machinery to make copies of themselves.

Some different viruses include:

Rhinoviruses

Rhinoviruses are a group of viruses that are responsible for the common cold. Symptoms of a cold may include:

- a stuffy or runny nose
- sore throat
- headache

A person can catch a rhinovirus by inhaling contaminated droplets from the cough or sneeze of another person.

Similarly, rhinoviruses spread by people touching their nose, eyes, or mouth after touching items or surfaces that have come into contact with the virus.

Influenza

Influenza viruses are infections that attack the respiratory system. Some potential symptoms include:

- fever or chills
- stuffy or runny nose
- sore throat
- cough
- headaches
- muscle or body aches

- fatigue

A person can catch influenza viruses in the same way they may catch rhinoviruses.

HIV

HIV attacks the immune system of its host. This makes the person vulnerable to other infections and diseases.

A person can contract HIV as a result of contact with blood or other body fluids containing the virus.

The symptoms of HIV may develop gradually and in stages. They can include:

- fever
- chills
- rash
- mouth sores
- sore throat
- swollen lymph nodes
- night sweats
- muscle aches
- fatigue

The only way a person can be certain they have HIV is to have an HIV test.

Although there is no cure for HIV, medications can help to keep the virus under control. Without such treatment, HIV can develop into AIDS.

Bacteria

Bacteria are microscopic, single celled organisms. They exist in almost every environment on earth, including inside the human body.

Many bacteria are harmless, and some help the body to function. However, bacteria can also cause infections that damage the body.

Some different types of bacterial infection include:

Salmonella *and* Escherichia coli

Salmonella and *Escherichia coli (E. coli)* are two different types of bacteria that can infect the digestive system.

They typically spread through contaminated foods, such as uncooked meats, and unwashed fruits and vegetables.

Some symptoms of these infections include:

- abdominal cramps
- diarrhea
- fever
- headache

Tuberculosis

Tuberculosis (TB) is a bacterial infection that primarily attacks the lungs. It may cause the following symptoms:

- a cough continuing for more than 3 weeks
- loss of appetite
- unintentional weight loss
- fever
- chills
- night sweats

A person can catch TB by inhaling tiny droplets or “aerosols” from the cough or sneeze of a person who has the infection. However, the American Lung Association state that while TB is contagious, it does not easily spread from person to person.

Fungi

Fungi are a type of organism that includes yeasts, molds, and mushrooms. There are millions of different fungi, but only around 300 cause harmful illnesses.

Fungal infections can occur anywhere in the body, but they commonly affect the skin and mucus membranes. Some different types of fungal infection include:

Ringworm

Ringworm is a common fungal infection of the skin. The characteristic symptom of ringworm is a red or silver ring shaped rash. It may be dry, scaly, or itchy.

People may contract ringworm in the following ways through close contact with a person who has ringworm. Alternatively, they can catch it from sharing towels, bedding, or other personal items with a person who has ringworm.

Without treatment, ringworm may spread to other parts of the body.

Athlete's foot

Athlete's foot is a common fungal infection that affects the skin on the feet. It typically causes sore or itchy white patches between the toes.

People can contract athlete's foot through direct contact with someone who has the fungus, or surfaces that have been in contact with the fungus.

For example, an individual might contract athlete's foot after walking barefoot in locker rooms, showers, or swimming pools.

Protists

Protists are microscopic organisms that typically consist of a single cell.

Some protists are parasitic, meaning they live on or inside another organism and use the organism's nutrients for their own survival. Parasitic protists can cause various diseases.

The protist *Plasmodium* causes the tropical disease malaria. The parasite can pass from person to person through mosquito bites.

Malaria causes symptoms such as:

- fever and chills
- headaches
- vomiting
- diarrhea
- muscle pains

Without proper treatment, malaria can be life threatening.

6.4.4 Prevention of Communicable Diseases through means and Immunization

Building up host immunity by having a well balanced diet, adequate rest and sleep, regular exercise, being a non-smoker and avoiding alcohol consumption are vital to the prevention of communicable diseases. Vaccination should be given to high risk groups. Moreover, good personal hygiene, environmental hygiene and food safety should be observed.

1. Personal hygiene: Observing personal hygiene is an important tip in prevention of communicable diseases. It includes hand hygiene, respiratory hygiene and cough manners, skin care and avoiding sharing of personal items such as towels, combs, toothbrushes, etc.

1.1 Hand hygiene:

Hand hygiene is a prerequisite for the prevention of many infections. Two hand hygiene practices are recommended: hand washing with liquid soap and using alcohol-based handrub.

Home managers of RCHEs should provide adequate hand washing facilities and place alcohol-based handrub at convenient locations to facilitate staff, residents and visitors to perform hand hygiene. They should also remind residents and staff of the following: • Avoid wearing objects

that may harbour infective agents such as artificial nails, rings, watches and bracelets, etc. • Perform hand hygiene before wearing and after taking off gloves. Even though gloves are worn, hand hygiene can never be substituted. • Observe proper hand hygiene techniques irrespective of whether hand washing with liquid soap or alcohol-based handrub is used. • Staff should perform hand hygiene and encourage residents to perform hand hygiene when necessary, e.g. before each meal.

A. Hand washing • Wash hands with liquid soap and water when hands are visibly soiled or likely contaminated with body fluid. • Steps for hand washing: (i) Wet hands under running water. (ii) Away from the running water, apply liquid soap on hands to make a soapy lather. (iii) Rub the palms, back of hands, between fingers, back of fingers, thumbs, finger tips and wrists. Do this for at least 20 seconds (for details, please refer to Section 3.1.1 C). (iv) Rinse hands thoroughly under running water. (v) Do not re-contaminate washed hands by touching the faucet directly. The tap may be turned off by wrapping the faucet with the paper towel, or clean the faucet by splashing with water or asking someone for assistance. (vi) Dry hands thoroughly with paper towel or a hand dryer. • Never share towel with others. • Dispose of used paper towel properly. • Store personal towels properly and wash them thoroughly at least once daily.

B. Use of alcohol-based handrub • Using 70-80% alcohol-based handrub to rub hands is effective to prevent contracting and spreading communicable diseases via hands when hands are not visibly soiled. • Same as hand washing, apply adequate amount of alcohol-based handrub and cover all surfaces of the hands; rub the palms, back of hands, between fingers, back of fingers, thumbs, finger tips and wrists; rub for at least 20 seconds until the hands are dry • Allow alcohol to evaporate naturally for maximum effect and no need to use paper towels to dry the hands. • Need to check the expiry date of alcohol-based handrub before using it.

C. When to perform hand hygiene For staff, there are 'Five moments for hand hygiene' : • Before touching a resident; • Before a clean or aseptic procedure, e.g. before nasogastric tube feeding or changing dressing; • After blood, body fluid, secretion, excreta, wound or mucous membrane exposure risk, e.g. after changing diaper; • After touching a resident; • After touching contaminated items or resident surrounding environment. Staff should also perform hand hygiene, and encourage residents to perform hand hygiene for the following situations: • Before and after touching eyes, nose and mouth; • Before handling or eating food; • Before taking medications; • After using the toilet; • When hands are contaminated by respiratory secretions, e.g. after coughing or sneezing; • After touching public installations or equipment, such as escalator handrails, elevator control panels or door knobs; • After contact with animals or poultry.

2. Respiratory hygiene and cough manners Respiratory hygiene and cough manners are recommended for all persons: • Cover nose and mouth with tissue paper when coughing or sneezing. • Dispose of soiled tissue paper in a garbage bin with lid or flush them away in the toilet. • Wash hands thoroughly after contact with respiratory secretions or touching objects contaminated with respiratory secretions. • Put on a surgical mask if there are respiratory symptoms. Staff should ensure the availability of materials for residents to adhere to respiratory hygiene and cough manners. • Provide tissue paper and garbage bin with lid for disposal. • Ensure that supplies for hand washing (i.e. liquid soap and paper towels) are consistently available near sinks and provide dispensers of alcohol-based handrub in convenient locations. • Put up signage and remind residents and visitors not to spit on floor. • Put up signage to remind visitors to put on surgical mask if there are respiratory symptoms.

3. Skin care Staff should pay attention to the following points for residents' skin care: • Help residents to check their skin condition and pay particular attention to skin fold under the armpit, around the neck and groin area. • Assist dependent residents to dry the skin fold between the toes properly and do not use talcum powder as it forms crusts and causes skin irritation. • Cleanse and cover abrasion, if present, with dressing to prevent wound infection. • Advise ambulant residents to put on socks or shoes to prevent abrasion around the soles or toes.

2. Environmental hygiene:

1. General cleaning • Always keep the windows open for good indoor ventilation. Fans or exhaust fans can be used to improve indoor ventilation. • Clean the dust filters of air-conditioners regularly. • Clean and disinfect frequently touched surfaces, furniture, rehabilitation aids, floor, toilets and bathrooms regularly, for example daily clean and disinfect with 1 in 99 diluted household bleach (mixing 1 part of household bleach containing 5.25% sodium hypochlorite with 99 parts of water). • For places soiled by vomitus, excreta or secretions, clean up the visible matter with strong absorbent disposable material, then disinfect with 1 in 49 diluted household bleach (mixing 1 part of household bleach containing 5.25% sodium hypochlorite with 49 parts of water). • For spillage of blood, clean the visible matter with strong absorbent disposable material, then disinfect with 1 in 4 diluted household bleach (mixing 1 part of household bleach containing 5.25% sodium hypochlorite with 4 parts of water), leave for 10 minutes and then rinse with water and keep dry. • Clean the floor regularly and increase the frequency as the circumstances require. The floor should be kept dry after cleaning so that residents and staff will not slip on it. Carpets should be kept clean by regular washing and daily vacuum cleaning. • Clean and examine the bedside cupboards of the residents regularly to avoid food remnants and hence the breeding of pests and rodents. • Keep appropriate distance between beds or groups of beds (not less than 1 metre as far as possible or with partitioned barrier between beds) to reduce the chance of transmission of infective agents by droplets. • Empty water in the saucers underneath flower pots and change water in vases at least once a week. Top up all defective ground surfaces to prevent accumulation of stagnant water and breeding of mosquitoes. To prevent rodent infestation, avoid stacking of unnecessary articles. • Commence clean-up actions immediately when there are any signs of pest or rodent infestation such as excreta of rats, cockroaches, mosquitoes and flies. In case of need, call the Food and Environmental Hygiene Department hotline at 2868 0000 or relevant departments to follow up. • For a hygienic environment, it is not advisable to keep pets such as dogs and cats in RCHEs.

2. Disinfection :

Generally speaking, household bleach, which normally contains 5.25% sodium hypochlorite, is the most convenient and effective disinfectant when it is diluted appropriately (Appendix C). Care should be taken to avoid its use on metal surfaces since sodium hypochlorite is corrosive to metal. Please refer to Appendix D for procedures of preparing diluted bleach. • 1 in 99 diluted household bleach (mixing 1 part of household bleach containing 5.25% sodium hypochlorite with 99 parts of water) is sufficient for general cleaning purpose. • 1 in 49 diluted household bleach (mixing 1 part of household bleach containing 5.25% sodium hypochlorite with 49 parts of water) should be used for places contaminated with vomitus, excreta or secretions and in outbreak situations. • 1 in 4 diluted household bleach (mixing 1 part of household bleach containing 5.25% sodium hypochlorite with 4 parts of water) should be used for places

contaminated with blood spillage. • Use 70% alcohol to disinfect metal surfaces. Apart from household bleach and alcohol, there are many detergents in the market that claim to have disinfection property. Purchasers should seek more information on the effectiveness and the directions for use from the supplier.

3. Cleaning and disinfection for toilets and bathrooms :
• Keep toilets and bathrooms dry and clean. • Provide liquid soap for washing hands. • Provide disposable paper towels or hand dryers for drying hands. • Place garbage bins with lids inside toilets and bathrooms. • Ensure the flushing system of the toilet is in proper function all the times. • Make sure that the drain pipes are built with U-shaped water traps. Do not alter the pipelines without authorisation. • Pour about half a litre of water into each drain outlet regularly (about once a week) so as to maintain the water column in the pipe as water lock to prevent the spread of microorganisms. • Make sure that the soil pipes are unobstructed and the sewage drains are functioning properly without leakage so as to avoid breeding of infective agents.

4. **Domestic waste disposal:**
• Garbage bins should be covered with lids. • Rubbish should be properly wrapped up and discarded into garbage bins with lids. • Garbage bins should be emptied at least once a day. Staff should wash their hands thoroughly after handling refuse.

5. **Cleaning and disinfection of cleaning tools** • To minimise the risk of cross-transmission, different sets of cleaning tools are recommended for different areas such as kitchen, toilets, general areas, isolation room or cohort areas. • Rinse floor mop, wiper or other cleaning tools with water to remove solid or bulky waste if any. Wash with detergents. • Disinfect by immersing them in 1 in 49 diluted household bleach (mixing 1 part of household bleach containing 5.25% sodium hypochlorite with 49 parts of water) for 30 minutes. • Rinse with water. • Reuse after drying

3. Food safety and hygiene:
It is important for RCHEs to ensure food safety and hygiene to prevent food-borne diseases.
1**. Food handlers** • Staff should not handle food if suffering from illnesses such as fever, diarrhoea or vomiting. • Cover wounds with waterproof dressing to prevent passing infective agents from the wounds to food. • Wash hands properly before preparing food. • Do not smoke while preparing or handling food.
2. Maintain a clean and hygienic kitchen • Keep the kitchen clean and tidy. • Clean the exhaust fan and range hood regularly. • Keep worktops and floor in the kitchen clean and dry. • Store eating utensils in a clean cupboard. • Do not store personal items such as clothes and shoes in the kitchen. • Cover garbage bins properly to avoid breeding of cockroaches, flies and rodents. 3. Choice of food • Buy fresh meat and vegetables. • Do not patronise illegal food hawkers. • Do not buy packaged food without proper labelling, beyond its expiry date or with damaged packages. • Do not buy ready-to-eat food or drinks that are displayed together with raw products. • Do not buy food which looks, smells or tastes abnormal. • Avoid unpasteurised dairy products like raw milk. • Do not buy excessive food to avoid prolonged storage.
4. **Food Preparation** • Wash food thoroughly and scrub with a brush when appropriate. • Handle or store raw foods and cooked foods separately. • Use separate knives and chopping boards for raw and cooked food to avoid cross-contamination. • Discard the outer leaves of leafy vegetables and wash the vegetables thoroughly. • Frozen meat or fish

must be thawed completely before cooking. • Cook food thoroughly before consumption. • Sample food with a clean spoon, not with fingers. • Consume food as soon as it is cooked. • Do not prepare too much food at one time to avoid over-stocking. • Cooked food taken out from the refrigerator should be reheated thoroughly before consumption. • Do not touch cooked food with bare hands.

5 **Food Storage** • Keep the storage place clean to avoid pest infestation. • Store food in covered containers. • Never leave perishable food at room temperature. • Store perishable food in refrigerator immediately after purchase. Before refrigeration, pack the food into smaller portions if it is not intended for use in one go. • Store raw meat at the bottom shelf of the fridge so that juices do not drip onto cooked food. • Surplus food should preferably be disposed of or stored in the refrigerator. All leftovers should not be kept for more than 2 days. • Make sure that the refrigerator is clean and functioning properly, and clean it at regular intervals. Keep the temperature inside the refrigerator at or below 4°C and the freezer at or below -18°C. The temperature of each refrigerator should be checked daily. • Avoid overcrowding to allow adequate ventilation inside the refrigerator. • Do not wrap food with newspaper, unclean paper or coloured plastic bags. In summary, staff and residents should adopt safe food handling practice based on the '5 Keys to Food.

5. **Vaccination:** Vaccination should be arranged for residents and staff of RCHEs according to the recommendations of the Department of Health (DH) to prevent them from acquiring vaccine-preventable communicable diseases and to minimise the risk of outbreak occurrence in RCHEs**.**

1. Vaccination for residents • Residents of RCHEs may develop severe or even fatal complications when they suffer from influenza. DH offers free seasonal influenza vaccination to eligible residents of RCHEs annually through the Residential Care Home Vaccination Programme. They are encouraged to receive seasonal influenza vaccination unless they have contraindications. • Free pneumococcal vaccinations are also provided for those eligible residents who are aged 65 or above and have never received the vaccination before.

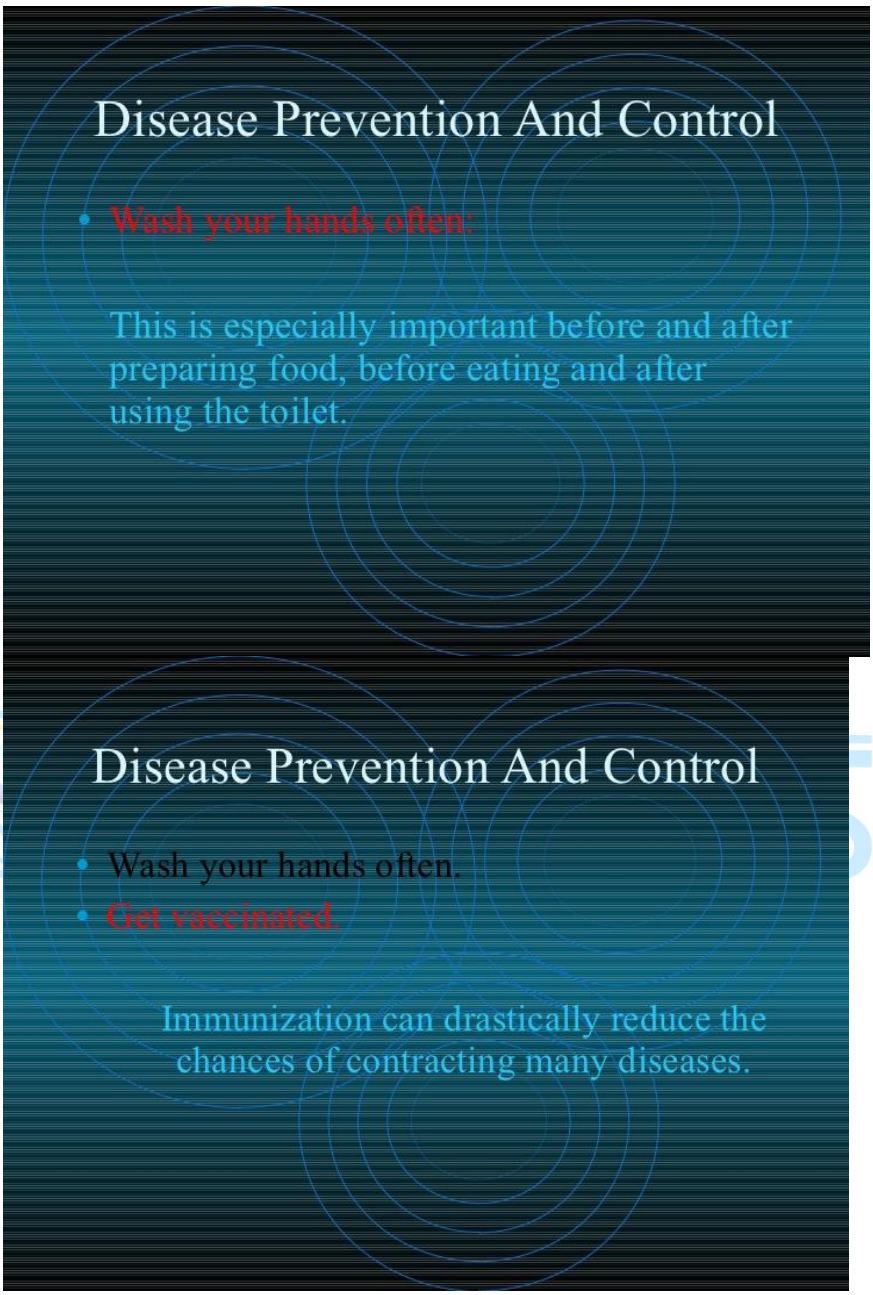
2. Vaccination for staff

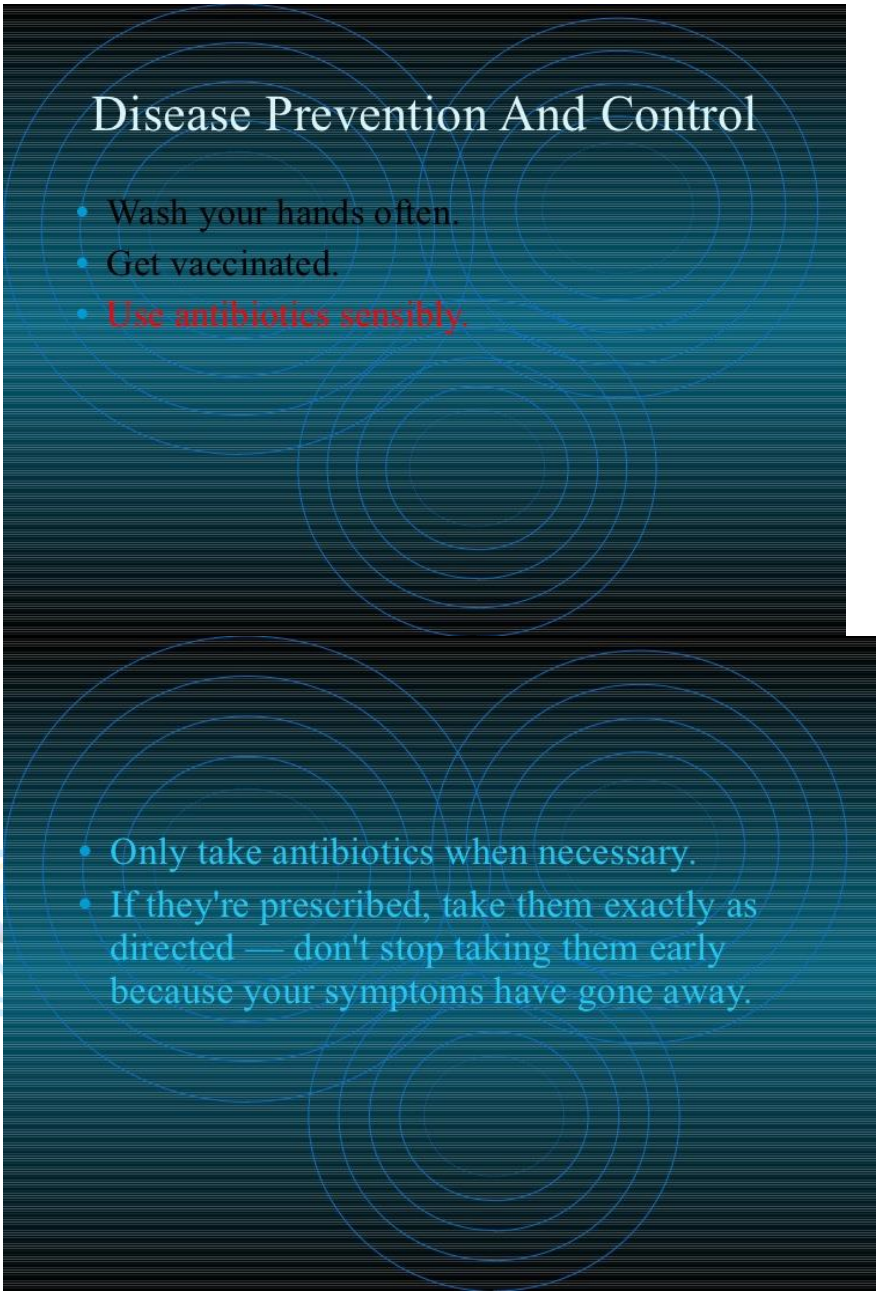
• All staff in RCHEs are offered free seasonal influenza vaccination annually through the Residential Care Home Vaccination Programme. Operators or home managers of RCHEs should encourage the staff to receive seasonal influenza vaccination. • For other vaccinations, please refer to the latest recommendations by DH.

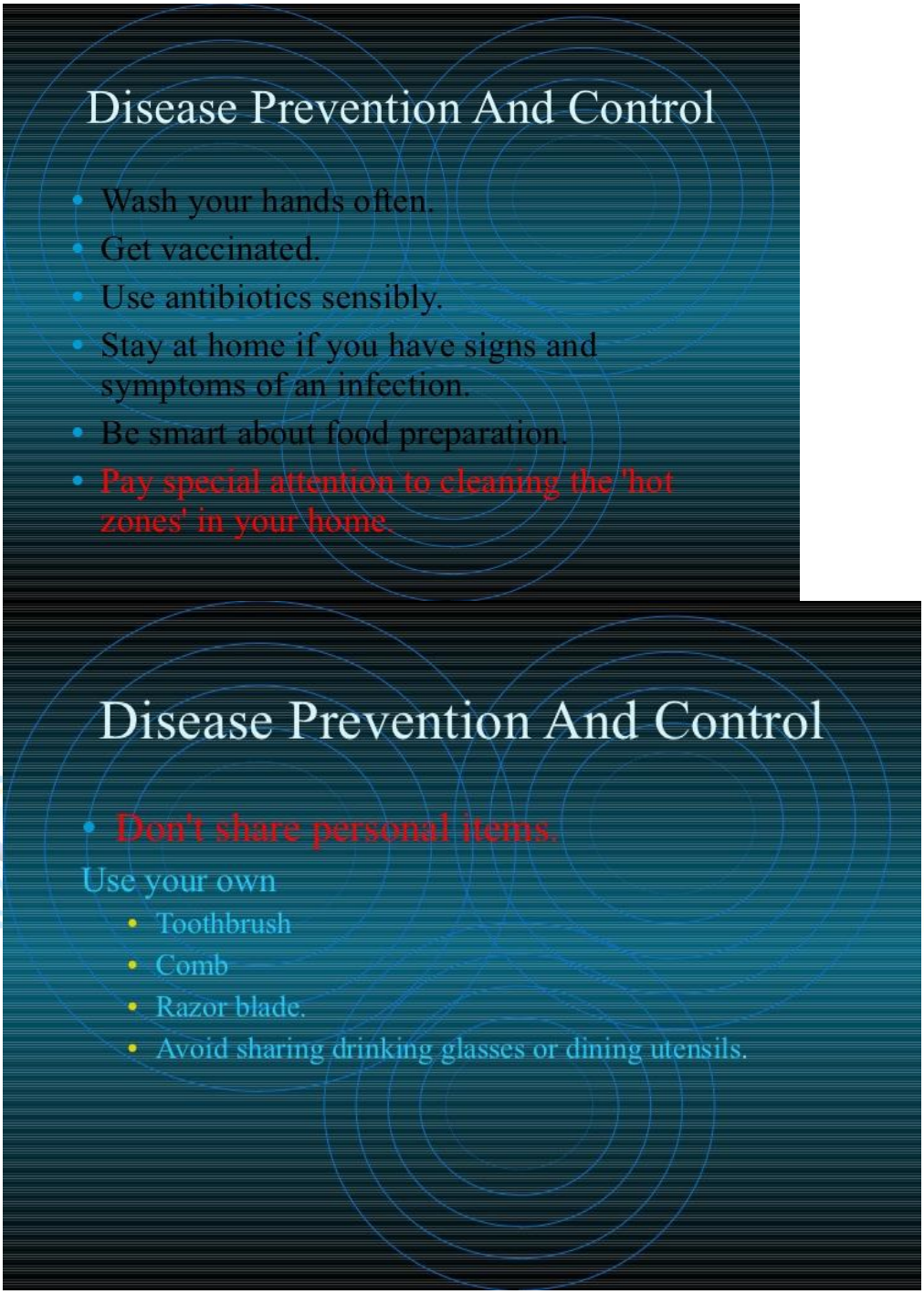
Apart from general hygienic practice and vaccination, staff of RCHEs should also adopt appropriate precautions against communicable diseases. The measures fall under two main categories: • Standard precautions – applicable to all staff and residents • Transmission-based precautions – precautions based on the mode of transmission In addition, isolation of residents with communicable diseases, urging visitors to comply with infection control advice and caring high-risk residents with greater caution will also help to minimise the chance of outbreak of communicable diseases in RCHEs.

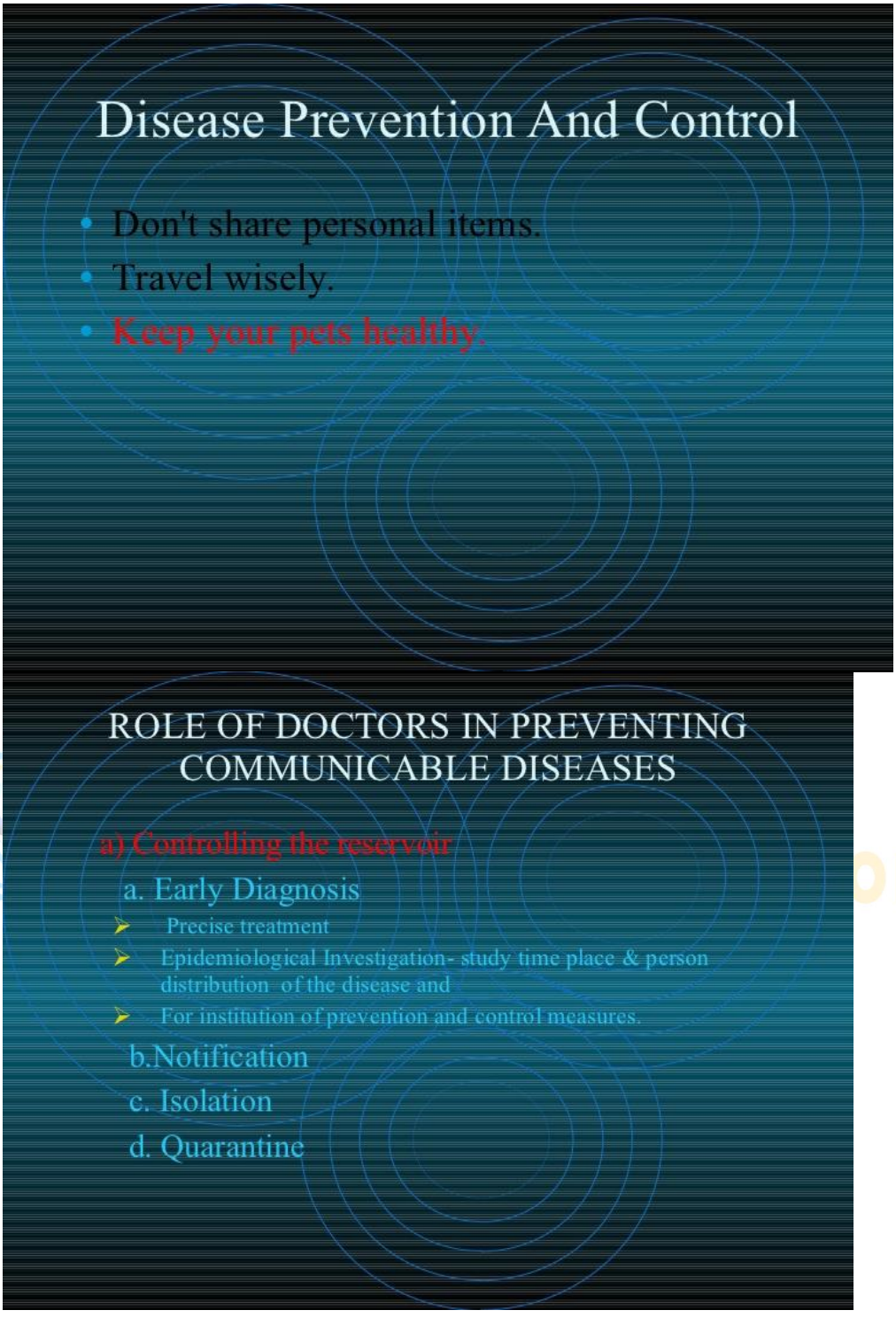
Standard precautions are designed to reduce the risk of transmission of infective agents from recognised or unrecognised sources of infection. They are based on the concepts that all blood, body fluids, secretions, excretions (except sweat) such as urine, faeces, saliva, sputum, vomitus, or secretions from wounds, as well as the non-intact skin such as wound and mucous membrane, should be treated as potentially infectious. Hence, every staff and resident should take appropriate protective measures when coming into contact with these potentially infectious sources. These include: • Hand hygiene • Respiratory hygiene and cough manners • Use of personal protective equipment (PPE) • Environmental cleaning and disinfection • Proper handling of used or contaminated

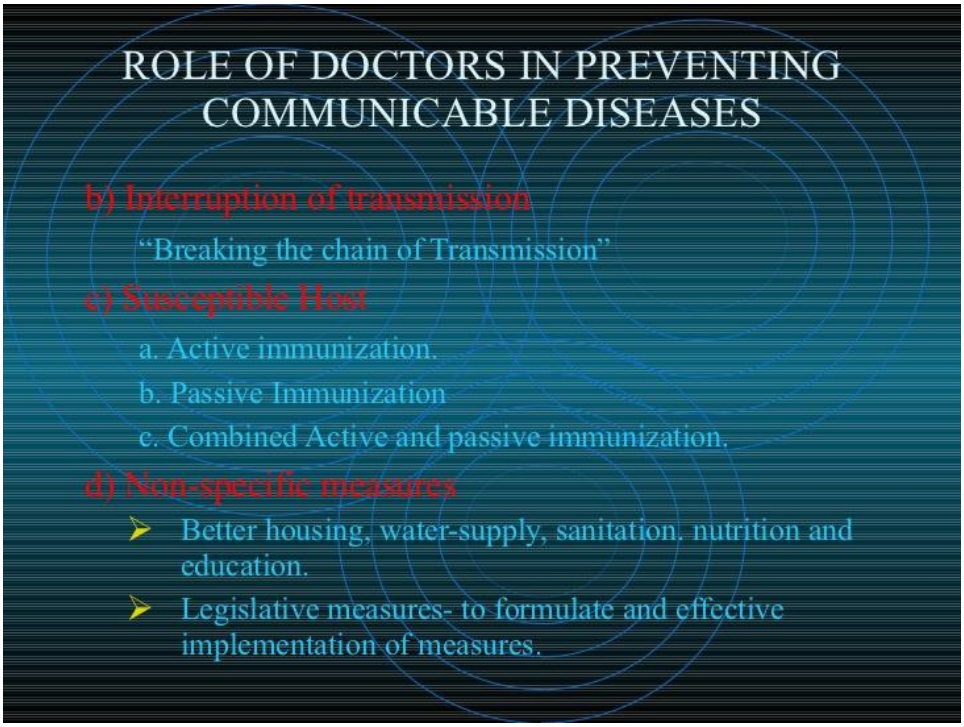
equipment • Proper handling of used or soiled linen • Proper clinical waste disposal • Proper handling of sharps.




Disease Prevention And Control
Wash your hands often.
Get vaccinated.
Use antibiotics sensibly.
Only take antibiotics when necessary.
If they're prescribed, take them exactly as directed — don't stop taking them early because your symptoms have gone away.


Disease Prevention And Control
Wash your hands often.
Get vaccinated.
Use antibiotics sensibly.
Stay at home if you have signs and symptoms of an infection.
Be smart about food preparation.
Pay special attention to cleaning the 'hot zones' in your home.
Disease Prevention And Control
Don't share personal items.
Use your own
Toothbrush
Comb
Razor blade.
Avoid sharing drinking glasses or dining utensils.


Disease Prevention And Control
Don't share personal items.
Travel wisely.
Keep your pets healthy.
ROLE OF DOCTORS IN PREVENTING COMMUNICABLE DISEASES
a) Controlling the reservoir
a. Early Diagnosis
Precise treatment
Epidemiological Investigation- study time place & person distribution of the disease and
For institution of prevention and control measures.
b.Notification
c. Isolation
d. Quarantine



Sub Unit – V
Psychosomatic disorders/ sedentary life style diseases: causes, symptoms and prevention.

6.5.1 What is Psychosomatic Disorders?

Psychosomatic means mind (psyche) and body (soma). A psychosomatic disorder is a disease which involves both mind and body. Some physical diseases are thought to be particularly prone to being made worse by mental factors such as stress and anxiety. To an extent most diseases are psychosomatic - involving both mind and body.

- There is a mental aspect to every physical disease. How we react to disease and how we cope with disease vary greatly from person to person. For example, the rash of psoriasis may not bother some people very much. However, the rash covering the same parts of the body in someone else may make them feel depressed and more ill.
- There can be physical effects from mental illness. For example, with some mental illnesses you may not eat, or take care of yourself, very well which can cause physical problems.

Each disease has its own treatment options. For physical diseases, physical treatments such as medication or operations are usually the most important. However, healthcare workers will usually try to treat a person as a whole and take into account mental and social factors which may be contributing to a disease. Therefore, treatments to ease stress, anxiety, depression, etc, may help if they are thought to be contributing to your physical disease.

The term psychosomatic refers to real physical symptoms that arise from or are influenced by the mind and emotions rather than a specific organic cause in the body (such as an injury or infection).

A psychosomatic illness originates from or is aggravated by emotional stress and manifests in the body as physical pain and other symptoms. Depression can also contribute to psychosomatic illness, especially when the body’s immune system has been weakened by severe and/or chronic stress.

A common misconception is that psychosomatic conditions are imaginary or "all in the head." In reality, physical symptoms of psychosomatic conditions are real and require treatment just as any other illness would. Unfortunately, effective treatment doesn't always come in a timely or effective manner.

The pervasive social stigma attached to psychosomatic illness may prevent someone from seeking treatment. Even when someone does seek treatment, stigma is also present in research and medical communities, at least in part because the mechanisms that drive the stress-illness relationship are not yet fully understood.

You may not have thought much about the unique ways stress manifests physically, but it can be helpful to learn how to recognize when you are under extreme stress. Once you identify the signs, you can work on reducing the effect stress has on your health.

While it sounds like a complicated undertaking, there are actually some simple ways you can determine if you are overly stressed.

Common physical signs of stress include:

- “Butterflies” in the stomach
- Racing heart
- Sweaty palms
- Tense muscles

Bodily signs of stress may be different depending on if you are biologically male or female. For example, women often report symptoms such as fatigue despite getting enough sleep, irritability, abdominal bloating, and changes to their menstrual periods. Signs and symptoms of stress in men, on the other hand, are more likely to include chest pain, increased blood pressure, and changes in sex drive. Symptoms of stress also vary by age. Children often display stress through their bodies because they haven’t yet developed the language they need to communicate how they feel. For example, a child who is having a hard time at school may have frequent stomachaches and may be sent home or ask to stay home. Stress in the teen years can be especially intense, particularly during periods of major social adjustment and hormonal shifts. Sometimes, signs of stress in people in this age group may be missed or attributed to “teen angst” when it is really a sign of adolescent depression. The elderly are also prone to depression, as they are often contending with several compounding factors, such as isolation, loss and grief, and chronic or serious health problems. If you are caring for an aging loved one, make sure you know the signs of depression in older adults. There are actually different kinds of stress, some of which can be positive. Eustress is what makes life invigorating and interesting. It's a feeling that makes you want to get up in the morning and keeps you motivated. If you've ever enjoyed the thrill of a roller coaster ride or felt a sense of excitement and fulfillment when completing a project, you've experienced "good" stress. On the other hand, if you've ever experienced a major loss, gone through a big life change, or endured other stressors, you also know what "bad" stress feels like. Just like you can feel the giddiness and uplifting feelings of good stress all over, the negative effects of bad stress can be felt in your mind and your body. While the exact mechanisms are not completely understood, researchers know that stress and depression can be expressed as physical pain and illness. It’s a complex process, but here’s an analogy that might help. Compare your body to a pressure cooker. If it's allowed to vent its steam, it works efficiently. If it can’t vent steam, the pressure continues to build until the lid blows off. Now, imagine that the cooker is under pressure already and you apply more pressure to keep the lid on. When the container can no longer hold in all the pressure, it will break at its weakest point. Someone who is under stress and not able to “vent” their emotions or who tries to “keep it all in” will eventually reach an emotional breaking point. It may manifest as physical symptoms or trigger an episode of major depression. In retrospect, you may realize there were some warning signs or "clues" that such a break was coming—especially in terms of the physical symptoms you experience. For example, if your neck has always been your physical weakness, you may find your pain increases when you are stressed. Back pain, stomach trouble, and headaches are other common ways stress may take up residence in your body.

6.5.2 Define sedentary life style diseases

A sedentary lifestyle is defined as a type of lifestyle where an individual does not receive regular amounts of physical activity. Where physical inactivity is considered the failure to meet the recommendations of the Center for Disease Control (CDC), stating that an individual should participate in a minimum of 150 minutes of moderate exercise, or 75 minutes of a more vigorous regimen. Most health professionals are also in agreement that walking 10,000 steps a day (approximately 5 miles) is the ideal goal to set for improving health and reducing the health risks caused by inactivity. According to the World Health Organization (WHO), 60 to 85% of

the population worldwide does not engage in enough activity. Making physical inactivity the fourth leading risk factor for global mortality.
In 2005, James A. Levine, an obesity specialist at Mayo Clinic, pioneered the way for research on the negative effects of a sedentary lifestyle by publishing an article in Science Magazine. Levine's conclusion was that Any extended sitting – such as behind a desk at work or behind a wheel – can be harmful. Levine has even gone as far as labeling sitting as the disease of our time. Now I'm sure it's no surprise that sitting behind a desk, commuting or relaxing on the couch for too many hours a day can be harmful to your health, but what you may find surprising is the extent of havoc it is causing on your body. According to an article posted by John Hopkins Medicine, physical inactivity has been shown to contribute to the following health conditions:

- **Physical inactivity may increase the risks of certain cancers.**
- **Physical inactivity may contribute to anxiety and depression.**
- **Physical inactivity has been shown to be a risk factor for certain cardiovascular diseases.**
- **People who engage in more physical activity are less likely to develop coronary heart disease.**
- **People who are more active are less likely to be overweight or obese.**
- **Sitting too much may cause a decrease in skeletal muscle mass.**
- **Physical inactivity is linked to high blood pressure and elevated cholesterol levels.**

Worldwide, it is estimated that a sedentary lifestyle is responsible for 6% of coronary heart disease cases, 7% of type 2 diabetes, 10% of breast cancer and 10% of colon cancer cases. In fact, it was recently reported that inactivity is responsible for more annual deaths than smoking.

6.5.3Causes, symptoms and prevention of Atherosclerosis

Atherosclerosis is a hardening and narrowing of your arteries. It can put blood flow at risk as your arteries become blocked. You might hear it called arteriosclerosis or atherosclerotic cardiovascular disease. It's the usual cause of heart attacks, strokes, and peripheral vascular disease- what together are called cardiovascular disease.

You might not have symptoms until your artery is nearly closed or until you have a heart attack or stroke. Signs can also depend on which artery is narrowed or blocked.
Symptoms related to your coronary arteries include:

- Arrhythmia, an unusual heartbeat
- Pain or pressure in your upper body, including your chest, arms, neck, or jaw. This is known as angina.
- Shortness of breath

Symptoms related to the arteries that deliver blood to your brain include:

- Numbness or weakness in your arms or legs
- A hard time speaking or understanding someone who's talking
- Drooping facial muscles
- Paralysis
- Severe headache
- Trouble seeing in one or both eyes

Symptoms related to the arteries of your arms, legs, and pelvis include:

- Leg pain when walking
- Numbness

Symptoms related to the arteries that deliver blood to your kidneys include:

- High blood pressure
- Kidney failure

Atherosclerosis Diagnosis

Your doctor will start with a physical exam. They'll listen to your arteries and check for weak or absent pulses.

You might need tests, including:

- Angiogram, in which your doctor puts dye into your arteries so they'll be visible on an X-ray
- Ankle-brachial index, a test to compare blood pressures in your lower leg and arm
- Blood tests to look for things that raise your risk of having atherosclerosis, like high cholesterol or blood sugar
- Chest X-ray to check for signs of heart failure
- CT scan or magnetic resonance angiography (MRA) to look for hardened or narrowed arteries
- EKG, a record of your heart's electrical activity
- Stress test, in which you exercise while health care professionals watch your heart rate, blood pressure, and breathing

You might also need to see doctors who specialize in certain parts of your body, like cardiologists or vascular specialists, depending on your condition.

Lifestyle changes can help to prevent as well as treat atherosclerosis, especially for people with type 2 diabetes.

Helpful lifestyle changes include:

- eating a healthy diet that's low in saturated fat and cholesterol
- avoiding fatty foods
- adding fish to your diet twice per week
- getting at least 75 minutes of vigorous exercise or 150 minutes of moderate exercise each week
- quitting smoking if you're a smoker
- losing weight if you're overweight or obese
- managing stress
- treating conditions associated with atherosclerosis, such as hypertension, high cholesterol, and diabetes

Your treatment will depend on which arteries have blockages and the symptoms you have as a result. You may need medicines, such as:

- Antiplatelet medicines that prevent blood from clotting
- Anticoagulants or blood thinners that also keep blood clots from forming
- Cholesterol-lowering medication
- Blood pressure medication

In some cases, you may need a procedure or surgery, such as:

- Balloon angioplasty -- A small balloon inflated inside your blocked artery to open it
- Atherectomy -- A procedure to shave away plaque inside the artery
- Laser angioplasty -- Lasers that blast away plaque
- Coronary artery stent -- A tiny coil expanded inside your blocked artery to allow blood to flow through

If the blocked artery is in your heart, you may need a surgery called coronary artery bypass. In this surgery, doctors take a piece of healthy artery and attach it to the blocked artery. Blood flows through this detour instead of the blocked area.

6.5.4Causes, symptoms and prevention of Heart Attack

A heart attack happens when something blocks the blood flow to your heart so it can't get the oxygen it needs. More than a million Americans have heart attacks each year. Heart attacks are also called myocardial infarctions (MI). "Myo" means muscle, "cardial" refers to the heart, and "infarction" means death of tissue because of a lack of blood supply. This tissue death can cause lasting damage to your heart muscle..

Heart Attack Symptoms

Symptoms of a heart attack include:

- Discomfort, pressure, heaviness, tightness, squeezing, or pain in your chest or arm or below your breastbone
- Discomfort that goes into your back, jaw, throat, or arm
- Fullness, indigestion, or a choking feeling (it may feel like heartburn)
- Sweating, upset stomach, vomiting, or dizziness
- Severe weakness, anxiety, fatigue, or shortness of breath
- Fast or uneven heartbeat

Symptoms can be different from person to person or from one heart attack to another. Women are more likely to have symptoms like an upset stomach, shortness of breath, or back or jaw pain.

With some heart attacks, you won't notice any symptoms (a "silent" myocardial infarction). This is more common in people who have diabetes.

Heart Attack Causes

Your heart muscle needs a constant supply of oxygen-rich blood. Your coronary arteries give your heart this critical blood supply. If you have coronary artery disease, those arteries become narrow, and blood can't flow as well as it should. When your blood supply is blocked, you have a heart attack.

Fat, calcium, proteins, and inflammatory cells build up in your arteries to form plaques. These plaque deposits are hard on the outside and soft and mushy on the inside.

When the plaque is hard, the outer shell cracks. This is called a rupture. Platelets (disc-shaped things in your blood that help it clot) come to the area, and blood clots form around the plaque. If a blood clot blocks your artery, your heart muscle becomes starved for oxygen. The muscle cells soon die, causing permanent damage.

Rarely, a spasm in your coronary artery can also cause a heart attack. During this coronary spasm, your arteries restrict or spasm on and off, cutting off the blood supply to your heart muscle (ischemia). It can happen while you're at rest and even if you don't have serious coronary artery disease.

Each coronary artery sends blood to a different part of your heart muscle. How much the muscle is damaged depends on the size of the area that the blocked artery supplies and the amount of time between the attack and treatment.

Your heart muscle starts to heal soon after a heart attack. This takes about 8 weeks. Just like a skin wound, a scar forms in the damaged area. But the new scar tissue doesn't move the way it should. So your heart can't pump as much after a heart attack. How much that ability to pump is affected depends on the size and location of the scar.

Prevention:
Many things can put you at risk for these problems – one's you can control, and others that you can't. But the key takeaway is that with the right information, education and care, heart disease in women can be treated, prevented and even ended.
Studies show that healthy choices have resulted in 330 fewer women dying from heart disease per day.

Here are a few lifestyle changes you should make:

- Don't smoke
- Manage your blood sugar
- Get your blood pressure under control
- Lower your cholesterol
- Know your family history
- Stay active
- Lose or manage your weight
- Eat healthy

6.5.5Causes, symptoms and prevention of Stroke

- A stroke occurs when part of the brain loses its blood supply and stops working. This causes the part of the body that the injured brain controls to stop working.
- A stroke also is called a cerebrovascular accident, CVA, or "brain attack."
- The types of strokes include:
    - Ischemic stroke (part of the brain loses blood flow)
    - Hemorrhagic stroke (bleeding occurs within the brain)
- Transient ischemic attack, TIA, or mini-stroke (The stroke symptoms resolve within minutes, but may take up to 24 hours on their own without treatment. This is a **warning sign** that a stroke may occur in the near future.)
- **A stroke is a medical emergency. The affected individual, family, friends, or bystanders need to call 9-1-1 (activate EMS) to access emergency care.**
- From onset of symptoms, there is only a 3 to 4 1/2 hour window to use clot-busting drugs (thrombolytics) to try to restore blood supply to the affected part of the brain.
- Remember FAST if you think someone might be having a stroke:
    - **F**ace drooping
    - **A**rm weakness
    - **S**peech difficulty
    - **T**ime to call 9-1-1
- Causes of strokes include ischemia (loss of blood supply) or hemorrhage (bleeding) in the brain.
- People at risk for stroke include those who have high blood pressure, high cholesterol, diabetes, and those who smoke. People with heart rhythm disturbances, especially atrial fibrillation are also at risk.
- Stroke is diagnosed by the patient's symptoms, history, and blood and imaging tests.
- Depending on the situation, including the patient's neurologic examination and severity of stroke, mechanical thrombectomy to remove a blood clot within a brain artery may occur up to 24 hours after onset of symptoms. This procedure is not available at all hospitals and not appropriate for all stroke patients.
- You can prevent stroke by quitting smoking, controlling blood pressure, maintaining a healthy weight, eating a healthy diet, and exercising on a regular basis.

- The prognosis and recovery for a person that has suffered a stroke depends upon the location of the injury to the brain.

  Stroke is caused by an interruption of blood flow to a specific area of the brain. This means that the brain cells in the involved artery do not receive an adequate supply of oxygen carried from the bloodstream. Damage to the brain cells due to the lack of oxygen causes a stroke. Strokes can be ischemic (due to a blocked artery or interruption of blood flow) or hemorrhagic (the area of the brain bleeds due to a bursting or leaking blood vessel). In either case, there is insufficient oxygen for the brain to function.

Stroke Symptoms and Signs

The symptoms of a stroke vary depending upon the area of the brain affected by a lack of oxygen. All strokes involve symptoms that relate to impairment of nerve function. The symptoms typically arise suddenly and most commonly occur on one side of the body. Symptoms and signs of stroke can include:

- numbness,
- weakness,
- tingling, or
- vision loss or changes.

Confusion, changes in the level of consciousness, trouble speaking, trouble understanding speech, vertigo, and balance problems are other common symptoms. Headache, nausea, and vomiting sometimes accompany a stroke, particularly when the stroke involves bleeding inside the brain.

If you have been diagnosed with a condition known to increase your risk of stroke, ensuring the condition is well controlled is also important for helping prevent strokes. The lifestyle changes mentioned above can help control these conditions to a large degree, but you may also need to take regular medication.

6.5.6Causes, symptoms and prevention of Hypertension

Hypertension or high blood pressure is one of the most common health conditions. It is a long-term medical condition that is caused by the high force of blood against artery walls. Hypertension is also responsible for various health diseases such as heart disease, heart attack, vision loss, chronic kidney disease and even stroke. Hypertension is classified into two categories, Primary hypertension and Secondary hypertension. While 90 to 95 per cent of hypertension cases are primary, only 5 to 10 per cent people suffer from secondary hypertension. The main causes of getting affected by primary hypertension are lifestyle and genetic factors. Eating foods with high amount of salt, tobacco smoking or excess consumption of alcohol can increase the risk of high blood pressure. Secondary hypertension can be caused due to excess use of birth control pills, narrowing of kidney arteries and endocrine disorder. This type of high blood pressure tends to appear suddenly and other factors responsible for secondary hypertension are obstructive sleep apnea, thyroid, alcohol abuse and illegal drugs such as cocaine.

Stress and depression can also cause high blood pressure. But this can lead to a temporary increase in the blood pressure. Relaxing may control the levels. There may not be any signs or symptoms of high blood pressure, even if it is reaching higher levels. A person with hypertension may feel dizziness, suffer from headaches, may feel short of breath or his/ her may nose bleeds more often. It should be noted that these symptoms may not even appear until high blood pressure has reached a life-threatening stage. The

way we are leading our lifestyles, it has become crucial to be extra careful about our physical as well as mental health. Visit your doctor immediately if your body shows any different symptoms. Get your blood pressure checked at regular intervals so as to avoid any serious health complications.

Hypertension Causes

Studies show that in 90 per cent patients there is no known cause for Hypertension, making it all the more important to be alert. The exact cause(s) of high blood pressure is not known. However, there are a number of lifestyle habits that aggravate Hypertension. They are: The force with which blood pushes against the sides of the blood vessel walls is called blood pressure. When this pressure gets high, it puts strain on your heart and blood vessels leading to hypertension. Hypertension is dangerous because it makes the heart work harder to pump the blood and leads to hardening of arteries which is also called as atherosclerosis. Hypertension can also lead to kidney failure, heart disease and heart failure.

There are three stages of hypertension:

- **Prehypertension:** 120/139 over 80/89
- **Hypertension stage 1:** 140/59 over 90/99
- **Hypertension stage 2:** 160 or above over 100 or above
- **Normal blood pressure:** Less than 120 over 80

Blood pressure varies throughout the day; it's low while we sleep and increases when we are awake.

Studies show that in 90 per cent of patients, there is no known cause for Hypertension, making it all the more important to be alert. The exact cause(s) of high blood pressure is not known. However, there are a number of lifestyle habits that aggravate hypertension. Some of them are:

1. Excess sodium consumption: According to the American Heart Association, more than 1500 mg of salt in a day can lead to high blood pressure, cardiovascular disease and diabetes.

2. Ageing: As we age, our blood pressure increases naturally. If we don't maintain a healthy diet, smoke or drink excessively and eat fatty and sugary food items then hypertension may hit us even at a younger age.

3. Sleep apnea: It's a condition where oxygen level decreases while we sleep leading to high blood pressure, stress and cardiovascular diseases. Those people who have sleep apnea have more chances of developing high blood pressure.

4. Drugs and alcohol: Increased use of drugs and alcohol will lead to stress on heart and arteries and will damage them. This can be one of the major reasons for hypertension. Substances like cocaine, amphetamines and crystal methamphetamine put stress on your heart.

Some other common reasons can be genes, obesity, thyroid disorder and adrenal disorder.

Hypertension Symptoms

Usually high blood pressure shows no symptoms. Most of the people affected with Hypertension have no idea about the ailment till it takes serious toll on the body. Due to absence of symptoms, it is also known as the 'silent killer'. The symptoms include the following:

There are three main categories of hypertension: pre-hypertension, hypertension stage 1 and hypertension stage 2.

1. Some rare symptoms include frequent headaches, nose bleeding and short breath.

2. In severe cases, hypertension may lead to vision loss, kidney failure, erectile dysfunction and loss of memory.

3. Blood spots in eyes is also an uncommon symptom in people with high blood pressure or diabetes.

4. Dizziness is one of the side effects of high blood pressure medication. But dizziness is not caused by high blood pressure. However sudden dizziness, loss of balance and problem in walking can be warning signs of stroke. High blood pressure is a leading risk factor for stroke.

5. Many people do not seek care until the condition is very severe. This condition is known as malignant hypertension. In malignant hypertension, the diastolic blood pressure (lower number) increases up to 140 mm Hg.

6. Hypertension may lead to peripheral arterial disease which causes leg pain while walking. Peripheral arterial disease is a condition in which plaque builds up in arteries and affects the blood flow in lungs due to which symptoms like numbness, aching or heaviness of legs may occur.

7. Hypertension that occurs during pregnancy can be due to several reasons including being over 40 years of age, IVF or other pregnancy related issues, being overweight, inactive, having more than one baby (twins or more) in the womb, smoking and alcohol.

8. If hypertension continues to be there after 20 weeks of pregnancy then problems like preeclampsia may arise. High blood pressure may lead to a premature birth of the baby and may require caesarian delivery.

Hypertension Prevention

1. Monitoring

Due to absence of symptoms in majority of cases, high blood pressure often goes unnoticed. It is critical to monitor blood pressure at regular intervals. The sooner it is caught, the easier it becomes to control it.

2. Salt

Doctors will ask you to cut down salt in your diet. Salt contains sodium which is directly proportional to blood pressure. The richer the diet in sodium, the higher the blood pressure.

3. Diet

A balanced diet can help you prevent a plethora of diseases, the same is true for Hypertension. A diet rich in potassium helps maintain blood pressure levels whereas a diet rich in fats, carbohydrates may trigger high blood pressure.

4. Exercise
A minimum 30 minutes of workout is mandatory for people with high blood pressure. However, they should consult their doctor before starting any workout regime.

5. Quit smoking and alcohol
Moderate consumption of alcohol may not affect blood pressure levels but smoking is directly linked to high blood pressure. Do consult a good doctor if you have any concerns regarding alcohol intake.

6. Maintaining a healthy weight
Weight plays an important role when it comes to hypertension. If you are obese then there are more chances of you being affected by hypertension. Obesity is the result of intake of more calories and no physical activity. So, to maintain a normal blood pressure, one should try to lose weight as doing so will help a lot.

7. Reducing stress
Stress can lead to high blood pressure and if not taken care of, it can cause a permanent problem of high blood pressure. There are many ways in which stress can be reduced, including, yoga, meditation and by being optimistic towards life.

8. Some nutrients can also help
Eating foods rich in calcium, potassium and magnesium can help in lowering blood pressure. Fish oils and garlic can also help.

6.5.7Causes, symptoms and prevention of Diabetes

Diabetes mellitus, commonly known as diabetes, is a metabolic disease that causes high blood sugar. The hormone insulin moves sugar from the blood into your cells to be stored or used for energy. With diabetes, your body either doesn't make enough insulin or can't effectively use the insulin it does make. Untreated high blood sugar from diabetes can damage your nerves, eyes, kidneys, and other organs.
There are a few different types of diabetes:

- Type 1 diabetes is an autoimmune disease. The immune system attacks and destroys cells in the pancreas, where insulin is made. It's unclear what causes this attack. About 10 percent of people with diabetes have this type.
- Type 2 diabetes occurs when your body becomes resistant to insulin, and sugar builds up in your blood.
- Prediabetes occurs when your blood sugar is higher than normal, but it's not high enough for a diagnosis of type 2 diabetes.
- Gestational diabetes is high blood sugar during pregnancy. Insulin-blocking hormones produced by the placenta cause this type of diabetes.

A rare condition called diabetes insipidus is not related to diabetes mellitus, although it has a similar name. It's a different condition in which your kidneys remove too much fluid from your body. Each type of diabetes has unique symptoms, causes, and treatments. Learn more about how these types differ from one another.

Symptoms of diabetes

Diabetes symptoms are caused by rising blood sugar.

General symptoms

The general symptoms of diabetes include:

- increased hunger
- increased thirst
- weight loss
- frequent urination
- blurry vision
- extreme fatigue
- sores that don't heal

Symptoms in men

In addition to the general symptoms of diabetes, men with diabetes may have a decreased sex drive, erectile dysfunction (ED), and poor muscle strength.

Symptoms in women

Women with diabetes can also have symptoms such as urinary tract infections, yeast infections, and dry, itchy skin.

Type 1 diabetes

Symptoms of type 1 diabetes can include:

- extreme hunger
- increased thirst
- unintentional weight loss
- frequent urination
- blurry vision
- tiredness

It may also result in mood changes.

Type 2 diabetes

Symptoms of type 2 diabetes can include:

- increased hunger
- increased thirst
- increased urination
- blurry vision
- tiredness
- sores that are slow to heal

It may also cause recurring infections. This is because elevated glucose levels make it harder for the body to heal.

Gestational diabetes

Most women with gestational diabetes don't have any symptoms. The condition is often detected during a routine blood sugar test or oral glucose tolerance test that is usually performed between the 24th and 28th weeks of gestation.

In rare cases, a woman with gestational diabetes will also experience increased thirst or urination.

Causes of diabetes

Different causes are associated with each type of diabetes.

Type 1 diabetes

Doctors don't know exactly what causes type 1 diabetes. For some reason, the immune system mistakenly attacks and destroys insulin-producing beta cells in the pancreas.

Genes may play a role in some people. It's also possible that a virus sets off the immune system attack.

Type 2 diabetes

Type 2 diabetes stems from a combination of genetics and lifestyle factors. Being overweight or obese increases your risk too. Carrying extra weight, especially in your belly, makes your cells more resistant to the effects of insulin on your blood sugar.

This condition runs in families. Family members share genes that make them more likely to get type 2 diabetes and to be overweight.

Gestational diabetes

Gestational diabetes is the result of hormonal changes during pregnancy. The placenta produces hormones that make a pregnant woman's cells less sensitive to the effects of insulin. This can cause high blood sugar during pregnancy.

Women who are overweight when they get pregnant or who gain too much weight during their pregnancy are more likely to get gestational diabetes.

Diabetes risk factors

Certain factors increase your risk for diabetes.

Type 1 diabetes

You're more likely to get type 1 diabetes if you're a child or teenager, you have a parent or sibling with the condition, or you carry certain genes that are linked to the disease.

Type 2 diabetes

Your risk for type 2 diabetes increases if you:

- are overweight
- are age 45 or older
- have a parent or sibling with the condition
- aren't physically active
- have had gestational diabetes
- have prediabetes
- have high blood pressure, high cholesterol, or high triglycerides
- have African American, Hispanic or Latino American, Alaska Native, Pacific Islander, American Indian, or Asian American ancestry

Gestational diabetes

Your risk for gestational diabetes increases if you:

- are overweight
- are over age 25
- had gestational diabetes during a past pregnancy
- have given birth to a baby weighing more than 9 pounds
- have a family history of type 2 diabetes
- have polycystic ovary syndrome (PCOS)

Diabetes complications

High blood sugar damages organs and tissues throughout your body. The higher your blood sugar is and the longer you live with it, the greater your risk for complications.

Complications associated with diabetes include:

- heart disease, heart attack, and stroke
- neuropathy
- nephropathy
- retinopathy and vision loss
- hearing loss
- foot damage such as infections and sores that don't heal
- skin conditions such as bacterial and fungal infections
- depression
- dementia

Gestational diabetes

Uncontrolled gestational diabetes can lead to problems that affect both the mother and baby. Complications affecting the baby can include:

- premature birth
- higher-than-normal weight at birth
- increased risk for type 2 diabetes later in life
- low blood sugar
- jaundice
- stillbirth

The mother can develop complications such as high blood pressure (preeclampsia) or type 2 diabetes. She may also require cesarean delivery, commonly referred to as a C-section.

The mother's risk of gestational diabetes in future pregnancies also increases.

Treatment of diabetes

Doctors treat diabetes with a few different medications. Some of these drugs are taken by mouth, while others are available as injections.

Type 1 diabetes

Insulin is the main treatment for type 1 diabetes. It replaces the hormone your body isn't able to produce.

There are four types of insulin that are most commonly used. They're differentiated by how quickly they start to work, and how long their effects last:

- Rapid-acting insulin starts to work within 15 minutes and its effects last for 3 to 4 hours.
- Short-acting insulin starts to work within 30 minutes and lasts 6 to 8 hours.
- Intermediate-acting insulin starts to work within 1 to 2 hours and lasts 12 to 18 hours.
- Long-acting insulin starts to work a few hours after injection and lasts 24 hours or longer.

Type 2 diabetes

Diet and exercise can help some people manage type 2 diabetes. If lifestyle changes aren't enough to lower your blood sugar, you'll need to take medication.

These drugs lower your blood sugar in a variety of ways:

Types of drug	How they work	Example(s)
Alpha-glucosidase inhibitors	Slow your body's breakdown of sugars and starchy foods	Acarbose (Precose) and miglitol (Glyset)
Biguanides	Reduce the amount of glucose your liver makes	Metformin (Glucophage)
DPP-4 inhibitors	Improve your blood sugar without making it drop too low	Linagliptin (Tradjenta), saxagliptin (Onglyza), and sitagliptin (Januvia)
Glucagon-like peptides	Change the way your body produces insulin	Dulaglutide (Trulicity), exenatide (Byetta), and liraglutide (Victoza)

Meglitinides	Stimulate your pancreas to release more insulin	Nateglinide (Starlix) and repaglinide (Prandin)
SGLT2 inhibitors	Release more glucose into the urine	Canagliflozin (Invokana) and dapagliflozin (Farxiga)
Sulfonylureas	Stimulate your pancreas to release more insulin	Glyburide (DiaBeta, Glynase), glipizide (Glucotrol), and glimepiride (Amaryl)
Thiazolidinediones	Help insulin work better	Pioglitazone (Actos) and rosiglitazone (Avandia)

You may need to take more than one of these drugs. Some people with type 2 diabetes also take insulin.

Gestational diabetes

You'll need to monitor your blood sugar level several times a day during pregnancy. If it's high, dietary changes and exercise may or may not be enough to bring it down.

According to the Mayo Clinic, about 10 to 20 percent of women with gestational diabetes will need insulin to lower their blood sugar. Insulin is safe for the growing baby.

Diabetes and diet

Healthy eating is a central part of managing diabetes. In some cases, changing your diet may be enough to control the disease.

Type 1 diabetes

Your blood sugar level rises or falls based on the types of foods you eat. Starchy or sugary foods make blood sugar levels rise rapidly. Protein and fat cause more gradual increases.

Your medical team may recommend that you limit the amount of carbohydrates you eat each day. You'll also need to balance your carb intake with your insulin doses.

Work with a dietitian who can help you design a diabetes meal plan. Getting the right balance of protein, fat, and carbs can help you control your blood sugar. Check out this guide to starting a type 1 diabetes diet.

Type 2 diabetes

Eating the right types of foods can both control your blood sugar and help you lose any excess weight.

Carb counting is an important part of eating for type 2 diabetes. A dietitian can help you figure out how many grams of carbohydrates to eat at each meal.

In order to keep your blood sugar levels steady, try to eat small meals throughout the day. Emphasize healthy foods such as:

- fruits
- vegetables
- whole grains
- lean protein such as poultry and fish
- healthy fats such as olive oil and nuts

Certain other foods can undermine efforts to keep your blood sugar in control.Discover the foods you should avoid if you have diabetes.

Gestational diabetes

Eating a well-balanced diet is important for both you and your baby during these nine months. Making the right food choices can also help you avoid diabetes medications.

Watch your portion sizes, and limit sugary or salty foods. Although you need some sugar to feed your growing baby, you should avoid eating too much.

Consider making an eating plan with the help of a dietitian or nutritionist. They'll ensure that your diet has the right mix of macronutrients. Go here for other do's and don'ts for healthy eating with gestational diabetes.

Diabetes diagnosis

Anyone who has symptoms of diabetes or is at risk for the disease should be tested. Women are routinely tested for gestational diabetes during their second or third trimesters of pregnancy.

Doctors use these blood tests to diagnose prediabetes and diabetes:

- The fasting plasma glucose (FPG) test measures your blood sugar after you've fasted for 8 hours.
- The A1C test provides a snapshot of your blood sugar levels over the previous 3 months.

To diagnose gestational diabetes, your doctor will test your blood sugar levels between the 24th and 28th weeks of your pregnancy.

- During the glucose challenge test, your blood sugar is checked an hour after you drink a sugary liquid.
- During the 3 hour glucose tolerance test, your blood sugar is checked after you fast overnight and then drink a sugary liquid.

The earlier you get diagnosed with diabetes, the sooner you can start treatment. Find out whether you should get tested, and get more information on tests your doctor might perform.

Diabetes prevention

Type 1 diabetes isn't preventable because it's caused by a problem with the immune system. Some causes of type 2 diabetes, such as your genes or age, aren't under your control either.

Yet many other diabetes risk factors are controllable. Most diabetes prevention strategies involve making simple adjustments to your diet and fitness routine.

If you've been diagnosed with prediabetes, here are a few things you can do to delay or prevent type 2 diabetes:

- Get at least 150 minutes per week of aerobic exercise, such as walking or cycling.
- Cut saturated and trans fats, along with refined carbohydrates, out of your diet.
- Eat more fruits, vegetables, and whole grains.
- Eat smaller portions.
- Try to lose 7 percentTrusted Source of your body weight if you're overweight or obese.

These aren't the only ways to prevent diabetes. Discover more strategies that may help you avoid this chronic disease.

Diabetes in pregnancy

Women who've never had diabetes can suddenly develop gestational diabetes in pregnancy. Hormones produced by the placenta can make your body more resistant to the effects of insulin. Some women who had diabetes before they conceived carry it with them into pregnancy. This is called pre-gestational diabetes.

Gestational diabetes should go away after you deliver, but it does significantly increase your risk for getting diabetes later.

About half of women with gestational diabetes will develop type 2 diabetes within 5 to 10 years of delivery, according to the International Diabetes Federation (IDF).

Having diabetes during your pregnancy can also lead to complications for your newborn, such as jaundice or breathing problems.

If you're diagnosed with pre-gestational or gestational diabetes, you'll need special monitoring to prevent complications. Find out more about the effect of diabetes on pregnancy.

Diabetes in children

Children can get both type 1 and type 2 diabetes. Controlling blood sugar is especially important in young people, because the disease can damage important organs such as the heart and kidneys.

Type 1 diabetes

The autoimmune form of diabetes often starts in childhood. One of the main symptoms is increased urination. Kids with type 1 diabetes may start wetting the bed after they've been toilet trained.

Extreme thirst, fatigue, and hunger are also signs of the condition. It's important that children with type 1 diabetes get treated right away. The disease can cause high blood sugar and dehydration, which can be medical emergencies.

Type 2 diabetes

Type 1 diabetes used to be called "juvenile diabetes" because type 2 was so rare in children. Now that more children are overweight or obese, type 2 diabetes is becoming more common in this age group.

About 40 percent of children with type 2 diabetes don't have symptoms, according to the Mayo Clinic. The disease is often diagnosed during a physical exam.

Untreated type 2 diabetes can cause lifelong complications, including heart disease, kidney disease, and blindness. Healthy eating and exercise can help your child manage their blood sugar and prevent these problems.

Type 2 diabetes is more prevalent than ever in young people. Learn how to spot the signs so you can report them to your child's doctor.

Currently, type 1 diabetes is not preventable. However, studies have shown that type 2 diabetes can be prevented by adopting lifestyle changes that include moderate weight loss through eating a healthy diet and regularly exercising.

In addition, studies have shown that certain oral antidiabetes medications may play a role in preventing the development of type 2 diabetes for people with prediabetes.

Diabetes is a chronic condition, and it can last an entire lifetime. The goal of treating diabetes is to keep blood glucose levels as close to a normal range as possible. This prevents the symptoms of diabetes and the long-term complications of the condition. If you've been diagnosed with diabetes, your doctor – working with the members of your diabetes care team – will help you find your target blood glucose levels.

More than most conditions, treating diabetes requires a significant amount of real effort on the person's part. Coping with diabetes is a lifelong challenge, so people with diabetes should not be afraid to speak with a doctor or pharmacist if they feel overwhelmed.

Part of a treatment plan for diabetes will involve learning about diabetes, how to manage it, and how to prevent complications. Your doctor, diabetes educator, or other health care professional will help you learn what you need to know so you are able to manage your diabetes as effectively as possible. Keep in mind that learning about diabetes and its treatment will take time. Involving family members or other people who are significant in your life can also help you manage your diabetes.

Although you may see herbal products advertised to help control blood sugar, there are not enough good quality studies to show that these treatments are safe and effective.

People with type 1 diabetes need insulin* continuously to survive. The only way to cure this disease is to have a pancreas or islet cell transplant, but these operations are only recommended in a small set of circumstances.

As with many conditions, treatment of type 2 diabetes begins with lifestyle changes, particularly in your diet and exercise. If you have type 2 diabetes, speak to your doctor and diabetes educator about an appropriate diet. You may be referred to a dietitian. It is also a good idea to speak with your doctor before beginning an exercise program that is more vigourous than walking to determine how much and what kind of exercise is appropriate.

If lifestyle changes don't put blood glucose levels in the target range, medications may be required. Medications for type 2 diabetes include antidiabetes pills or injections, insulin injections, or a combination of these.

Medications are very effective at treating diabetes and reducing the symptoms and long-term effects of the condition. However, you may experience *hypoglycemia* (a blood glucose level that is too low) when taking certain medications for diabetes.

Symptoms of hypoglycemia include:

- anxiety
- tremors or shakiness
- sweating
- hunger
- nausea
- rapid, fluttering or pounding heart
- confusion
- difficulty concentrating
- dizziness
- drowsiness
- fatigue
- headache
- irritability
- visual changes

If your blood glucose level is extremely low, it is possible to have a seizure or lose consciousness. A health care professional can teach you how to recognize the warning signs of hypoglycemia. People with diabetes should carry candy, sugar, or glucose tablets to treat hypoglycemia if it does occur.

Hypoglycemia is a side effect of many medications for type 1 and 2 diabetes, but it is never a reason to avoid getting treatment. The best way to avoid hypoglycemia is to eat regular meals and monitor your blood glucose.

Measurement of blood glucose levels is the best way to know whether blood glucose levels are in the target range. This is easily done at home with a blood glucose monitor.

It is essential for people with diabetes to self-monitor blood glucose levels. However, the number of times you should test your blood glucose will be based on the type of diabetes you have and your diabetes treatment. Some people may need to measure their blood glucose levels multiple times a day, whereas others may need to infrequently.

It is important to record blood glucose readings taken at different times of the day – after fasting (before breakfast) as well as 2 hours after a meal. This allows your doctor to see a snapshot of how your blood glucose levels vary during the day and to recommend treatments accordingly. Most blood glucose meters now have "memory" that stores a number of blood glucose tests along with the time and date they were taken. Some even allow for graphs and charts of the results to be created and sent to your phone.

A1C test is not just used for diagnosis of diabetes. It allows your doctor to see the average of blood glucose values over the last 3 months. This is a good indication of how well your blood glucose has been in control overall and allows your doctor to manage your diabetes more effectively. A1C is usually measured every 3 to 6 months.

Diabetes Treatments:

Prediabetes condition doesn't require treatment. However, lifestyle modifications help to decrease the risk of developing diabetes. Treatment options for other diabetic conditions are:

- **Insulin therapy:** Insulin therapy is the major treatment option for patients with type 1diabetes. Patients with type 2 diabetes may also require insulin therapy depending on their glucose levels. Insulin cannot be administered orally and injections are available.
- **Oral antihypoglycemic agents:** Biguanides, sulfonyl ureas, and glitazones are some examples of antihypoglycemic medications. These medications act either by stimulating the production of insulin from pancreas or inhibit the breakdown of fats to produce glucose.
- **Transplantation:** Patients with type 1 diabetes may be considered for pancreas or islet cell transplantation. But the research is still going on to find out potential risks of the therapy.

Diabetes Remedies:

Home remedies and foods for diabetes may help ton control blood glucose levels and prevent complications. These remedies include:

- Bitter gourd, cinnamon, aloe vera, okra, and fenugreek seeds are known to decrease glucose levels naturally.
- Proper foot care helps to prevent complications.
- Don't skip meals if you are on antidiabetic medications, as this may cause hypoglycemia (decrease in glucose levels more than normal).

Prevention and Cure for Diabetes:

Lifestyle modifications play a significant role in the prevention and management of diabetes. Measures to follow are:

- Consume healthy diet that is low in sugars, carbohydrates, and fats. Opt more for fiber-rich and whole grain foods.
- Be physically active. Exercise regularly at least one hour per day. Physical activity can include a brisk walking, jogging, swimming, or even gardening.
- Undergo screening tests regularly, at least once in a year.
- Reduce stress.
- Quit smoking.
- Limit alcohol consumption.

6.5.8Causes, symptoms and prevention of Obesity

Obesity is a complex disease involving an excessive amount of body fat. Obesity isn't just a cosmetic concern. It is a medical problem that increases your risk of other diseases and health problems, such as heart disease, diabetes, high blood pressure and certain cancers.

There are many reasons why some people have difficulty avoiding obesity. Usually, obesity results from a combination of inherited factors, combined with the environment and personal diet and exercise choices.

The good news is that even modest weight loss can improve or prevent the health problems associated with obesity. Dietary changes, increased physical activity and behavior changes can help you lose weight. Prescription medications and weight-loss procedures are additional options for treating obesity.

Obesity is diagnosed when your body mass index (BMI) is 30 or higher. To determine your body mass index, divide your weight in pounds by your height in inches squared and multiply by 703. Or divide your weight in kilograms by your height in meters squared.

BMI	Weight status
Below 18.5	Underweight
18.5-24.9	Normal
25.0-29.9	Overweight
30.0 and higher	Obesity

For most people, BMI provides a reasonable estimate of body fat. However, BMI doesn't directly measure body fat, so some people, such as muscular athletes, may have a BMI in the obesity category even though they don't have excess body fat.

Although there are genetic, behavioral, metabolic and hormonal influences on body weight, obesity occurs when you take in more calories than you burn through exercise and normal daily activities. Your body stores these excess calories as fat.

Most Americans' diets are too high in calories — often from fast food and high-calorie beverages. People with obesity might eat more calories before feeling full, feel hungry sooner, or eat more due to stress or anxiety.

Obesity usually results from a combination of causes and contributing factors:

Family inheritance and influences

The genes you inherit from your parents may affect the amount of body fat you store, and where that fat is distributed. Genetics may also play a role in how efficiently your body converts food into energy, how your body regulates your appetite and how your body burns calories during exercise.

Obesity tends to run in families. That's not just because of the genes they share. Family members also tend to share similar eating and activity habits.

Lifestyle choices

- **Unhealthy diet.** A diet that's high in calories, lacking in fruits and vegetables, full of fast food, and laden with high-calorie beverages and oversized portions contributes to weight gain.
- **Liquid calories.** People can drink many calories without feeling full, especially calories from alcohol. Other high-calorie beverages, such as sugared soft drinks, can contribute to significant weight gain.
- **Inactivity.** If you have a sedentary lifestyle, you can easily take in more calories every day than you burn through exercise and routine daily activities. Looking at computer, tablet and phone screens is a sedentary activity. The number of hours you spend in front of a screen is highly associated with weight gain.

Certain diseases and medications

In some people, obesity can be traced to a medical cause, such as Prader-Willi syndrome, Cushing syndrome and other conditions. Medical problems, such as arthritis, also can lead to decreased activity, which may result in weight gain.

Some medications can lead to weight gain if you don't compensate through diet or activity. These medications include some antidepressants, anti-seizure medications, diabetes medications, antipsychotic medications, steroids and beta blockers.

Social and economic issues

Social and economic factors are linked to obesity. Avoiding obesity is difficult if you don't have safe areas to walk or exercise. Similarly, you may not have been taught healthy ways of

cooking, or you may not have access to healthier foods. In addition, the people you spend time with may influence your weight — you're more likely to develop obesity if you have friends or relatives with obesity.

Age

Obesity can occur at any age, even in young children. But as you age, hormonal changes and a less active lifestyle increase your risk of obesity. In addition, the amount of muscle in your body tends to decrease with age. Generally, lower muscle mass leads to a decrease in metabolism. These changes also reduce calorie needs, and can make it harder to keep off excess weight. If you don't consciously control what you eat and become more physically active as you age, you'll likely gain weight.

Other factors

- **Pregnancy.** Weight gain is common during pregnancy. Some women find this weight difficult to lose after the baby is born. This weight gain may contribute to the development of obesity in women. Breast-feeding may be the best option to lose the weight gained during pregnancy.
- **Quitting smoking.** Quitting smoking is often associated with weight gain. And for some, it can lead to enough weight gain to qualify as obesity. Often, this happens as people use food to cope with smoking withdrawal. In the long run, however, quitting smoking is still a greater benefit to your health than is continuing to smoke. Your doctor can help you prevent weight gain after quitting smoking.
- **Lack of sleep.** Not getting enough sleep or getting too much sleep can cause changes in hormones that increase your appetite. You may also crave foods high in calories and carbohydrates, which can contribute to weight gain.
- **Stress.** Many external factors that affect your mood and well-being may contribute to obesity. People often seek more high-calorie food when experiencing stressful situations.
- **Microbiome.** Your gut bacteria are affected by what you eat and may contribute to weight gain or difficulty losing weight.
- **Previous attempts to lose weight.** Previous attempts of weight loss followed by rapid weight regain may contribute to further weight gain. This phenomenon, sometimes called yo-yo dieting, can slow your metabolism.

Even if you have one or more of these risk factors, it doesn't mean that you're destined to develop obesity. You can counteract most risk factors through diet, physical activity and exercise, and behavior changes.

People with obesity are more likely to develop a number of potentially serious health problems, including:

- **Heart disease and strokes.** Obesity makes you more likely to have high blood pressure and abnormal cholesterol levels, which are risk factors for heart disease and strokes.
- **Type 2 diabetes.** Obesity can affect the way your body uses insulin to control blood sugar levels. This raises your risk of insulin resistance and diabetes.
- **Certain cancers.** Obesity may increase your risk of cancer of the uterus, cervix, endometrium, ovary, breast, colon, rectum, esophagus, liver, gallbladder, pancreas, kidney and prostate.
- **Digestive problems.** Obesity increases the likelihood that you'll develop heartburn, gallbladder disease and liver problems.
- **Gynecological and sexual problems.** Obesity may cause infertility and irregular periods in women. Obesity also can cause erectile dysfunction in men.
- **Sleep apnea.** People with obesity are more likely to have sleep apnea, a potentially serious disorder in which breathing repeatedly stops and starts during sleep.

- **Osteoarthritis.** Obesity increases the stress placed on weight-bearing joints, in addition to promoting inflammation within the body. These factors may lead to complications such as osteoarthritis.

Quality of life

Obesity can diminish your overall quality of life. You may not be able to do things you used to do, such as participating in enjoyable activities. You may avoid public places. People with obesity may even encounter discrimination.

Other weight-related issues that may affect your quality of life include:

- Depression
- Disability
- Sexual problems
- Shame and guilt
- Social isolation
- Lower work achievement

Treatment and Prevention

Changing your lifestyle

Obesity is managed and treated to decrease the health risks caused by obesity and to improve quality of life. An appropriate weight management program usually combines physical activity, healthy diet, and change in daily habits. Other programs may also involve psychological counselling and, in some cases, drug therapy. Losing weight and keeping it off is very challenging because lifestyle and behavioural changes are required.

What's important is to eat a healthy, balanced diet. Fad and crash diets don't work and can be dangerous. The body needs a minimum amount of energy from food to function normally. No daily diet with less than 1000 to 1200 calories should be used without medical supervision. "Crash diets" are never successful in the long term because once the diet is stopped, the weight usually comes back. Commercial weight-loss plans and clinics are successful businesses because they have so many return customers.

To lose weight successfully, and to maintain a healthy weight, requires lifelong changes in eating and exercise habits as well as an understanding of emotional factors that lead to overeating. It also involves setting and achieving specific and realistic goals. People who are medically obese should consult a doctor or dietitian for a safe and personalized weight-loss program. Behavioural therapy or modification can also help. Seeing a therapist or counsellor can help you understand the emotional and psychological reasons for overeating and can teach you ways to manage your eating triggers.

Regular physical activity is an important part of weight management. In addition to managing weight, exercise also improves overall health and can help reduce the risk of diseases such as certain cancers, heart disease, and osteoporosis. Regular physical activity doesn't mean you have to join the nearest gym. It can be as simple as climbing the stairs instead of taking the elevator, walking or cycling to work and leaving the car at home (if at all possible), or going for a walk at lunchtime with coworkers. What's important is to add exercise to your daily routine, and to work towards a higher activity level. Choose activities and exercises you enjoy.

Medical intervention

Medications may be part of a weight management program. Medications aren't "magic cures" leading to permanent weight loss. They're generally used in combination with a proper diet and exercise program. They are only for people who are classified as obese (i.e., those with a BMI over 30), or people with a BMI of 27 and extra heart disease risk factors such as high cholesterol or diabetes.

Some medications are approved for short-term use only. One example of a weight-loss medication available in Canada is orlistat*, which blocks the absorption of fat from the bowel. Talk to your doctor about whether medications are an option for you.

Surgery is only considered when other weight management options have not been successful. There are many forms of obesity surgery, but often surgery reduces the size of the stomach so that only a small amount of food can be eaten comfortably. Some of the terms used to describe the surgeries used to treat obesity include:

- gastric surgery
- gastric bypass surgery
- laparoscopic band surgery
- Roux-en-Y gastric bypass
- stomach "stapling"

When reviewing suitable management options, it's important to consider the risks and benefits of each option. Your doctor and other health care professionals can provide you with the information you need to make an informed choice about what options are best for you.

Whether you're at risk of obesity, currently overweight or at a healthy weight, you can take steps to prevent unhealthy weight gain and related health problems. Not surprisingly, the steps to prevent weight gain are the same as the steps to lose weight: daily exercise, a healthy diet, and a long-term commitment to watch what you eat and drink.

- **Exercise regularly.** You need to get 150 to 300 minutes of moderate-intensity activity a week to prevent weight gain. Moderately intense physical activities include fast walking and swimming.
- **Follow a healthy-eating plan.** Focus on low-calorie, nutrient-dense foods, such as fruits, vegetables and whole grains. Avoid saturated fat and limit sweets and alcohol. Eat three regular meals a day with limited snacking. You can still enjoy small amounts of high-fat, high-calorie foods as an infrequent treat. Just be sure to choose foods that promote a healthy weight and good health most of the time.
- **Know and avoid the food traps that cause you to eat.** Identify situations that trigger out-of-control eating. Try keeping a journal and write down what you eat, how much you eat, when you eat, how you're feeling and how hungry you are. After a while, you should see patterns emerge. You can plan ahead and develop strategies for handling these types of situations and stay in control of your eating behaviors.
- **Monitor your weight regularly.** People who weigh themselves at least once a week are more successful in keeping off excess pounds. Monitoring your weight can tell you whether your efforts are working and can help you detect small weight gains before they become big problems.
- **Be consistent.** Sticking to your healthy-weight plan during the week, on the weekends, and amidst vacation and holidays as much as possible increases your chances of long-term success.

6.5.9 Causes, symptoms and prevention of Osteoporosis

Osteoporosis causes bones to become weak and brittle — so brittle that a fall or even mild stresses such as bending over or coughing can cause a fracture. Osteoporosis-related fractures most commonly occur in the hip, wrist or spine.

Bone is living tissue that is constantly being broken down and replaced. Osteoporosis occurs when the creation of new bone doesn't keep up with the loss of old bone.

Osteoporosis affects men and women of all races. But white and Asian women — especially older women who are past menopause — are at highest risk. Medications, healthy diet and weight-bearing exercise can help prevent bone loss or strengthen already weak bones.

Symptoms

There typically are no symptoms in the early stages of bone loss. But once your bones have been weakened by osteoporosis, you might have signs and symptoms that include:

- Back pain, caused by a fractured or collapsed vertebra
- Loss of height over time
- A stooped posture
- A bone that breaks much more easily than expected

Causes:

Your bones are in a constant state of renewal — new bone is made and old bone is broken down. When you're young, your body makes new bone faster than it breaks down old bone and your bone mass increases. After the early 20s this process slows, and most people reach their peak bone mass by age 30. As people age, bone mass is lost faster than it's created.

- How likely you are to develop osteoporosis depends partly on how much bone mass you attained in your youth. Peak bone mass is somewhat inherited and varies also by ethnic group. The higher your peak bone mass, the more bone you have "in the bank" and the less likely you are to develop osteoporosis as you age.

A number of factors can increase the likelihood that you'll develop osteoporosis — including your age, race, lifestyle choices, and medical conditions and treatments.

Unchangeable risks

Some risk factors for osteoporosis are out of your control, including:

- **Your sex.** Women are much more likely to develop osteoporosis than are men.
- **Age.** The older you get, the greater your risk of osteoporosis.
- **Race.** You're at greatest risk of osteoporosis if you're white or of Asian descent.
- **Family history.** Having a parent or sibling with osteoporosis puts you at greater risk, especially if your mother or father fractured a hip.
- **Body frame size.** Men and women who have small body frames tend to have a higher risk because they might have less bone mass to draw from as they age.

Hormone levels

Osteoporosis is more common in people who have too much or too little of certain hormones in their bodies. Examples include:

- **Sex hormones.** Lowered sex hormone levels tend to weaken bone. The reduction of estrogen levels in women at menopause is one of the strongest risk factors for developing osteoporosis.

  Men have a gradual reduction in testosterone levels as they age. Treatments for prostate cancer that reduce testosterone levels in men and treatments for breast cancer that reduce estrogen levels in women are likely to accelerate bone loss.
- **Thyroid problems.** Too much thyroid hormone can cause bone loss. This can occur if your thyroid is overactive or if you take too much thyroid hormone medication to treat an underactive thyroid.
- **Other glands.** Osteoporosis has also been associated with overactive parathyroid and adrenal glands.

Dietary factors

Osteoporosis is more likely to occur in people who have:

- **Low calcium intake.** A lifelong lack of calcium plays a role in the development of osteoporosis. Low calcium intake contributes to diminished bone density, early bone loss and an increased risk of fractures.
- **Eating disorders.** Severely restricting food intake and being underweight weakens bone in both men and women.
- **Gastrointestinal surgery.** Surgery to reduce the size of your stomach or to remove part of the intestine limits the amount of surface area available to absorb nutrients, including calcium. These surgeries include those to help you lose weight and for other gastrointestinal disorders.

Steroids and other medications

Long-term use of oral or injected corticosteroid medications, such as prednisone and cortisone, interferes with the bone-rebuilding process. Osteoporosis has also been associated with medications used to combat or prevent:

- Seizures
- Gastric reflux
- Cancer
- Transplant rejection

Medical conditions

The risk of osteoporosis is higher in people who have certain medical problems, including:

- Celiac disease
- Inflammatory bowel disease
- Kidney or liver disease
- Cancer
- Lupus
- Multiple myeloma
- Rheumatoid arthritis

Lifestyle choices

Some bad habits can increase your risk of osteoporosis. Examples include:

- **Sedentary lifestyle.** People who spend a lot of time sitting have a higher risk of osteoporosis than do those who are more active. Any weight-bearing exercise and activities that promote balance and good posture are beneficial for your bones, but walking, running, jumping, dancing and weightlifting seem particularly helpful.
- **Excessive alcohol consumption.** Regular consumption of more than two alcoholic drinks a day increases your risk of osteoporosis.
- **Tobacco use.** The exact role tobacco plays in osteoporosis isn't clear, but it has been shown that tobacco use contributes to weak bones.

Bone fractures, particularly in the spine or hip, are the most serious complications of osteoporosis. Hip fractures often are caused by a fall and can result in disability and even an increased risk of death within the first year after the injury. In some cases, spinal fractures can occur even if you haven't fallen. The bones that make up your spine (vertebrae) can weaken to the point of crumpling, which can result in back pain, lost height and a hunched forward posture.

Prevention

Good nutrition and regular exercise are essential for keeping your bones healthy throughout your life.

Protein

Protein is one of the building blocks of bone. However, there's conflicting evidence about the impact of protein intake on bone density.

Most people get plenty of protein in their diets, but some do not. Vegetarians and vegans can get enough protein in the diet if they intentionally seek suitable sources, such as soy, nuts, legumes, seeds for vegans and vegetarians, and dairy and eggs for vegetarians.

Older adults might eat less protein for various reasons. If you think you're not getting enough protein, ask your doctor if supplementation is an option.

Body weight

Being underweight increases the chance of bone loss and fractures. Excess weight is now known to increase the risk of fractures in your arm and wrist. As such, maintaining an appropriate body weight is good for bones just as it is for health in general.

Calcium

Men and women between the ages of 18 and 50 need 1,000 milligrams of calcium a day. This daily amount increases to 1,200 milligrams when women turn 50 and men turn 70.

Good sources of calcium include:

- Low-fat dairy products
- Dark green leafy vegetables
- Canned salmon or sardines with bones
- Soy products, such as tofu
- Calcium-fortified cereals and orange juice

If you find it difficult to get enough calcium from your diet, consider taking calcium supplements. However, too much calcium has been linked to kidney stones. Although yet unclear, some experts suggest that too much calcium especially in supplements can increase the risk of heart disease.

The Health and Medicine Division of the National Academies of Sciences, Engineering and Medicine (formerly the Institute of Medicine) recommends that total calcium intake, from supplements and diet combined, should be no more than 2,000 milligrams daily for people older than 50.

Vitamin D

Vitamin D improves your body's ability to absorb calcium and improves bone health in other ways. People can get some of their vitamin D from sunlight, but this might not be a good source if you live in a high latitude, if you're housebound, or if you regularly use sunscreen or avoid the sun because of the risk of skin cancer.

To get enough vitamin D to maintain bone health, it's recommended that adults ages 51 to 70 get 600 international units (IU) and 800 IU a day after age 70 through food or supplements.

People without other sources of vitamin D and especially with limited sun exposure might need a supplement. Most multivitamin products contain between 600 and 800 IU of vitamin D. Up to 4,000 IU of vitamin D a day is safe for most people.

Exercise

Exercise can help you build strong bones and slow bone loss. Exercise will benefit your bones no matter when you start, but you'll gain the most benefits if you start exercising regularly when you're young and continue to exercise throughout your life.

Combine strength training exercises with weight-bearing and balance exercises. Strength training helps strengthen muscles and bones in your arms and upper spine. Weight-bearing exercises — such as walking, jogging, running, stair climbing, skipping rope, skiing and impact-producing sports — affect mainly the bones in your legs, hips and lower spine. Balance exercises such as tai chi can reduce your risk of falling especially as you get older.

Swimming, cycling and exercising on machines such as elliptical trainers can provide a good cardiovascular workout, but they don't improve bone health.

Sub Unit – VI

Obesity related health problems. Body weight control and its significance on health. Role of exercise, dieting and combination of exercise & dieting on weight control. First-aid-objectives and principles.

6.6.1 Obesity related Health problems

People who have obesity, compared to those with a normal or healthy weight, are at increased risk for many serious diseases and health conditions, including the following:

- All-causes of death (mortality)
- High blood pressure (Hypertension)
- High LDL cholesterol, low HDL cholesterol, or high levels of triglycerides (Dyslipidemia)
- Type 2 diabetes
- Coronary heart disease
- Stroke
- Gallbladder disease
- Osteoarthritis (a breakdown of cartilage and bone within a joint)
- Sleep apnea and breathing problems
- Many types of cancer
- Low quality of life
- Mental illness such as clinical depression, anxiety, and other mental disorders
- Body pain and difficulty with physical functioning

6.6.2 Body weight control

1. Add Protein to Your Diet

When it comes to weight loss, protein is the king of nutrients.

Your body burns calories when digesting and metabolizing the protein you eat, so a high-protein diet can boost metabolism by up to 80–100 calories per day

A high-protein diet can also make you feel more full and reduce your appetite. In fact, some studies show that people eat over 400 fewer calories per day on a high-protein diet. Even something as simple as eating a high-protein breakfast (like eggs) can have a powerful effect.

2. Eat Whole, Single-Ingredient Foods

One of the best things you can do to become healthier is to base your diet on whole, single-ingredient foods.

By doing this, you eliminate the vast majority of added sugar, added fat and processed food.

Most whole foods are naturally very filling, making it a lot easier to keep within healthy calorie limits.

Furthermore, eating whole foods also provides your body with the many essential nutrients that it needs to function properly.

Weight loss often follows as a natural side effect of eating whole foods.

3. Avoid Processed Foods

Processed foods are usually high in added sugars, added fats and calories.

What's more, processed foods are engineered to make you eat as much as possible. They are much more likely to cause addictive-like eating than unprocessed foods.

4. Stock Up on Healthy Foods and Snacks

Studies have shown that the food you keep at home greatly affects weight and eating behavior. By always having healthy food available, you reduce the chances of you or other family members eating unhealthy.

There are also many healthy and natural snacks that are easy to prepare and take with you on the go.

These include yogurt, whole fruit, nuts, carrots, and hard-boiled eggs.

5. Limit Your Intake of Added Sugar

Eating a lot of added sugar is linked with some of the world's leading diseases, including heart disease, type 2 diabetes and cancer.

On average, Americans eat about 15 teaspoons of added sugar each day. This amount is usually hidden in various processed foods, so you may be consuming a lot of sugar without even realizing it.

Since sugar goes by many names in ingredient lists, it can be very difficult to figure out how much sugar a product actually contains.

Minimizing your intake of added sugar is a great way to improve your diet.

6. Drink Water

There is actually truth to the claim that drinking water can help with weight loss.

Drinking 0.5 liters (17 oz) of water may increase the calories you burn by 24–30% for an hour afterward.

Drinking water before meals may also lead to reduced calorie intake, especially for middle-aged and older people.

Water is particularly good for weight loss when it replaces other beverages that are high in calories and sugar.

7. Drink (Unsweetened) Coffee

Fortunately, people are realizing that coffee is a healthy beverage that is loaded with antioxidants and other beneficial compounds.

Coffee drinking may support weight loss by increasing energy levels and the amount of calories you burn.

Caffeinated coffee may boost your metabolism by 3–11% and reduce your risk of developing type 2 diabetes by a whopping 23–50%.

Furthermore, black coffee is very weight loss friendly, since it can make you feel full but contains almost no calories.

8. Supplement With Glucomannan

Glucomannan is one of several weight loss pills that has been proven to work.

This water-soluble, natural dietary fiber comes from the roots of the konjac plant, also known as the elephant yam.

Glucomannan is low in calories, takes up space in the stomach and delays stomach emptying. It also reduces the absorption of protein and fat, and feeds the beneficial gut bacteria.

Its exceptional ability to absorb water is believed to be what makes it so effective for weight loss. One capsule is able to turn an entire glass of water into gel.

9. Avoid Liquid Calories

Liquid calories come from beverages like sugary soft drinks, fruit juices, chocolate milk and energy drinks.

These drinks are bad for health in several ways, including an increased risk of obesity. One study showed a drastic 60% increase in the risk of obesity among children, for each daily serving of a sugar-sweetened beverage.

It's also important to note that your brain does not register liquid calories the same way it does solid calories, so you end up adding these calories on top of everything else that you eat.

10. Limit Your Intake of Refined Carbs

Refined carbs are carbs that have had most of their beneficial nutrients and fiber removed.

The refining process leaves nothing but easily digested carbs, which can increase the risk of overeating and disease.

The main dietary sources of refined carbs are white flour, white bread, white rice, sodas, pastries, snacks, sweets, pasta, breakfast cereals, and added sugar.

11. Fast Intermittently

Intermittent fasting is an eating pattern that cycles between periods of fasting and eating.

There are a few different ways to do intermittent fasting, including the 5:2 diet, the 16:8 method and the eat-stop-eat method.

Generally, these methods make you eat fewer calories overall, without having to consciously restrict calories during the eating periods. This should lead to weight loss, as well as numerous other health benefits.

12. Drink (Unsweetened) Green Tea

Green tea is a natural beverage that is loaded with antioxidants.

Drinking green tea is linked with many benefits, such as increased fat burning and weight loss.

Green tea may increase energy expenditure by 4% and increase selective fat burning by up to 17%, especially harmful belly fat.

Matcha green tea is a variety of powdered green tea that may have even more powerful health benefits than regular green tea.

Shop for green tea and matcha green tea online.

13. Eat More Fruits and Vegetables

Fruits and vegetables are extremely healthy, weight-loss-friendly foods.

In addition to being high in water, nutrients and fiber, they usually have very low energy density. This makes it possible to eat large servings without consuming too many calories.

Numerous studies have shown that people who eat more fruits and vegetables tend to weigh less.

14. Count Calories Once in a While

Being aware of what you're eating is very helpful when trying to lose weight.

There are several effective ways to do this, including counting calories, keeping a food diary or taking pictures of what you eat.

Using an app or another electronic tool may be even more beneficial than writing in a food diary.

15. Use Smaller Plates

Some studies have shown that using smaller plates helps you eat less, because it changes how you see portion sizes.

People seem to fill their plates the same, regardless of plate size, so they end up putting more food on larger plates than smaller ones.

Using smaller plates reduces how much food you eat, while giving you the perception of having eaten more.

16. Try a Low-Carb Diet

Many studies have shown that low-carb diets are very effective for weight loss.

Limiting carbs and eating more fat and protein reduces your appetite and helps you eat fewer calories.

This can result in weight loss that is up to 3 times greater than that from a standard low-fat diet.

A low-carb diet can also improve many risk factors for disease.

17. Eat More Slowly

If you eat too fast, you may eat way too many calories before your body even realizes that you are full.

Faster eaters are much more likely to become obese, compared to those who eat more slowly.

Chewing more slowly may help you eat fewer calories and increase the production of hormones that are linked to weight loss.

18. Replace Some Fat with Coconut Oil

Coconut oil is high in fats called medium-chain triglycerides, which are metabolized differently than other fats.

Studies show that they can boost your metabolism slightly, while helping you eat fewer calories.

Coconut oil may be especially helpful in reducing the harmful belly fat.

Note that this does not mean that you should *add* this fat to your diet, but simply replace some of your other fat sources with coconut oil.

19. Add Eggs to Your Diet

Eggs are the ultimate weight loss food. They are cheap, low in calories, high in protein and loaded with all sorts of nutrients.

High-protein foods have been shown to reduce appetite and increase fullness, compared to foods that contain less protein.

Furthermore, eating eggs for breakfast may cause up to 65% greater weight loss over 8 weeks, compared to eating bagels for breakfast. It may also help you eat fewer calories throughout the rest of the day.

20. Spice Up Your Meals

Chili peppers and jalapenos contain a compound called capsaicin, which may boost metabolism and increase the burning of fat.

Capsaicin may also reduce appetite and calorie intake.

21. Take Probiotics

Probiotics are live bacteria that have health benefits when eaten. They can improve digestive health and heart health, and may even help with with weight loss.

Studies have shown that overweight and obese people tend to have different gut bacteria than normal-weight people, which may influence weight.

Probiotics may help regulate the healthy gut bacteria. They may also block the absorption of dietary fat, while reducing appetite and inflammation.

Of all the probiotic bacteria, *Lactobacillus gasseri* shows the most promising effects on weight loss.

22. Get Enough Sleep

Getting enough sleep is incredibly important for weight loss, as well as to prevent future weight gain.

Studies have shown that sleep-deprived people are up to 55% more likely to become obese, compared to those who get enough sleep. This number is even higher for children.

This is partly because sleep deprivation disrupts the daily fluctuations in appetite hormones, leading to poor appetite regulation.

23. Eat More Fiber

Fiber-rich foods may help with weight loss.

Foods that contain water-soluble fiber may be especially helpful, since this type of fiber can help increase the feeling of fullness.

Fiber may delay stomach emptying, make the stomach expand and promote the release of satiety hormones.

Ultimately, this makes us eat less naturally, without having to think about it.

Furthermore, many types of fiber can feed the friendly gut bacteria. Healthy gut bacteria have been linked with a reduced risk of obesity.

Just make sure to increase your fiber intake gradually to avoid abdominal discomfort, such as bloating, cramps and diarrhea.

24. Brush Your Teeth After Meals

Many people brush or floss their teeth after eating, which may help limit the desire to snack or eat between meals.

This is because many people do not feel like eating after brushing their teeth. Plus, it can make food taste bad.

Therefore, if you brush or use mouthwash after eating, you may be be less tempted to grab an unnecessary snack.

25. Combat Your Food Addiction

Food addiction involves overpowering cravings and changes in your brain chemistry that make it harder to resist eating certain foods.

This is a major cause of overeating for many people, and affects a significant percentage of the population. In fact, a recent 2014 study found that almost 20% of people fulfilled the criteria for food addiction.

Some foods are much more likely to cause symptoms of addiction than others. This includes highly processed junk foods that are high in sugar, fat or both.

The best way to beat food addiction is to seek help.

26. Do Some Sort of Cardio

Doing cardio — whether it is jogging, running, cycling, power walking or hiking — is a great way to burn calories and improve both mental and physical health.

Cardio has been shown to improve many risk factors for heart disease. It can also help reduce body weight.

Cardio seems to be particularly effective at reducing the dangerous belly fat that builds up around your organs and causes metabolic disease.

27. Add Resistance Exercises

Loss of muscle mass is a common side effect of dieting.

If you lose a lot of muscle, your body will start burning fewer calories than before.

By lifting weights regularly, you'll be able to prevent this loss in muscle mass.

As an added benefit, you'll also look and feel much better.

28. Use Whey Protein

Most people get enough protein from diet alone. However, for those who don't, taking a whey protein supplement is an effective way to boost protein intake.

One study shows that replacing part of your calories with whey protein can cause significant weight loss, while also increasing lean muscle mass.

Just make sure to read the ingredients list, because some varieties are loaded with added sugar and other unhealthy additives.

29. Practice Mindful Eating

Mindful eating is a method used to increase awareness while eating.

It helps you make conscious food choices and develop awareness of your hunger and satiety cues. It then helps you eat healthy in response to those cues.

Mindful eating has been shown to have significant effects on weight, eating behavior and stress in obese individuals. It is especially helpful against binge eating and emotional eating.

By making conscious food choices, increasing your awareness and listening to your body, weight loss should follow naturally and easily.

30. Focus on Changing Your Lifestyle

Dieting is one of those things that almost always fails in the long term. In fact, people who "diet" tend to gain more weight over time.

Instead of focusing only on losing weight, make it a primary goal to nourish your body with healthy food and nutrients.

Eat to become a healthier, happier, fitter person — not just to lose weight.

6.6.3 Significance of Body Weight Control

The most important component of an effective weight-management program must be the prevention of unwanted weight gain from excess body fat. The military is in a unique position to address prevention from the first day of an individual's military career. There is significant evidence that losing excess body fat is difficult for most individuals and the risk of regaining lost weight is high. From the first day of initial entry training, an understanding of the fundamental causes of excess weight gain must be communicated to each individual, along with a strategy for maintaining a healthy body weight as a way of life. The principle of weight gain is simple, i.e., energy intake exceeds energy expenditure. However, overweight and obesity are clearly the result of a complex set of interactions among genetic, behavioral, and environmental factors. The percentage of individuals who lose weight and successfully maintain the loss has been estimated to be 10%.Military personnel who are identified as exceeding body composition standards are mandated to enter a military weight-management program for treatment. A good weight-management program must include two phases, weight loss and weight maintenance. Based on recommendations, the critical components of the programs should be uniform across the services. Physical Activity Increased physical activity is an essential component of a comprehensive weight-reduction strategy for overweight adults who are otherwise healthy. One of the best predictors of success in the long-term management of overweight and obesity is the ability to develop and to sustain an exercise program. Physical activity represents an important component of volitional energy expenditure. Modern transportation and other conveniences have reduced the need for energy expenditure in the form of physical exertion. The availability of exercise facilities at military bases can reinforce exercise and fitness programs. For a given individual, the intensity, duration, frequency, and type of physical activity depend on existing medical conditions, the degree of previous activity, physical limitations, and individual preferences. The benefits of physical activity are significant and occur even in the absence of weight loss. For previously sedentary individuals, a slow progression in physical activity has been recommended, so that 30 minutes of exercise daily is achieved after several weeks of gradual increase. The activity goal has been expressed as an increase in energy expenditure of 1,000 kcal/week, although this quantity may be insufficient to prevent weight regain. For that purpose, a weekly goal of 2,000 to 3,000 kcal of added activity may be necessary. Therefore, mental preparation for the amount of activity necessary to maintain weight loss must begin while the individual is losing weight. When strength training or resistance exercise is combined with aerobic activity, long-term results may be better than those with aerobic activity alone. Because strength training tends to build muscle, loss of lean body mass may be minimized and the relative loss of body fat may be increased. Although exercise programs can result in an average weight loss of 2 to 3 kg in the short term, outcomes improve significantly when physical activity is combined with dietary intervention. For example, when physical activity was combined with a reduced-calorie diet and lifestyle changes, a weight loss of 7.2 kg was achieved after 6 months to 3 years of follow-up monitoring. An average of 80 minutes/day of moderate activity or 35 minutes/day of vigorous activity is needed for a sedentary lifestyle to maintain weight. This would be considered the threshold level, and levels would likely need to be higher (either longer time periods or greater intensity) to effect weight loss. There is good evidence that peak rates of lipid oxidation are achieved at exercise intensities of 45% of maximal oxygen consumption. An initial weight loss of 10% of body weight achieved over 6 months is a recommended target. The rate of weight loss should be 1 to 2 pounds each week. Greater rates of weight loss do not achieve better long-term results. After the first 6 months of weight-loss therapy, the priority should be weight maintenance; additional weight loss can be considered after a period of weight maintenance. Behavior and Lifestyle Modification The use of behavior and lifestyle modification in weight management is based on a body of evidence that people become or

remain overweight as the result of modifiable habits or behaviors and that, with changes in those behaviors, weight can be lost and the loss can be maintained. The primary goals of behavioral strategies for weight control are to increase physical activity and to reduce caloric intake by altering eating habits. More recently, these treatments have been used in combination with low-calorie diets, medical nutrition therapy, nutrition education, exercise programs, monitoring, pharmacological agents, and social support to promote weight loss and as a component of maintenance programs. Self-monitoring of dietary intake and physical activity, which enables the individual to develop a sense of accountability, is one of the cornerstones of behavioral treatment. Patients are asked to keep a daily food diary in which they record what and how much they have eaten, when and where the food was consumed, and the context in which the food was consumed (e.g., what else they were doing at the time, what they were feeling, and who else was there). In addition, clients may be asked to keep a record of their daily physical activities. Self-monitoring of food intake is often associated with a relatively immediate reduction in food intake and consequent weight loss. Particular attention must be directed toward increasing activity, decreasing energy intake, and improving food quality for consumption. Diet Weight-management programs may be divided into two phases, weight loss and weight maintenance. Although exercise may be the most important element of a weight-management program, it is clear that dietary restriction is the critical component of a weight-loss program that influences the rate of weight loss. Activity outcome accounts for only approximately 15 to 30% of daily energy expenditure, but food intake accounts for 100% of daily energy intake. Therefore, the energy balance equation may be affected most significantly by reducing energy intake. The diets that have been proposed are almost innumerable but, whatever the name, all diets consist of reductions of some proportions of protein, carbohydrate, and fat. General criteria for a diet that provides reasonable and steady weight loss are based on the principle of a hypocaloric balanced diet. However, there is recent evidence that, among obese individuals, use of very-low-calorie diets, coupled with behavior modification, may be more successful in initial weight loss and maintenance of weight loss than hypocaloric balanced diets. The most important dietary considerations recommend the following. (1) Energy intake should be sufficient but must be less than the individual's energy expenditure. The level of other essential nutrients should be adequate to allow individuals to pursue their regularly scheduled activities and to maintain appropriate levels of fitness. (2) The diet program should promote a new set of eating habits that can help to maintain weight loss over time and should emphasize changes in what, how much, and how often the individual eats. (3) At least five servings of fruits and vegetables per day should be included and incorporated into the individual's lifestyle. (4) The diet should be palatable and familiar, with sufficient volume to promote feelings of satiety. The foods provided must be readily available and affordable, and the diet must be easily adaptable to a variety of situations, including living in barracks or at home and married or single. Although the etiology of obesity is multifactorial, the common characteristic of all obese people is excessive energy storage in the form of body fat. An appropriate weight-loss diet is energy deficient by 350 to 1,000 kcal/day, in comparison to the habitual daily diet. Protein intake should be no less than 60 g/day for women and no less than 75 g/day for men. Fat content should be no greater than 30% of total calories, and carbohydrate intake should be no less than 130 g/day. In general, diets containing 1,000 to 1,200 kcal/day should be selected for most women; a diet of 1,200 to 1,600 kcal/day should be chosen for men and may be appropriate for women who weigh 165 pounds or who exercise. For military purposes, use of lowcarbohydrate diets is not recommended. Such diets have potential side effects, such as physiological dehydration, nausea, hyperuricemia, ketosis, and fatigue accompanied by the depletion of glycogen stores, with deteriorating effects on performance. The recently released Dietary Reference Intakes for macronutrients concluded that the adult requirement for carbohydrate to supply adequate glucose for proper brain function is 100 g/day,

with a recommended daily intake of 130 g/day. Therefore, it is recommended that under no circumstances should weight-loss diets recommended for military personnel contain 130 g/day of carbohydrate. A daily multivitamin and mineral supplement may be useful. Negative Consequences of Improper Weight Loss Weight management is the adoption of healthful and sustainable eating and exercise behaviors indicated for reduced disease risk and improved feelings of energy and well-being. Military personnel are open to just as much misinformation about weight loss and dieting as the rest of the community. Unfortunately, this often results in the use of unbalanced dietary regimens, nutritional supplements, and drugs that lack scientific support or are not permitted by health authorities and officials. Such approaches may result in decreased performance and may have negative health consequences. The promotion of safe, effective, weight-loss strategies is an important function of the military health staff and nutrition team. Rapid weight loss during the first few days of caloric deficit results primarily from a loss of body water and stored glycogen. As weight loss continues, a greater loss of fat occurs per unit of weight lost. An unrealistic perception of optimal body weight, and a belief that weight loss is necessary for improved performance, can contribute to unhealthy weight-loss practices. Undesirable weightloss programs are defined as those that are not nutritionally sound, that result in large losses of fat-free tissue, that pose potential serious medical complications, and that cannot be followed for long-term weight maintenance. The effect of rapid weight loss on performance appears to depend on the method of weight loss, the magnitude of weight loss, and the type of exercise performance test used. Clients may often resort to pathogenic weight-control behaviors such as fasting, sweating, fluid restriction, and use of diuretics and laxatives. Repeated cycles of rapid weight loss and subsequent regain increase risks of disordered eating, fatigue, psychological distress (anger, anxiety, and depression), dehydration, and macronutrient and micronutrient imbalances. Such cycles may increase the body's ability to conserve energy, although controversy exists on this topic. Thus, "yo-yo" dieting may lead to greater difficulty achieving weight loss with subsequent dieting; it also may facilitate regaining lost weight. Energy restriction and dieting can pose difficulties when individuals are attempting to consume adequate levels of macronutrients and micronutrients. Carbohydrate, iron, calcium, zinc, folate, and B vitamins are nutrients particularly affected by energy restriction. All of these nutrients are critical for optimal health and performance. Chronic underconsumption of these nutrients can lead to glycogen depletion, decreased oxygencarrying capacity, increased incidence of bone fractures, and higher injury rates attributable to fatigue and impaired cell growth and repair. Fluid losses during exercise and military training can be quite large, and personnel must replenish fluids to maintain health and performance. Achieving rapid weight loss through dehydration and other pathogenic purging strategies can adversely affect thermoregulation, renal and cardiovascular function, nerve conduction, and electrolyte balance. In general, the diets of most subjects attempting rapid weight loss are likely to be low in many nutrients. A single weight-loss effort is unlikely to cause problems in nutrient status, but repeated weight loss over a period of time is more likely to cause deterioration of nutritional status. Counseling with personnel to choose micronutrients and protein can decrease the likelihood of nutritional deficiencies.

6.6.4 Role of Exercise on weight control

To reap the health benefits of exercise, it is recommended that you to perform some form of aerobic exercise at least three times a week for a minimum of 20 minutes per session. However, more than 20 minutes is better if you want to actually lose weight. Incorporating just 15 minutes of moderate exercise — such as walking one mile — on a daily basis will burn up to 100 extra calories (assuming you don't consume excess calories in your diet afterwards). Burning 700 calories a week can equals 10 lbs. of weight loss over the course of a year.

In general, you should start slowly, with just a few minutes of exercise at once. The goal is to eventually work up to half an hour on most days of the week. If your schedule requires it, you can split this into shorter periods of a few minutes at a time.

As you continue to exercise and build up your stamina, you can graduate to longer exercises and more strenuous activities. Consider ramping up the intensity if you think you can handle it. At minimum, general recommendations include performing aerobic exercise at least three times a week for at least 20 minutes per session.

Any exercise that makes the heart and lungs expend more energy than normal is ideal. Some suggestions include walking, biking, jogging, swimming, fitness classes or cross-country skiing. There are also ways to work exercise into daily activities, like mowing the lawn or playing with your kids.

A few other recommendations:

- If you're a male over 45 or a female over 55 and you don't exercise, or if you have a medical condition, ask your doctor if there are any kinds of exercise you should avoid.
- Start slow, with something like walking or swimming that's easy on the body. Work slowly and comfortably so you don't strain your body.
- At least two or three times a week, do strength training to varying things up.
- Stretch all muscles at least twice a week after exercise to improve flexibility and prevent injury.

Target Your Heart Rate

To get the most out of exercise, mix in higher-intensity exercises like strength training and use your heart rate to track how hard you're working. The formula for determining your target heart rate is simple: subtract your age from 220, and then calculate 60 to 80 percent of that number.

If you need to make alterations to your training program based on heart rate, consult a trainer or your doctor to determine proper intensity levels. Do the same if you have any special health concerns like an injury, diabetes or a heart condition.

6.6.5 Role of dieting on weight control

It is a daily struggle. People hire trainers because they want to lose weight. Trainers teach clients correct and effective movements to complete a workout to lose weight, tone the body, or eventually gain muscle. Too many clients give up altogether because they aren't seeing results after months and months of hard work. These same clients are often missing a large aspect of the healthy lifestyle: diet. Too often, many people are under the impression that in order to lose weight, they can see results after doing well in either diet or exercise. To free clients of this mindset, have them imagine diet and exercise on opposite sides of a scale. Overcompensating for one means that someone will not receive the benefits of the other. Too much diet without exercise is great, but the tone and buildup of muscle isn't happening. On the other side, too much exercise without diet, isn't going to achieve favorable results, either. In order to achieve a certain body style, fit into a certain piece of clothing, or to maintain a current figure, a diet must complement the exercise, not compete against it.

A healthy weight is an important element of good health. How much you eat—and what you eat—play central roles in maintaining a healthy weight or losing weight. Exercise is the other key actor.

For years, low-fat diets were thought to be the best way to lose weight. A growing body of evidence shows that low-fat diets often don't work, in part because these diets often replace fat with easily digested carbohydrates.

Hundreds of diets have been created, many promising fast and permanent weight loss. Remember the cabbage soup diet? The grapefruit diet? How about the Hollywood 48 Hour Miracle diet, the caveman diet, the Subway diet, the apple cider vinegar diet, and a host of forgettable celebrity diets?

The truth is, almost any diet will work if it helps you take in fewer calories. Diets do this in two main ways:

- getting you to eat certain "good" foods and/or avoid "bad" ones
- changing how you behave and the ways you think or feel about food

The best diet for losing weight is one that is good for all parts of your body, from your brain to your toes, and not just for your waistline. It is also one you can live with for a long time. In other words, a diet that offers plenty of good tasting and healthy choices, banishes few foods, and doesn't require an extensive and expensive list of groceries or supplements.

One diet that fills the bill is a Mediterranean-type diet. Such a diet—and there are many variations—usually includes:

- several servings of fruits and vegetables a day
- whole-grain breads and cereals
- healthy fats from nuts, seeds, and olive oil
- lean protein from poultry, fish, and beans
- limited amounts of red meat
- moderate wine consumption with meals (no more than two glasses a day for men; no more than one a day for women

A Mediterranean-style diet is a flexible eating pattern. People who follow such diets tend to have lower rates of heart disease, diabetes, dementia, and other chronic conditions.

6.6.6 Role of combination of exercise and dieting on weight control

Combining exercise with a healthy diet is a more effective way to lose weight than depending on calorie restriction alone. Exercise can prevent or even reverse the effects of certain diseases. Exercise lowers blood pressure and cholesterol, which may prevent a heart attack.

In addition, if you exercise, you lower your risk of developing certain types of cancers such as colon and breast cancer. Exercise is also known to help contribute to a sense of confidence and well-being, thus possibly lowering rates of anxiety and depression.

Exercise is helpful for weight loss and maintaining weight loss. Exercise can increase metabolism, or how many calories you burn in a day. It can also help you maintain and increase lean body mass, which also helps increase number of calories you burn each day.

Losing weight is not difficult. You can limit eating food and lose all that weight, fat and inches in less than a week. But in the process you will also end

up losing your health. Sagging and dull skin, indigestion, hair fall are some of the effects that you will end up experiencing if you lose weight this way. Therefore, eating the right food is equally important and should not be digressed from just to reach your ideal weight faster. Weight loss, if done in the right manner, can lead to many benefits other than just a slimmer body.

What is the 80-20 rule?

The 80-20 rule talks about 20 per cent exercise and 80 per cent nutrition. While most mistake this the other way round, it is important to understand how 80per cent nutrition plays a huge role in fitness. Both nutrition and exercise compliment each other and neither can do anything without the other. This means that without exercising, you will not end up burning calories of the foods you eat and without food, you will not have the desired energy for exercise. The 80-20 rule has been backed by science and should be adhered to if healthy and sustainable weight loss is your goal. However, this does not mean that 80 per cent nutrition means you keep eating food all the time and exercise for sometime only. 80 per cent nutrition denotes to a food plate which is a perfect blend of fiber, protein, carbohydrates, fats and vitamins and minerals.

How to ensure your 80 per cent nutrition intake everyday?

Since we know how our food plate needs to be divided into different food groups, here is the list of healthy foods which you can include in your daily diet:

Fiber: Indigestion and constipation are two biggest issues of any weight loss fanatic. Fiber will take care of this. To include enough fiber in your diet, you can include green leafy vegetables, fruits, pulses, whole grain foods such as buckwheat flour.

Fats: To cut the bad fats from your body, you need to consume good fats. This does not mean loading up your plate with harmful fats such as trans fats which are cancerous in nature, but rather healthy fats which contribute to a healthier body. To add fats to your diet, you need to include ghee, mustard oil, sesame oil, dried fruits and nuts such as walnuts, almonds and cashew nuts.

Proteins: Despite the fact that a typical Indian breakfast starts with milk, we lack protein in our diet. Proteins are the building blocks of the body and hence lead to weight loss as well. Not only milk but you need to include other richer sources of protein such as yoghurt, cheese, paneer, soya, tofu, gram flour, peanuts, chicken or fish to complete your daily intake of protein.

Vitamins and minerals: Even though we have read in many textbooks that vitamins and minerals are important for immunity, we tend to forget them anyway. Vegetables, seeds, nuts, and fruits are the best way to get your daily dose.

Carbohydrates: The often feared food group during weight loss is actually the most important for a fully functional healthy active body. At least 40 per cent of your plate should contain carbs such as rice, roti, multigrain breads, vegetables, pulses, legumes and fruits.

Why is the 80 per cent nutrition rule important?

The 80 per cent nutrition rule is necessary to manage your daily calorie intake. If you are a weight loss fanatic, by now you understand the basic concept of calorie in and calorie out. This means that you should burn as many calories as you eat. This definitely does not mean that you exercise throughout the day only to make up for your last meal, but rather that you should be active despite your exercise schedule.

The calorie rule means that on every kilogram of your body weight, you need 30 calories. For example, if you weigh 60 kilograms, you need (60X30) 1800 healthy calories everyday, even to lose or maintain your ideal weight.

The scientific reason behind fasting is detoxifying your body. By eating light for a week or maybe once in a week, one is supposed to give their system a little rest. But what happens is actually the opposite of this. On the days of fasting, we eat calorie-laden food more than we do on other days.

Read on to find out about a few tips that will help you in healthy fasting and **losing weight** as well.

1. Green leafy vegetables are a must. They provide you with energy along with some essential nutrients like Vitamin A, B and C. Spinach, bottle guard, broccoli, peas and tomatoes are some healthy green options that can be considered for fasting.

2. One must have fruits and this goes without saying. Fruits bring down your cholesterol. Apple, papaya, orange, pear and guava are the ideal fruits which can help you in bringing down your cholesterol.

3. A glass of lukewarm water with juice of 1 lemon in it if taken on an empty stomach can be more than effective when it comes to losing weight.

4. During fasting abstain from full cream milk and do not prepare food in condensed milk.

5. Do not eat deep fried foods like puri and pakodas. Replace these foods with roti and food options that are less in sugar content.

6. Fasting is one excuse for people to have loads of ghee. Eating too much ghee will not contribute to your weight loss and rather do the opposite. Use olive oil or if you really wish to have ghee, use not more than one tablespoon for preparation.

7. Have lots of fluids like juices, shakes, lassi, soups, herbal teas and coconut water. These liquids will not only keep you energised but will also alleviate your metabolism. Maintaining an optimum fluid level is also as important as not eating too much ghee.

8. Liquids will help in detoxification of your body.

9. Opt for fresh fruits and not the once peeled and cut hours before you are having them. Have salads, nuts, roasted makhana and roasted dry fruits as mid-day munchies.

10. If you have a sweet tooth, avoid having 'meetha' from outside. You can fulfil your sweet cravings by having jaggery, honey, apple kheer and fruit curd. Sweet potato is also a healthy option.

11. People love having fried potato while they are fasting. If you want to do it in a healthy way then substitute these fried potatoes with roasted, grilled or boiled potato chat. You can add cucumber, rock salt and tomato to enhance the taste and nutrition too.

12. Follow the rule of moderation. Eat small meals instead of eating too much at a time or starving yourself. Eat a small meal every 3 hours. These meals keep your metabolism up and maintain the blood glucose level.
Fasting if done in the right manner helps in body detoxification, gives rest to body's mechanisms, purifies gastro-intestinal tract and balances the metabolic constituents.

6.6.7 Definition of First-aid.

First Aids are an emergency care or treatment given to an ill or injured person before regular medical aid can be obtained. When you provide basic medical care to someone experiencing a sudden injury or illness, it's known as first aid.
In some cases, first aid consists of the initial support provided to someone in the middle of a medical emergency. This support might help them survive until professional help arrives.
In other cases, first aid consists of the care provided to someone with a minor injury. For example, first aid is often all that's needed to treat minor burns, cuts, and insect stings**. In a nut cell "Emergency care or treatment given to an ill or injured person before regular medical aid can be obtained is called First Aid."**

6.6.8 Objectives of First-aid.

1. **Preservation of life:** Preservation of life is the most significant aspect of a **first aid exercise**. We need air to survive and to live. The circulation of air in the body helps in the preservation of life. Providers of first aid look at the circulation of air in the body and clean any blocked airways. When the air way is blocked, brain damage occurs in about four minutes – dangerous isn't it?

2. Prevention of illness or injury from worsening: Illnesses and injuries can easily spread when prevention measures are not undertaken. First aid helps in containing wounds and injuries sustained in the body and enables prevention of further illnesses resulting from the injuries or wounds. First aid measures ensure that illnesses or injuries do not worsen. This is also a principle in the practice of medicine; the principle of beneficence.

3. Promoting Recovery: For every wound or injury sustained in the body, there is a prescribed **first aid exercise.**Depending on the nature and the extent of the sustained injury or wound, first aid attempts to promote recovery. Promotion of recovery includes attempts to dry up the wounds or avoiding its further spread. Also, in case of bleeding, it serves to stop the bleeding and the subsequent loss of blood that might result into loss of life.

4. Relieving pain: Injuries and pains inflict pain on the victims. There are people who are scared by the sight of blood and would feel psychological pain for it. Relieving pain is the **aim of first aid.** First aid providers sometimes use aesthetics to reduce the pain in the body. Cleaning up of wound also reduces the pains in the wounds through the removal of dirt and other germs that might be in the wounds.

5. Protect the unconscious: Sometimes people become unconscious and attract first aid attention. Unconsciousness involves the loss of ability to recognize people, events, or the immediate environment and the complete or partial failure to respond to either of the elements. When you faint, for instance, you are likely to be unconscious. The **aim of first aid** is to protect the unconscious through the identification of any dangers within the surrounding, confirmation of the likeliness of any form of response, and assessment of the airway. The breathing positions and free circulation of air are measures that must be undertaken to protect the unconscious.

6. Disinfecting wounds: Disinfection of wounds is also an objective of first aid. The infected wound might cause further spread of the wound in the body. Sometimes, the infections can be toxic. First aid disinfects the wounds through cleaning, often using hot water and preventive medicine.

7. **Prevent further infections:** First aid prevents further infections in the body. Besides disinfection of wounds, it helps in the prevention of germs and other pathogens from entering the wounds. First, the first aid providers clean the wounds using appropriate medicine. Also, they cover the wounds to prevent further entry of germs or other pathogens into the wounds. The use of a glove in the provision of first aid also prevents further infections. Personal cleanliness also plays an integral role in the prevention of further infections.

8. Preventing excessive loss of blood: Excess loss of blood can lead to loss of consciousness. In extreme cases, an uncontrolled excessive loss might lead to the loss of life. Where there is blood oozing out of the body, the first aid providers have a duty to ensure the oozing is stopped. In severe cases, this is done through the use of tourniquets. In simple cases, first aid provides prevent excessive loss of blood through the use of a sterile bandage or a clean piece of cloth.

9. Maintain normal body temperature: The body works normally under normal temperature. When the temperatures are irregular or inconsistent, there is a likelihood of equal irregular or abnormal body functioning. Hypothermia, for instance, is characterized by the loss of a drop of body temperatures below 95 Fahrenheit. It can lead to confusion, memory loss, or slurred language. The first aid objective is to regain and maintain the normal body temperatures. The steps could include warming the trunks of the person and covering the person with warm clothes.

10. Ensure an adequate supply of oxygen: Adequate oxygen helps a person to regain consciousness. A limited supply of oxygen causes intoxication and a subsequent death of a person. Where a person has lost consciousness, the first aid providers' act with speed to ensure the supply of oxygen is adequate. The person can be put in an open and free place to get access to enough supply of oxygen. Sometimes, the person's heavy clothes can be removed to create a cooling effect on the person.

11. Provide reassurance: First aid offers an assurance of life to the victims. It is an initial stage towards recovering from the injuries or wounds. Everyone needs an assurance for the continuity of life and recovering from shock. Cleaning of wounds and stopping of excessive loss of blood, for instance, creates an assurance of recovering from the shock and continuing with life. It limits the loss of hope and courage. First aid gives the victims new hope, power, strength, energy, and confidence!

6.6.9 Principles of First-aid.

Basic principles of first aid include:

- Safe response to emergencies for the benefit of casualties, bystanders and rescuers
- Securing the emergency site to reduce further harm to the casualty
- Using appropriate first aid procedures and techniques
- Safely moving the casualty, minimising pain and helping stabilise the condition
- Providing reassurance and guidance to the casualty
- Communication with bystanders and emergency services personnel
- Acting in accord with first aid protocol and workplace guidelines

Golden Rules Of First Aid :-

1. Reach the site of accident as early as possible.
2. Do not waste time asking unnecessary questions.
3. Find out the cause of injury.
4. Separate the causative agent from the patient or the patient from the agent e.g. Falling machinery, fire, electrical wire, poisonous insects etc.
5. Find out the whether the patient is dead or alive conscious or unconscious.
6. Determine the priority of first aid measures to be adopted e.g. Restoration of cardiac function, restoration of breathing, stop bleeding from the site of injury etc, in that order.
7. Arrange for medical aid.
8. Keep a record of the patient and the details of the event.
9. Keep the patient warm and comfortable as far as possible.
10. Improvise rather than wait for specific equipment.
11. If the patient is conscious, reassure him.

Sub Unit – VII
First-aid for Shock, poisoning, burns, drowning, bleeding, electric shock and common sports injuries.

6.7.1 First-aid for shock

Signs and symptoms

Signs of shock can include:

- weak, rapid pulse
- cold, clammy skin
- faintness/dizziness
- nausea.

Immediately after an injury, people may show little evidence of experiencing shock. Signs and symptoms may gradually develop depending on:

- severity of the injury
- continuation of fluid loss
- effectiveness of management.

Warning

- Shock can be life-threatening.
- Try not to leave a patient suffering from shock, alone.

Managing shock

1. Follow DRSABCD and manage injuries such as severe bleeding.
2. Reassure the patient.
3. Raise the patient's legs (unless they have fractures or a snake bite) above the level of the heart, with head flat on the floor.
4. Treat any wound or burn and immobilise fractures.
5. Loosen tight clothing around neck, chest and waist.
6. Maintain the patient's body warmth with a blanket or similar. **Do not** use any source of direct heat.
7. Give small, frequent amounts of water to the conscious patient who does not have abdominal trauma and who is unlikely to require an operation in the immediate future.
8. Monitor and record breathing, pulse and skin colour at regular intervals.
9. Place the patient in the recovery position if the person:

- has difficulty breathing
- becomes unconscious
- is likely to vomit.

Common Steps:

1. Lay the Person Down, if Possible

- Elevate the person's feet about 12 inches unless head, neck, or back is injured or you suspect broken hip or leg bones.
- Do not raise the person's head.
- Turn the person on side if he or she is vomiting or bleeding from the mouth.

2. Begin CPR, if Necessary

If the person is not breathing or breathing seems dangerously weak:

- For a child, start CPR for children.
- For an adult, start adult CPR.
- Continue CPR until help arrives or the person wakes up.

3. Treat Obvious Injuries

4. Keep Person Warm and Comfortable

- Loosen restrictive clothing.
- Cover with a coat or blanket.

- Keep the person still. Do not move the person unless there is danger.
- Reassure the person.
- Do not give anything to eat or drink.

5. Follow Up

- At the hospital, the person will be given oxygen and intravenous fluids.
- Blood test, urine tests, heart test and xrays and/or CT scans may be done.
- Other treatment will depend on the cause of shock.

6.7.2 First-aid for Poisoning

Poisoning is injury or death due to swallowing, inhaling, touching or injecting various drugs, chemicals, venoms or gases. Many substances — such as drugs and carbon monoxide — are poisonous only in higher concentrations or dosages. And others — such as cleaners — are dangerous only if ingested. Children are particularly sensitive to even small amounts of certain drugs and chemicals.

How you treat someone who may have been poisoned depends on:

- The person's symptoms
- The person's age
- Whether you know the type and amount of the substance that caused poisoning

If you are concerned about possible poisoning, call Poison Help at 800-222-1222 in the United States or your regional poison control center. Poison control centers are excellent resources for poisoning information and, in many situations, may advise that in-home observation is all that's needed.

When to suspect poisoning

Poisoning signs and symptoms can mimic other conditions, such as seizure, alcohol intoxication, stroke and insulin reaction. Signs and symptoms of poisoning may include:

- Burns or redness around the mouth and lips
- Breath that smells like chemicals, such as gasoline or paint thinner
- Vomiting
- Difficulty breathing
- Drowsiness
- Confusion or other altered mental status

If you suspect poisoning, be alert for clues such as empty pill bottles or packages, scattered pills, and burns, stains and odors on the person or nearby objects. With a child, consider the possibility that he or she may have applied medicated patches or swallowed a button battery.

Take the following actions until help arrives:

- **Swallowed poison.** Remove anything remaining in the person's mouth. If the suspected poison is a household cleaner or other chemical, read the container's label and follow instructions for accidental poisoning.
- **Poison on the skin.** Remove any contaminated clothing using gloves. Rinse the skin for 15 to 20 minutes in a shower or with a hose.
- **Poison in the eye.** Gently flush the eye with cool or lukewarm water for 20 minutes or until help arrives.
- **Inhaled poison.** Get the person into fresh air as soon as possible.
- If the person vomits, turn his or her head to the side to prevent choking.
- Begin CPR if the person shows no signs of life, such as moving, breathing or coughing.
- Call Poison Help at 800-222-1222 in the United States or your regional poison control for additional instructions.
- Have somebody gather pill bottles, packages or containers with labels, and any other information about the poison to send along with the ambulance team.

Caution

- **Syrup of ipecac.** Don't give syrup of ipecac or do anything to induce vomiting. Expert groups, including the American Association of Poison Control Centers and the American Academy of Pediatrics, no longer endorse using ipecac in children or adults who have taken pills or other potentially poisonous substances. No good evidence proves its effectiveness, and it often can do more harm than good.
  If you still have old bottles of syrup of ipecac in your home, throw them away.
- **Button batteries.** The small, flat batteries used in watches and other electronics — particularly the larger, nickel-sized ones — are especially dangerous to small children. A battery stuck in the esophagus can cause severe burns in as little as 2 hours.
  If you suspect that a child has swallowed one of these batteries, immediately take him or her for an emergency X-ray to determine its location. If the battery is in the esophagus, it will have to be removed. If it has passed into the stomach, it's usually safe to allow it to pass on through the intestinal tract.
- **Medicated patches.** If you think a child got hold of medicated patches (adhesive products for transdermal drug delivery), carefully inspect the child's skin and remove any that are attached. Also check the roof of the mouth, where they can get stuck if the child sucks on them.

First aid for poisoning

Here is an action list. Each step is explained in more detail below the list. Start with the first step and follow each step in the order given. Act as quickly as you can, but stay calm.

1. Check if the patient is conscious.
2. Open the airway and make sure the tongue is not blocking the throat.
3. Check if the patient is breathing.
4. Clean out the mouth and clear the throat.
5. Give mouth-to-mouth respiration.
6. Check if the heart is beating.
7. If the heart is beating, but the patient is still not breathing, carry on with mouth-to-mouth respiration.
8. If the heart is not beating, give heart massage.
9. If the patient is breathing but is unconscious, turn him or her onto one side, into the recovery position.
10. Give first aid for fits if necessary.
11. Wash any chemical out of the eyes.
12. Remove contaminated clothing and wash any chemical off the skin and hair.
13. Give first aid for poisonous bites and stings.

Check if the patient is conscious

Try to make the patient wake up. Shout "Are you all right?" and gently shake the shoulders, but take care not to make any injuries worse (Fig. 15). Pinch the skin on the neck and watch the face. A patient who is just sleeping will wake up, but an unconscious patient will not.

Open the airway

The airway is the tube through which air passes from the mouth and nose to the lungs. If it is blocked the patient cannot breathe and air cannot get into or out of the lungs. A patient who cannot breathe will die within four minutes.

In an unconscious patient the tongue may block the throat and the airway. Make sure the airway is open and air can get down the throat (Fig. 16):

* Place the patient on his or her back.
* Tilt the head back and lift the chin up with the finger and thumb of one hand on the bony part

of the chin, while pressing the forehead back with the other hand (Fig. 17). This will open the airway and stop the tongue blocking the throat.

Check whether the patient is breathing

After opening the airway, quickly check whether the patient is breathing (Fig. 18):

* Look for the belly or the chest moving up and down.
* Feel the chest moving up and down.
* Feel the patient's breath on your cheek.
* Listen for breath sounds. Put your ear close to the patient's mouth.

A person may stop breathing because:

* Something is stuck in the throat.
* The throat is blocked by the tongue, or by blood, spit, vomit, food, or false teeth. (If you have tilted the head back, the tongue will not block the throat.)
* The throat is blocked because the patient has swallowed poison which has burnt the throat and made it swell.
* The patient has been poisoned.
* The patient has been hit on the head or chest.
* The patient has had a heart attack.
* The patient has nearly drowned.

Clean out the mouth and clear the throat

If the patient is not breathing after you have tilted the head back, something may be blocking the throat.

Turn the head to one side. With one or two fingers (and preferably wearing gloves) scoop deeply round the mouth and throat to clear any blockage such as vomit (see Fig. 19). Take out the patient's false teeth.

If the patient starts breathing turn him or her onto one side, into the recovery position. Check breathing and pulse frequently.

Whatever the cause, if the patient does not start breathing you must act immediately to help the patient to breathe.

Give mouth-to-mouth respiration

You can help the patient to breathe by blowing air from your lungs into his or her lungs through the patient's mouth (mouth to mouth) or nose (mouth to nose). This is called mouth-to-mouth (or mouth-to-nose) respiration.

How to give mouth-to-mouth respiration or mouth-to-nose respiration to an adult

1. With the patient lying flat on his or her back, clear any blockage from the mouth. Kneel beside the patient's head.
2. Tilt the head back.
3. Pinch the nose with one hand. With the other hand pull the mouth open (Fig. 21). Do not press on the neck. For mouth-to-nose respiration, close the patient's mouth with your thumb.
4. Breathe in deeply. Cover the patient's mouth completely with your own mouth and breathe out steadily and smoothly so that all your breath goes into the patient's mouth. Breathe out strongly to fill the chest (see Fig. 22). Look for the patient's chest rising. For mouth-to-nose respiration put your mouth around the patient's nose.
5. Lift your mouth away so that the patient can breathe out and you can take another breath of air. Turn your head, look for the chest falling, feel the breathed-out air on your cheek, and listen for the sound of the patient breathing out (see Fig. 23). For mouth-to-nose respiration you may have to open the patient's mouth to let air out.

6. Take another breath of air. Once the chest has fallen, blow into the patient's mouth (or nose) again. Watch the patient breathe out again. Then check that the heart is beating.
If the chest does not rise with each breath, and you cannot feel or hear the patient breathing out, then either the airway is blocked or some of your breath is not going into the patient's chest. Check that the head is held well back and clear the airway again. Make sure there is no air escaping when you breathe into the patient's mouth (or nose).
How to give mouth-to-mouth respiration to a child or a baby
Open the airway in a child or baby in the same way as for an adult, but do not tilt the head too far back or the soft airway may kink.
If you can see something blocking the throat carefully remove it, but do not sweep your finger inside a baby's mouth if you cannot see anything there. If the throat is swollen because of an infection, you might make the swelling worse.
Do not pinch the nose. Put your lips over both the nose and the mouth (Fig. 24). Breathe gently, just enough to move the chest. For a very small baby only small puffs are needed. Do not blow hard or you may harm the baby's chest. Blow into the chest every 3 seconds.
Feel for the pulse in the neck, in the hollow between the voice box and the muscle. Place two fingers on the voice box (Adam's apple) and slide your fingers into the groove under the jaw (Fig. 25). Keep your fingers there for at least five seconds to feel if there is a pulse.
If you cannot feel a pulse, the heart has stopped. This is called cardiac arrest. The patient will be unconscious and will probably have large pupils. If the patient has white skin it will probably have a blue-grey colour. If the patient has black or brown skin look for a blue colour to the nails, lips and the inside of the lower eyelids. If the heart stops, breathing will also stop and the patient will need both heart massage and mouth-to-mouth respiration.
If the heart is beating, but the patient is still not breathing, carry on with mouth-to-mouth respiration
Take a deep breath and blow once every 5 seconds, until the patient starts to breathe without help. You may have to do this for more than one hour.
If the patient has breathed in an irritant gas, the mouth and throat may be full of froth. You cannot remove this froth by wiping, so do not waste time trying to remove it. As this froth is air bubbles, all you have to do to move air in and out of the lungs is to blow the froth into the lungs. So blow as usual.
When the patient starts to breathe, turn him or her onto one side into the recovery position. The patient may vomit when breathing starts again but the vomit will not block the throat if the patient is lying on one side. Let the vom Watch carefully in case the patient stops breathing again. If breathing stops turn the patient onto his or her back and start mouth- to-mouth respiration again.
If the heart is not beating give heart massage
If you cannot feel a pulse in the neck, you should try to start the heart beating again by giving heart massage (see below).
Heart massage (or chest compression) means pressing down on the heart to push blood out of it and round the body. This may start the heart beating again. It will only be effective if the patient is lying on a hard surface.
If there is no heartbeat, the patient will have stopped breathing. Always start mouth-to-mouth respiration before heart massage.
Do not give heart massage if the heart is beating, even faintly. Stop as soon as you feel a pulse in the neck, but carry on with mouth- to-mouth respiration if the patient is still not breathing.
How to give heart massage to an adult
1. Check that there is no heartbeat.
2. Lay the patient on his or her back on a firm surface. Kneel beside the patient's chest.

3. Find the right place to put your hands. Find the lower edge of the ribs. Follow the edge of the ribs to where they meet the breastbone. Place your middle finger on the base of the breastbone, and the index finger next to it (Fig. 26), then place the heel of your other hand next to these two fingers, on the breastbone in the midline of the chest (Fig. 27).
4. Now cover this hand with the heel of your other hand, lock your fingers together, keeping them off the chest (Fig. 28). Put your shoulders above the patient's chest and keep your arms straight.
5. Press down on the lower half of the breastbone 4-5 centimetres, keeping your arms straight. Then stop pushing. While counting "one and two and three and...", press 15 times, in time with the numbers (80 presses a minute). Presses should be regular and smooth, not jerky and jabbing.
6. Remember that both mouth-to-mouth respiration and heart massage are needed. After 15 presses tilt the head back again so that air can get down the throat, put your mouth round the patient's mouth and give two breaths.
7. Continue with 15 presses followed by two full breaths. After one minute check the heartbeat, then after 3 minutes or every 12 cycles check the heartbeat again. As soon as the heartbeat returns stop heart massage immediately. You may see the patient's colour become more normal and the pupils return to normal size.
8. Continue mouth-to-mouth respiration at 12 breaths a minute, until the patient breathes without help. It may be some time before breathing starts again, even after the heart has started beating. When breathing starts again put the patient onto his or her side in the recovery position.

If another person is with you, get him or her to do the breathing while you do the heart massage (Fig. 29). The other person should kneel by the patient's head while you kneel by the middle of the chest. The other person should give two breaths and check the heartbeat. If there is no heartbeat you should give five presses on the chest. Continue with the other person giving one breath and you giving five presses on the chest. Check the heartbeat after one minute then after every three minutes or 12 cycles.
it come out and clear it out of the mouth with your finger.

6.7.3 First-aid for burns

1. Stop Burning Immediately

- Put out fire or stop the person's contact with hot liquid, steam, or other material.
- Help the person "stop, drop, and roll" to smother flames.
- Remove smoldering material from the person.
- Remove hot or burned clothing. If clothing sticks to skin, cut or tear around it.

2. Remove Constrictive Clothing Immediately

- Take off jewelry, belts, and tight clothing. Burns can swell quickly.

Then take the following steps:

For First-Degree Burns (Affecting Top Layer of Skin)

1. Cool Burn

- Hold burned skin under cool (not cold) running water or immerse in cool water until the pain subsides.
- Use compresses if running water isn't available.

2. Protect Burn

- Cover with sterile, non-adhesive bandage or clean cloth.
- Do not apply butter, oil, lotions, or creams (especially if they contain fragrance). Apply a petroleum-based ointment two to three times per day.

3. Treat Pain

- Give over-the-counter pain reliever such as acetaminophen (Panadol, Tylenol), ibuprofen (Advil, Motrin, Nuprin), or naproxen (Aleve, Naprosyn).

4. When to See a Doctor

Seek medical help if:

- You see signs of infection, like increased pain, redness, swelling, fever, or oozing.
- The person needs tetanus or booster shot, depending on date of last injection. Tetanus booster should be given every 10 years.
- The burn blister is larger than two inches or oozes.
- Redness and pain last more than a few hours.
- The pain gets worse.
- The hands, feet, face, or genitals are burned.

5. Follow Up

- The doctor will examine the burn and may prescribe antibiotics and pain medication.

First aid for a major burn

The first step in treating a major burn is to call 911 or seek emergency medical care.

Steps to take until emergency arrives include:

1. Make sure you and the person who's burned are safe and out of harm's way. Move them away from the source of the burn. If it's an electrical burn, turn off the power source before touching them.
2. Check to see if they're breathing. If needed, start rescue breathing if you've been trained.
3. Remove restrictive items from their body, such as belts and jewelry in or near the burned areas. Burned areas typically swell quickly.
4. Cover the burned area. Use a clean cloth or bandage that's moistened with cool, clean water.
5. Separate fingers and toes. If hands and feet are burned, separate the fingers and toes with dry and sterile, nonadhesive bandages.
6. Remove clothing from burned areas, but don't try to remove clothing that's stuck to the skin.
7. Avoid immersing the person or burned body parts in water. Hypothermia (severe loss of body heat) can occur if you immerse large, severe burns in water.
8. Raise the burned area. If possible, elevate the burned area above their heart.
9. Watch for shock. Signs and symptoms of shock include shallow breathing, pale complexion, and fainting.

Things not to do

- Don't contaminate the burn with potential germs by breathing or coughing on it.
- Don't apply any medical or home remedy, including ointment, butter, ice, spray, or cream.
- Don't give the burned person anything to ingest.
- Don't put a pillow under their head if you think they have an airway burn.

6.7.4 First-aid for drowning

1. Get Help

- Notify a lifeguard, if one is close. If not, ask someone to call 911.
- If you are alone, follow the steps below.

2. Move the Person

- Take the person out of the water.

3. Check for Breathing

- Place your ear next to the person's mouth and nose. Do you feel air on your cheek?
- Look to see if the person's chest is moving.

4. If the Person is Not Breathing, Check Pulse

- Check the person's pulse for 10 seconds.

5. If There is No Pulse, Start CPR

Carefully place person on back.

- For an adult or child, place the heel of one hand on the center of the chest at the nipple line. You can also push with one hand on top of the other. For an infant, place two fingers on the breastbone.
- For an adult or child, press down at least 2 inches. Make sure not to press on ribs. For an infant, press down about 1 and 1/2 inches. Make sure not to press on the end of the breastbone.
- Do chest compressions only, at the rate of 100-120 per minute or more. Let the chest rise completely between pushes.
- Check to see if the person has started breathing.

Note that these instructions are not meant to replace CPR training. Classes are available through the American Red Cross, local hospitals, and other organizations.

6. Repeat if Person Is Still Not Breathing

- If you've been trained in CPR, you can now open the airway by tilting the head back and lifting the chin.
- Pinch the nose of the victim closed. Take a normal breath, cover the victim's mouth with yours to create an airtight seal, and then give 2 one-second breaths as you watch for the chest to rise.
- Give 2 breaths followed by 30 chest compressions.
- Continue this cycle of 30 compressions and 2 breaths until the person starts breathing or emergency help arrives.

6.7.5 First-aid for bleeding

For severe bleeding, take these first-aid steps and reassure the injured person.

1. **Remove any clothing or debris on the wound.** Don't remove large or deeply embedded objects. Don't probe the wound or attempt to clean it yet. Your first job is to stop the bleeding. Wear disposable protective gloves if available.
2. **Stop the bleeding.** Place a sterile bandage or clean cloth on the wound. Press the bandage firmly with your palm to control bleeding. Apply constant pressure until the bleeding stops. Maintain pressure by binding the wound with a thick bandage or a piece of clean cloth. Don't put direct pressure on an eye injury or embedded object.
   Secure the bandage with adhesive tape or continue to maintain pressure with your hands. If possible, raise an injured limb above the level of the heart.
3. **Help the injured person lie down.** If possible, place the person on a rug or blanket to prevent loss of body heat. Calmly reassure the injured person.
4. **Don't remove the gauze or bandage.** If the bleeding seeps through the gauze or other cloth on the wound, add another bandage on top of it. And keep pressing firmly on the area.

5. **Tourniquets:** A tourniquet is effective in controlling life-threatening bleeding from a limb. Apply a tourniquet if you're trained in how to do so. When emergency help arrives, explain how long the tourniquet has been in place.
6. **Immobilize the injured body part as much as possible.** Leave the bandages in place and get the injured person to an emergency room as soon as possible.

6.7.6 First-aid for electric shock

The danger from an electrical shock depends on the type of current, how high the voltage is, how the current traveled through the body, the person's overall health and how quickly the person is treated.

An electrical shock may cause burns, or it may leave no visible mark on the skin. In either case, an electrical current passing through the body can cause internal damage, cardiac arrest or other injury. Under certain circumstances, even a small amount of electricity can be fatal.

When to contact your doctor

A person who has been injured by contact with electricity should be seen by a doctor.

Caution

- Don't touch the injured person if he or she is still in contact with the electrical current.
- Call 911 or your local emergency number if the source of the burn is a high-voltage wire or lightning. Don't get near high-voltage wires until the power is turned off. Overhead power lines usually aren't insulated. Stay at least 20 feet (about 6 meters) away — farther if wires are jumping and sparking.
- Don't move a person with an electrical injury unless he or she is in immediate danger.

When to seek emergency care

- Severe burns
- Confusion
- Difficulty breathing
- Heart rhythm problems (arrhythmias)
- Cardiac arrest
- Muscle pain and contractions
- Seizures
- Loss of consciousness

Take these actions immediately while waiting for medical help:

- Turn off the source of electricity, if possible. If not, move the source away from you and the person, using a dry, nonconducting object made of cardboard, plastic or wood.
- Begin CPR if the person shows no signs of circulation, such as breathing, coughing or movement.
- Try to prevent the injured person from becoming chilled.
- Apply a bandage. Cover any burned areas with a sterile gauze bandage, if available, or a clean cloth. Don't use a blanket or towel, because loose fibers can stick to the burns.

1. Separate the Person From Current's Source

To turn off power:

- Unplug an appliance if plug is undamaged or shut off power via circuit breaker, fuse box, or outside switch.

If you can't turn off power:

- Stand on something dry and non-conductive, such as dry newspapers, telephone book, or wooden board.

- Try to separate the person from current using non-conductive object such as wooden or plastic broom handle, chair, or rubber doormat.

If high voltage lines are involved:

- The local power company must shut them off.
- Do not try to separate the person from current if you feel a tingling sensation in your legs and lower body. Hop on one foot to a safe place where you can wait for lines to be disconnected.
- If a power line falls on a car, instruct the passengers to stay inside unless explosion or fire threatens.

2. Do CPR, if Necessary

When you can safely touch the person, do CPR if the person is not breathing or does not have a pulse.

- For a child, start CPR for children
- For an adult, start adult CPR.

3. Check for Other Injuries

- If the person is bleeding, apply pressure and elevate the wound if it's in an arm or leg.
- There may be a fracture if the shock caused the person to fall.
- For burns, see Burn Treatment.

4. Wait for 911 to Arrive

5. Follow Up

- A doctor will check the person for burns, fractures, dislocations, and other injuries.
- An ECG, blood tests, urine test, CT scan, or MRI may be necessary.
- The person may be admitted to the hospital or a burn center.

6.7.7 First-aid for Common Sports Injuries

Sports injuries are commonly caused by overuse, direct impact, or the application of force that is greater than the body part can structurally withstand. There are two kinds of sports injuries: acute and chronic. An injury that occurs suddenly, such as a sprained ankle caused by an awkward landing, is known as an acute injury.

Chronic injuries are caused by repeated overuse of muscle groups or joints. Poor technique and structural abnormalities can also contribute to the development of chronic injuries. Medical investigation of any sports injury is important, because you may be hurt more severely than you think. For example, what seems like an ankle sprain may actually be a bone fracture.

Types of sports injuries

Some of the more common sports injuries include:

- Ankle sprain – symptoms include pain, swelling and stiffness.
- Bruises – a blow can cause small bleeds into the skin.
- Concussion – mild reversible brain injury from a blow to the head, which may be associated with loss of consciousness. Symptoms include headache, dizziness and short term memory loss.
- Cuts and abrasions – are usually caused by falls. The knees and hands are particularly prone.
- Dehydration – losing too much fluid can lead to heat exhaustion and heat stroke.
- Dental damage – a blow to the jaw can crack, break or dislodge teeth.
- Groin strain – symptoms include pain and swelling.
- Hamstring strain – symptoms include pain, swelling and bruising.

- Knee joint injuries – symptoms include pain, swelling and stiffness. The ligaments, tendons or cartilage can be affected.
- Nose injuries – either blood nose or broken nose, are caused by a direct blow.
- Stress fractures – particularly in the lower limbs. The impact of repeated jumping or running on hard surfaces can eventually stress and crack bone.

First aid for sprains, strains and joint injuries

Suggestions on immediate treatment for sprains, strains and joint injuries, to prevent further damage include:

- **R**est – keep the injured area supported and avoid using for 48-72 hours.
- **I**ce – apply ice to the injured area for 20 minutes every two hours for the first 48-72 hours.
- **C**ompression – apply a firm elastic bandage over the area, extending above and below the painful site.
- **E**levation – raise the injured area above the level of the heart at all times.
- **R**eferral – as soon as possible, see a doctor.
- No **H**eat – heat will increase bleeding.
- No **A**lcohol – alcohol increases bleeding and swelling.
- No **R**unning – running or exercise increases blood flow, delaying healing.
- No **M**assage – massage increases swelling and bleeding, also delaying healing.

First aid for nose bleeds

Suggestions include:

- Stop the activity.
- Sit with your head leaning forward.
- Pinch your nostrils together and breathe through your mouth.
- Hold your nose for at least 10 minutes.
- If bleeding continues past 30 minutes, seek medical advice.

First aid for dislodged teeth

It may be possible to save a tooth that has been knocked out with prompt dental treatment. Rinse the tooth in water or milk, and see your dentist immediately.

Emergency situations

Call an ambulance for:

- prolonged loss of consciousness
- neck or spine injuries
- broken bones
- injuries to the head or face
- eye injuries
- abdominal injuries.

Treatment for sports injuries

Treatment depends on the type and severity of the injury. Always see your doctor if pain persists after a couple of days. What you may think is a straightforward sprain may actually be a fractured bone.

Physiotherapy can help to rehabilitate the injured site and, depending on the injury, may include exercises to promote strength and flexibility. Returning to sport after injury depends on your doctor's or physiotherapist's assessment.

Trying to play before the injury is properly healed will only cause further damage and delay recovery. The biggest single risk factor for soft tissue injury is a previous injury. While the injury heals, you can maintain your fitness by choosing forms of exercise that don't involve that part of your body, if possible.

Prevention of sports injuries

You can reduce your risk of sports injuries if you:

- Warm up thoroughly by gently going through the motions of your sport and performing slow, sustained stretches.
- Wear appropriate footwear.
- Tape or strap vulnerable joints, if necessary.
- Use the appropriate safety equipment, such as mouth guards, helmets and pads.
- Drink plenty of fluids before, during and after the game.
- Try to avoid exercising in the hottest part of the day, between 11 am and 3 pm.
- Maintain a good level of overall fitness, particularly in the off season (in the months between playing seasons for a sport).
- Cross-train with other sports to ensure overall fitness and muscle strength.
- Ensure training includes appropriate speed and impact work so muscles are capable of the demands of a game situation.
- Don't exert yourself beyond your level of fitness. Gradually increase intensity and duration of training.
- Use good form and technique.
- Cool down after sport with gentle, sustained stretches.
- Allow adequate recovery time between sessions.
- Have regular medical check-ups.

Sub Unit – VIII
Pollution- Air, water, sound and radiation. Effects of pollution on health, Preventive and safety measures from pollution.

6.8.1 Define Pollution.

Environmental pollution is the unfavorable alteration of our surroundings, wholly or largely as a byproduct of man's actions, through direct or indirect effects of the changes in the energy pattern, radiation levels, and chemical and physical constitution and abundance of organisms. Environmental pollution is a global problem and is common to both developed as well as developing countries, which attracts the attention of human beings for its severe long-term consequences. The decline in environmental quality as a consequence of pollution is evidenced by loss of vegetation, biological diversity, excessive amounts of harmful chemicals in the ambient atmosphere and in food grains, and growing risks of environmental accidents and threats to life support systems. Pollution is viewed from different angles by different people but is commonly agreed to be the outcome of urban-industrial and technological revolution and rapacious and speedy exploitation of natural resources, increased rate of exchange of matter and energy, and ever-increasing industrial wastes, urban effluents, and consumer goods. Holdgate (1979) defined environmental pollution as the introduction by man, into the environment, of substances or energy liable to cause interference with legitimate uses of environment. Singh (1991) has defined pollution in a very simple manner, i.e., "Disequilibrium condition from equilibrium condition in any system." This definition may be applied to all types of pollution ranging from physical to economic, political, social, and religious. Over the past couple of decades, various sources of pollution were identified that altered the composition of water, air, and soil of the environment. The substances that cause pollution are known as pollutants. A pollutant can be any chemical (toxic metal, radionuclides, organophosphorus compounds, gases) or geochemical substance (dust, sediment), biological organism or product, or physical substance (heat, radiation, sound wave) that is released intentionally or inadvertently by man into the environment with actual or potential adverse, harmful, unpleasant, or inconvenient effects. Such undesirable effects may be direct (affecting man) or indirect, being mediated via resource organisms or climate change. Depending on the nature of pollutants and also subsequent pollution of environmental components, the pollution may be categorized as follows:

1. Air Pollution
2. Water Pollution
3. Soil/Land Pollution
4. Noise Pollution
5. Radioactive Pollution
6. Thermal Pollution

6.8.2 Air Pollution

Air pollution refers to the release of pollutants into the air that are detrimental to human health and the planet as a whole. Air pollution is a mix of particles and gases that can reach harmful concentrations both outside and indoors. Its effects can range from higher disease risks to rising temperatures. Soot, smoke, mold, pollen, methane, and carbon dioxide are a just few examples of common pollutants. Though many living things emit carbon dioxide when they breathe, the gas is widely considered to be a pollutant when associated with cars, planes, power plants, and other human activities that involve the burning of fossil fuels such as gasoline and natural gas. That's because carbon dioxide is the most common of the greenhouse gases, which trap heat in the atmosphere and contribute to climate change.

Humans have pumped enough carbon dioxide into the atmosphere over the past 150 years to raise its levels higher than they have been for hundreds of thousands of years. Other greenhouse gases include methane - which comes from such sources as landfills, the natural gas industry, and gas emitted by livestock - and chlorofluorocarbons (CFCs), which were used in refrigerants and aerosol propellants until they were banned in the late 1980s because of their deteriorating effect on Earth's ozone layer. Another pollutant associated with climate change is sulfur dioxide, a component of smog. Sulfur dioxide and closely related chemicals are known primarily as a cause of acid rain. But they also reflect light when released in the atmosphere, which keeps sunlight out and creates a cooling effect. Volcanic eruptions can spew massive amounts of sulfur dioxide into the atmosphere, sometimes causing cooling that lasts for years. In fact, volcanoes used to be the main source of atmospheric sulfur dioxide; today, people are. Airborne particles, depending on their chemical makeup, can also have direct effects separate from climate change. They can change or deplete nutrients in soil and waterways, harm forests and crops, and damage cultural icons such as monuments and statues.

Air pollution is a mix of hazardous substances from both human-made and natural sources. Vehicle emissions, fuel oils and natural gas to heat homes, by-products of manufacturing and power generation, particularly coal-fueled power plants, and fumes from chemical production are the primary sources of human-made air pollution. Nature releases hazardous substances into the air, such as smoke from wildfires, which are often caused by people; ash and gases from volcanic eruptions; and gases, like methane, which are emitted from decomposing organic matter in soils.

Traffic-Related Air Pollution (TRAP), from motor vehicle emissions, may be the most recognizable form of air pollution. It contains most of the elements of human-made air pollution: ground-level ozone, various forms of carbon, nitrogen oxides, sulfur oxides, volatile organic compounds, polycyclic aromatic hydrocarbons, and fine particulate matter.

Ozone, an atmospheric gas, is often called smog when at ground level. It is created when pollutants emitted by cars, power plants, industrial boilers, refineries, and other sources chemically react in the presence of sunlight.

Noxious gases, which include carbon dioxide, carbon monoxide, nitrogen oxides (NOx), and sulfur oxides (SOx), are components of motor vehicle emissions and byproducts of industrial processes.

Particulate matter (PM) is composed of chemicals such as sulfates, nitrates, carbon, or mineral dusts. Vehicle and industrial emissions from fossil fuel combustion, cigarette smoke, and burning organic matter, such as wildfires, all contain PM.

A subset of PM, fine particulate matter (PM 2.5) is 30 times thinner than a human hair. It can be inhaled deeply into lung tissue and contribute to serious health problems. PM 2.5 accounts for most health effects due to air pollution in the U.S.

Volatile organic compounds (VOC) vaporize at or near room temperature—hence, the designation volatile. They are called organic because they contain carbon. VOCs are given off by paints, cleaning supplies, pesticides, some furnishings, and even craft materials like glue. Gasoline and natural gas are major sources of VOCs, which are released during combustion.

Polycyclic aromatic hydrocarbons (PAH) are organic compounds containing carbon and hydrogen. Of more than 100 PAHs known to be widespread in the environment, 15 are listed in the Report on Carcinogens. In addition to combustion, many industrial processes, such as iron, steel, and rubber product manufacturing, as well as power generation, also produce PAHs as a by-product. PAHs are also found in particulate matter.

Countries around the world are tackling various forms of air pollution. China, for example, is making strides in cleaning up smog-choked skies from years of rapid industrial expansion, partly by closing or canceling coal-fired power plants. In the U.S., California has been a leader in setting emissions standards aimed at improving air quality, especially in places like famously hazy Los Angeles. And a variety of efforts aim to bring cleaner cooking options to places where hazardous cookstoves are prevalent. In any home, people can safeguard against indoor air pollution by increasing ventilation, testing for radon gas, using air purifiers, running kitchen and bathroom exhaust fans, and avoiding smoking. When working on home projects, look for paint and other products low in volatile organic compounds: organizations such as Green Seal, UL (GREENGUARD), and the U.S. Green Building Council can help. To curb global warming, a variety of measures need to be taken, such as adding more renewable energy and replacing gasoline-fueled cars with zero-emissions vehicles such as electric ones. On a larger scale, governments at all levels are making commitments to limit emissions of carbon dioxide and other greenhouse gases. The Paris Agreement, ratified on November 4, 2016, is one effort to combat climate change on a global scale. And the Kigali Amendment seeks to further the progress made by the Montreal Protocol, banning heat-trapping hydrofluorocarbons (HFCs) in addition to CFCs.

How does air pollution affect our health?

Respiratory Disease

- Air pollution can affect lung development and is implicated in the development of emphysema, asthma, and other respiratory diseases, such as chronic obstructive pulmonary disease (COPD).
- PM and nitrogen oxide are linked to chronic bronchitis.

Cardiovascular Disease

- Fine particulate matter can impair blood vessel function and speed up calcification in arteries.
- NIEHS researchers established links between short-term daily exposure by post-menopausal women to nitrogen oxides and increased risk of hemorrhagic stroke.
- For a cross-section of older Americans, exposure to TRAP can result in lowered levels of high-density lipoprotein, sometimes called good cholesterol, increasing their risk for cardiovascular disease.
- According to a National Toxicology Program (NTP) report, TRAP exposure also increases a pregnant woman's risk for dangerous changes in blood pressure, known as hypertensive disorders, which are a leading cause of pre-term birth, low birth weight, and maternal and fetal illness and death.

Cancer

- A large study of more than 57,000 women found living near major roadways may increase a woman's risk for breast cancer.

- The NIEHS Sister Study found other airborne toxic substances, especially methylene chloride, which is used in aerosol products and paint removers, are also associated with increased risk of breast cancer.
- Occupational exposure to benzene, an industrial chemical and component of gasoline, can cause leukemia and is associated with non-Hodgkin's Lymphoma.
- A long-term study, 2000-2016, found an association between lung cancer incidence and increased reliance on coal for energy generation.

Whom does air pollution affect the most?

Air pollution affects everyone's health, but certain groups may be harmed more.

Children

The NIEHS-funded Children's Health Study at the University of Southern California is one of the largest studies of the long-term effects of air pollution on children's respiratory health. Among its findings:

- Higher air pollution levels increase short-term respiratory infections, which lead to more school absences.
- Children who play several outdoor sports and live in high ozone communities are more likely to develop asthma.
- Children living near busy roads are at increased risk for asthma.
- Children with asthma who were exposed to high levels of air pollutants were more likely to develop bronchitis symptoms.
- Living in communities with higher pollution levels can cause lung damage

Follow these Tips Every Day to Reduce Pollution:

- **Conserve energy - at home, at work, everywhere.**
- **Look for the ENERGY STAR label when buying home or office equipment.**
- **Carpool, use public transportation, bike, or walk whenever possible.**
- **Follow gasoline refueling instructions for efficient vapor recovery, being careful not to spill fuel and always tightening your gas cap securely.**
- **Consider purchasing portable gasoline containers labeled "spill-proof," where available.**
- **Keep car, boat, and other engines properly tuned.**
- **Be sure your tires are properly inflated.**
- **Use environmentally safe paints and cleaning products whenever possible.**
- **Mulch or compost leaves and yard waste.**
- **Consider using gas logs instead of wood.**
    - **Choose a cleaner commute - share a ride to work or use public transportation.**
    - **Combine errands and reduce trips. Walk to errands when possible.**
    - **Avoid excessive idling of your automobile.**
    - **Refuel your car in the evening when its cooler.**
    - **Conserve electricity and set air conditioners no lower than 78 degrees.**
    - **Defer lawn and gardening chores that use gasoline-powered equipment, or wait until evening.**
    - **Reduce the number of trips you take in your car.**
    - **Reduce or eliminate fireplace and wood stove use.**
    - **Avoid burning leaves, trash, and other materials.**
    - **Avoid using gas-powered lawn and garden equipment.**

1. **Avoid smoking indoors (but quitting smoking is the best answer for overall health).**
2. **Use craft supplies in well-ventilated areas.**
3. **Make sure your gas stove is well-ventilated.**
4. **Minimize clutter.**
5. **Remove carpeting if possible.**
6. **Use a dehumidifier and/or air conditioner to reduce moisture.**
7. **Keep trash covered to avoid attracting pests.**
8. **Remove shoes at the door.**
9. **Have car emissions tested regularly.**
10. **Minimize air freshener use.**
11. **Test your home for radon.**
12. **Use carbon monoxide detectors.**
13. **Fix water leaks.**
14. **Dust surfaces and vacuum frequently.**
15. **Wash bedding weekly in hot water.**
16. **Make sure exhaust fans are functioning in your bathrooms and kitchen**
17. **Keep a lid on scented candles.**

6.8.3 Water Pollution

Water pollution can be defined as the contamination of a stream, river, lake, ocean or any other stretch of water, depleting water quality and making it toxic for the environment and humans.

There are two types of water pollution:

- 1. Organic pollution due to microorganisms - bacteria and viruses - present in the water, generated by excrement, animal and vegetable waste
- 2.Chemical pollution generated by the nitrates and phosphates of pesticides, human and animal drugs, household products, heavy metals, acids and hydrocarbons used in industries

Water pollution occurs when harmful substances—often chemicals or microorganisms—contaminate a stream, river, lake, ocean, aquifer, or other body of water, degrading water quality and rendering it toxic to humans or the environment.

What Are the Causes of Water Pollution?

Water is uniquely vulnerable to pollution. Known as a "universal solvent," water is able to dissolve more substances than any other liquid on earth. It's the reason we have Kool-Aid and brilliant blue waterfalls. It's also why water is so easily polluted. Toxic substances from farms, towns, and factories readily dissolve into and mix with it, causing water pollution.

Categories of Water Pollution

Groundwater

When rain falls and seeps deep into the earth, filling the cracks, crevices, and porous spaces of an aquifer (basically an underground storehouse of water), it becomes groundwater—one of our least visible but most important natural resources. Nearly 40 percent of Americans rely on groundwater, pumped to the earth's surface, for drinking water. For some folks in rural areas, it's their only freshwater source. Groundwater gets polluted when contaminants—from pesticides and fertilizers to waste leached from landfills and septic systems—make their way into an aquifer, rendering it unsafe for human use. Ridding groundwater of contaminants can be difficult to impossible, as well as costly. Once polluted, an aquifer may be unusable for

decades, or even thousands of years. Groundwater can also spread contamination far from the original polluting source as it seeps into streams, lakes, and oceans.

Surface water

Covering about 70 percent of the earth, surface water is what fills our oceans, lakes, rivers, and all those other blue bits on the world map. Surface water from freshwater sources (that is, from sources other than the ocean) accounts for more than 60 percent of the water delivered to American homes. But a significant pool of that water is in peril. According to the most recent surveys on national water quality from the U.S. Environmental Protection Agency, nearly half of our rivers and streams and more than one-third of our lakes are polluted and unfit for swimming, fishing, and drinking. Nutrient pollution, which includes nitrates and phosphates, is the leading type of contamination in these freshwater sources. While plants and animals need these nutrients to grow, they have become a major pollutant due to farm waste and fertilizer runoff. Municipal and industrial waste discharges contribute their fair share of toxins as well. There's also all the random junk that industry and individuals dump directly into waterways.

Ocean water

Eighty percent of ocean pollution (also called marine pollution) originates on land—whether along the coast or far inland. Contaminants such as chemicals, nutrients, and heavy metals are carried from farms, factories, and cities by streams and rivers into our bays and estuaries; from there they travel out to sea. Meanwhile, marine debris—particularly plastic—is blown in by the wind or washed in via storm drains and sewers. Our seas are also sometimes spoiled by oil spills and leaks—big and small—and are consistently soaking up carbon pollution from the air. The ocean absorbs as much as a quarter of man-made carbon emissions.

Point source

When contamination originates from a single source, it's called point source pollution. Examples include wastewater (also called effluent) discharged legally or illegally by a manufacturer, oil refinery, or wastewater treatment facility, as well as contamination from leaking septic systems, chemical and oil spills, and illegal dumping. The EPA regulates point source pollution by establishing limits on what can be discharged by a facility directly into a body of water. While point source pollution originates from a specific place, it can affect miles of waterways and ocean.

Nonpoint source

Nonpoint source pollution is contamination derived from diffuse sources. These may include agricultural or stormwater runoff or debris blown into waterways from land. Nonpoint source pollution is the leading cause of water pollution in U.S. waters, but it's difficult to regulate, since there's no single, identifiable culprit.

Transboundary

It goes without saying that water pollution can't be contained by a line on a map. Transboundary pollution is the result of contaminated water from one country spilling into the waters of another. Contamination can result from a disaster—like an oil spill—or tNot only is the agricultural sector the biggest consumer of global freshwater resources, with farming and livestock production using about 70 percent of the earth's surface water supplies, but it's also a serious water polluter. Around the world, agriculture is the leading cause of water degradation. In the United States, agricultural pollution is the top source of contamination in rivers and streams, the second-biggest source in wetlands, and the third main source in lakes. It's also a major contributor of contamination to estuaries and groundwater. Every time it rains,

fertilizers, pesticides, and animal waste from farms and livestock operations wash nutrients and pathogens—such bacteria and viruses—into our waterways. Nutrient pollution, caused by excess nitrogen and phosphorus in water or air, is the number-one threat to water quality worldwide and can cause algal blooms, a toxic soup of blue-green algae that can be harmful to people and wildlife.

Sewage and wastewater

Used water is wastewater. It comes from our sinks, showers, and toilets (think sewage) and from commercial, industrial, and agricultural activities (think metals, solvents, and toxic sludge). The term also includes stormwater runoff, which occurs when rainfall carries road salts, oil, grease, chemicals, and debris from impermeable surfaces into our waterways

More than 80 percent of the world's wastewater flows back into the environment without being treated or reused, according to the United Nations; in some least-developed countries, the figure tops 95 percent. In the United States, wastewater treatment facilities process about 34 billion gallons of wastewater per day. These facilities reduce the amount of pollutants such as pathogens, phosphorus, and nitrogen in sewage, as well as heavy metals and toxic chemicals in industrial waste, before discharging the treated waters back into waterways. That's when all goes well. But according to EPA estimates, our nation's aging and easily overwhelmed sewage treatment systems also release more than 850 billion gallons of untreated wastewater each year.

Oil pollution

Big spills may dominate headlines, but consumers account for the vast majority of oil pollution in our seas, including oil and gasoline that drips from millions of cars and trucks every day. Moreover, nearly half of the estimated 1 million tons of oil that makes its way into marine environments each year comes not from tanker spills but from land-based sources such as factories, farms, and cities. At sea, tanker spills account for about 10 percent of the oil in waters around the world, while regular operations of the shipping industry—through both legal and illegal discharges—contribute about one-third. Oil is also naturally released from under the ocean floor through fractures known as seeps.

Radioactive substances

Radioactive waste is any pollution that emits radiation beyond what is naturally released by the environment. It's generated by uranium mining, nuclear power plants, and the production and testing of military weapons, as well as by universities and hospitals that use radioactive materials for research and medicine. Radioactive waste can persist in the environment for thousands of years, making disposal a major challenge. Consider the decommissioned Hanford nuclear weapons production site in Washington, where the cleanup of 56 million gallons of radioactive waste is expected to cost more than $100 billion and last through 2060. Accidentally released or improperly disposed of contaminants threaten groundwater, surface water, and marine resources.

1. DO NOT pour fat from cooking or any other type of fat, oil, or grease down the sink. Keep a "fat jar" under the sink to collect the fat and discard in the solid waste when full.
2. DO NOT dispose of household chemicals or cleaning agents down the sink or toilet. Simsbury has a Hazardous Waste Collection day usually from 8:00am to 1:00pm at Henry James School. Connecticut Resource Recovery Authority lists all collection dates.

3. DO NOT flush pills, liquid or powder medications or drugs down the toilet. For recommendations on proper disposal for all types of medical wastes, visit the CT DEP publication here.
4. Avoid using the toilet as a wastebasket. Most tissues, wrappers, dust cloths, and other paper goods should be properly discarded in a wastebasket. The fiber reinforced cleaning products that have become popular should never be discarded in the toilet.
5. Avoid using a garbage disposal. Keep solid wastes solid. Make a compost pile from vegetable scraps.
6. Install a water efficient toilet. In the meantime, put a brick or 1/2 gal container in the standard toilet tank to reduce water use per flush.
7. Run the dishwasher or clothes washer only when you have a full load. This conserves electricity and water.
8. Use the minimum amount of detergent and/or bleach when you are washing clothes or dishes. Use only phosphate free soaps and detergents.
9. Minimize the use of pesticides, herbicides, fertilizers. DO NOT dispose of these chemicals, motor oil, or other automotive fluids into the sanitary sewer or storm sewer systems. Both of them end at the river.
10. If your home has a sump pump or cellar drain, make certain it does not drain into the sanitary sewer system. If you are unsure, please call Simsbury Water Pollution Control at (860) 658-1380 and we can assist in determining the discharge point.

Everyone understands that clean water is vitally important. Yet, many things we do can contribute to water pollution in different ways. This post describes some easy and inexpensive ways to protect water by doing certain things at home and in the community.

Dispose of Toxic Chemicals Properly:

Household solvents, pesticides, and cleaners might not seem that bad. But, bleach, paint, paint thinner, ammonia, and many chemicals are becoming a serious problem. If you combine millions of people every month dumping toxic chemicals down the drain or flushing them down the toilet, the effects add up. This is why proper disposal is important.

Many household chemicals can be recycled. Your community may have a recycling center that can take the old paint, used motor oil, and other chemicals and recycle them. Community collection centers and drop-off sites also exist in some areas. Your community may even have a hazardous waste collection day where those toxic old chemicals can be dropped off for safe disposal.

Shop with Water Pollution in Mind:

You can avoid issues with household chemicals and pesticides by not buying products that contain persistent and dangerous chemicals in the first place. Many companies now sell non-toxic cleaners and biodegradable cleaners and pesticides. Spending a little extra money on those products automatically cuts down on water pollution.

Do Not Pour Fat and Grease Down the Drain:

Grease, fat, and used cooking oil should be disposed of in the trash or kept in a “fat jar” for disposal with other solid waste. Your pipes might clog and cause sewer pipes to clog and back up into yards and basements. The waste also contaminates local bodies of water.

Use Phosphate-Free Detergent and Dish Cleaner:

You can further cut down on water pollution by using just enough of these cleaners to do the job. Phosphates aren’t the only harmful chemicals in cleaners. Phosphates lead to algae blooms and kill fish and other aquatic animals by reducing the oxygen in the water.

Check Your Sump Pump or Cellar Drain:

Sometimes these devices drain into the town's sanitary sewer pipes. This connection dumps biological wastes, heavy metals, cleaning chemicals and more into the system. If you have a sump pump or cellar drain and aren't sure where they drain to, you should be able to find out by checking with the city's pollution control department.

Dispose of Medical Waste Properly:

Never flush medicines down the toilet, and never dump them in the nearest pond or creek. The drugs tend to accumulate in the water, and in fish and other wildlife. Hormones and other compounds end up causing a variety of health problems in fish and birds and contaminate drinking water that people and livestock use.

Eat More Organic Food:

While chemicals can be used on organic foods, they tend to be produced with few synthetic chemicals. Eating organic reduces the amount of chemical pollution that ends up in the water. The food we choose to eat has a huge impact on environmental quality, between the chemicals used to grow food, the fuel used to transport the crops, and the fuel used to power farm equipment on industrial farms.

Report Water Polluters:

Many cases of illegal waste disposal and other forms of water pollution go unreported and often aren't cleaned up. Report people who pour oil in storm drains, toss bags of trash in a stream, and so on.

Support Environmental Charities:

No matter where you live in the country, there are going to be charities working on watershed protection, water pollution cleanup, and similar causes. Find an organization that's active in your area and make a donation every year. Your support may even lead to expanded anti-pollution work.

Cut Down on Meat Consumption:

Raising animals for meat takes lots of water for the grains and other foods they need, as well as to keep them alive. Further, the antibiotics and solid waste both tend to end up in groundwater and rivers.

Try to Avoid Plastic Containers:

Plastic shopping bags and plastic rings from six-packs of beverages cause inordinate problems in the nations lakes and seas. Plastic bottles can last for decades in the water. Buy some reusable cloth or plastic grocery bags instead. They can be had for as little as $1 each, so there is a minimal cost involved. Use reusable, insulated containers to hold drinks and make your own filtered water at home.

Keep Your Vehicles from Leaking:

Oil and other fluids leak from motor vehicles and end up in the local water table, or running off into creeks and streams. This runoff problem is easy to treat; just be diligent about maintaining and repairing your vehicles. Leaky seals, hoses, and gaskets tend to cause expensive mechanical problems anyway, so replacing the worn parts can save you money.

Cut Down on the Chemicals:

Homeowners like to keep the yard looking green and healthy. This desire for a green lawn produces water pollution in two ways: Fertilizers and pesticides inevitably run off the shrubs and lawns and into the water. Select landscaping that is adapted to the climate. No matter where you live, there are bound to be attractive plants that can thrive with minimal help from added chemicals. This makes the plants cheaper to care for. As a bonus, you will waste less water keeping those plants alive.

Plant Some Trees:

Trees reduce erosion that washes pollution into the water and reduces erosion. You can also volunteer your time in a local tree-planting effort. If you own land along a river or pond, plant trees, bushes, or grass along the bank.

Help Clean Up Beaches and Rivers:

Supporting charities devoted to protecting the water is important because they can do work that is beyond the power of the average homeowner. If you choose not to donate money, or really can't afford it, volunteer to help plant trees or clean up the local river or help collect leftover chemicals from local residents. Some environmental groups might have collection days where they need volunteer labor.

6.8.4 Sound Pollution

Noise pollution, unwanted or excessive sound that can have deleterious effects on human health and environmental quality. Noise pollution is commonly generated inside many industrial facilities and some other workplaces, but it also comes from highway, railway, and airplane traffic and from outdoor construction activities. Sound waves are vibrations of air molecules carried from a noise source to the ear. Sound is typically described in terms of the loudness (amplitude) and the pitch (frequency) of the wave. Loudness (also called sound pressure level, or SPL) is measured in logarithmic units called decibels (dB). The normal human ear can detect sounds that range between 0 dB (hearing threshold) and about 140 dB, with sounds between 120dB and 140 dB causing pain (pain threshold). The ambient SPL in a library is about 35 dB, while that inside a moving bus or subway train is roughly 85 dB; building construction activities can generate SPLs as high as 105 dB at the source. SPLs decrease with distance from the source. The rate at which sound energy is transmitted, called sound intensity, is proportional to the square of the SPL. Because of the logarithmic nature of the decibel scale, an increase of 10 dB represents a 10-fold increase in sound intensity, an increase of 20 dB represents a 100-fold increase in intensity, a 30-dB increase represents a 1,000-fold increase in intensity, and so on. When sound intensity is doubled, on the other hand, the SPL increases by only 3 dB. For example, if a construction drill causes a noise level of about 90 dB, then two identical drills operating side by side will cause a noise level of 93 dB. On the other hand, when two sounds that differ by more than 15 dB in SPL are combined, the weaker sound is masked (or drowned out) by the louder sound. For example, if an 80-dB drill is operating next to a 95-dB dozer at a construction site, the combined SPL of those two sources will be measured as 95 dB; the less intense sound from the compressor will not be noticeable. Frequency of a sound wave is expressed in cycles per second (cps), but hertz (Hz) is more commonly used (1 cps = 1 Hz). The human eardrum is a very sensitive organ with a large dynamic range, being able to detect sounds at frequencies as low as 20 Hz (a very low pitch) up to about 20,000 Hz (a very high pitch). The pitch of a human voice in normal conversation occurs at frequencies between 250 Hz and 2,000 Hz. Precise measurement and scientific description of sound levels differ from most subjective human perceptions and opinions about sound. Subjective human responses to noise depend on both pitch and loudness. People with normal hearing generally perceive high-frequency sounds to be louder than low-frequency sounds of the same amplitude. For this reason, electronic sound-level meters used to measure noise levels take into account the variations of perceived loudness with pitch. Frequency filters in the meters serve to match meter readings with the sensitivity of the human ear and the relative loudness of various sounds. The so-called A-weighted filter, for example, is commonly used for measuring ambient community noise. SPL measurements made with this filter are expressed as A-weighted decibels, or dBA. Most people perceive and describe a 6- to 10-dBA increase in an SPL reading to be a doubling of "loudness." Another

system, the C-weighted (dBC) scale, is sometimes used for impact noise levels, such as gunfire, and tends to be more accurate than dBA for the perceived loudness of sounds with low frequency components. Noise levels generally vary with time, so noise measurement data are reported as time-averaged values to express overall noise levels. There are several ways to do this. For example, the results of a set of repeated sound-level measurements may be reported as L_{90} = 75 dBA, meaning that the levels were equal to or higher than 75 dBA for 90 percent of the time. Another unit, called equivalent sound levels (L_{eq}), can be used to express an average SPL over any period of interest, such as an eight-hour workday. (L_{eq} is a logarithmic average rather than an arithmetic average, so loud events prevail in the overall result.) A unit called day-night sound level (DNL or L_{dn}) accounts for the fact that people are more sensitive to noise during the night, so a 10-dBA penalty is added to SPL values that are measured between 10 PM and 7 AM. DNL measurements are very useful for describing overall community exposure to aircraft noise, for example. Noise is more than a mere nuisance. At certain levels and durations of exposure, it can cause physical damage to the eardrum and the sensitive hair cells of the inner ear and result in temporary or permanent hearing loss. Hearing loss does not usually occur at SPLs below 80 dBA (eight-hour exposure levels are best kept below 85 dBA), but most people repeatedly exposed to more than 105 dBA will have permanent hearing loss to some extent. In addition to causing hearing loss, excessive noise exposure can also raise blood pressure and pulse rates, cause irritability, anxiety, and mental fatigue, and interfere with sleep, recreation, and personal communication. Noise pollution control is therefore of importance in the workplace and in the community. Noise-control ordinances and laws enacted at the local, regional, and national levels can be effective in mitigating the adverse effects of noise pollution. under the Occupational Safety and Health Act of 1970 and the Noise Control Act of 1972. Under these acts, the Occupational Safety and Health Administration set up industrial noise criteria in order to provide limits on the intensity of sound exposure and on the time duration for which that intensity may be allowed. If an individual is exposed to various levels of noise for different time intervals during the day, the total exposure or dose (D) of noise is obtained from the relation $D = (C_1/T_1) + (C_2/T_2) + (C_3/T_3) + \ldots$, where C is the actual time of exposure and T is the allowable time of exposure at any level. Using this formula, the maximum allowable daily noise dose will be 1, and any daily exposure over 1 is unacceptable. Criteria for indoor noise are summarized in three sets of specifications that have been derived by collecting subjective judgments from a large sampling of people in a variety of specific situations. These have developed into the noise criteria (NC) and preferred noise criteria (PNC) curves, which provide limits on the level of noise introduced into the environment. The NC curves, developed in 1957, aim to provide a comfortable working or living environment by specifying the maximum allowable level of noise in octave bands over the entire audio spectrum. The complete set of 11 curves specifies noise criteria for a broad range of situations. The PNC curves, developed in 1971, add limits on low-frequency rumble and high-frequency hiss; hence, they are preferred over the older NC standard. Summarized in the curves, these criteria provide design goals for noise levels for a variety of different purposes. Part of the specification of a work or living environment is the appropriate PNC curve; in the event that the sound level exceeds PNC limits, sound-absorptive materials can be introduced into the environment as necessary to meet the appropriate standards. Low levels of noise may be overcome using additional absorbing material, such as heavy drapery or sound-absorbent tiles in enclosed rooms. Where low levels of identifiable noise may be distracting or where privacy of conversations in adjacent offices and reception areas may be important, the undesirable sounds may be masked. A small white-noise source such as static or rushing air, placed in the room, can mask the sounds of conversation from adjacent rooms without being offensive or dangerous to the ears of people working nearby. This type of device is often used in offices of doctors and other professionals. Another

technique for reducing personal noise levels is through the use of hearing protectors, which are held over the ears in the same manner as an earmuff. By using commercially available earmuff-type hearing protectors, a decrease in sound level can be attained ranging typically from about 10 dB at 100 Hz to more than 30 dB for frequencies above 1,000 Hz. Outdoor noise limits are also important for human comfort. Standard house construction will provide some shielding from external sounds if the house meets minimum standards of construction and if the outside noise level falls within acceptable limits. These limits are generally specified for particular periods of the day—for example, during daylight hours, during evening hours, and at night during sleeping hours. Because of refraction in the atmosphere owing to the nighttime temperature inversion, relatively loud sounds can be introduced into an area from a rather distant highway, airport, or railroad. One interesting technique for control of highway noise is the erection of noise barriers alongside the highway, separating the highway from adjacent residential areas. The effectiveness of such barriers is limited by the diffraction of sound, which is greater at the lower frequencies that often predominate in road noise, especially from large vehicles. In order to be effective, they must be as close as possible to either the source or the observer of the noise (preferably to the source), thus maximizing the diffraction that would be necessary for the sound to reach the observer. Another requirement for this type of barrier is that it must also limit the amount of transmitted sound in order to bring about significant noise reduction.

By definition, noise pollution takes place when there is either an excessive amount of noise or an unpleasant sound that causes a temporary disruption in the natural balance.
This definition is usually applicable to sounds or noises that are unnatural in either their volume or their production.
Our environment is such that it has become difficult to escape the noise. Even electrical appliances at home have a constant hum or beeping sound.
By and large, lack of urban planning increases the exposure to unwanted sounds. This is why understanding noise pollution is necessary to curb it in time.
Types of Noise Pollution
Even before taking a closer look at the various causes of noise pollution, let us first understand the two primary types of noise.
Man-Made Noise
This refers to the noise created due to man-made activities. It can be anything from construction work, noise from the air, vehicular traffic, household noise, noise from pubs and bars, to name a few. Ranging from 30 to a whopping 140 dB, this form of noise is extremely harmful to humans.
Environmental Noise
Environmental Noise refers to the kind of noise occurring from a range of environmental activities. This can be anything from the mating call of animals to the sound of thunderstorms that often go up to 140 dB.
Various Causes of Noise Pollution on Humans and Wildlife
Multiple causes may attribute to noise pollution. Some of the most popular causes are listed below.
1. Industrialization
Most of the industries use big machines which are capable of producing a large amount of noise. Apart from that, various equipment like compressors, generators, exhaust fans, grinding mills also participates in producing big noise.
You’re probably familiar with the sight of workers in these factories and industries wearing earplugs to minimize the effect of noise.

However, even after taking precautionary measures like these, extensive exposure to high levels of noise might damage their hearing abilities in the long run.

2. Poor Urban Planning

In most of the developing countries, poor urban planning also plays a vital role. Congested houses, large families sharing small space, fight over parking, frequent fights over basic amenities lead to noise pollution, which may disrupt the environment of society.

Noise pollution in urban settings may also be caused when residential properties and industrial buildings are in proximity. In situations like these, the noise from the nearby industrial property might hinder the basic well-being of the individuals living in residential properties.

It doesn't just affect their sleep and hours of rest but also has an adverse effect on the development and well-being of children.

3. Social Events

Noise is at its peak in most of the social events. Whether it is marriage, parties, pub, disc or place of worship, people normally flout rules set by the local administration and create a nuisance in the area.

People play songs on full volume and dance till midnight, which makes the condition of people living nearby pretty worse. In markets, you can see people selling clothes via making a loud noise to attract the attention of people.

While this may not seem like much at the outset, over time, it affects the hearing abilities of the individuals who are constantly exposed to these sounds.

4. Transportation

A large number of vehicles on roads, airplanes flying over houses, underground trains produce heavy noise, and people find it difficult to get accustomed to that.

The high noise leads to a situation where in a normal person loses the ability to hear properly.

5. Construction Activities

Under construction activities like mining, construction of bridges, dams, buildings, stations, roads, flyovers takes place in almost every part of the world.

These construction activities take place every day as we need more buildings, bridges to accommodate more people.

However, while this does help us to some degree, in the long run, the noise from construction activities hinders the hearing abilities of individuals exposed to this sound.

A part of it includes construction workers who participate in these activities, while another part of it consists of people who encounter these noise either from their homes or while traveling.

6. Household Chores

We people are surrounded by gadgets and use them extensively in our daily life. Gadgets like TV, mobile, mixer grinder, pressure cooker, vacuum cleaners, washing machine and dryer, cooler, air conditioners are minor contributors to the amount of noise that is produced. Still, it affects the quality of life of your neighborhood in a bad way.

While this form of pollution may seem harmless, it, in fact, has far-reaching consequences. The adverse effects on the health of the environment are quite severe. Not only is the local wildlife affected by pollution, but humans also face a number of problems due to it.

7. Noise From Air Traffic

While many find it difficult to believe, air traffic too contributes to significant levels of noise pollution. Noise from a single aircraft may produce sounds of up to 130 dB. Now, imagine the amount of noise produced by the numerous aircraft traveling our airspace.

8. Catering and Nightlife

When the weather is good, restaurants, bars, and terraces spill outside. Late night parties continue with loud music and unnecessary noise made by the party mongers. These can produce more than 100 dB. The noise from pubs and clubs are also included.

9. Animals' Sound

The noise made by animals cannot go unnoticed, particularly a howling or barking dog. These can produce noise around 60-80 dB.

Fatal Effects of Noise Pollution

1. Hearing Problems

Any unwanted sound that our ears have not been built to filter can cause problems within the body. Our ears can take in a certain range of sounds without getting damaged.

Man-made noises such as jackhammers, horns, machinery, airplanes, and even vehicles can be too loud for our hearing range.

Constant exposure to loud levels of noise can easily result in the damage of our eardrums and loss of hearing, causing tinnitus or deafness. It also reduces our sensitivity to sounds that our ears pick up unconsciously to regulate our body's rhythm.

2. Psychological Issues

Excessive noise pollution in working areas such as offices, construction sites, bars and even in our homes can influence psychological health.

Studies show that the occurrence of aggressive behavior, disturbance of sleep, constant stress, fatigue, depression, anxiety, hysteria and hypertension in humans as well as animals can be linked to excessive noise levels. The level of irritation increases with increased noise, and people tend to become less and less patient. These, in turn, can cause more severe and chronic health issues later in life.

3. Physical Problems

Noise pollution can cause headaches, high blood pressure, respiratory agitation, racing pulse, and, in exposure to extremely loud, constant noise, gastritis, colitis and even heart attacks may occur.

4. Cognitive Issues & Behavioral Changes

Noise affects brain responses and people's ability to focus, which can lead to low-performance levels over time. Like other sound waves, too much noise when it goes to the brain leads to lower response rates as well as making the mind dull.

It is also poor for memory, making it hard to study. The studies have shown that school children living near railway stations or airports have problems in learning.

Research has shown that people who live near airports or busy roads, usually have a higher incidence of headaches, take more sleeping pills and sedatives, are more prone to minor accidents, and are more likely to seek psychiatric treatment.

5. Sleeping Disorders

While it may not seem like much at this point, excessively high levels of noise are likely to hamper your sleeping pattern, thereby leading to irritation and uncomfortable situations.

Without a good night's sleep, you might experience multiple problems related to fatigue. This will affect your performance in the office as well as at home. It is therefore recommended to take a sound sleep to give your body proper rest.

If a certain noise is disturbing your sleep, take an actionable measure to reduce it. While in some instances, it is completely unavoidable; there are other instances (like noise from TV or gadgets) that can be easily avoided by making good lifestyle changes.

Interestingly, our ears need rest for 16 hours and even more to make up for two hours of exposure to 100 dB.

6. Cardiovascular Issues

Blood pressure levels, cardiovascular disease, and stress-related heart problems are on the rise. Studies suggest that high-intensity noise causes high blood pressure and increases heartbeat rate as it disrupts the normal blood flow.

Since bringing these rates to a manageable level depends on our understanding of noise pollution, we need to be wary of the ill-effects and tackle these situations mindfully.

7. Trouble Communicating

High decibel noise can put trouble and affect free communication between people. This may lead to misunderstanding, and you may get difficult understanding the other person. Constant sharp noise can give you a severe headache and disturb your emotional balance.

8. Effect on Wildlife

Wildlife faces far more problems than humans because of noise pollution since they are more dependent on sound. Animals develop a better sense of hearing than us since their survival depends on it.

A recent study published in Biology Letters found that human-created noise affects a wide range of animals. The ill-effects of excessive noise begin at home. Pets react more aggressively in households where there is constant noise.

They become disoriented more easily and face many behavioral problems. In nature, animals may suffer from hearing loss, which makes them easy prey and leads to dwindling populations. Others become inefficient at hunting, disturbing the balance of the eco-system.

9. Effects on Species Depending on Mating Call

Species that depend on mating calls to reproduce are often unable to hear these calls due to excessive man-made noise.

As a result, they are unable to reproduce and cause declining populations. Others require sound waves to locate and find their way when migrating.

Disturbing their sound signals means they get lost easily and do not migrate when they should. To cope up with the increasing sound around them, animals are becoming louder, which may further add to the pollution levels. This is why understanding noise pollution can help us lower the impact it has on the environment.

Solutions to Lower Noise Pollution

WHO agrees that awareness of noise pollution is essential to beat this invisible enemy. As of now, there are not many solutions to reduce sound pollution. However, governments can help in the following ways:

- Establishing regulations that include preventive and corrective measures.
- Governments can take measures such as protecting certain areas, parts of the countryside, areas of natural interest, city parks, etc. to ensure noise management and reduce noise pollution.
- The mandatory separation between residential zones and sources of noise, like airports.
- Creating pedestrian areas where traffic is not allowed to enter other than offload goods at certain times.
- Fines for exceeding noise limits.
- Other ways to battle noise pollution are by controlling the sound levels in clubs, bars, parties, and discos.
- Removal of public loudspeakers is another way in which pollution can be countered.
- Again, better urban planning can help create ‘No-Noise’ zones, where honking and industrial noise is not tolerated.
- Replacing traditional asphalt with more efficient options can also help reduce traffic noise by up to 3 dB.

On a personal level, everybody can help to reduce the noise in the following ways:

- Keep checking the surrounding noise levels and limit the sounds that you produce.
- Stay in a green neighborhood full of trees as they are known to reduce the sound levels from 5 to 10 dB.
- Reduce noise in homes by lowering the volume of the radio, music system and the television.
- Avoid very noisy leisure activities and also going to areas that are too noisy.
- Doing your housework at the recommended time also makes a difference.

- Use proper noise absorbents in machines that make too much noise.
- Listening to music with headphones is also a good step forward.
- Use earplugs when you are in a noisy area because it lowers the overall noise of the surroundings.
- Try alternative means of transport such as bicycles or electric vehicles instead of taking the car.
- Get your vehicle checked regularly and lubricate it properly that it doesn't produce too much noise.
- In the case of new buildings, you can insulate your home with noise-absorbing materials.

6.8.5 Pollution due to Radiation

Radioactive Pollution is defined as the increase in the natural radiation levels caused by human activities. It is estimated that about 20% of radiation we are exposed to is due to human activities. The human activities that can release radiation involve activities with radioactive materials such as mining, handling and processing of radioactive materials, handling and storage of radioactive waste, as well as the use of radioactive reactions to generate energy (nuclear power plants), along with the use of radiation in medicine (e.g. X-rays) and research. But what about microwaves, cell phones, radio transmitters, wireless devices, computers, and other common commodities of today's life?

When we think of radiation, we imagine bombs and nuclear explosions. While these are serious sources of high levels radiation (of high energy), there are many other sources that are much more common, practically ubiquitous, that generate low levels of radiation and which basically remain unnoticed. How many of us think for example of cellular phones as a source of radiation? And yet, the cell phones, cell phone towers, cordless phones, as well as TVs, computers, microwave ovens, broadcast antennas, military and aviation radars, satellites, and wireless internet are all sources of radiation. And so are the common medical X-Rays. Considering this, the picture of radiation pollution significantly expands. From a few explosions and nuclear accidents happening relatively rarely in faraway places, the picture of radiation pollution expands to a complex matrix covering all the Earth and thus involving all of us everywhere! In this context, we could ask ourselves: is radiation really so bad? Yet, if it were, wouldn't we all be dead or sick by now?!

Radiation is essentially energy that travels and spreads out as it goes. This is referred to as electromagnetic radiation. Examples include visible light, radio waves, microwaves, infrared and ultraviolet lights, X-rays, and gamma-rays. The differences between these various types of radiation consist of some physical properties such as energy, frequency, and wavelength. Thus, there are a variety of electromagnetic radiations. This means that any and all these types of radiation can generate radiation pollution if they are enhanced by human activities. However, the magnitude of the pollution generated varies, with higher-risk pollution generated by radiation of higher energy such as gamma-rays regardless of exposure time. This radiation is generated through detonation of nuclear weapons or in power plants. Therefore, the meaning of radiation pollution is that, while there are ubiquitous sources of radiation, it is mostly the high-energy radiation that causes radiation pollution, carrying serious health risks (such as cancer or death). This is why we will focus on sources for high health-risk radiation when discussing the causes of radioactive pollution and its effects. However, the other types of radiation (in low doses over longer time) may still cause health problems, including neurological, reproductive, and cardiac dysfunctions.

Types of Radioactive Pollution

Based on the frequency with which it occurs, radioactive pollution can be continuous, occasional or accidental.

Examples of Radioactive Contaminants

Radioactive materials are those materials or elements that emit radiation, thus they are not stable and get transformed into other radioactive or non-radioactive materials. The harm that they can cause depends on the radioactive elements and their half time function (the time needed for their concentration to be reduced to half due to radioactive decay processes). Basically, the higher the half-time, the lower the effects on human health. Radioactive elements with a short and very short half-time pose a serious threat to human health because of their hazardous effects. Most of the radioactive materials have half-lives of hundreds of thousands of years and, once generated, may persist in the environment for a very long time.

Many radioactive elements (materials) are naturally present in the environment. Most of them are used in nuclear power plants, and as basic components of nuclear weapons. Examples of this type of materials are:

CAESIUM-137

Used for radiation therapy in medicine (to treat cancer).

STRONTIUM-90

Used for thermoelectric generators and portable power sources for space vehicles, weather stations etc.

PLUTONIUM 238

Used as a heat source for radioisotope thermoelectric generators.

URANIUM-235

Used as fuel for nuclear reactors.

Other examples of radioactive elements include:

CHROMIUM-51

Used as traceable radiation that can indicate various medical parameters.

COBALT-57 & 60

Used in nuclear medicine.

CALCIUM-47

Used in biomedical research

IODINE-123

Used to diagnose thyroid diseases.

KRYPTON-85

Used for indicator lights.

NICKEL-63

Used in explosives detection.

RADIUM-226

Used for lightning rods.

STRONTIUM-85

Used in the study of bone formation.

THORIUM-229

Used for fluorescent lights.

TRITIUM
Used in drug metabolism studies.
URANIUM-234
Used in dental fixtures like crowns.
RADON
Represents about 55% of the natural radiation.

Causes of Radioactive Pollution
1. Nuclear Accidents From Nuclear Energy Generation Plants
In the postmodern world, various forms of energy are being discovered. Among them is nuclear energy, which is touted to be the most potent source of energy due to its high latent power. Reports indicate that the high latent power is due to its high level of radiation.
Its use is, therefore, prohibited, but research is underway to determine its environmental safety and to put in place the most appropriate precautionary measures for its use. In some cases and countries, however, nuclear power plant accidents like the Fukushima Daiichi nuclear disaster (2011), Chernobyl disaster (1986), and Three Mile Island accident (1979) left many dead and even many more affected by the radiation released.
2. The Use of Nuclear Weapons as Weapons of Mass Destruction (WMD)
The use of nuclear missiles and atomic bombs, a form of nuclear energy, in the Second World War explains not only the cause but also the damaging nature of radioactive pollution or contamination.
The effects of those two strikes in Hiroshima and Nagasaki that prompted the end of the war in 1945 have been seen to date with children born with complications such as mental retardation as well as conditions like autism and other disorders. The number of cancer cases present in the two towns is more than those of the rest of Japan.
3. Use of Radioisotopes
Radioisotopes are used to make detectors and in other industrial activities. Isotopes such as uranium have high concentrations of radiation in them. On the other hand, common Isotopes such as carbon-containing radioactive material are easily found in waterways through sewage lines.
Since most of the raw sewage is untreated before release, once released, the isotope combines with other compounds and elements present in water. This is the same water that people fetch for domestic use. Moreover, fishes use the same water to survive. Consumption of these fishes and from contaminated water sources means the potential intake of radiation.
4. Mining
Mining mostly involves the excavation of the mineral ores, which are then broken into smaller, manageable pieces. Radium and Uranium, for instance, are naturally occurring in the environment and are equally radioactive.
Hence, mining increases the natural geological processes by moving these materials from underneath the earth to the surface. Other minerals with a hint of radiation are thorium, plutonium, radon, potassium, carbon and phosphorus.
5. Spillage of Radioactive Chemicals
There have been instances of spillages over oceans when ships hit glaciers or coral reefs and end up releasing chemicals on waterways and in the atmosphere. The majority of these chemicals, including petroleum products, have a significant level of radiation, which can be detrimental to the environment.
6. Tests on Radiation
Radiation has been seen to have a lot of interesting properties, which has promoted a lot of scientists to conduct tests to learn more about it. It is one of the key elements in the cure and treatment of cancer.

Chemotherapy, a cancer curative health initiative, uses radiation to prevent further growth of the cancer cells as well as keep the immune system strong. Despite this, scientists have been exposed to radiation leading to their deaths or other complications.

As per the report to the UN General Assembly in 2000, nuclear testing is the main reason for human exposure to radioactivity caused by man.

7. Cosmic Rays and Other Natural Sources

These come from the outer space to our planet with intense radiation as their nature, therefore, causing radioactive pollution. Gamma rays, for example, are said to have the highest level of radiation and yet, depending on their intensity, some are not visible to the human eye. The quantity with which the rays hit the earth depends on the altitude of the earth and the geographical location.

There may be terrestrial radiations from radioactive elements present in the earth's crust. These radioactive elements include potassium 40, radium 224, radon 222, thorium 232, uranium 235, uranium 238, and carbon 14 and occur in rocks, soil and water.

There can also be unstable radio-nuclides split into smaller parts emitting energetic radiation that can enter into the body of organisms through the air during respiration.

8. Nuclear Waste Handling and Disposal

The radioactive wastes are of three categories- high level, low level and transuranic. They mainly comprise of the disposal from nuclear weapons, the cleaning materials from nuclear plants, military installations, emitted from plutonium processing and other radioisotopes from hospitals and laboratories.

The handling and disposal of nuclear waste may generate low to medium radiation over a long period of time. Their effects are not only hard to predict but may not be easily distinguishable as the radioactivity may contaminate and propagate through air, water, and soil as well. Moreover, identifying locations of some nuclear waste is not easy.

The main issue is that the radiation waste cannot be degraded or treated chemically or biologically. The only options are either to contain the waste storing in tightly closed containers shielded with radiation-protective materials (such as Pb) or dilute it.

It can also be contained by storage in remote areas with little or no life like remote caves or abandoned salt mines. However, natural or artificial whatever shields are used may get damaged over time.

Moreover, waste disposal practices in the past may not have used appropriate measures to isolate the radiation. Therefore, those areas need to be identified carefully, and restrictions promptly imposed.

9. Defensive Weapon Production

The production of defensive weapons that may release radioactivity from the radioactive materials handled usually have high health risks. However, the current standards will not allow the release of any significant amount of radiation unless an accident occurs.

The Effects of Radioactive Pollution

Depending on the amount of radiation to which we are exposed and the sensitivity of each exposed person, the effects of radioactive pollution can vary significantly between individuals. While the exposure to high amounts of radiation generates almost immediately chronic diseases, cancer or even sudden death in rare cases of extreme pollution, small amounts of radiation can cause diseases that are not so serious and develop over the course of time. The risk of developing cancer increases with the dose of radiation, but lower doses of radiation can also cause cancer after years of exposure.

Exposure to radon is the second leading cause of lung cancer in the U.S.! (please note that the risk of developing lung cancer increases with smoking). Also, the exposure to other similar radioactive materials can generate neurological, reproductive or heart problems. These may or

may not be followed by cancer. If the parents are exposed to radiation before or during pregnancy, genetic birth defects and retardation may occur in the fetus.

Genetic inheritance plays an important role in how sensitive an individual may be to radiation-based pollution. However, any amount of radiation may cause cancer, and any exposure to radiation may cause some health risks. Thus, it is always safer to minimize as much as possible the exposure to radiation!

1. Genetic Mutations

Radiation has adverse effects when it comes to genetics. It leads to damage to DNA strands leading to the genetic break up over time. The degree of genetic mutation leading to changes in DNA composition varies due to the level of radiation one has been exposed to and the kind of exposure.

In the event that a human or an animal is exposed to too much radiation from the atmosphere, the food consumed, and even water used then, the chances are that their bodies have already absorbed the radiation. Once in the body, it remains active because energy cannot be destroyed. The resulting mutation makes one highly susceptible to cancer. For pregnant women, kids born have adverse defects caused by genetic mutations like low weight during birth. Effects such as disfigured births and impairment like blindness in children have also been reported. Infertility has also been mentioned as an effect of radiation.

2. Diseases

Cancer is the most dominant radiation-related disease. It has developed over the years and poses a great risk in global health. Others include leukemia, anemia, hemorrhage, a reduction in the life span leading to premature aging and premature deaths as well as others such as cardiovascular complications. Leukemia, for instance, is caused by radiation in the bone marrow.

3. Soil Infertility

Exposure of radiation to the atmosphere means it is present even in soils. Radioactive substances in the soil react together with the various nutrients leading to the destruction of those nutrients, thus rendering the soil infertile and highly toxic.

Such soil leads to the harvest of crops that are riddled with radiation and thus, unfit for consumption by both humans and animals.

Plants that grow from such soil are also genetically modified. Since these are at the base of the food chain, the herbivores consume them and retain the radiation levels. The carnivores such as lions, vultures end up consuming them and increasing their levels of radiation – explained through the concept of Biomagnification.

4. Cell Destruction

Radioactive pollution has diverse effects, such as the alteration of cells. The bodies of living organisms are unique as within it, there are millions of cells in one single body, where each has its own purpose to fulfill. Radiation distorts the cells present, leading to permanent damage of the various organs and organ systems. In the face of too much radiation, permanent illnesses and death are inevitable.

5. Burns

Radiation is not easy to feel, but it is easy to realize that you have been affected by it. The immediate presence of burns, red lesions and sores is evidence. To make it worse, this can lead to skin cancer.

6. Effects on Wildlife

The animals at different levels suffer differently. The higher-level organisms get more affected than insects and flies. Herbivores, such as cattle, when grazing the contaminated land, the deposited Ce-13 and I-131 get accumulated on the animal tissues in a large amount.

These radionuclides enter their metabolic cycles and affect their DNAs (mentioned above; ionizing). This ends up having a mutated animal generation with a higher risk of health issues by just a small amount of radionuclides.

7. Effects on Plants

The plants are also exposed to radiation, and the damage is mostly done due to the increased Ultraviolet waves. Different plants get affected differently.

The stomata stop to evaporate during the increase of radiation. When the radiation hits the chromosomes, the reproduction gets hampered. It results in altered shapes, sizes and health in plants. Exposure in high amounts destroys the affected plants. When we eat these plants, we ingest nuclides.

8. Effects on Marine life

The power plants, which are the sources of nuclear energy and chemical processing, have been releasing radioisotopes into the water for decades. Cesium, Radon, Crypton, Ruthenium, Zinc and Copper are few of them. Though the waste is released in a “permissible” amount, it does not mean safe.

These radionuclides can be detected in the soft tissues or on the bones of the fishes. The sea-weed used in bread was said to have radioisotope of ruthenium. The shells of all shelled fishes and the tissues of fishes are contaminated with radionuclides.

Solutions to Radioactive Pollution

1. Proper Method of Disposing of Radioactive Waste

Radioactive waste still has some level of radiation. Accordingly, it cannot be disposed of in the same way as normal waste. It cannot be incinerated or buried. Since there is a likelihood of seepage, this waste should be stored in heavy and thick concrete containers.

Another option is to dilute the radiation since storage may not be possible. Since there are no easy ways of disposing of radioactive material, professional assistance should always be sought.

2. Proper Labeling

It is necessary for any material with radioactive content to be labeled, and the necessary precautions advised on the content of the label. The reason for this is because radiation can enter the body by a mere touch of radioactive material. Containers with such elements should be well labeled in order to make one use protective gear when handling them.

3. Banning of Nuclear Tests

It has already been proven that nuclear power has a lot of latent power that is very destructive. Nevertheless, the tests done to perfect the energy contribute greatly to the overall presence of radioactive substances. Moreover, these tests, though done in the deserts, end up escaping from one ecosystem to another, eventually affecting the lives of many people.

4. Alternative Energy Sources

The evolution and use of nuclear power was not a bad thing initially. However, considering the damage and threats it has on the environment, it is high time for its use to be discontinued and for the world to perhaps focus on alternative and environmentally friendly energy sources – like renewable sources of energy namely solar, hydro-electric and wind power.

The use of radioactivity to generate energy in nuclear power plants, for example, leads to the production of more radiation to the atmosphere considering the waste released from the various processes and combustion.

5. Proper Storage

It is mandatory for containers carrying radioactive material to be stored properly. For starters, such substances should be stored in radiation proof containers to ensure no seeping or leakage during handling. Proper storage means no harm and can minimize cases of accidental leakage.

6. Reusing
Since it is not easy to store or dispose the waste, it can be recycled and used for other purposes like in another reactor as fuel thereby protecting the environment.
7. Precautions at the Personal Level
There may be the possibility of contamination if one owns a house located near a nuclear power plant. In that case, it is recommended to check the level of radon gas in your building. The radon level needs to be removed. Those who work with radioactive material are also at great risk. They need protective measures to keep away from radioactive contamination.

6.8.6 Effects of Pollution on Health

The significance of environmental factors to the health and well-being of human populations' is increasingly apparent. Environment pollution is a worldwide problem and its potential to influence the health of human populations is great. Pollution reaches its most serious proportions in the densely settled urban-industrial centers of the more developed countries. In poor countries of the world more than 80% polluted water have been used for irrigation with only seventy to eighty percent food and living industrial urban and semi urban areas. Industry, clustered in urban and semi surrounded by densely populated, low-income localities, continues to pollute the environment with impunity. Over the last three decades there has been increasing global concern over the public health impacts attributed to environmental pollution, Human exposure to pollution is believed to be more intense now than at any other time in human existence. Pollution can be made by human activity and by natural forces as well. Selfish private enterprise and their lack of awareness of public well and natural disasters are the one of the main reason of pollution. British Airways expresses their concern about environment in their general goal 'to be a good ne concerned for the community and the environment. This implies that, businesses now adopted this responsibility as part of their overall business strategy; which should match their broader business goals. Air Pollution The air we breathe is an essential ingredient for our wellbeing and a healthy life. Unfortunately polluted air is common throughout the world specially in countries from 1960s. South of Poland, Ukraine China, and Pakistan even famous crowded cities and countries are facing air pollution. Polluted air contains one, or more, hazardous substance, pollutant, or contaminant hazard to general health.

Selfish private enterprise and their lack of awareness of public well-being and social costs disasters e.g. volcanic ash from Iceland are the one of the main reason of pollution. British Airways expresses their concern about environment in their general goal 'to be a good neighbor, concerned for the community and the environment. This implies that, businesses now adopted this responsibility as part of their overall business strategy; which should match their broader business goals. Pollutants found in the air we breathe include, particulate matter, PAHs, lead, ground-level ozone, heavy metals, sulphur dioxide, benzene, carbon monoxide, and nitrogen dioxide. Air pollution in cities causes a shorter lifespan for city dwellers. Holland et al, (1979) illustrated that British scientists concluded that particulate and related air pollution at high levels pose hazards to human health. According to Mishra (2003) rapid growth in urban population, increasing industrialization, and rising demands for energy and motor vehicles are the worsening air pollution levels. He added other factors, such as poor environmental regulation, less efficient technology of production, congested roads, and age and poor maintenance of vehicles, also add to the problem. He further added that air pollution is caused of ill health and death by natural and man-made sources, major man-made sources of ambient air pollution include tobacco smoke, combustion of solid fuels for cooking, heating, home cleaning agents, insecticides industries, automobiles, power generation, poor environmental regulation, less efficient technology of production, congested roads, and age and poor

maintenance of vehicles. The natural sources include incinerators and waste disposals, forest and agricultural fires.

Water pollution:

The water we drink are essential ingredients for our wellbeing and a healthy life. Unfortunately, polluted water and air are common throughout the world (European Public Health Alliance, 2009). The WHO states that one sixth of the world's population; approximately 1.1 billion people do not have access to safe water and 2.4--billion lack basic sanitation (European Public Health Alliance, 2009). Polluted water consists of Industrial discharged effluents, sewage water, rainwater pollution (Ashraf et al, 2010) and polluted by agriculture or households cause damage to human health or the environment. (European Public Health Alliance, 2009). This water pollution affects the health and quality of soils and vegetation (Carter, 1985). Some water pollution effects are recognized immediately, whereas others do not show up for months or years (Ashraf et al, 2010). Estimation indicates that more than fifty countries of the world with an area of twenty million hectares area are treated with polluted or partially treated polluted water (Hussain et al, 2001) including parts of all continents (Avdeev & Korchagin, 1994; Carter, 1985; Kan, 2009; Khan, 2010; Krześlak & Korytkowski, 1994; Wu et al, 1999) and this poor quality water causes health hazard and death of human being, aquatic life and also disturbs the production of different crops (Ashraf et al, 2010; Scipeeps, 2009). In fact, the effects of water pollution are said to be the leading cause of death for humans across the globe, moreover, water pollution affects our oceans, lakes, rivers, and drinking water, making it a widespread and global concern (Scipeeps, 2009). A drinking water contained a fluoride content ranging from 5.26 to 26.32 milligrams per liter and this is too high as compared to the World Health Organization's standard of 0.6 to 1.7 milligram per liter (Rizvi, 2000). According to Ashraf et al (2010), In present scenario due to industrialization and increased population, the drains of Pakistan carry the industrial and municipal effluents that are ultimately carried that polluted water to the canals and rivers. The untreated industrial and municipal wastes have created multiple environmental hazards for mankind, irrigation, drinking, and sustenance of aquatic life. The drainage water contains heavy metals in addition to biological contaminations. This water pollution infected our food in addition to groundwater contamination when used to irrigate crops. Pakistani cities are facing tribulations of urban congestion, deteriorating air and water quality and waste management while the rural areas are witnessing rapid deforestation, biodiversity and habitat loss, crop failure, desertification, land degradation, clean drinking water, noise pollution, sanitation (Government of Pakistan, 2009).

Land/ Solid waste Pollution:

Improper management of solid waste is one of the main causes of environmental pollution (Kimani, 2007). Land pollution is one of the major forms of environmental catastrophe our world is facing today (Khan, 2004). As Bulgaria and the Slovak Republic, heavy metal industries have produced wastes that are deposited into landfills without special precautions (Lenkova&Vargova, 1994; Spassov, 1994). Cucu et al (1994) posit that approximately half of the population lives in the vicinity of waste sites that do not conform to contemporary standards in Romania. Czech Republic's coal and uranium mines have produced serious pollution problems, and much of the solid industrial waste containing heavy metals is disposed of, without pretreatment, in open dumps (Rushbrook, 1994). Harvath&Hegedus (1994) concluded as the worst pollution of Hungary comes from open cast mines, lignite-based power plants, chemical factories, and the aluminum industry. The Silesia district in the south of Poland has severe contamination from mining and industry (Krześlak&Korytkowski, 1994). Avdeev&Korchagin (1994) conceived soil pollution is critical issues in Ukraine. World Bank (2002) found Particulate matter is the most serious pollutant in large cities in South Asia.

EFFECTS OF DYING ENVIRONMENT ON HUMAN, ANIMALS, AND PLANTS

Environment dying is global perilous point which catastrophically the human, animals and

plants. Air pollution results are Cancer (Ries et al. 1999; European Public Health Alliance, 2009), neurobehavioral disorders (Blaxill 2004; Landrigan et al. 2002; Mendola et al. 2002; Schettler 2002; Stein et al. 2002), cardiovascular problems (European Public Health Alliance, 2009; Tillett, 2009), reduced energy levels (Colls, 2002), premature death (European Public Health Alliance, 2009), asthma (Brauer et al, 2007; Gehring et al, 2002; Jacquemin et al, 2009; Mannino et al. 1998; McConnell et al, 2006; Modig et al, 2006), asthma exacerbations (D'Amato et al, 2005; Heinrich & Wichmann, 2004; Künzli et al, 2000; Nel, 2005;), headaches and dizziness (Colls, 2002), irritation of eyes, nose, mouth and throat (Colls, 2002), reduced lung functioning (Colls, 2002; Gauderman et al, 2005), respiratory symptoms (Colls, 2002; Vichit-Vadakan, 2001), respiratory disease (European Public Health Alliance, 2009; Firkat, 1931), disruption of endocrine (Colls, 2002; Crisp et al, 1998) and reproductive and immune systems (Colls, 2002; European Public Health Alliance, 2009). London Fog episode of 1952, where a sharp increase in particulate matter air pollution led to increased mortality among infants and older adults (Woodruff et al, 2006). High air pollution levels have been linked to infant mortality. (Fereidoun et al, 2007). Air pollutants can also indirectly affect human health through acid rain, by polluting drinking water and entering the food chain, and through global warming, associated climate change, and sea level rise. (Mishra, 2003).

Associations between particulate air pollution and respiratory disease are reported in Meuse Valley, Belgium, in December 20, 2016 1930 (Firkat, 1931), an episode in Donora, Pennsylvania, in 1948 (Ciocco & Thompson, 1961) and the most notable occurring in December 1952 (Logan, 1953). According to Gardiner (2006) acid rain destroys fish life in lakes and streams and kill trees, destroy the leaves of plants, can permeate soil by making it inappropriate for reasons of nutrition and habitation, unwarranted ultraviolet radiation through the ozone layer eroded by some air pollutants, may cause skin cancer in wildlife and damage to trees and plants, and Ozone in the lower atmosphere may damage lung tissues of animals and can prevent plant respiration by blocking stomata (openings in leaves) and negatively affecting plants' photosynthesis rates which will stunt plant growth; ozone can also decay plant cells directly by entering stomata. Polluted drinking water or water polluted by chemicals produced waterborne diseases like, Giardiasis, Amoebiasis, Hookworm, Ascariasis, Typhoid, Liver and kidney damage, Alzheimer's disease, non-Hodgkin's Lymphoma, multiple Sclerosis, Hormonal problems that can disorder development and reproductive processes, Cancer, heart disease, damage to the nervous system, different type of damages on babies in womb, Parkinson's disease, Damage to the DNA and even death, meanwhile, polluted beach water contaminated people like stomach aches, encephalitis, Hepatitis, diarrhea, vomiting, gastroenteritis, respiratory infections, ear ache, pink eye and rashes (Water Pollution Effects, 2006). Loss of wild life is directly related to pollution (Progressive Insurance, 2005). More sodium chloride (ordinary salt) in water may kill animals and plants, plants may be killed by mud from construction sites as well as bits of wood and leaves, clay and other similar materials and plants may be killed by herbicides in water (Kopaska-Merkel, 2000). For tree and plants water, pollution may disrupt photosynthesis in aquatic plants and thus affecting ecosystems that depend on these plants (Forestry Nepal, n.d). Soil pollution effects causes according to tutor vista (n.d) are cancer including leukemia and it is danger for young children as it can cause developmental damage to the brain furthermore it illustrated that mercury in soil increases the risk of neuromuscular blockage, causes headaches, kidney failure, depression of the central nervous system, eye irritation and skin rash, nausea and fatigue. Soil pollution closely associated to air and water pollution, so its numerous effects come out as similar as caused by water and air contamination. Conclusion It appears that polluted environment is global an issue and world community would bear worst results more as they already faced. As effective response to pollution is largely based on human appraisal of the problem (Kromm,

1973) and pollution control program evolves as a nationwide fixed costsharing effort relying upon voluntary participation (Sharp & Bromley, 1979). Education, research, and advocacy, are lacking in the region as preventive strategy for pollution (Fitzgerald, 1998) especially in Asia. At present the adoption of environmental auditing in any economic sector is voluntary but future legislation could well make it mandatory (Goodall, 1995) and still time available to use technology and information for environmental health decision. Policymakers in developing countries need to design programs, set standards, and take action to mitigate adverse health effects of air pollution.

6.8.7 Preventive and Safety measures from pollution

Pollution prevention approaches can be applied to all potential and actual pollution-generating activities, including those found in the energy, agriculture, federal, consumer and industrial sectors. Prevention practices are essential for preserving wetlands, groundwater sources and other critical ecosystems - areas in which we especially want to stop pollution before it begins. In the energy sector, pollution prevention can reduce environmental damages from extraction, processing, transport and combustion of fuels. Pollution prevention approaches include:

- increasing efficiency in energy use;
- use of environmentally benign fuel sources.

In the agricultural sector, pollution prevention approaches include:

- Reducing the use of water and chemical inputs;
- Adoption of less environmentally harmful pesticides or cultivation of crop strains with natural resistance to pests; and
- Protection of sensitive areas.

In the industrial sector, examples of P2 practices include:

- Modifying a production process to produce less waste
- Using non-toxic or less toxic chemicals as cleaners, degreasers and other maintenance chemicals
- Implementing water and energy conservation practices
- Reusing materials such as drums and pallets rather than disposing of them as waste

In homes and schools examples of P2 practices include:

- Using reusable water bottles instead of throw-aways
- Automatically turning off lights when not in use
- Repairing leaky faucets and hoses
- Switching to "green" cleaners

Pollution prevention refers to the use of materials, processes, and practices that reduce or eliminate the creation of pollutants at the source of generation through increased efficiency in the use of raw materials, energy, water, or other resources or through the protection of natural resources by conservation. Pollution prevention is a multimedia approach that reduces waste generation and the emission of pollutants released to land, air, and water without transferring pollutants from one medium to another. Pollution prevention techniques include:

- Modifying equipment or technology
- Modifying processes or procedures
- Reformulating or redesigning products
- Substituting raw materials
- Improving housekeeping, maintenance, training, or inventory control
- Incorporating demand-side management when designing or renewing projects
- Incorporating integrated resource planning into project planning.

Sub Unit – IX

Nutrition- Balanced diet and its components. Nutritional Deficiencies. Understanding of malnutrition and nutritional supplements.

i. What is Nutrition?

Nutrition is the process of providing or obtaining the food necessary for health and growth. The process of taking in food and using it for growth, metabolism, and repair. Nutritional stages are ingestion, **digestion**, absorption, transport, assimilation, and excretion.

Nutrition is the study of how food and drink affects our bodies with a special regard to the essential nutrients necessary to support human health. It looks at the physiological and biochemical processes involved in nourishment and how substances in food provide energy or are converted into body tissues. These nutrients which are the source of energy for our bodies are classed as: carbohydrates, fats, fibre, minerals, proteins, vitamins, and water. Good nutrition means obtaining the right amount of nutrients from healthy foods in the right combinations. An important part of the study of nutrition is looking at the diseases that can result from malnutrition and the role food plays in the development of chronic disease.

Poor nutrition can lead to a lack of energy, digestive problems, food allergies, weight gain, depression and anxiety as well as many of today's most prevalent chronic diseases like coronary heart disease, cancer, ADHA. Having nutritional knowledge and making informed choices about the foods you eat can help you achieve optimum health over your lifetime. Nutrition is also about why we choose to eat the food we do, even when we know they may not be good for us. What is going on at a cellular level and how does that effect what we crave and set up food cycles that are unhealthy or damaging. Nutritionist advise people on what to eat and how to modify their diet so they can maintain or restore optimal health or to help relieve ill health and combat disease. There is almost daily advice in the media on what to eat and what not to eat (and drink), most of it is confusing and contradictory. Celebrity chefs and fine dining have continued to grow in popularity. As have food fads and quick win diets. Food is a subject close to everyone's heart (and stomach!) and more and more people are realizing what you eat can affect your short term, as well as your long term health. Naturopathic nutrition seeks to uncover and support the cause of a disease, rather than just treating the symptoms as conventional medicine often does. Many people find that improving a poor diet to cure one symptom can often lead to other health benefits such as increased energy levels, improvements in skin and better sleep amongst a number other benefits. Whether you take your studies further to become a nutritionist or not, the knowledge you gain will be invaluable as it is knowledge you will integrate into daily life to the benefit of your own health and well being.

ii. What is balanced diet?

Balanced diet is a diet consisting of a variety of different types of food and providing adequate amounts of the nutrients necessary for good health.

A balanced diet is a healthy diet to be able to function properly, our body needs all the nutrients that come from foods, that is proteins, carbohydrates (sugar) and fats, plus vitamins and minerals. To help maintain a healthy weight and have the best chance to stay in good health, balance is key.

The WHO (the World Health Organization) has given recommendations in 5 points that summarize the basis of nutrition:

1. Eat roughly the same amount of calories that your body uses. Healthy body weight = "calories in"- "calories out".
2. Eat a lot of plant foods: vegetables, legumes, whole grains, fruits and nuts.

3. Limit your intake of fats, preferring the healthier unsaturated fats to saturated fats and trans fats.
4. Limit your intake of granulated sugar, ideally less than 10g/day.
5. Limit salt / sodium consumption from all sources

A balanced diet is pleasure

Pleasure and variety are important in a balanced diet. Fatty and sweet foods are usually the most delicious and can be part of a balanced diet if eaten in moderation. A balanced diet should bring us our body needs, no more, no less, but it must not be strictly followed every day; equilibrium can be achieved over several days.

A balanced diet is for everybody

At all stages and conditions of life, we need a balanced diet that can be adapted while following the same principles, for example:

- Children, elderly people need a little bit more protein and calcium for growth, maintenance or repairing. Think of eggs, fish, white meat, legumes and dairy products.
- Students and families might find it expensive and practically difficult to eat lots of fresh vegetables and fruits. Think of tinned or frozen fruits and vegetables that are cheap and nutritionally as good as fresh ones.

A diet consisting of the adequate amounts of all the necessary nutrients recommended for a healthy growth and for efficient daily activities and functions. A balanced diet contains the proper quantities and proportions of the needed nutrients to maintain good health.

It must have *balanced* amounts in proper proportions of carbohydrates, fats, proteins, vitamins, minerals, and water intake. In order to achieve a balanced diet, one should be able to have the following in their diet: (1) fruits, (2) vegetables, (3) grains, (4) proteins, (5) dairy, and (6) oils. Fruits and vegetables are important sources of various nutrients, especially vitamins and minerals. Dark, leafy greens such as spinach, kale, broccoli, and green beans are highly nutritious. Whole grains are preferred than refined grains since the latter lack the hull, which contains the majority of the grain's nutrition (after processing). Proteins in meats and beans are essential for growth, especially muscle and brain development. However, one should prefer lean, low-fat meats to reduce the amount of fat and cholesterol intake.

iii. Components of balanced diet

The 7 components of a balanced diet are Carbohydrates, Proteins, Fats, Vitamins, Minerals, Fibre and Water. We will go into more detail below.

1. Carbohydrates

Carbohydrates play important roles within our body. They are the primary energy source that our brain and muscles use. Approximately 55-60% of our calories should come from carbohydrates. Carbohydrates are energy foods and provide 4 calories per gram. We need carbs not only to support our growth but to also fuel our activity. Carbohydrates are broken down into glucose, which then circulates in the blood. Excess glucose in the blood is then stored as glycogen either in the liver or the muscles. The glycogen stored in the liver is released to help maintain the glucose levels in the blood. Muscle glycogen is used to provide fuel for the muscles to work. If carbohydrates are consumed in excess of the body's needs then it is converted to fat and stored in adipocytes (fat tissue). Therefore it's important that you do not consume excessive amounts of carbs.

72. Protein

Protein is used by our body helps us develop and grow properly. Protein makes up our muscles, organs, skin and hair. Protein is broken down into amino acids. The body is able to make 12 amino acids but we need the remaining 8 (essential amino acids) to ensure good health. Protein is used for building, maintaining and repairing body cells and organs. They also make hormones and enzymes which regulate body functions. Antibodies are also made and other important components of the immune system. In the UK diet, the main sources of protein are animal sources such as meat, fish, eggs and dairy foods. We also obtain important proteins from cereal products, nuts and pulses. Approximately 10-15% of our calories should come from protein. Protein contains 4 calories per gram.

73. Fats

Approximately no more than 35% of our daily calories should come from fat. Fats are a great source of energy: 1g of fat provides 9 calories. Fat protects the internal organs, however, too much fat can be damaging. Fat is also a great insulator and fat stored just below the skin acts to insulate the body from the cold. Females require a minimum level of body fat in order to maintain menstrual function as fat cells secrete and are the store for oestrogen. It is advised to limit the number of saturated fats consumed as they are strongly correlated with an increased amount of cholesterol in the blood, which in turn increases the risk of heart disease and diabetes. Saturated fats can be found in beef, lamb, pork, butter, cream, milk, cheeses, coconut oil, palm oil and cocoa butter. It's important to replace saturated fat with unsaturated fat. This means eating more fish, avocados, nuts and seeds and plant-based oils and spreads such as flax seed oil and soya spread.

74. Vitamins

Vitamins are complex organic substances found in our food which support almost every system in the body, including the immune system, the brain and the nervous system. Many of them help convert food into energy and help the body to use carbohydrate, fat and protein. They are also involved in regulating growth, making red blood cells and protecting the body from harmful free radicals. Only very small amounts of vitamins and minerals are needed to enable the body to work properly and prevent illness. Vitamins K and D cannot be manufactured by the body and must come from our food. To get more vitamins into your diet, try and eat foods as fresh and unprocessed as possible. Choose fruit and vegetables that have been produced locally rather than those that have had to travel across the world. Try cooking vegetables as light as possible, keeping their crunchy texture. Avoid slow cookers and lengthy cooking techniques. Microwaving, steaming or pressure-cooking vegetables is the kindest to vitamins.

75. Minerals

Minerals are elemental substances and are found in the soil. They are absorbed by plants, which we eat or are eaten by animals – which we then eat. Therefore we can get minerals from both animal and vegetable sources. Minerals have many different roles, including structural roles, such as calcium in bones and teeth or regulator roles such as sodium and potassium in fluid balance and muscle contractions. Minerals do not deteriorate in the same way that vitamins do because they are 'elemental' they cannot be easily destroyed by heat, light or air.

76. Fibre

Fiber can be found in plants such as fruits, vegetables and grains. Fibre is made up of two main types: soluble fibre and insoluble fibre, both kinds are needed for good health. Soluble fibre is usually found in plant cells. It assists with digestion which allows the stomach to adopt a slower emptying time. This means the nutrients are absorbed gradually which allows for a steady release of energy. Soluble fibre also assists with lowering harmful LDL cholesterol. Insoluble fibre does not dissolve in water and passes through the digestive tract largely intact. Insoluble fibre keeps the digestive system in good working order. It helps to

prevent bowel problems. High fibre foods contain a good source of vitamins and minerals. It also adds bulk which makes them more filling and satisfying. We should be eating around 18g of fibre every day. To get more fibre into your diet you should always select wholemeal foods rather than refined grains, for example, eat whole grain or whole wheat breakfast cereals. Eat more peas, lentils and beans. Potato skins contain a lot of fibre and brown rice contains more fibre than white rice. You should also ensure that you eat at least two pieces of fruit every day.

77. Water

Water is one of the most important macronutrients along with carbohydrates, proteins and fats. We can live a little longer without food (around 8 weeks) than we can water (only a few days). A 12% drop in body weight through water is always fatal. Our body is made up of around 65% water, it assists with absorption, digestion, excretion and aids circulation of nutrients around our body. Water is also essential for regulating our bodies temperature and distributing heat. Water also lubricates our bodies moving joints and our eyes. How much water should we be drinking? Individual requirements of fluid intake vary considerably. This is due to various factors which depend on the amount of fluid being lost for example environmental temperature, humidity, individual metabolism, activity levels and the individual's health and diet. On average a Man (70 kg) should be drinking 2.5 litres a day, a Women (58 kg) should be drinking 2.2 litres of water a day and for children (10 kg Child) 1 litre and a Child (5 kg) should be drinking 0.75 litres a day. Many foods that we eat particularly fruit and vegetables contain high amounts of water. On average most healthy adults should drink at least 6 to 8 glasses of liquid every day. How does water leave the body? Water is mainly lost from the body by urine, breathing and sweating, we lose around 1.5 litres a day. Dehydration can occur when fluids are not replaced. If we lose even just 1-2% can result in dehydration symptoms such as thirst occurs and dry mouth will start to appear. 3-4% vague discomfort and loss of appetite appears, difficulty concentrating, headache and sleepiness are observed at 5%. Tingling and numbness of extremities can occur at 6% and collapse at 7% dehydration. A 10% loss of water through dehydration is life-threatening. Therefore it is very important that we maintain our hydration levels correctly throughout the day.

i. What is nutritional deficiency?

The body requires many different vitamins and minerals that are crucial for both body development and preventing disease. These vitamins and minerals are often referred to as micronutrients. They aren't produced naturally in the body, so you have to get them from your diet. A nutritional deficiency occurs when the body doesn't absorb or get from food the necessary amount of a nutrient. Deficiencies can lead to a variety of health problems. These can include digestion problems, skin disorders, stunted or defective bone growth, and even dementia. The amount of each nutrient you should consume depends on your age. In the United States, many foods that you buy in the grocery store — such as cereals, bread, and milk — are fortified with nutrients that are needed to prevent nutritional deficiency. But sometimes your body is unable to absorb certain nutrients even if you're consuming them. It's possible to be deficient in any of the nutrients your body needs. Keep reading to learn about some common nutritional deficiencies and how to avoid them.

Iron deficiency

The most widespread nutritional deficiency worldwide is iron deficiency. Iron deficiency can lead to anemia. This is a blood disorder that causes fatigue, weakness, and a variety of other symptoms. Iron is found in foods such as dark leafy greens, red meat, and egg yolks. It helps

your body make red blood cells. When you're iron-deficient, your body produces fewer red blood cells. The red blood cells it produces are smaller and paler than healthy blood cells. They're also less efficient at delivering oxygen to your tissues and organs. According to the World Health Organization (WHO)Trusted Source, over 30 percent of the world's population is anemic. Many of these people are anemic due to iron deficiency. In fact, it's the only nutritional deficiency that's prevalent in both developing and industrialized countries. Iron deficiency anemia affects so many people that it's now widely recognized as a public health epidemic.

Vitamin A deficiency

Vitamin A is a group of nutrients crucial for eye health and functioning and reproductive health in men and women. It also plays a part in strengthening the immune system against infections. According to WHOTrusted Source, a lack of vitamin A is the leading cause of preventable blindness in children. Pregnant women deficient in vitamin A have higher maternal mortality rates as well.

Beta carotene is a nutrient that functions as an antioxidant. It's found in red, orange, yellow, and dark green produce. Beta carotene can be converted to vitamin A in the body when needed. For newborn babies, the best source of vitamin A is breast milk. For everyone else, it's important to eat plenty of foods high in vitamin A. These include:

- milk
- eggs
- green vegetables, such as kale, broccoli, and spinach
- orange vegetables, such as carrots, sweet potatoes, and pumpkin
- reddish-yellow fruits, such as apricots, papaya, peaches, and tomatoes

Thiamine (vitamin B-1) deficiency

Another common nutritional deficiency occurs with thiamine, also known as vitamin B-1. Thiamine is an important part of your nervous system. It also helps your body turn carbohydrates into energy as part of your metabolism.

A lack of thiamine can result in:

- weight loss
- fatigue
- confusion
- short-term memory loss

Thiamine deficiency can also lead to nerve and muscle damage and can affect the heart.

In the United States, thiamine deficiency is most often seen in people with excessive alcohol use. Alcohol reduces the body's ability to absorb thiamine, store thiamine in the liver, and convert thiamine to a usable form. Thiamine deficiency is a common cause of Wernicke-Korsakoff syndrome. This is a form of dementia.

Many breakfast cereals and grain products in the United States are fortified with thiamine. Other good sources of thiamine include:

- eggs
- legumes
- nuts
- seeds
- wheat germ
- pork

Niacin (vitamin B-3) deficiency

Niacin is another mineral that helps the body convert food into energy. It's also known as vitamin B-3.

A severe deficiency in niacin is often referred to as pellagra. Niacin is found in most animal proteins but also in peanuts. As a result, this condition is rare in industrialized countries or in meat-eating communities.

Symptoms of pellagra include diarrhea, dementia, and skin disorders. You can usually treat it with a balanced diet and vitamin B-3 supplements.

Folate (vitamin B-9) deficiency

Vitamin B-9 helps the body create red blood cells and produce DNA. It's often referred to as folate. Folate also helps brain development and nervous system functioning. Folic acid is the synthetic form found in supplements or fortified foods.

Folate is especially important for fetal development. It plays a crucial role in the formation of a developing child's brain and spinal cord. Folate deficiency can lead to severe birth defects, growth problems, or anemia.

You can find folate in the following foods:

- beans and lentils
- citrus fruits
- leafy green vegetables
- asparagus
- meats, such as poultry and pork
- shellfish
- fortified grain products
- whole grains

While beans can provide a great amount of folate, the folate content in canned beans is about half of what cooked, dried beans offer.

Most people in the United States get enough folate. But pregnant women and women of childbearing age sometimes don't consume enough folate for a healthy pregnancy.

The National Institutes of Health (NIH) recommends that women who are pregnant or who may become pregnant consume up to 400 micrograms of folic acid each day — over and above the folate they're getting from food naturally — to help prevent birth defects.

There's also research showing that some people have genetic mutations that prevent their body from methylating folate, or converting it to a form the body can use. In these cases, while folate intake might be adequate, a supplement of methylated folate may be necessary to prevent deficiency.

HEALTHLINE NEWSLETTER

Shop for vitamin B-3 supplements.

Cobalamin (vitamin B-12) deficiency

Vitamin B-12 is a B vitamin that's responsible for assisting the body in making enough healthy red blood cells. Deficiency in this vitamin is common among people who:

- are vegans
- have had gastric surgery
- are over 60 years old
- have diabetes and take metformin (Glucophage)
- have a long history of antacid use
- lack intrinsic factor

Intrinsic factor is a transport protein secreted by the stomach cells. It binds to B-12 and takes it to the small intestine for absorption. This is the way the body is able to absorb and utilize B-12.

Adequate calcium intake at meals is required for intrinsic factor to assist in B-12 absorption in the small intestine.

A deficiency in this vitamin may cause pernicious anemia. This is a type of anemia caused by a decreased ability to absorb B-12 efficiently. Pernicious anemia is more common in people with autoimmune disorders and inflammatory or digestive diseases.
Symptoms of vitamin B-12 deficiency include:

- fatigue and weakness in extremities
- dizziness
- shortness of breath
- weight loss
- nausea or poor appetite
- sore, red, or swollen tongue
- pale or yellowish skin

Left untreated for too long, vitamin B-12 deficiency may cause irreversible damage to the nervous system. More severe symptoms include:

- difficulty walking
- muscle weakness
- irritability
- dementia
- depression
- memory loss

Your doctor can order a variety of blood tests to check for vitamin B-12 deficiency. Blood tests can check for:

- levels of vitamin B-12
- methylmalonic acid
- intrinsic factor antibodies

Treatment may be provided in a variety of ways, including:

- increasing vitamin B-12 sources in the diet
- taking vitamin B-12 supplements
- receiving vitamin B-12 injections
- blood transfusions

Vitamin B-12 is commonly found in red meat and animal products. Vegetarian sources include fortified plant-based milks and nutritional yeast.

Vitamin D deficiency

According to Harvard's School of Public Health, about 1 billion people worldwide don't get enough vitamin D. People with darker skin tones are at a higher risk of vitamin D deficiency.
Vitamin D is essential for healthy bones. It helps the body maintain the right levels of calcium in order to regulate the development of teeth and bones. A lack of this nutrient can lead to stunted or poor bone growth. Osteoporosis, caused by a lack of calcium and vitamin D, can lead to porous and fragile bones that break very easily.
Vitamin D is only found naturally in a few foods. Foods with vitamin D include:

- fish liver oils
- fatty fish
- mushrooms
- egg yolks
- liver

Many dairy products and plant milks in the United States are fortified with vitamin D.
The best source of vitamin D is sunlight. According to the NIH, some research suggests that 5 to 30 minutes of midday sun exposure twice a week on the face, arms, neck, or back can provide you with enough vitamin D.
Although recommended, sunscreen does hinder vitamin D absorption from sunlight through the skin. Spend a few minutes in the sun prior to sunscreen for optimal vitamin D absorption.

Calcium deficiency

Calcium helps your body develop strong bones and teeth. It also helps your heart, nerves, and muscles work the way they should.

A calcium deficiency often doesn't show symptoms right away, but it can lead to serious health problems over time. If you aren't consuming enough calcium, your body may use the calcium from your bones instead. This leads to bone loss.

While some experts believe that calcium deficiencies may be related to low bone mass and weakening of bones due to osteoporosis, it's a topic of much debate. According to WHOTrusted Source, evidence does support the importance of calcium with vitamin D for bone health in older populations. Evidence is weaker for younger populations.

Population study research by WHO also reveals that countries with lower calcium intake don't have high rates of bone diseases. But countries with higher calcium intake have higher rates of hip fractures. In these countries, like the United States, high protein intake and lack of exercise can contribute to poor calcium status and bone health.

Calcium deficiency can lead to convulsions and abnormal heart rhythms. These can even be life-threatening. Postmenopausal women experience greater bone loss due to changing hormones and have more trouble absorbing calcium.

The best sources of calcium are:

- dairy products, such as milk, yogurt, and cheese
- calcium-set tofu
- small fish with bones

Vegetables such as kale and broccoli also have calcium. Many cereals and grains are calcium-fortified.

Person	Calorie requirements
Sedentary children: 2–8 years	1,000–1,400
Active children: 2–8 years	1,000–2,000
Females: 9–13 years	1,400–2,200
Males: 9–13 years	1,600–2,600
Active females: 14–30 years	2,400
Sedentary females: 14–30 years	1,800–2,000
Active males: 14–30 years	2,800–3,200
Sedentary males: 14–30 years	2,000–2,600
Active people: 30 years and over	2,000–3,000
Sedentary people: 30 years and over	1,600–2,400

What causes nutritional deficiencies?

The main causes of nutritional deficiencies include a poor diet that lacks essential nutrients, a disease or medication that impairs absorption, or both. The body is able to store some nutrients, so a deficiency may not be caught until the body has been without the nutrient for some time.

A number of diseases and conditions can lead to an iron deficiency. These include:

- colon cancer
- imbalanced gut flora

- Crohn's disease
- celiac disease

Pregnancy can also cause an iron deficiency if the body diverts iron to the fetus.
Researchers have found associations between bariatric surgery, which reduces the size of the stomach to achieve weight loss, and nutritional deficiency.
People who are candidates for bariatric surgery may already be nutrient-deficient due to poor diet. Talk to your doctor and dietitian before and after the surgery to set up a thorough nutrition plan.

What are the symptoms of nutritional deficiencies?

The symptoms of a nutritional deficiency depend on which nutrient the body lacks. However, there are some general symptoms you might experience. These can include:

- pallor, or pale skin
- fatigue
- weakness
- trouble breathing
- unusual food cravings
- hair loss
- periods of lightheadedness
- constipation
- sleepiness
- heart palpitations
- feeling faint or fainting
- depression
- tingling and numbness of the joints
- menstrual issues, such as missed periods or very heavy cycles
- poor concentration

You may display all of these symptoms or only groups of them.
Over time, most people adapt to the symptoms. This can cause the condition to go undiagnosed. Schedule a checkup with your doctor if you experience prolonged periods of fatigue, weakness, or poor concentration. These symptoms could be a sign of the beginning of a serious deficiency.

How are nutritional deficiencies diagnosed?

Your doctor will discuss your diet and eating habits with you if they suspect you have a nutritional deficiency. They'll ask what symptoms you're experiencing. Make sure to mention if you've experienced any periods of constipation or diarrhea, or if blood has been present in your stool.
Your nutritional deficiency may also be diagnosed during routine blood tests, including a complete blood count (CBC). This is often how doctors identify anemia.

How are nutritional deficiencies treated?

The treatment for a nutritional deficiency depends on the type and severity of the deficiency. Your doctor will find out how severe the deficiency is as well as the likelihood of long-term problems caused by the lack of nutrients.
Before deciding on a treatment plan, they may order further testing to see if there's any other damage. Symptoms usually fade when the correct diet is followed or nutrient is supplemented.

Dietary changes

A doctor may advise you on how to change your eating habits in the case of a minor deficiency. For example, people with iron deficiency anemia should include more meat, eggs, dark meat poultry, vegetables, and legumes in their diet.
Your doctor may refer you to a dietitian if your deficiency is more severe. They may recommend keeping a food diary for a few weeks. When you meet with the dietitian, you'll go over the diary and identify any changes you should make.

Typically, you'll meet with your dietitian regularly. Eventually, you may have a blood test to confirm that you're no longer deficient.

Supplements

The United States' official dietary guidelinesTrusted Source recommend that you get most of your nutrients from food. In some cases, you may need to take supplements or a multivitamin. It may also be necessary to take an additional supplement to help your body absorb the supplements, such as taking calcium and vitamin D together.

The frequency and dosage of a supplement depends on how severe the deficiency is. Your doctor or dietitian can determine this.

Talk to your doctor before taking any nutritional supplements.

Parenteral administration

In very severe cases — such as when a nutritional deficiency doesn't respond to oral medications or vitamins — it may be necessary to give the nutrient parenterally, or through the veins or muscles. This can carry the risk of additional side effects. It's usually done in a hospital.

Parenteral iron, for example, can cause side effects that include:

- chills
- backache
- dizziness
- fever
- muscle pain
- fainting

In rare cases, it can even cause a severe allergic reaction.

Once you've been given the treatment, your doctor will have you do a repeat blood test to confirm that it was successful. You may need to attend the hospital for repeat appointments until you're no longer deficient.

Will a nutritional deficiency cause long-term problems?

Most problems caused by nutritional deficiencies stop once you're no longer deficient. But in some cases, there may be lasting damage. This usually only occurs when the deficiency has been severe and has lasted a long time. For example, a prolonged thiamine deficiency can be associated with stunted growth or depression. Nutritional deficiencies in children can be serious and lead to lasting negative health outcomes. If you're experiencing symptoms and are concerned that you're not obtaining enough of a certain nutrient, talk to your doctor. They can discuss your diet with you and help you figure out whether you should make some dietary changes or start taking supplements.

ii. What is malnutrition?

Malnutrition refers to deficiencies, excesses or imbalances in a person's intake of energy and/or nutrients. The term malnutrition covers 2 broad groups of conditions. One is 'undernutrition'—which includes stunting (low height for age), wasting (low weight for height), underweight (low weight for age) and micronutrient deficiencies or insufficiencies (a lack of important vitamins and minerals). The other is overweight, obesity and diet-related noncommunicable diseases (such as heart disease, stroke, diabetes and cancer). Malnutrition refers to getting too little or too much of certain nutrients.

Malnutrition is a condition that results from nutrient deficiency or overconsumption.

Types of malnutrition include:

- **Undernutrition:** This type of malnutrition results from not getting enough protein, calories or micronutrients. It leads to low weight-for-height (wasting), height-for-age (stunting) and weight-for-age (underweight).

- **Overnutrition:** Overconsumption of certain nutrients, such as protein, calories or fat, can also lead to malnutrition. This usually results in overweight or obesity.

People who are undernourished often have deficiencies in vitamins and minerals, especially iron, zinc, vitamin A and iodine.

However, micronutrient deficiencies can also occur with overnutrition.

It's possible to be overweight or obese from excessive calorie consumption but not get enough vitamins and minerals at the same time.

That's because foods that contribute to overnutrition, such as fried and sugary foods, tend to be high in calories and fat but low in other nutrients.

Signs and Symptoms

The signs and symptoms of malnutrition depend on the type. Being able to recognize the effects of malnutrition can help people and healthcare providers identify and treat issues related to under- or overnutrition.

Undernutrition

Undernutrition typically results from not getting enough nutrients in your diet.

This can cause:

- Weight loss
- Loss of fat and muscle mass
- Hollow cheeks and sunken eyes
- A swollen stomach
- Dry hair and skin
- Delayed wound healing
- Fatigue
- Difficulty concentrating
- Irritability
- Depression and anxiety

People with undernutrition may have one or several of these symptoms. Some types of undernutrition have signature effects. Kwashiorkor, a severe protein deficiency, causes fluid retention and a protruding abdomen. On the other hand, the condition marasmus, which results from severe calorie deficiency, leads to wasting and significant fat and muscle loss. Undernutrition can also result in micronutrient deficiencies. Some of the most common deficiencies and their symptoms include:

- **Vitamin A:** Dry eyes, night blindness, increased risk of infection.
- **Zinc:** Loss of appetite, stunted growth, delayed healing of wounds, hair loss, diarrhea.
- **Iron:** Impaired brain function, issues with regulating body temperature, stomach problems.
- **Iodine:** Enlarged thyroid glands (goiters), decreased production of thyroid hormone, growth and development issues.

Since undernutrition leads to serious physical issues and health problems, it can increase your risk of death. In fact, it's estimated that stunting, wasting and zinc and vitamin A deficiencies contributed to up to 45% of all child deaths in 2011.

Overnutrition

The main signs of overnutrition are overweight and obesity, but it can also lead to nutrient deficiencies. Research shows that people who are overweight or obese are more likely to have inadequate intakes and low blood levels of certain vitamins and minerals compared to those who are at a normal weight. One study in 285 adolescents found that blood levels of vitamins A and E in obese people were 2–10% lower than those of normal-weight participants. This is likely because overweight and obesity can result from an overconsumption of fast and processed foods that are high in calories and fat but low in other nutrients. A study in over 17,000 adults and children found that those who ate fast food had significantly lower intakes

of vitamins A and C and higher calorie, fat and sodium consumption than those who abstained from this type of food.

Assessing Malnutrition

Symptoms of malnutrition are assessed by healthcare providers when they screen for the condition. Tools that are used to identify malnutrition include weight loss and body mass index (BMI) charts, blood tests for micronutrient status and physical exams. If you have a history of weight loss and other symptoms associated with undernutrition, your doctor may order additional tests to identify micronutrient deficiencies. Identifying nutrient deficiencies that result from overnutrition, on the other hand, can be more difficult. If you're overweight or obese and eat mostly processed and fast foods, you may not get enough vitamins or minerals. To find out if you have nutrients deficiencies, consider discussing your dietary habits with your doctor.

6.9.6 Nutritional supplements for malnutrition

Preventing and treating malnutrition involves addressing the underlying causes.

Government agencies, independent organizations and schools can play a role in preventing malnutrition.

Research suggests that some of the most effective ways to prevent malnutrition include providing iron, zinc and iodine pills, food supplements and nutrition education to populations at risk of undernutrition. In addition, interventions that encourage healthy food choices and physical activity for children and adults at risk of overnutrition may help prevent overweight and obesity.

You can also help prevent malnutrition by eating a diet with a variety of foods that include enough carbs, proteins, fats, vitamins, minerals and water.

Treating malnutrition, on the other hand, often involves more individualized approaches.

If you suspect that you or someone you know is undernourished, talk to a doctor as soon as possible.

A healthcare provider can assess the signs and symptoms of undernutrition and recommend interventions, such as working with a dietitian to develop a feeding schedule that may include supplements.

Oral Nutrition Supplements and Malnutrition

At least one-third of patents entering a hospital are already malnourished. Another one-third of previously well-fed patients are leaving the hospital malnourished. Malnutrition can prolong and worsen disease, damaging quality of life and increasing healthcare costs. Oral nutrition supplements may be helpful in preventing and treating malnutrition and should be part of the medical treatment plan.

Poor nutrition status increases risk of complications, infection and mortality, slows wound healing, and decreases physical/cognitive function.

Oral nutrition supplements (ONS) provide calories, protein, vitamins and minerals to supplement food intake. You may find them in ready-to-drink/liquid or powder forms. People who may benefit from ONS may not be able to consume adequate nutrients from food, putting them at risk for nutrition. This would include:

- Eldery
- Low birth weight
- Injury
- Food allergies
- Cardiac, renal and respiratory disease
- Cancer
- Dysphagia

- Food insecurity
- Organ failure
- Intestinal inflammatory disorders
- Other infectious causes

Once malnourished, immune response is lowered and healing slows. This can lead to longer hospital stays, higher risk of hospital readmission and overall higher healthcare costs. With oral nutrition supplements, this at-risk population has a better chance of thriving.

Benefits of Oral Nutrition Supplements:

Oral nutrition supplements have positive effects on indicators of malnutrition.

1. Improved body weight, physical and cognitive function, hand grip strength and social function
2. Increased protein intake, physical activity and improved scores on the Karnofsky Performance Scale
3. Reduced risk of post-surgical complications
4. Decreased length of hospital stay, readmission rates and healthcare costs

The first step in reducing malnutrition is to identify those who are at risk. There is a variety of malnutrition screening and assessment tools that are validated in various settings.[2] These tools include questions about current weight, body mass index, weight change, appetite and comorbidities, and assign a score indicating level of risk. They can help to identify those who are losing weight and who are at risk, but they must be used together with a 'pathway of action'. The factors contributing to poor intake must be treated where possible. Everyone involved in the care of the person can play a part in encouraging food intake and improving nutrition. The causes of poor intake should be closely examined and corrected. In addition the role of the dining environment and other social factors should not be underestimated.[6,7] An Accredited Practising Dietitian can provide a comprehensive assessment and advise on strategies.

Most elderly people eat far less than they did when they were younger. Their energy needs are lower, but the requirements for some nutrients such as protein, calcium and riboflavin are actually higher.[8] This means that their food must be more nutritious to meet their needs.

A variety of dietary measures can be used to improve energy and nutrient intake. While the temptation might be to reach for a commercial oral nutrition supplement as a first step, there are many approaches that can improve oral intake with regular foods. Supplements have an important role, but the first step should be to find ways to increase the intake from familiar and preferred foods. There is a large element of taste fatigue with supplements and they are potentially an expensive option.

There are three main approaches to increase the intake of protein, energy and nutrient intake from food:

- small frequent meals – encouraging snacks between meals
- increasing the nutrient density of meals by additions of milk powder, grated cheese, margarine and cream
- nourishing fluids such as milk drinks, smoothies, juice.

These strategies can increase protein and energy intake, but if the core food groups[9] are not taken in recommended amounts, micronutrient deficiencies may develop. In this instance a multivitamin and mineral supplement may be recommended. Improvements in weight and nutrition status can be very difficult to achieve, and individual dietary advice from a dietitian may be needed. The dietitian can assess whether the use of commercial oral nutrition supplements is appropriate and which supplements may suit the individual person.

Studies have shown that judicious use of oral nutrition supplements can improve weight, protein and energy intake, nutritional status, physical function, quality of life and length of stay in acute care. [2,10] When a supplement is required there are a number to choose from. The most

common and readily available are milk based. They vary in their taste, nutrient profile and indications for use.

Standard oral supplements

Standard supplements are suitable for people who have some oral intake, but who are struggling to achieve adequate nutrition. These supplements are best taken as snacks between meals to complement normal meals. Most standard supplements are powder based. Some are 'complete', meaning that they will provide 100% of macro- and micronutrient needs if they are taken as the only form of nutrition. Some are supplemented with fibre, some are low in lactose. The standard dilution is one calorie per mL of fluid. Examples include:

- Enprocal
- Ensure Powder
- Fortisip Powder
- Proform
- Sustagen hospital formula.

Standard liquid supplements

Some supplements come premixed in a liquid form. They are particularly useful in the acute-care setting as they do not require mixing and reduce waste. Some products may be more concentrated and provide more nutrition in a smaller volume. The formulations containing two calories per mL are frequently used in a 'med pass' program, where 50–60 mL of the supplement is provided at the same time as the medication round dispenses medicines, three or four times a day. This results in increased acceptance and a significant boost to nutrient and energy intake. Examples of these products include:

- Ensure liquid, Ensure plus, TwoCal HN
- FMR (formulated meal replacement)*
- Fortisip
- Resource plus, Resource protein, Resource 2.0.

Clear liquid supplements

Clear liquid supplements have added protein and nutrients and are very useful for people who do not like milk drinks. Most are fruit flavoured. They tend to be quite sweet, but still provide significant nutrition even if they need to be diluted. They are suitable for use on a 'clear fluid' diet. Examples include:

- Enlive Plus
- Fortijuice
- Resource fruit flavoured beverage.

Puddings

The puddings are helpful for those who do not like milky drinks, but who are happy to take custards and milky desserts. The available products include:

- Ensure puddings
- FMR (formulated meal replacement) puddings*
- Forticreme
- Sustagen pudding powder (can be made to different thicknesses).

Supplements for diabetes

Some supplements have been developed specifically for patients with diabetes. They have a lower glycaemic load, lower carbohydrate and low glycaemic index. In practice, patients with diabetes can usually tolerate the standard supplements. Most ordinary supplements have a low glycaemic index and are taken instead of regular foods. If blood glucose concentrations are elevated on the standard supplements then diabetes-specific options may be considered. They include:

- Diasip
- Glucerna

- Resource diabetic.

Energy and protein boosters

Some products are formulated to only boost protein or energy intake. While some have other additional nutrients they cannot be seen as complete foods. They are added to regular foods or drinks.

Glucose polymers

Glucose polymers have a neutral taste and can be added to sweet or savoury foods or drinks. They provide a source of pure carbohydrate only. They are not recommended for people with diabetes as they add significantly to the glycaemic load. Examples are:

- Carb plus
- Poly-Joule.

Protein powders

Protein powders can assist in increasing protein intake for individuals who will not eat meat or other protein foods and who do not like milk or its alternatives. The protein powders can be added into puddings, mashed potato and soups. Examples are:

- Beneprotein
- Protifar.

Fat supplements

Fat has a higher energy value per gram than protein and carbohydrate and is an excellent way of increasing energy intake in a small volume.

Benecalorie has no carbohydrate, but contains protein and fat. It can be a useful way to add extra energy in a defined dose. Calogen is a 50% fat emulsion and is often used as part of a 'med pass' program.

Biscuits, soups, desserts

The commercial supplement companies are finding increasingly diverse ways to provide supplemented nourishing products that may tempt the taste buds of those with a poor appetite. These products are particularly useful when a person does not like the milky drinks. Examples include:

- bite sized cookies and desserts*
- Resource dessert fruit.

Specialised supplements

Many specialised supplements are available for a variety of medical conditions. The need for these should be assessed by a dietitian. Examples include:

- pulmonary supplements – lower carbohydrate
- renal disease – lower protein, potassium, sodium, phosphate
- supplements for a variety of metabolic disorders
- cancer cachexia supplements
- supplements for metabolic stress
- elemental (pre-digested) formulae.

Wound management

Adequate nutrition plays an important role in prevention and treatment of wounds and pressure ulcers.[11] There is increasing interest in the role of specific nutrients, in particular arginine, in the healing process. A number of supplements have been designed as specific wound management support products. These include:

- Cubitan
- Recover
- Resource Arginaid.

Treatment for malnutrition (undernutrition) depends on the underlying cause and how malnourished a person is.

You may be given advice to follow at home, or be supported at home by a dietitian or other qualified healthcare professional. In severe cases, treatment in hospital may be needed.

The healthcare professional in charge of your care must ask for your consent when starting or stopping nutrition support. If you're unable to give your consent, they must act in your best interest following medical guidelines.

Dietary changes and supplements

A dietitian will advise you about dietary changes that can help.

They may create a tailored diet plan that ensures you get enough nutrients.

They may also suggest:

- having a healthier, more balanced diet
- eating "fortified" foods that contain extra nutrients
- snacking between meals
- having drinks that contain lots of calories
- getting supermarket deliveries at home

If these measures are not enough, taking extra nutrients in the form of supplements may be recommended. These should only be taken on the advice of a healthcare professional.

You'll have regular appointments to check that any changes to your diet are helping to improve your nutrition. Your diet may need to be adjusted to make it more effective.

Feeding tubes

If you are unable to eat enough to meet your body's needs – for example because you have problems swallowing (dysphagia) – an alternative way of getting nutrients may be needed.

This can include:

- using a tube that's passed through your nose and down into your stomach (nasogastric tube)
- using a tube that's placed directly into your stomach or gut through the skin on your tummy (percutaneous endoscopic gastrostomy – PEG – tube**)**
- using a solution containing nutrients that's fed directly into your blood through a tube in a vein (parenteral nutrition)

These treatments are usually started in hospital, but they can be continued at home if you are well enough.

Care and support services

Some people who are malnourished need extra care to help them cope with underlying issues such as limited mobility.

This may include:

- home care visitors who can help you to shop for food or cook if you find this difficult – read more about getting care at home
- occupational therapy – an occupational therapist can identify problems with daily activities and help find solutions
- a "meals on wheels" or meals at home service – this can often be provided by the local authority, although there's usually a charge
- speech and language therapy – a speech therapist can teach you exercises to help with swallowing problems and give advice about dietary changes (such as foods that are easy to swallow)

Treating malnutrition in children

Malnutrition in children is often caused by long-term health conditions, for which hospital treatment is needed. But this is not the case for all children with malnutrition.

Treatment may involve:

- dietary changes, such as eating foods high in energy and nutrients
- support for families to help them manage factors affecting the child's nutritional intake
- treatment for any underlying medical conditions causing malnutrition
- vitamin and mineral supplements
- high-energy and protein nutritional supplements – if the other treatments are not enough on their own

Severely malnourished children need to be fed and rehydrated with great care. They cannot be given a normal diet immediately. They'll usually need special care in hospital.

Once they're well enough, they can gradually begin eating a normal diet and continue this at home.

It's important that treatment is monitored regularly to make sure it's working. Weight and height measurements will be taken, and a child will be referred to specialist services if there's no improvement.

FOOTBALL MEAL PLAN

Fueling Teens

	Sunday	Monday	Tuesday	Wednesday	Thursday	GAME DAY	Saturday
Breakfast	2 eggs 1/2 cup hash browns 3 oz ham 1 slice toast 1 cup orange juice	Protein Smoothie: (1/2 cup Greek yogurt, handful spinach, banana, 1 T chia seeds, 1/4 cup zucchini, 1/4 cup frozen berries, 2 T oats, 2 cups milk) 1 slice toast	PB Oatmeal: (3/4 cup oats, 1 banana, 2 T peanut butter, 1 scoop protein powder, 1 T chia seeds) 1 cup milk	Bagel with 2 T cream cheese 1 cup 100% orange juice 2 scrambled eggs	2 cups whole grain cereal. 1 cup milk. Banana	3 Protein Pancakes 3 T syrup 1/2 cup berries 1 T peanut butter 1 cup milk	1 cup Greek yogurt 1/2 cup granola 1 cup fruit/veggie smoothie 1 slice toast
Snack	Choose from snack list as needed						
Lunch	Grilled panini sandwich 1/2 cup cucumber slices 1 cup cottage cheese pear slices	Chicken sandwich 1 bag baked chips apple 1/2 cup baby carrots 1 cup 100% juice	Tuna salad sandwich 1/2 cup carrots 1/2 cup celery 12 whole grain crackers 1/4 cup hummus 1 cup chocolate milk	Burrito pear slices 1 cup tortilla chips salsa 1 cup milk	Hoagie sandwich 1 cup pretzels 1/2 cup snap peas 2 T ranch dressing orange slices	(eat whatever your stomach can easily handle before games) Leftover pasta breadsticks orange slices cucumbers	Burrito Bowl apple 1 cup 100% juice 1/2 cup pretzels
Snack	Choose from snack list as needed						
Dinner	3 tacos (topped with shredded lettuce, salsa, sour cream, guacamole, tomatoes, bell peppers) 1 cup milk	2 cups meat and bean chili cornbread muffin	Lean chicken and rice bowl 1 cup grilled veggies	Pulled pork sandwich 2 cups green salad 2 T dressing 1 cup oven baked fries 3 T ketchup	1 cup pasta (with tomato sauce, parmesan cheese, and 8 meatballs) 1/2 cup green beans 2 breadsticks peach slices	(Eat what is easiest on your stomach post-game with a focus on protein, carbs, and fluid) chicken veggie pizza chocolate milk	Hamburger with toppings 1 cup oven baked fries 3 T ketchup 2 cups green salad 2 T dressing
Snack	Smoothie popsicles or choose from list	3 cups popcorn or choose from list	1 cup chips and salsa or choose from list	1/2 cup frozen yogurt or choose from list	veggies and ranch or choose from list	(may not need snack based on dinner timing)	Bran muffin or choose from list

Sub Unit – X
Effects of smoking, alcohol, & drugs on health; prevention and rehabilitation

6.10.1 Effects of smoking on health

No matter how you smoke it, tobacco is dangerous to your health. There are no safe substances in any tobacco products, from acetone and tar to nicotine and carbon monoxide. The substances you inhale don't just affect your lungs. They can affect your entire body. Smoking can lead to a variety of ongoing complications in the body, as well as long-term effects on your body systems. While smoking can increase your risk of a variety of problems over several years, some of the bodily effects are immediate. Tobacco smoke is incredibly harmful to your health. There's no safe way to smoke. Replacing your cigarette with a cigar, pipe, or hookah won't help you avoid the health risks. Cigarettes contain about 600 ingredients, many of which can also be found in cigars and hookahs. When these ingredients burn, they generate more than 7,000 chemicals, according to the American Lung Association. Many of those chemicals are poisonous and at least 69 of them are linked to cancer. In the United States, the mortality rate for smokers is three times that of people who never smoked. In fact, the Centers for Disease Control and Prevention (CDC) says that smoking is the most common "preventable cause of death" in the United States. While the effects of smoking may not be immediate, the complications and damage can last for years. The good news is that quitting smoking can reverse many effects.

Central nervous system

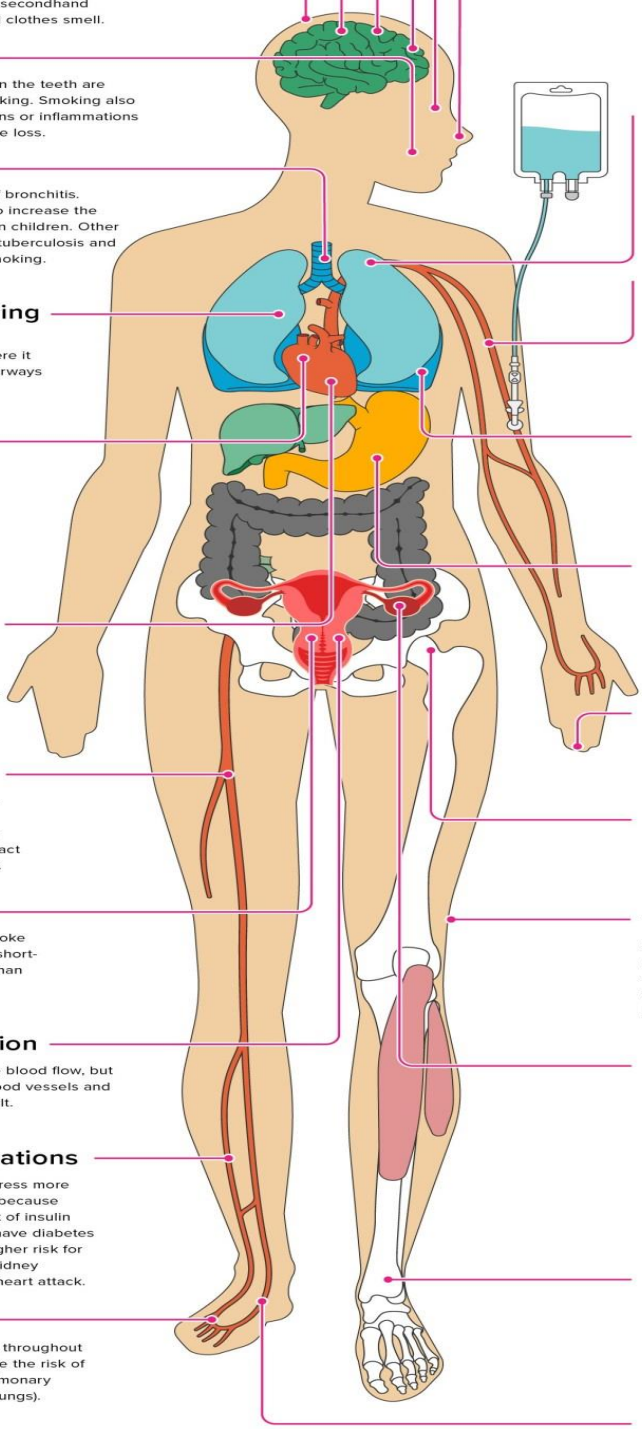
One of the ingredients in tobacco is a mood-altering drug called nicotine. Nicotine reaches your brain in mere seconds and makes you feel more energized for a while. But as that effect wears off, you feel tired and crave more. Nicotine is extremely habit-forming, which is why people find smoking so difficult to quit. Physical withdrawal from nicotine can impair your cognitive functioning and make you feel anxious, irritated, and depressed. Withdrawal can also cause headaches and sleep problems.

Respiratory system

When you inhale smoke, you're taking in substances that can damage your lungs. Over time, this damage leads to a variety of problems. Along with increased infections, people who smoke are at higher risk for chronic nonreversible lung conditions such as:

- emphysema, the destruction of the air sacs in your lungs
- chronic bronchitis, permanent inflammation that affects the lining of the breathing tubes of the lungs
- chronic obstructive pulmonary disease (COPD), a group of lung diseases
- lung cancer

Withdrawal from tobacco products can cause temporary congestion and respiratory discomfort as your lungs and airways begin to heal. Increased mucus production right after quitting smoking is a positive sign that your respiratory system is recovering. Children whose parents smoke are more prone to coughing, wheezing, and asthma attacks than children whose parents don't. They also tend to have higher rates of pneumonia and bronchitis.



mood stimulation

Smoking can temporarily put you in a good mood, but dependence is common and withdrawal side effects like anxiety and irritability can be challenging to manage.

anxiety and irritability

You might find yourself a bit on edge if you missed your cigarette break. Nicotine withdrawal is responsible for these symptoms.

smelly hair

Tobacco smoke can stick to your clothes and hair. In fact, just being around secondhand smoke can make your hair and clothes smell.

unhealthy teeth

Yellowish or brownish stains on the teeth are telltale signs of long-term smoking. Smoking also increases your risk for infections or inflammations that can lead to tooth and bone loss.

bronchitis

Smokers have a higher rate of bronchitis. Secondhand smoking can also increase the risk for bronchitis, especially in children. Other respiratory problems such as tuberculosis and pneumonia may worsen by smoking.

persistent coughing

You know the infamous term "smoker's cough"? This is where it comes from. Damage to the airways contributes to this cough.

heart disease

Smoking is one of the well-proven lifestyle habits that contribute to heart disease. Both people who smoke and those who are regularly exposed to secondhand smoke are at higher risk for heart attacks.

high cholesterol

Tobacco smoke lowers your HDL (good) cholesterol and increases your LDL (bad) cholesterol. It also raises total cholesterol and triglycerides, which are fats in your blood.

immune system

Smoking lowers your immune system's ability to fight off infection. Smokers have more infections of the respiratory tract than people who don't smoke.

infertility

Both men and women who smoke are more likely to experience short- and long-term fertility issues than people who don't smoke.

erectile dysfunction

An erection requires adequate blood flow, but smoking can constrict your blood vessels and make this process more difficult.

diabetes complications

Type 2 diabetes tends to progress more rapidly in people who smoke, because smoking increases the amount of insulin resistance in the body. If you have diabetes and smoke, you're also at a higher risk for other complications, such as kidney problems, eye problems, and heart attack.

blood clotting

Smoking can increase clotting throughout your body. Blood clots increase the risk of heart damage, stroke, and pulmonary embolism (a blood clot in the lungs).

early menopause

Female smokers tend to enter menopause earlier than nonsmokers. Smoking has also been shown to increase hot flashes.

poor vision

Smoking can cause future vision problems and increase the risk of eye problems like glaucoma, macular degeneration, and cataracts.

dull sense of smell and taste

Your sense of smell and taste can be dulled by smoking, which can decrease your appetite.

lung cancer

Smoking puts you at a significantly higher risk of developing lung cancer. Lung cancer is the most common cause of death due to smoking, according to the CDC. It's also the most common cause of cancer death in both men and women.

constricted blood vessels

Nicotine causes blood vessels to tighten and restrict blood flow, which increases your risk for high blood pressure, stroke, and heart attack.

COPD

Developing chronic obstructive pulmonary disease (COPD) is more common in smokers. In fact, 8 out of 10 cases of COPD are due to smoking. Your asthma symptoms can worsen as well.

loss of appetite

Smoking can suppress your appetite by decreasing your sense of taste. This can make eating less enjoyable. Once you stop smoking, you'll be more likely to taste your food fully again.

yellow fingers

Handling tobacco products can stain your fingers and fingernails, turning them yellow.

cervical cancer

The risk for developing cervical cancer is increased in women who smoke.

wrinkly skin

Substances in cigarettes can cause dry skin and premature aging. Reduced blood flow also causes your skin to get less nutrition.

problems with pregnancy and newborns

Smoking during pregnancy can increase the risk for miscarriage, asthma, ear infections, and death in your newborn. It also puts the baby at risk for oxygen deprivation, growth problems, physical deformities, and sudden infant death syndrome (SIDS).

cancer connection

Smoking-related cancers can occur anywhere in the body. People who smoke have a higher rate of certain cancers, including cancer of the mouth, throat, bladder, and kidneys.

increased risk of blood cancer

When compared with people who don't smoke, people who do smoke have an increased risk of blood cancer, such as leukemia.

Cardiovascular system

Smoking damages your entire cardiovascular system. Nicotine causes blood vessels to tighten, which restricts the flow of blood. Over time, the ongoing narrowing, along with damage to the blood vessels, can cause peripheral artery disease. Smoking also raises blood pressure, weakens blood vessel walls, and increases blood clots. Together, this raises your risk of stroke. You're also at an increased risk of worsening heart disease if you've already had heart bypass surgery, a heart attack, or a stent placed in a blood vessel. Smoking not only impacts your cardiovascular health, but also the health of those around you who don't smoke. Exposure to secondhand smoke carries the same risk to a nonsmoker as someone who does smoke. Risks include stroke, heart attack, and heart disease.

Integumentary system (skin, hair, and nails)

The more obvious signs of smoking involve skin changes. Substances in tobacco smoke actually change the structure of your skin. A recent study has shown that smoking dramatically increases the risk of squamous cell carcinoma (skin cancer). Your fingernails and toenails aren't immune from the effects of smoking. Smoking increases the likelihood of fungal nail infections. Hair is also affected by nicotine. An older study found it increases hair loss, balding, and graying.

Digestive system

Smoking increases the risk of mouth, throat, larynx, and esophagus cancer. Smokers also have higher rates of pancreatic cancer. Even people who "smoke but don't inhale" face an increased risk of mouth cancer. Smoking also has an effect on insulin, making it more likely that you'll develop insulin resistance. That puts you at increased risk of type 2 diabetes and its complications, which tend to develop at a faster rate than in people who don't smoke.

Sexuality and reproductive system

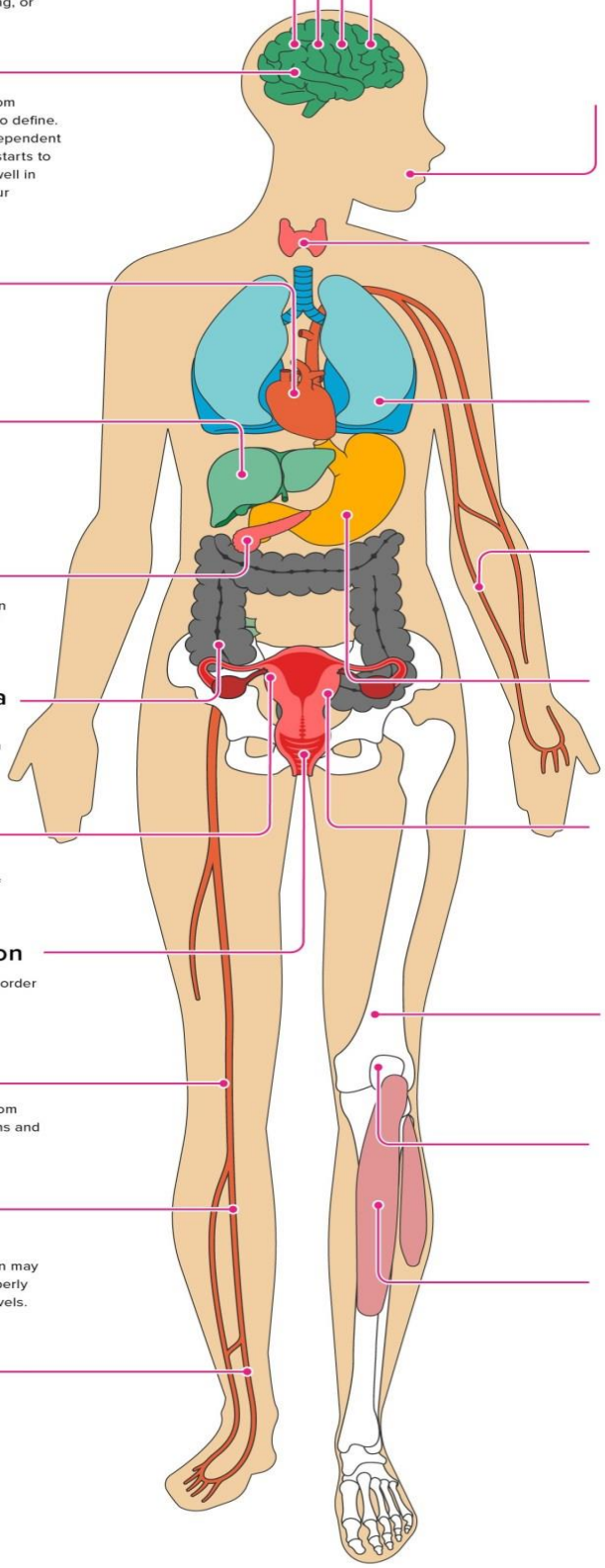
Nicotine affects blood flow to the genital areas of both men and women. For men, this can decrease sexual performance. For women, this can result in sexual dissatisfaction by decreasing lubrication and the ability to reach orgasm. Smoking may also lower sex hormone levels in both men and women. This can possibly lead to decreased sexual desire. Quitting smoking is difficult, but your doctor can help you make a plan. Ask them for advice. There are a variety of nonprescription and prescription medications that can help you quit. You can also turn to our smoking cessation resource center, which has advice, stories from others, and more. There are both short and long-term benefits to quitting smoking. Since smoking affects every body system, finding a way to quit is the most important step you can take to living a longer and happier life.

6.10.2 Effects of alcohol on health

Alcohol's impact on your body starts from the moment you take your first sip. While an occasional glass of wine with dinner isn't a cause for concern, the cumulative effects of drinking wine, beer, or spirits can take its toll. A glass a day may do little damage to your overall health. But if the habit grows or if you find yourself having a hard time stopping after just one glass, the cumulative effects can add up.

Digestive and endocrine glands

Drinking too much alcohol can cause abnormal activation of digestive enzymes produced by the pancreas. Buildup of these enzymes can lead to inflammation known as pancreatitis. Pancreatitis can become a long-term condition and cause serious complications.



shrinking brain

Long-term exposure to alcohol can shrink the frontal lobes of your brain.

blackouts

Alcohol can interfere with how your brain makes memories. It's possible to wake up with no recollection of what you did while you were drinking, or even before.

dependence

Alcohol dependence varies from person to person so it's hard to define. You may become physically dependent on alcohol if drinking alcohol starts to affect your ability to perform well in school or work and affects your relationships.

heart damage

Chronic heavy drinking is one of the leading causes of cardiovascular disease.

liver damage

Chronic alcohol use can damage the liver and prevent it from properly removing harmful substances from your body.

pancreatitis

Excessive alcohol consumption or abuse is a leading cause of chronic pancreatitis.

frequent diarrhea

Alcohol consumption can damage your intestines, which may lead to bouts of diarrhea or stomach pain.

infertility

Over a longer period of time, drinking excessive amounts of alcohol may cause infertility.

sexual dysfunction

Men who have alcohol use disorder are more likely to experience erectile dysfunction.

malnutrition

Alcohol prevents your body from properly absorbing the vitamins and minerals from foods you eat.

diabetes complications

Excessive alcohol consumption may prevent your organs from properly balancing your blood sugar levels.

numbness

Tingling, numbness, or pain in your hands and feet may be a sign of damage to your central nervous system.

behavior changes

Alcohol can change your typical behaviors and leave you without the mental clarity to make smart decisions.

hallucinations

For people with alcohol dependence, a sudden withdrawal may cause serious complications, including hallucinations.

slurred speech

Slurred speech is one of the first symptoms of excessive alcohol consumption.

cancer

Chronic drinkers of alcohol are more likely to develop throat, mouth, or esophagus cancers. Breast cancer is also more common in women who drink excessively.

lung infections

People who drink frequently have a hard time fighting off bacteria and viruses, and are more susceptible to illnesses like tuberculosis and pneumonia.

fatigue

Fatigue or feeling tired may be a sign of anemia, which is a possible complication of alcoholism.

stomach distress

Drinking too much can lead to bloating, gas, and painful ulcers.

birth defects

A pregnant woman's heavy drinking can increase a baby's risk for several conditions, including fetal alcohol syndrome and issues with mental development.

thinning bones

Drinking increases your risk of osteoporosis, or thinning bones.

changes in coordination

Too much alcohol can interfere with your coordination and your ability to balance or walk.

muscle cramps

People who drink often experience muscle cramping, weakness, and eventually muscle death.

A glass a day may do little damage to your overall health. But if the habit grows or if you find yourself having a hard time stopping after just one glass, the cumulative effects can add up.

Digestive and endocrine glands

Drinking too much alcohol can cause abnormal activation of digestive enzymes produced by the pancreas. Buildup of these enzymes can lead to inflammation known as pancreatitis. Pancreatitis can become a long-term condition and cause serious complications.

Inflammatory damage

The liver is an organ which helps break down and remove harmful substances from your body, including alcohol. Long-term alcohol use interferes with this process. It also increases your risk for chronic liver inflammation and liver disease. The scarring caused by this inflammation is known as cirrhosis. The formation of scar tissue destroys the liver. As the liver becomes increasingly damaged, it has a harder time removing toxic substances from your body. Liver disease is life-threatening and leads to toxins and waste buildup in your body. Women are at higher risk for developing alcoholic liver disease. Women's bodies are more likely to absorb more alcohol and need longer periods of time to process it. Women also show liver damage more quickly than men.

Sugar levels

The pancreas helps regulate your body's insulin use and response to glucose. When your pancreas and liver aren't functioning properly, you run the risk of experiencing low blood sugar, or hypoglycemia. A damaged pancreas may also prevent the body from producing enough insulin to utilize sugar. This can lead to hyperglycemia, or too much sugar in the blood. If your body can't manage and balance your blood sugar levels, you may experience greater complications and side effects related to diabetes. It's important for people with diabetes or hypoglycemia to avoid excessive amounts of alcohol.

Central nervous system

One of the easiest ways to understand alcohol's impact on your body is by understanding how it affects your central nervous system. Slurred speech is one of the first signs you've had too much to drink. Alcohol can reduce communication between your brain and your body. This makes coordination more difficult. You may have a hard time balancing. You should never drive after drinking. As alcohol causes more damage to your central nervous system, you may experience numbness and tingling sensations in your feet and hands. Drinking also makes it difficult for your brain to create long-term memories. It also reduces your ability to think clearly and make rational choices. Over time, frontal lobe damage can occur. This area of the brain is responsible for emotional control, short-term memory, and judgement, in addition to other vital roles. Chronic and severe alcohol abuse can also cause permanent brain damage. This can lead to Wernicke-Korsakoff syndrome, a brain disorder that affects memory.

Dependency

Some people who drink heavily may develop a physical and emotional dependency on alcohol. Alcohol withdrawal can be difficult and life-threatening. You often need professional help to break an alcohol addiction. As a result, many people seek medical detoxification to get sober. It's the safest way to ensure you break the physical addiction. Depending on the risk for withdrawal symptoms, detoxification can be managed on either an outpatient or inpatient basis. Symptoms of alcohol withdrawal include:

- anxiety
- nervousness
- nausea
- tremors
- high blood pressure
- irregular heartbeat
- heavy sweating

Digestive system

The connection between alcohol consumption and your digestive system might not seem immediately clear. The side effects often only appear after there has been damage. And the more you drink, the greater the damage will become. Drinking can damage the tissues in your digestive tract and prevent your intestines from digesting food and absorbing nutrients and vitamins. As a result, malnutrition may occur.

Heavy drinking can also lead to:

- gassiness
- bloating
- a feeling of fullness in your abdomen
- diarrhea or painful stools

For people who drink heavily, ulcers or hemorrhoids (due to dehydration and constipation) aren't uncommon. And they may cause dangerous internal bleeding. Ulcers can be fatal if not diagnosed and treated early. People who consume too much alcohol may also be at risk for cancer. People who drink frequently are more likely to develop cancer in the mouth, throat, esophagus, colon, or liver. People who regularly drink and use tobacco together have an even greater Trusted Source cancer risk.

Circulatory system

Alcohol can affect your heart and lungs. People who are chronic drinkers of alcohol have a higher risk of heart-related issues than people who do not drink. Women who drink are more likely to develop heart disease than men who drink.

Circulatory system complications include:

- high blood pressure
- irregular heartbeat
- difficulty pumping blood through the body
- stroke
- heart attack
- heart disease
- heart failure

Difficulty absorbing vitamins and minerals from food can cause anemia. This is a condition where you have a low red blood cell count. One of the biggest symptoms of anemia is fatigue.

Sexual and reproductive health

You may think drinking alcohol can lower your inhibitions and help you have more fun in bed. But the reality is quite different. Men who drink too much are more likely to experience erectile dysfunction. Heavy drinking can also prevent sex hormone production and lower your libido. Women who drink too much may stop menstruating. That puts them at a greater risk for infertility. Women who drink heavily during pregnancy have a higher risk of premature delivery, miscarriage, or stillbirth. Women who drink alcohol while pregnant put their unborn child at risk. Fetal alcohol syndrome disorders (FASD) is a serious concern. Other conditions include:

- learning difficulties
- long-term health issues
- increased emotional problems
- physical development abnormalities

Skeletal and muscle systems

Long-term alcohol use may prevent your body from keeping your bones strong. This habit may cause thinner bones and increase your risk for fractures if you fall. And factures may heal more slowly. Drinking alcohol may also lead to muscle weakness, cramping, and eventually atrophy.

Immune system

Drinking heavily reduces your body's natural immune system. This makes it more difficult for your body to fight off invading germs and viruses. People who drink heavily over a long period of time are also more likely to develop pneumonia or tuberculosis than the general population. About 10 percentTrusted Source of all tuberculosis cases worldwide can be tied to alcohol consumption. Drinking alcohol also increases your risk for several types of cancer, including mouth, breast, and colon. Click here to learn the basics of alcoholism. You can also read about the stages of alcoholism and recognizing an addiction.

6.10.3 Effects of drugs on health

Drugs affect your body's central nervous system. They affect how you think, feel and behave. The three main types are depressants, hallucinogens and stimulants:

- **Depressants** slow or 'depress' the function of the central nervous system. They slow the messages going to and from your brain. In small quantities depressants can cause a person to feel relaxed and less inhibited. In large amounts they may cause vomiting, unconsciousness and death. Depressants affect your concentration and coordination, and slow your ability to respond to situations. It is important to not operate heavy machinery while taking depressants. Alcohol, cannabis, GHB, opiates (heroin, morphine, codeine) and benzodiazepines (minor tranquillisers) are examples of depressants.
- **Hallucinogens** distort your sense of reality. You may see or hear things that are not really there, or see things in a distorted way. Other effects can include emotional and psychological euphoria, jaw clenching, panic, paranoia, gastric upset and nausea. Ketamine, LSD, PCP, 'magic mushrooms' and cannabis are examples of hallucinogens.
- **Stimulants** speed or 'stimulate' the central nervous system. They speed up messaging to and from the brain, making you feel more alert and confident. This can cause increased heart rate, blood pressure and body temperature, reduced appetite, agitation and sleeplessness. In large amounts stimulants may cause anxiety, panic, seizures, stomach cramps and paranoia. Caffeine, nicotine, amphetamines (speed and Ice), cocaine and ecstasy (MDMA) are examples of stimulants.

Risk factors for drug-related harm

The effects of a drug, and how long they last, depend on a number of factors:

- the type and strength of drugs that you use
- how the drug was made -- substances manufactured in home labs may contain bacteria, dangerous chemicals and other unsafe substances, and have an unknown strength. Even one dose may cause an overdose that leads to brain damage or death
- your physical characteristics (including height, weight, age, body fat and metabolism)
- the dose that you take
- how often and for how long you have been using drugs
- how you ingest the drug (by inhalation, by injection or orally). Compared with swallowing a drug, inhalation and injection are more likely to lead to overdose and dependence. If you are injecting drugs, sharing injecting equipment will increase your risk of contracting serious diseases such as hepatitis and HIV. It will also increase your risk of serious infection
- your mental health, mood and environment (that is, whether you are in a secure, happy place or an unsafe place) can affect the experience you have when taking drugs. If you have a mental health condition, drugs may exacerbate or complicate the symptoms of that condition
- whether you mix drugs, including alcohol. In particular, alcohol use may lead to high risk behaviour (such as drink driving) which can result in the serious injury or death of yourself or others.

Physical harms from drug use

Drug use can affect short- and long-term health outcomes. Some of these health outcomes can be serious, and possibly irreversible.

Drug use can lead to risky or out of character behaviour. When affected by drugs:

- You are more likely to have an accident (at home, in a car, or wherever you are).
- You may be vulnerable to sexual assault or you may engage in unprotected sex. Either of these could lead to pregnancy and sexually transmitted infection.
- You could commit a sexual assault or other violent act.
- You may find it hard to sleep, think, reason, remember and solve problems.

Drug use can also result in long-term health outcomes that include:

- harm to organs and systems in your body, such as your throat, stomach, lungs, liver, pancreas, heart, brain, nervous system
- cancer (such as lung cancer from inhaling drugs)
- infectious disease, from shared injecting equipment and increased incidence of risk-taking behaviors
- harm to your baby, if you are pregnant
- acne, or skin lesions if the drug you are taking causes you to pick or scratch at your skin
- needle marks and collapsed veins, if you inject regularly
- baldness
- male pattern hair growth in women, such as facial hair
- jaw and teeth issues due to clenching and grinding your teeth; or **bad breath, teeth cavities and gum disease**
- mood swings and erratic behavior
- **addiction**
- psychosis (losing touch with reality)
- accidental overdose
- higher risk of mental illness, depression, suicide and death.

Effects of common drugs

Cannabis (hash, pot, dope, weed, grass, skunk, marijuana):

- may cause relaxation and altered perception
- can lead to increased heart rate and low blood pressure
- can make you feel relaxed and happy, but can also cause lethargy, anxiety, paranoia, and psychosis in extreme cases. A history or family history of mental illness may increase the possibility of more extreme psychotic reactions
- is linked to mental health problems such as schizophrenia and, when smoked, to lung diseases such as asthma, chronic bronchitis and lung, throat, mouth and tongue cancer
- affects how your brain works. Regular use can make it hard for you to concentrate, learn and retain information
- reduces your fertility
- when mixed with tobacco, is likely to increase the risk of heart disease and lung cancer.

Cocaine (powder cocaine, coke, blow, Charlie, crack):

- gives you increased energy
- makes you feel happy, awake, confident and less inhibited, but has a nasty 'come down' that makes you feel depressed and unwell. (Using depressant drugs to help with the severity of come downs can increase the chances of the development of negative cycles of dependence.)
- can overstimulate the heart and nervous system and lead to a seizure, brain haemorrhage, stroke or heart attack (people have died from cocaine-induced heart failure)
- reduces your pain perception and may result in injury
- carries greater risk if mixed with alcohol or other stimulants, especially if you have high blood pressure or if you have an existing heart condition

- can harm your baby during pregnancy, and may cause miscarriage
- can increase the risk of mental health issues such a s anxiety, paranoia and psychosis
- if snorted, can cause damage to the lining of the nasal passage and nose
- if injected, can cause vein collapse and increased risk of HIV and hepatitis infection.

Mephedrone (meow meow, m-cat, plant food, bubble, meph):

- can induce feelings of happiness, euphoria and confidence, but can also cause anxiety and paranoia
- causes vomiting, sweating and headaches in some users
- can overstimulate your heart and nervous system
- can cause periods of insomnia
- can lead to fits and agitated and hallucinatory states
- if used in large amounts, can cause tingling of the hands and feet, seizure and respiratory failure
- has been linked to a number of deaths
- if injected, can cause vein collapse and increases the risk of HIV and hepatitis infection.

Ecstasy (MDMA, pills, E, eckies):

- can make you feel alert, warm and chatty
- can make sounds and colours seem more intense
- may cause anxiety, confusion, paranoia and even psychosis
- is linked (in cases of long-term use) to memory loss, depression and anxiety
- can lead to overheating and dehydration
- tends to stop your body producing enough urine, so your body retains fluid.

Speed (amphetamine, billy, whizz):

- can make you feel alert, confident and energetic
- can reduce appetite
- may make you agitated and aggressive
- may cause confusion, paranoia and even psychosis
- can make you very depressed and lethargic for hours or days, when used a lot
- can cause high blood pressure and heart attacks
- is more risky if mixed with alcohol, or if you have blood pressure or heart problems
- puts you at risk of overdose, vein and tissue damage, and infectious disease (such as hepatitis C and HIV), if you inject speed.

Ice (crystal meth, shabu, crystal, glass, shard, P):

- may create feelings of pleasure and confidence
- can make you feel alert and energetic
- can cause you to repeat simple things like itching and scratching
- can cause enlarged or dilated pupils and a dry mouth
- may make you grind your teeth
- can cause excessive sweat
- can increase your heart rate and breathing
- may reduce your appetite
- may increase your sex drive
- puts you at risk of infectious diseases (such as hepatitis B, hepatitis C and HIV) if you inject it
- can damage your nasal passages and cause nose bleeds if you snort it.

6.10.4 Prevention and rehabilitation

Prevention form effect of Smoking:

1. Stick to Your Plan

Revisiting your quit plan can make your quit day easier—it will help you stay focused, confident, and motivated to quit and stay quit. If you haven't made a quit plan yet, it's not too late. Build a personalized quit plan now.

Remember: There is no single quit smoking plan that will work for everyone. Be honest about your needs. If using nicotine replacement therapy is right for you and part of your plan, be sure to start using it first thing in the morning.

2. Get Support

You don't need to rely on willpower alone to be smokefree. There are things you can do that will help you get through your quit day.

- **Lean on positive people**. Tell your family and friends about your quit day. Ask them for support, especially on your first few days and weeks of being smoke free. They can help you get through the rough spots.

3. Stay Busy

Keeping busy is a great way to stay smokefree on your quit day. Being busy will help you keep your mind off smoking and distract you from cravings. Think about trying some of these activities:

- Exercise.
- Get out of the house for a walk.
- Chew gum or hard candy.
- Keep your hands busy with a pen or toothpick, or play a game in the QuitGuide app.
- Drink lots of water.
- Relax with deep breathing.
- Go to a movie.
- Spend time with non-smoking friends and family.
- Go to dinner at your favorite smokefree restaurant.

4. Avoid Smoking Triggers

Triggers are the people, places, things, and situations that set off your urge to smoke. On your quit day, try to avoid your smoking triggers. Here are some tips to help you outsmart some common smoking triggers:

- Throw away your cigarettes, lighters, and ashtrays if you haven't already.
- Avoid caffeine, which can make you feel jittery. Try drinking water instead.
- Spend time with non-smokers.
- Go to places where smoking isn't allowed.
- Get plenty of rest and eat healthy. Being tired can trigger you to smoke.
- Change your routine to avoid the things you might associate with smoking.

5. Stay Positive

Quitting smoking is difficult. It happens one minute…one hour…one day at a time. Try not to think of quitting as forever. Pay attention to *today* and the time will add up. It helps to stay positive. Your quit day might not be perfect, but all that matters is that you don't smoke—not even one puff. Reward yourself for being smokefree for 24 hours. You deserve it. And if you're not feeling ready to quit today, set a quit date that makes sense for you. It's OK if you need a few more days to prepare to quit smoking. **Stay positive. On the tough days, remember your reasons for quitting in the first place. You've got this and we've got your back!**

The World Health Organization (WHO) has produced policy guidance focusing on reducing inequalities relating to tobacco smoking. The guidance looks at

- the complexity of smoking in terms of inequality
- how tobacco increases inequalities over the life course
- how the use of tobacco contributes to health inequalities
- what tobacco policies need to consider to address inequalities
- the widening socio-economic inequities in tobacco consumption.

Prevention form effect of alcohol:

Alcohol Drinking Patterns: How Much is Too Much?

The first step to curb unhealthy drinking patterns is knowing how much is too much. **Awareness of risky drinking behaviors is essential for the prevention of alcoholism.** According to guidelines issued by the National Institute on Alcohol Abuse and Alcoholism, the **safe limit for alcohol consumption** is a maximum of 14 standard drinks per week for men (with no more than 4 drinks per day) and a maximum of 7 standard drinks per week for women (with no more than 3 per day). A standard drink contains 14 grams of alcohol. Examples of one standard drink include:

- One 12-ounce bottle or can of beer with 5% strength
- One 5-ounce glass of wine with 12% strength
- One 1.5-ounce shot glass of spirit with 40% strength

High-Risk Individuals: Is A Loved One At Risk of Alcohol Abuse?

Certain individuals are at a higher risk of developing a dependence on intoxicating drinks. It is particularly important to prevent abuse in these groups. Some of the **known risk factors for abuse** include:

- Individuals with unhealthy drinking patterns (more than 12-15 drinks per week)
- Individuals who binge drink (more than 5 drinks on the same occasion)
- Individuals who have a family history of alcoholism (studies have shown that children of alcoholics are up to *4 times more likely* to develop addiction)
- Individuals with mental health problems such as anxiety and depression
- Youth experiencing peer pressure or low self-esteem
- Individuals with high-stress jobs and work pressure
- Families and cultures where drinking is traditional

One of the ways to prevent alcoholism is for family members of high-risk individuals to remain vigilant. **Behaviors that are red flags** include drinking alone, needing to drink more and more to get the desired effects, poor appetite, neglecting personal hygiene, missing school or work, and anger when confronted about drinking habits. These behaviors should invite more careful monitoring and intervention, if needed, by family and friends.

Alcohol Prevention in Young People

Statistics show that underage drinking is a serious health problem all over the world, but more so in developed nations where the media depicts drinking alcohol as a desirable and popular activity. **Teenagers and young adults are more likely to succumb to peer pressure and adopt inappropriate drinking behaviors.** Research has shown that young people tend to consume 90 percent of their total intake of alcohol through binge drinking. Binge drinking has dangerous consequences such as drunk driving, sexual assault, injuries, impaired judgment, and increased risk of alcoholism later in life. It is, therefore, essential to prevent abuse in young people. Some of the approaches to encourage the youth to avoid drinking include:

At home:

- Teach teenagers how to avoid alcohol and say no
- Discuss important facts about alcohol with youngsters
- Communicate the consequences of drinking and enforce them consistently

- Monitor alcohol use in the home and keep track of stock
- Don't permit unchaperoned parties
- Set a good example by drinking in moderation and showing teenagers there are healthy ways to deal with stress
- Clear the misconception that drinking is cool and everyone drinks
- Encourage healthy friendships with teenagers who do not drink
- Talk about ways to deal with peer pressure

At school and in the community:

- Use interactive teaching to educate youth about the dangers of drinking
- Appoint leaders from the peer group to reinforce prevention messages
- Involve parents and the community in alcoholism prevention initiatives for the youth
- Train and support teachers in alcohol prevention programs

Prevention of Alcohol Abuse in Older Adults

The aging human body does not handle alcohol in the same manner as its younger version. The drink stays in the body longer. It affects an older person differently than it does a young adult and women are more sensitive than men. **An adult above the age of 65 can become tipsy without increasing the amount consumed habitually.** Excessive consumption in older individuals may be associated with loss of balance, falls and fractures motor vehicle accidents, and a host of health problems. Some of the ways to avoid addiction and late-life drinking problems include:

- Educate older adults about the facts on aging and drinking and how to avoid alcohol poisoning
- Make older individuals aware that drinking can worsen or cause health problems such as stroke, high blood pressure, balance and coordination issues, and memory loss
- Talk about how prescription drugs, over-the-counter medications, and herbal remedies can interact with alcoholic drinks and cause deadly complications
- Be aware of triggers for addiction such as the death of friends and loved ones or boredom and loneliness after retirement

Workplace Strategies to Prevent Alcoholism

One of the leading causes of alcohol abuse in adults is work-related stress. Alcohol prevention programs at the workplace are an effective way to prevent abuse in employed individuals. Programs that raise awareness about how to avoid alcohol abuse, *especially for people in high-stress jobs*, have proven beneficial. Some of the workplace strategies and initiatives for prevention of addiction include:

- Lifestyle campaigns to ease stress and reduce risky behaviors such as excessive consumption of intoxicating drinks
- Talks and seminars on how to avoid drinking
- Peer referral programs to provide support to employees experiencing work-related stress
- Periodic assessment of high-risk behaviors and drinking rates
- Encouragement of group activities, such as sports, rather than socializing with colleagues over drinks

Simple Steps to Avoid Alcohol Abuse

In modern society, consuming alcohol is considered normal behavior. Many people begin and continue to drink to *fit in*. Yet, when consumption of beer, wine, and hard liquor is not practiced in moderation, it is associated with dangerous social behaviors such as sexual adventure, increased aggression, and poor judgment. The line between a social drinker and a full-blown alcoholic is often a fine one. How to prevent alcoholism? Is there something an individual can do? There are a number of **simple strategies to avoid alcohol abuse** and drink alcohol in moderation. Some approaches to prevent alcoholism include:

- Avoid drinking on an empty stomach
- Sip the drink slowly and don't binge drink

- Tell friends and family about the intention to stop or reduce alcohol intake
- Refuse alcoholic drinks and ask for something non-alcoholic when socializing
- Don't stock alcohol at home
- Avoid drinking when one is affected by negative emotions or upset
- Avoid drinking after a stressful or tiring day and deal with the stress by exercising or other healthy activities
- Curtail time spent with friends and colleagues who drink excessively
- Avoid socializing at bars; instead, plan activities with friends at places that do not sell alcohol
- Treat oneself and use the money saved to do something pleasant or buy something that makes one gappy

Seeking Help to Prevent Alcoholism

If an individual is showing high-risk behavior for abuse, studies have shown that **early intervention can help prevent many of the adverse effects of alcoholism.** Some of the things to do when a drinking problem is suspected include seeking therapy from a trained counselor, talking to the family physician, and finding a support group for adults with alcohol problems, such as Alcoholics Anonymous. Alcohol rehab centers offer professional help to people struggling with alcohol addiction.

Government Laws and Policies on Alcoholic Drinks

From a public health perspective, the laws and policies enforced by the government can address abusive use of alcohol in the general population as well as target groups. **These interventions for alcohol prevention affect a wider audience and work on a larger scale than any other category of strategies to prevent addiction.** Government policies in this regard include:

- Legislation controlling availability with limitations on density of outlets and hours of sale
- Consequences of excessive use such as laws for disruptive behavior under the influence
- Enforcement of ID checks to purchase alcoholic drinks
- Enactment of strict DUI laws and lowering of legal blood alcohol limit for drivers
- Increased prices of alcoholic drinks through taxation policies
- Community-based alcohol prevention programs for high-risk groups

Prevention form effect of drugs:

Preventative Measures for Teenage Substance Abuse

Family Influence

Prevention of drug and alcohol abuse can start at home. Parents can talk to their children and explain the consequences of drug and alcohol abuse. Specifically talking to children while they are young can create a strong foundation for awareness of drug use. This helps parents positively influence their children, while teaching their children about boundaries.

In teaching boundaries, parents help children to understand when to deny something that can hurt them, while controlling the dynamic of an unhealthy request. Prevention talks also create deeper bonds and guidance between children and parents. Parents can establish consistency in communication, as well as guidance that can be followed for years. Preventative conversations can lead the adolescent to strengthen trust with their parent, and make wise decisions with habits, friends, interests, and influences.

Educational Tools

There are governmental agencies, community leaders, and school personnel that attempt to teach children about living a drug-free life. Much of this is to prevent teen drug abuse before they reach adulthood or go into the real world. As a result of these educational tools, teen drug abuse has significantly decreased from previous decades.

Educating teens on the effects of drug abuse is important as it attempts to control possible drug use before the age of maturity. There are presently various educational programs in place for this very reason, including:

- Universal
- Selective
- Indicated

Universal programs function to teach social, personal, and drug resistance techniques on a weekly basis. Selective programs are interventions for teens who may be more at risk and have unstable home lives, or other risk factors. Indicated educational programs are geared to teens showing problematic behavior.

Stop Addiction Before It Gets Worse

Prevention strategies can help stop teens from developing a substance use disorder; however, treatment is best for teens who already have a problem. Treatment puts teens in the care of medical professionals with tools for recovery. For instance, teens may not realize there are underlying conditions that may encourage substance abuse, known as co-occurring disorders. These would be treated with cutting-edge medication and therapy. Detox is completed under the hand of a medical professional to ensure support. Perhaps most importantly, therapies and peer groups encourage a feeling of health and belonging. Contact a treatment provider to locate facilities catering to teen-related treatment today.

Programs for Drug Prevention

As previously mentioned, drug prevention begins with education. This education can take place at a number of levels including:

- **Family Based Drug Prevention**. The prevention of drug abuse should start inside the family unit as early as possible. There are many obvious benefits of home based drug prevention education including self-awareness, and the enhancement of parent-child communication skills and family bonding. Parental supervision and involvement are critical in adolescents. Parents must not only have a plan to educate their children on the dangers of drug use and abuse, but they must also establish and enforce family rules. This includes creating an effective system of monitoring their children's activities.
- **School Based Drug Abuse Prevention Programs**. Drug abuse prevention should be addressed as early as preschool. Preschool children can benefit from learning how to handle aggression, solve problems, and communicate better so that they can avoid putting themselves at risk for drug abuse later in life. Middle and high school programs should focus on peer relationships, communication, assertiveness, drug resistance skills and developing anti-drug attitudes. School based prevention programs should be repeated often for the best level of success.
- **Community Based Drug Abuse Prevention Programs**. Communities that make an effort to come together in the fight against drugs are sure to make an impact in the prevention of drug abuse. There are many places to establish these prevention programs including schools, churches and community based clubs.

Drug abuse has a pervasive effect on an entire community. Understanding drug use risk factors and spreading the word through prevention programs is the best defense against drug abuse.

- Parental monitoring has been the most effective way to slow the expansion of drugs in family situations.
- School drug prevention programs serve a valuable purpose in first time users aged 12-17.
- Schools with strict compliance rules and counseling support have been successful at reducing usage.
- The National Institute Against Drug Abuse (NIDA) has found that gains resulting from community drug prevention programs far outweigh the financial investment by the community.

- Programs should make sure to address all aspects of drug abuse. This includes underage use of legal drugs such as alcohol and tobacco, illicit street drugs, inhalants and the inappropriate use of legal drugs such as prescription and over the counter drugs.
- These programs must also be tailored to the specific needs of the audience. Having specialized programs for different genders, ages, cultures and ethnicities only make the programs more effective.