CHAPTER - 2

PREVENTIVE HEALTHCARE

Points to be covered in this topic

- 2.1 INTRODUCTION
- 2.2 DEMOGRAPHY AND FAMILY PLANNING
  - 2.2.1 Demography
  - 2.2.2 Importance of Demography
  - 2.2.3 Demographic cycle
- 2.3 FAMILY PLANNING
  - 2.3.1 Aim of family planning
  - 2.3.2 Methods of contraception
- 2.4 ROLE OF PHARMACIST IN PROMOTING FAMILY PLANNING
- 2.5 MOTHER AND CHILD HEALTH
  - 2.5.1 Breast Feeding
  - 2.5.2 Importance of Breast Feeding
  - 2.5.3 Ill Effects of Infant Milk Substitutes
  - 2.5.4 Bottle Feeding
- 2.6 Overview of Vaccines
  - 2.6.1 Types of vaccine
  - 2.6.2 Immunity
  - 2.6.3 Immunization

Points to be covered in this topic

2.7 EFFECT OF ENVIRONMENT ON HEALTH

- 2.7.1 Types of pollution
- 2.7.2 Sewage and solid waste disposal
- 2.7.3 Occupational illnesses
- 2.7.4 Environmental pollution due to pharmaceuticals

2.8 PSYCHOSOCIAL PHARMACY

2.9 IMPACT ON SOCIAL HEALTH

2.1 INTRODUCTION

The chapter discusses the significance of family planning, demographics, and contraceptive methods. The role of a pharmacist in family planning is also covered. It highlights the benefits of breastfeeding, mother and child health, and the negative consequences of milk replacements.

2.2 DEMOGRAPHY AND FAMILY PLANNING

Demography and family planning are essential components of public health and social development. Understanding the demographic characteristics of a population, such as age, gender, education, and socioeconomic status, is crucial for effective policy planning and implementation.

2.2.1 Demography

- The systematic and regular study of population growth is known as demography.
- Demos (people) and graphein (describe), the two words that make up the Greek word demography, together signify the description of people.

2.2.2 Importance of Demography

- The health state of any population or community will be determined by the demography, and regular health services will be made available.
- After doing demographic research, we can provide regular medicine, and dietary supplements, and meet the demands of the community.
- By supplying useful/accessory study materials and equipment, demographic studies also raise the educational standard of any country or state.

2.2.3 Demographic cycle

It comprises of following 5 stages

1. **High stationary stage:** This stage is characterized by a high birth rate and high death rate which cancel each other and the population remains stationary.
2. **Early expanding stage:** The death rate begins to decline while the birth rate remains unchanged, leading to rapid population growth.

3. **Late expanding stage:** The death rate declines still further and the birth rate tends to fall, but the population tends to grow as the birth rate supersedes the death rates, but rates of population growth decelerate.
4. **Low stationary stage:** This stage is characterized by low birth and low death rates with the result that the population becomes stationary.
5. **Declining stage:** Population begins to decline because the birth rate is lower than the death rate.

2.3 FAMILY PLANNING

INTRODUCTION

- Family planning, as per the World Health Organization (WHO), encompasses a range of services, information, methods, and practices that enable individuals and couples to decide freely and responsibly the number and spacing of their children.

2.3.1 Aim of family planning

1. **Promoting Reproductive Health:** Family planning contributes to the overall well-being of individuals and couples by providing access to reproductive health services. It includes information, counseling, and services related to contraception, maternal health, and prevention and treatment of sexually transmitted infections (STIs).
2. **Preventing Unintended Pregnancies:** One of the primary objectives of family planning is to prevent unintended pregnancies. By providing individuals with information about and access to a variety of contraceptive methods, family planning helps individuals and couples make choices that align with their reproductive goals.
3. **Improving Maternal and Child Health:** Timely and adequately spaced pregnancies contribute to improved maternal and child health outcomes.
4. **Empowering Women and Couples:** Family planning empowers women and couples to take control of their reproductive lives. It enables them to plan and space pregnancies based on their personal, health, and socioeconomic circumstances.

2.3.2 Methods of contraception

Following are the methods of contraception available at present

1. **Natural/Traditional methods:** The foundation of natural approaches is minimizing the possibility of an ovum and sperm coming into contact. It follows many ways.

a) **Periodic abstinence:** It's one of those techniques where the pair forgoes or refrains from coitus from days 10 to 17 of the menstrual cycle, when ovulation may be anticipated. It is known as the fertile phase because there are many opportunities for fertilization at this time.

b) **Withdrawal or coitus interrupts:** It is a different technique where the male partner removes his penis from the vagina immediately before ejaculating to prevent fertilization.

c) **Lactational amenorrhea:** Ovulation is absent after parturition during the lactational period. Menstruation is completely absent only for the first six months after giving birth.

2. **Physical/barrier methods:** In barrier procedures, barriers are used to prevent the physical interaction between the ovum and the sperm.

a) **For males:** Male condoms are thin rubber or latex barriers that are placed over the penis of male's right before coitus to prevent ejaculated semen from entering the female reproductive system.

b) **For females:** Another barrier tool used to protect women's vagina and cervix is the female condom, which is comprised of a thin rubber or latex sheath. By obstructing sperm entrance into the female reproductive canal, they hinder pregnancy.

c) **Diaphragms, cervical caps and vaults:** The cervix is covered during coitus by a rubber barrier that is placed into the female reproductive tract.

3. **Chemical/hormonal methods:** In addition to preventing conception, chemical and hormonal agents also serve as contraceptives.

(a) **Oral contraceptives:** Progestogens or progestogen-estrogen combinations are utilized in oral contraceptive tablets or pills. Beginning preferably within the first five days of the menstrual cycle, pills must be taken daily for 21 days.

(b) **Saheli:** The brand-new female oral contraceptive "Saheli" comprises a non-steroidal medication. It is a "once a weak" pill with little side effects and a high level of contraceptive effectiveness.

4. **Intra Uterine Device:** IUDs are put into the uterus through the vagina by doctors or skilled nurses, and they are the most popular and successful approach.

a) **Non-mediated IUDs:** eg- Lippes loop.

b) **Copper releasing IUDs:** eg- CuT, Cu7, Multiload 375.

c) **Hormone releasing IUDs:** eg- Progestasert, LNG-20.

d) **Implants and injection:** Females may also use progestogens as subcutaneous implants or injections, either alone or in conjunction with estrogen. They operate for substantially longer time.

5. **Surgical methods:** Both male and female patients undergo surgical procedures. Surgery is also referred to as sterilization since it restricts the movement of gametes, which prevents conception.

a) **Tubectomy:** A small portion of the fallopian tube is cut or tied off through a vaginal or abdominal incision.

b) **Vasectomy:** Removing or tying up a tiny portion of the vas deferens by a scrotum incision.

2.4 ROLE OF PHARMACIST IN PROMOTING FAMILY PLANNING

1. **Contraceptive Counseling:**

a) **Education:** Pharmacists can educate individuals and couples about various contraceptive methods, including their effectiveness, side effects, and proper usage.

b) **Personalized Advice:** They can offer personalized advice based on the individual's health history, preferences, and lifestyle

2. **Dispensing Contraceptives:**

(a) **Prescription and Over-the-counter (OTC) Methods:** Pharmacists dispense both prescription and OTC contraceptive methods. This includes oral contraceptives, patches, injections, condoms, emergency contraception.

(b) **Emergency Contraception:** Pharmacists can provide timely access to emergency contraception, reducing the risk of unintended pregnancies after unprotected sex.

3. **Patient Education:**

(a) **Proper Usage:** Pharmacists can ensure that patients understand how to correctly use their chosen contraceptive method to maximize its effectiveness.

(b) **Side Effects and Risks:** They can educate individuals about potential side effects, risks, and benefits associated with different contraceptive options.

2.5 MOTHER AND CHILD HEALTH

1. Prenatal Care:

a) **Early and Regular Check-ups:** Ensuring that pregnant women receive early and regular prenatal check-ups is essential for monitoring the health of both the mother and the developing fetus.

2. Antenatal Care:

(a) **Screening and Monitoring:** Regular screenings and monitoring during pregnancy help identify and address potential complications, ensuring a healthy pregnancy and reducing the risk of adverse outcomes.

3. Safe Delivery and Postnatal Care:

(a) **Skilled Birth Attendants:** Ensuring that deliveries are attended by skilled healthcare professionals reduces the risk of complications during childbirth.

4. Immunization:

(a) **Vaccination Programs:** Implementing comprehensive immunization programs helps protect children from preventable diseases, contributing to their overall health and well-being.

5. Nutrition:

(a) **Breastfeeding Promotion:** Promoting and supporting breastfeeding is critical for providing newborns with essential nutrients and antibodies, contributing to their immune system development.

2.5.1 BREAST FEEDING

- Breastfeeding is the practice of providing a newborn baby with breast milk to meet all of their nutritional needs, which promotes healthy growth and development up to a certain point.
- Water, proteins, carbs, lipids, antibodies, hormones, vitamins, minerals, and other immune cells are all present in breast milk.

2.5.2 IMPORTANCE OF BREAST FEEDING

1. Nutrient-Rich Composition:

(a) **Perfect Nutrition:** Breast milk is a complete and perfectly balanced source of nutrition for infants. It contains the ideal combination of proteins, fats, vitamins, and minerals needed for a baby's growth and development.

2. **Immune System Support:**

(a) **Antibodies and Immunoglobulins:** Breast milk contains antibodies and immunoglobulins that help protect infants from infections and diseases, providing passive immunity during the early months of life when the baby's immune system is still developing.

3. **Optimal Growth and Development:**

(a) **Brain Development:** The fatty acids found in breast milk, particularly docosahexaenoic acid (DHA), contribute to the development of the infant's brain and nervous system.

4. **Bonding and Emotional Connection:**

(a) **Emotional Well-being:** Breastfeeding promotes a strong emotional bond between mother and baby, fostering a sense of security and comfort for the infant.

2.5.3 ILL EFFECTS OF INFANT MILK SUBSTITUTES

- The Infant Milk Substitutes, Feeding Bottles and Infant Foods (Regulation of Production, Supply and Distribution) Act, 1992 and was amended in 2003 (IMS Act).

1. **Nutritional Differences:**

(a) **Incomplete Nutrition:** Although infant formulas are designed to mimic the nutritional composition of breast milk, they may not provide all the bioactive components and immune-boosting properties found in breast milk.

(b) **Varied Nutrient Absorption:** The absorption of nutrients from formula may differ from breast milk, and some infants may not absorb certain nutrients as effectively.

2. **Increased Risk of Infections:**

(a) **Lack of Antibodies:** Formula lacks the antibodies and immune-boosting factors present in breast milk, which can increase the risk of infections in formula.

3. **Allergic Reactions:**

(a) **Allergens in Formula:** Some infants may be allergic to ingredients in the formula, leading to allergic reactions or sensitivities.

(b) **Reduced Protection against Allergies:** Breastfeeding is associated with a lower risk of allergies and allergic diseases, and formula-fed infants may have a higher risk of developing allergies.

2.5.4 BOTTLE FEEDING

- Bottle feeding is a method that nourishes the infant by giving nutrient-rich supplements while maintaining an atmosphere and condition that are identical to breastfeeding.

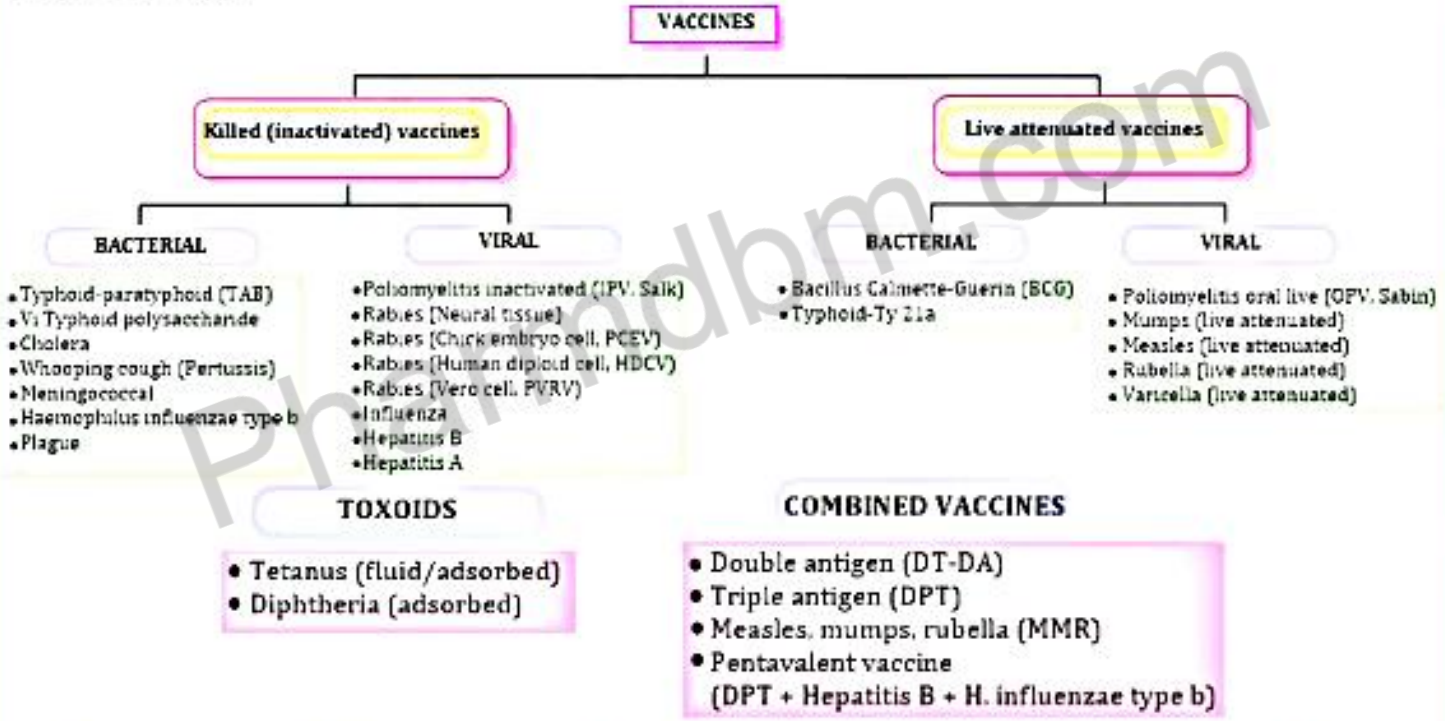
2.6 OVERVIEW OF VACCINES

Introduction

- A vaccine is a substance that is introduced into the body to stimulate the body's immune response.

2.6.1 TYPES OF VACCINE

Vaccines are biological products which act by reinforcing the immunological defense of the body against foreign agencies (mostly infecting organisms or their toxins).



Vaccines are antigenic materials consisting of the whole microorganism or one of its products. Vaccines are of 3 types:

1. **Killed (Inactivated) vaccines:** Consist of microorganisms killed by heat or chemicals. They generally require to be given by a series of injections for primary immunization.

a) Bacterial Vaccine

- Bacterial vaccines contain killed or attenuated bacteria that activate the immune system. Antibodies are built against that particular bacterium, and prevents bacterial infection.

✓ **Typhoid paratyphoid (TAB) or Typhoid-paratyphoid cholera (TABC)**

- Typhoid fever, paratyphoid fever, and cholera are three distinct bacterial illnesses that are meant to be prevented by the fictitious typhoid-paratyphoid cholera (TABC) vaccine.
- *Salmonella typhi, s. paratyphi A,* and *s. paratyphi B* are mixed together to form the TAB vaccine *s. paratyphi C* and the TAB vaccine are combined to form the TABC vaccine.

✓ **Cholera**

- The dangerous bacterial infection known as cholera is brought on by *vibrio cholerae* and results in severe diarrhoea and dehydration. If treatment is delayed, it may be fatal.

✓ **Pertussis:**

- Pertussis vaccine is a vaccine that protects against whooping cough, a serious respiratory disease caused by *bordetella pertussis* bacteria.

(b) Viral Vaccine

A viral vaccine is a type of vaccine that protects against viral infections. These components can stimulate the immune system to produce antibodies and memory cells that can recognize and fight the virus if it enters the body later. Example: Smallpox vaccine, Rabies vaccine.

✓ **Rabies Vaccine**

- Rabies is a fatal but preventable viral disease. It can spread to people and pets if they are bitten or scratched by a rabid animal. The vaccine should be given before exposure to the virus, preferably within 1 to 2 days of contact with an infected animal or person.

✓ **Smallpox Vaccine**

- Smallpox is caused by the variola virus. The vaccine was developed by Edward Jenner in 1796, who observed that people who had cowpox, a mild infection, were immune to smallpox, a much more severe infection.

2. **Live attenuated vaccines**: Consist of live bacteria or viruses which have been rendered avirulent. Live vaccines usually produced long-lasting immunity. In individuals with impaired host defense, e.g.

(a) Leukaemia or other malignancies, especially those receiving cytotoxic chemotherapy.

(b) AIDS and other immune deficiency states.

(a) **Bacterial Vaccine**

✓ **BCG Vaccine**

- The BCG vaccine is a vaccine that is used to prevent tuberculosis (TB), a serious infectious disease caused by bacteria called *Mycobacterium tuberculosis.*
- The BCG vaccine is named after its inventors, Albert Calmette and Camille Guérin, who developed it from a strain of bacteria found in cattle.

3. **Toxoids**: Are modified bacterial exotoxins so that toxicity is lost but antigenicity is retained. The term 'vaccine' is sometimes restricted to preparations of whole microorganisms and toxoids are enumerated separately.

✓ **Tetanus**

- It is formaline treated exotoxin of tetanus bacilli; indicated for routine immunization in all children and adults.

✓ **Diphtheria**

- Diphtheria toxoid adsorbed It is modified diphtheria exotoxin adsorbed onto aluminium hydroxide. It is indicated in infants and children below 6 years of age. Older individuals seldom require protection against diphtheria.

2.6.2 IMMUNITY

The ability of the immune system to mount an immunological defense against pathogens like bacteria, viruses, fungi, and other external agents is known as immunity.

Types of Immunity

1. **Innate immunity:** This is a generalized form of defense that exists at birth. Various forms of barriers are offered to prevent foreign agents from entering our bodies to achieve this.

(a) **Physical barriers:** These comprise the respiratory system, gastrointestinal tract, cilia, eyelashes, skin, and body hair. The First line of defense is formed by these. Beyond just giving us light or dark skin tones, the skin performs additional functions. The physical barrier that our skin provides prevents infections from entering.

(b) **Physiological barriers:** Owing to the extremely acidic environment, the majority of bacteria that enter our bodies through food are destroyed before the subsequent phase.

(c) **Cellular barriers:** Despite physical and physiological barriers, certain pathogens manage to enter our bodies. The cells involved in this barrier are leukocytes (WBC), neutrophils, lymphocytes, basophils, eosinophils, and monocytes.

(d) **Cytokine barriers:** The cells in our body are smarter than we give them credit for. For instance, in case a cell in our body experiences a virus invasion, it automatically secretes proteins called interferons which form a coating around the infected cell and prevent the cells around it from further infections.

2. **Acquired immunity:** Also known as adaptive or specific immunity, is the type of immunity that the body develops in response to exposure to pathogens or foreign substances. There are two main types of acquired immunity: active immunity and passive immunity.

(a) **Active Immunity:**

(i) **Natural Active Immunity:** This occurs when the body is exposed to a pathogen through natural means, such as getting infected with a virus.

(ii) **Artificial Active Immunity:** This type of immunity is induced when the body is exposed to a modified or inactivated form of a pathogen through vaccination.

(b) **Passive Immunity:**

(i) **Natural Passive Immunity:** This occurs when a newborn receives antibodies from its mother through the placenta or breast milk. These antibodies provide temporary protection to the infant until its immune system matures.

(ii) **Artificial Passive Immunity:** In this case, pre-formed antibodies are directly transferred to an individual.

2.6.3 IMMUNIZATION

- The concept of immunization and vaccination is based on the immune system's capacity for "memory."
- When receiving a vaccination, the body is given a vaccine that contains antigenic proteins from the disease or a pathogen that has been inactivated or weakened.

2.7 EFFECT OF ENVIRONMENT ON HEALTH

INTRODUCTION

- The environment affects our health in a variety of ways. The interaction between human health and the environment has been extensively studied and environmental risks have been proven to significantly impact human health, either directly by exposing people to harmful agents or indirectly, by disrupting life-sustaining ecosystems.

2.7.1 TYPES OF POLLUTION

• **Water pollution**	• **Noise pollution**	• **Air pollution**
• **Plastic pollution**	• **Radioactive pollution**	• **Soil pollution**

❖ Water pollution

- Life needs water to exist. For both their livelihood and health, people require clean water. Contaminated water, however, causes millions of illnesses and deaths annually.
- Any chemical contamination or other harmful material that endangers the health of people, animals, or plants is referred to as water pollution.

✓ Sources of water pollution

There are many different natural and man-made sources of water contamination.

1. **Industrial Discharges:**

a) **Factory Effluents:** Industrial facilities may discharge pollutants such as chemicals, heavy metals, and toxins into nearby water bodies.

2. **Agricultural Runoff:**

a) **Pesticides and Herbicides:** The use of agricultural chemicals can lead to runoff, carrying pesticides and herbicides into rivers and lakes.

3. **Oil Spills:**

a) Accidental or deliberate releases of oil, whether from transportation (ships, pipelines).

4. **Septic Systems:**

a) Poorly maintained or malfunctioning septic systems can release pathogens and nutrients into groundwater, affecting nearby water sources.

✓ Importance of safe drinking water

- A basic need for human survival and well-being is clean drinking water. It is crucial to have access to clean, uncontaminated water to protect the environment, promote economic growth, and maintain excellent health.

1. **Human Health:**

(a) **Disease Prevention:** Safe drinking water is essential for preventing waterborne diseases caused by pathogenic microorganisms.

2. **Nutrient Absorption:** Clean water is vital for proper nutrient absorption in the body. Contaminated water can hinder the absorption of essential nutrients, leading to malnutrition and related health issues.

3. **Economic Impact:**

(a) **Productivity:** A healthy population is better able to engage in economic activities, contributing to overall economic development.

4. **Human Rights:**

(a) **Basic Human Right:** Ensuring access to safe water is a commitment to upholding basic human rights and promoting social justice.

✓ Waterborne diseases

- Waterborne diseases are conditions (i.e., harmful effects on human health, including illness, disability, death, or disorders) brought on by pathogenic microorganisms that are spread by water.

Types of waterborne diseases:

➢ **Disease:** Giardiasis

- **Microbial agent:** Protozoan *(Giardia lamblia)*
- **Sources of agent in water supply:** Untreated water, poor disinfection, pipe breaks.
- **General symptoms:** Diarrhea, abdominal discomfort, bloating, and flatulence.

➢ **Disease:**
Cholera

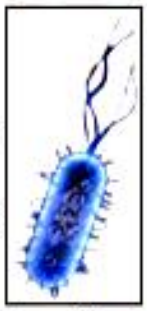
- **Microbial agent:** Spread by the bacterium *Vibrio cholerae*
- **Sources of agent in water supply:** Drinking water contaminated with the bacterium.
- **General symptoms:** Very watery diarrhea, nausea, cramps, nosebleed.

➢ **Disease:** *E. coli* Infection

- **Microbial agent:** Certain strains of *Escherichia coli*
- **Sources of agent in water supply:** Water contaminated with the bacteria.
- **General symptoms:** Mostly diarrhea.

➢ **Disease:** Dysentery

- **Microbial agent:** Caused by several species in the genera *Shigella* and *Salmonella*
- **Sources of agent in water supply:** Water contaminated with the bacterium.
- **General symptoms:** Frequent passage of feces with blood and/or mucus and in some cases vomiting of blood.



➢ **Disease:** Typhoid fever

- **Microbial agent:** *Salmonella typhi*
- **Sources of agent in water supply:** Ingestion of water contaminated with feces of an infected person.
- **General symptoms:** Characterized by sustained fever up to 40°C, profuse sweating, diarrhea, muscle aches, fatigue, and constipation may occur.

➢ **Disease:** Hepatitis A

- **Microbial agent:** Hepatitis A virus (HAV)
- **Sources of agent in water supply:** Can manifest itself (HAV) in water (and food).
- **General symptoms:** Only acute and include Fatigue, fever, malaise, abdominal pain, nausea,

❖ **Air pollution**

- The term "air pollution" describes the existence of contaminants in the atmosphere that are not part of the natural composition and impair both the environment and living things.

✓ **Source of air pollution**

- Numerous natural and man-made (anthropogenic) factors can contribute to air pollution. These sources contribute to the deterioration of air quality by releasing pollutants into the atmosphere.

1. Combustion of Fossil Fuels:

(a) Vehicles: Combustion engines in cars, trucks, motorcycles, and other vehicles emit pollutants.

2. **Industrial Activities:**

(a) **Manufacturing Processes:** Industrial facilities release various pollutants, including particulate matter, sulfur dioxide, and nitrogen oxides, depending on the industry type and production processes.

3. **Agricultural Practices:**

(a) **Livestock Farming:** Animal husbandry produces methane and ammonia, contributing to air pollution.

4. **Waste Management:**

(a) **Waste Incineration:** The burning of waste materials in incinerators releases pollutants, including particulate matter, heavy metals, and dioxins, into the air.

5. **Natural Sources:**

(a) **Wildfires:** Large-scale wildfires release significant amounts of smoke, particulate matter, and pollutants into the air.

✓ **Importance of safe breathing**

- Safe breathing is paramount for protecting individuals from the harmful effects of air pollution.

1. **Respiratory Health:**

(a) **Prevention of Respiratory Diseases:** Inhaling polluted air can lead to various respiratory issues, including asthma, bronchitis, and chronic obstructive pulmonary disease (COPD). Safe breathing helps prevent the development or exacerbation of these conditions.

2. **Cardiovascular Health:**

(a) **Reduced Risk of Cardiovascular Diseases:** Air pollution has been linked to an increased risk of cardiovascular diseases, including heart attacks and strokes. Breathing clean air helps reduce this risk and promotes cardiovascular well-being.

3. **Improved Immune Function:**

(a) **Enhanced Immune Response:** Exposure to air pollutants can weaken the immune system, making individuals more susceptible to infections. Safe breathing supports a robust immune response, aiding in the body's ability to defend against illnesses.

4. **Protecting Unborn Children:**

(a) **Fetal Development:** Pregnant women exposed to air pollution may experience adverse effects on fetal development.

✓ Disease-related to air pollution

- The respiratory, cardiovascular, and other systems of the human body are impacted by air pollution, which is linked to several disorders.

Respiratory Diseases:

1. **Asthma:** Air pollution, particularly fine particulate matter and ground-level ozone, can trigger or exacerbate asthma symptoms, leading to wheezing, coughing, and difficulty breathing.

(a) **Chronic Obstructive Pulmonary Disease (COPD):** Long-term exposure to air pollutants, especially particulate matter and gases like nitrogen dioxide, is a significant risk factor for the development and progression of COPD, a group of lung diseases that includes chronic bronchitis and emphysema.

(b) **Bronchitis:** Exposure to pollutants like sulfur dioxide and particulate matter can contribute to the development of chronic bronchitis, characterized by inflammation of the bronchial tubes.

(c) **Pneumonia:** Air pollution may weaken the respiratory system's defenses, making individuals more susceptible to respiratory infections like pneumonia.

2. **Cardiovascular Diseases:**

(a) **Heart Attacks:** Long-term exposure to air pollution, particularly fine particulate matter and other pollutants is associated with an increased risk of heart attacks and other cardiovascular events.

(b) **Stroke:** Air pollution is a recognized risk factor for strokes, contributing to the development of blood clots and other cardiovascular issues.

(c) **Hypertension (High Blood Pressure):** Prolonged exposure to air pollutants, such as fine particulate matter and nitrogen dioxide, has been linked to an increased risk of developing high blood pressure.

3. **Cancer:**

(a) **Lung Cancer:** Inhalation of carcinogenic air pollutants, such as benzene, formaldehyde, and polycyclic aromatic hydrocarbons, increases the risk of developing lung cancer.

(b) **Bladder Cancer:** Certain air pollutants, including arsenic and volatile organic compounds, have been associated with an elevated risk of bladder cancer.

❖ Noise pollution

- The existence of undesired or damaging sound in the surroundings is known as noise pollution, also sometimes called environmental noise.

✓ Source of noise pollution

- There are many different causes of noise pollution, both natural and man-made. The reason it disturbs the natural acoustic environment is because of undesired or dangerous sound.

1. **Transportation:**

(a) **Road Traffic:** Vehicle engines, horns, tire noise, and traffic congestion contribute significantly to noise pollution in urban areas.

2. **Industrial Activities:**

(a) **Factories and Manufacturing Plants:** Industrial machinery, equipment, and manufacturing processes contribute to elevated noise levels in and around industrial areas.

3. **Urban Development:**

(a) **Commercial Areas:** Increased human activities in commercial districts, including shopping centers, restaurants, and entertainment venues, contribute to noise pollution.

4. **Recreational and Entertainment Activities:**

(a) **Music Events and Festivals:** Large gatherings, concerts, and music festivals can generate high levels of noise, impacting nearby residential areas.

5. **Construction and Demolition:**

(a) **Heavy Machinery:** Construction sites involve the use of heavy machinery, including excavators, bulldozers, and jackhammers, generating high levels of noise.

✓ Effects on health

- Numerous detrimental health impacts, impacting one's physical and mental well-being, are linked to noise pollution.

1. **Hearing Loss:**

(a) **Noise-Induced Hearing Loss:** Long-term exposure to high levels of noise, especially in occupational settings or near sources like industrial machinery and loud music, can lead to permanent hearing damage or loss.

2. **Cardiovascular Diseases:**

(a) **Hypertension (High Blood Pressure):** Chronic exposure to noise pollution, particularly from traffic and urban activities, has been associated with an increased risk of developing high blood pressure, a major risk factor for cardiovascular diseases.

3. **Sleep Disturbances:**

(a) **Insomnia:** Noise pollution can interfere with sleep, leading to difficulty falling asleep or staying asleep. Chronic sleep disturbances may contribute to a range of health problems, including fatigue and impaired cognitive function.

4. **Stress and Mental Health Issues:**

(a) **Increased Stress Levels:** Chronic noise exposure has been linked to elevated stress hormone levels, contributing to stress-related health issues.

5. **Cognitive Impairment:**

(a) **Impaired Concentration and Learning:** Noise pollution can interfere with cognitive functions, affecting concentration, learning, and performance in tasks that require attention.

2.7.2 SEWAGE AND SOLID WASTE DISPOSAL

1. **Dumping:** In low-lying places, dry waste is typically dumped, aiding in both waste disposal and land reclamation. Bacteria cause a significant volume reduction in the waste, which is then progressively transformed into humus.
2. **Controlled tipping or Sanitary landfill:** Controlled tipping, commonly known as sanitary landfilling, is a waste disposal method that involves the controlled deposition of waste into designated landfills.
3. **Incineration or Burning:** Burning, or incinerating, is a waste disposal technique that includes burning both organic and inorganic materials at a high temperature.
4. **Composting:** Composting is not only an effective method for managing organic waste but also a sustainable way to enrich the soil, reduce the need for chemical fertilizers.
5. **Burial:** Burial is a method of disposal or interment in which an object or substance is placed underground.

2.7.3 OCCUPATIONAL ILLNESSES

- Health issues that develop directly as a result of being exposed to dangers or hazards at work are referred to as occupational illnesses.
- Occupational illnesses arise gradually as a result of continuous or recurrent exposure to specific substances, situations, or activities in the work environment, in contrast to injuries, which are the consequence of accidents or traumatic occurrences.

✓ **Sources of Occupational illness**

1. **Chemical Exposure:**

(a) **Toxic Chemicals:** Exposure to harmful chemicals in the workplace, such as solvents, pesticides, heavy metals, and industrial pollutants, can lead to respiratory issues, skin disorders, and long-term health problems.

2. **Biological Agents:**

(a) **Microorganisms:** Workers in healthcare, laboratories, and certain industries may be exposed to infectious agents, leading to illnesses such as respiratory infections, hepatitis, or other communicable diseases.

3. **Physical Hazards:**

(a) **Radiation:** Workers in certain industries, such as healthcare, nuclear facilities, or research, may be exposed to ionizing radiation, leading to radiation-related illnesses.

4. **Airborne Particles:**

(a) **Dust and Particulate Matter:** Certain occupations, such as mining, construction, or manufacturing, may expose workers to airborne particles, leading to respiratory conditions like pneumoconiosis or occupational asthma.

2.7.4 ENVIRONMENTAL POLLUTION DUE TO PHARMACEUTICALS

- The air is affected and becomes polluted when pharmaceutical businesses release dangerous gases including carbon dioxide, nitrous oxide, methane, and sulphur compounds, among others.
- Pharmaceutical wastes are immediately chemically involved in the soil when they are dumped, which results in soil pollution and lower production.

2.8 PSYCHOSOCIAL PHARMACY

- Psychosocial pharmacy, also known as psychopharmacology, is a branch of pharmacy that deals with the study of drugs affecting the mind and behavior. It involves understanding how medications, particularly psychoactive substances, interact with the brain and influence mental processes.

❖ **Drugs of misuse:**

- The misuse of drugs refers to the inappropriate or harmful use of substances intended for medical or therapeutic purposes.

➢ **Types of drugs: Sedatives and Tranquilizers**

- **Examples:** Barbiturates, Benzodiazepines
- **Effects:** Depress CNS activity, gives a feeling of calmness, relaxation, drowsiness

➢ **Types of drugs: Opiate narcotic**

- **Examples:** Opium, Morphine, Heroin, Codeine.
- **Effects:** Suppress brain activity, relaxed pain.

➢ **Types of drugs: Stimulants**

- **Examples:** Amphetamine, Caffeine, Cocaine,
- **Effects:** Make a person more wakeful, alert and active, causing excitement.

➢ **Types of drugs: Hallucinogens**

- **Examples:** LSQ, Mescaline, psilocybin, Ganja, Charas, Hashish
- **Effects:** Alter thoughts, feelings and perceptions

❖ **Psychotropic products**

- Drugs that alter mood, thought, and behavior are known as psychotropic substances.

❖ **Narcotics product**

- The drugs known as narcotics are those that bind directly to the brain's opioid receptors and reduce moderate to severe pain.
- The substances that are frequently abused include opiates, cannabis, and coca alkaloids.
- These are primarily derived from blooming plants. Others are derived from fungus.

✓ **Misuse of drugs** - These drugs are prescribed pharmaceuticals; they should not be used if not prescribed because they can lead to dependency.

❖ **Alcohol**

- The person's alcohol of choice is ethyl alcohol.
- It is also used in small doses as medicine to treat conditions including stress, depression, and others.

✓ **Misuse of drugs** - Drug abuse is one of the things that can have an addictive effect. Alcohol use at a high level has harmful effects. Due to the large dose, the person loses mental clarity and develops negative behaviors.

❖ **Tobacco**

- Nicotine, an alkaloid, is just one of the many chemicals found in tobacco.
- Nicotine causes the adrenal gland to release adrenaline and nor-adrenaline into the bloodstream, both of which elevate blood pressure and quicken the heartbeat.

✓ **Misuse of drugs** - Smoking or using chewing tobacco can lead to behaviors that lead to nicotine dependence and tobacco addiction. Although some people are utilized as stimulants, excessive amounts can have serious consequences.

2.9 IMPACT ON SOCIAL HEALTH

- Drug abuse and drug misuse can have significant and far-reaching impacts on social health, affecting individuals, families, and communities. The consequences extend beyond the individual user and can contribute to various social problems. These medicines change our social interactions and hurt social health because of their addictive properties.

1. Family Disruption:

(a) Child Neglect and Abuse: Drug misuse can contribute to neglect and abuse of children within the family, jeopardizing their well-being.

2. Economic Burden:

(a) Lost Productivity: Substance abuse can lead to decreased work performance, absenteeism, and job loss, affecting individual and family financial stability.

3. **Criminal Activity and Legal Issues:**

(a) **Involvement in Crime:** Substance abuse is often linked to criminal behavior, such as drug trafficking, theft, and violence, leading to increased crime rates.

4. **Community Safety and Stability:**

(a) **Increased Violence:** Drug abuse can contribute to violence within communities, both directly through drug-related crimes and indirectly through the impact on interpersonal relationships.

5. **Public Health Issues:**

(a) **Spread of Infectious Diseases:** Sharing needles and engaging in risky behaviors associated with drug abuse can contribute to the spread of infectious diseases such as HIV/AIDS and hepatitis.

❖ **Suicidal behaviors**

- Suicidal thoughts or behavior are not limited to any single diagnostic group or condition. Death by suicide occurs with distressing frequency among many different illnesses, including mood disorders, substance abuse disorders, schizophrenia, and personality disorders.
- The Institute of Medicine (2002) summarized the state of research in suicide and suicide prevention and reported that in the U.S. over 90% of suicides are associated with mental illness or substance abuse disorders
- Although suicide is not a form of mental illness, it is a serious potential side effect of several treatable mental disorders, such as major depression, bipolar disorder, post-traumatic stress disorder, borderline personality disorder, schizophrenia, substance use disorders, anxiety disorders, and eating disorders like bulimia.