

CYRILLIC COLLEGE

COURSE TITLE	PUBLIC HEALTH IN COMPLEMENTARY AND ALTERNATIVE MEDICINE
COURSE CODE	PGDNAT 206
DURATION	45 HRS
UNIT	3.0

GOAL: This course is designed to introduce the students to the practice and state of CAM practice within the public health system

GENERAL OBJECTIVES: On completion of the course this student should be able to:

- 1.0** Understand Complementary and Alternative Medicine
- 2.0** Understand Public Health
- 3.0** Understand Powers and Responsibilities of Government
- 4.0** Understand Principles of Epidemiology
- 5.0** Understand Diseases, Determinants of Health and Risk factors of Disease
- 6.0** Understand Prevention, Health Promotion, Disease Prevention
- 7.0** Understand Demography
- 8.0** Understand Diseases

9.0 Understand Complementary and Alternative Medicine in Public Health

Complementary and Alternative Medicine, Integrative Medicine, and Conventional Medicine

1.1 Explain the Term 'Complementary and Alternative Medicine' (CAM)

Definition

Complementary and Alternative Medicine (CAM) refers to a broad range of medical and healthcare practices, products, and systems that are not considered part of conventional medicine. These approaches are used alongside (complementary) or instead of (alternative) mainstream medical treatments.

Key Characteristics of CAM:

1. **Diverse Practices** – CAM includes a variety of approaches such as herbal medicine, acupuncture, chiropractic care, naturopathy, and homeopathy.
2. **Holistic Approach** – Many CAM therapies focus on treating the whole person—mind, body, and spirit—rather than just addressing symptoms.
3. **Non-Mainstream** – CAM therapies are not typically taught in conventional medical schools or widely used in hospitals.
4. **Patient-Centered** – CAM emphasizes personalized care, where treatments are tailored to the individual's needs and preferences.

Categories of CAM:

1. **Mind-Body Medicine** – Includes meditation, yoga, biofeedback, and hypnosis, which focus on the interaction between the mind and body in promoting health.
2. **Biologically-Based Therapies** – Includes the use of natural products like herbs, dietary supplements, and vitamins.
3. **Manipulative and Body-Based Practices** – Includes chiropractic adjustments, osteopathy, and massage therapy.

4. **Energy Therapies** – Includes practices like Reiki, Qigong, and therapeutic touch that are based on the concept of energy fields.
5. **Whole Medical Systems** – Includes traditional Chinese medicine (TCM), Ayurveda, and homeopathy, which have their own diagnostic and treatment approaches.

Examples of CAM:

- **Acupuncture** – A traditional Chinese practice that involves inserting fine needles into specific points on the body to balance energy flow.
 - **Herbal Medicine** – The use of plant extracts and natural substances to treat or prevent ailments.
 - **Chiropractic Care** – A practice that involves spinal adjustments to improve musculoskeletal function.
 - **Meditation and Mindfulness** – Techniques used to enhance mental well-being and reduce stress.
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1.2 Explain Integrative Medicine

Definition

Integrative Medicine is a healthcare approach that combines conventional medical treatments with evidence-based CAM practices to promote optimal health and healing. It emphasizes a holistic approach, focusing on the patient as a whole rather than just the disease.

Key Features of Integrative Medicine:

1. **Combination of Therapies** – Integrates the best practices from both conventional and CAM therapies for comprehensive patient care.
2. **Evidence-Based Approach** – Utilizes therapies that have been scientifically tested and proven effective.
3. **Personalized Care** – Treatments are tailored to individual needs, considering factors such as lifestyle, preferences, and overall health.

4. **Focus on Prevention and Wellness** – Emphasizes proactive healthcare strategies, including nutrition, exercise, stress management, and mental well-being.
5. **Patient-Practitioner Partnership** – Encourages active patient participation in treatment decisions and self-care.

Examples of Integrative Medicine in Practice:

- **Cancer Treatment** – Combining chemotherapy with acupuncture to manage pain and nausea.
- **Chronic Pain Management** – Using physical therapy alongside mindfulness meditation to reduce pain perception.
- **Heart Disease Prevention** – Implementing dietary changes, yoga, and medication to improve heart health.
- **Mental Health Care** – Integrating psychotherapy with mindfulness practices and nutritional interventions to treat depression and anxiety.

Benefits of Integrative Medicine:

- Provides a comprehensive treatment plan addressing multiple aspects of health.
 - Encourages natural healing and enhances the body's ability to recover.
 - Reduces reliance on medications by incorporating non-pharmaceutical therapies.
 - Improves overall well-being and quality of life for patients.
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1.3 Explain Conventional Medicine

Definition

Conventional Medicine, also known as Western Medicine or Allopathic Medicine, refers to the mainstream medical practices that are based on scientific research, clinical trials, and standardized procedures for diagnosis and treatment.

Key Characteristics of Conventional Medicine:

1. **Evidence-Based** – Treatments and medications are supported by rigorous scientific research and clinical trials.
2. **Standardized and Regulated** – Practitioners follow strict guidelines, protocols, and medical ethics.
3. **Specialized Healthcare** – Involves different specialties such as cardiology, neurology, oncology, and orthopedics.
4. **Technology-Driven** – Relies on advanced medical technology, laboratory tests, imaging, and pharmaceuticals.
5. **Symptom-Focused Treatment** – Primarily aims to diagnose and treat diseases based on symptoms and underlying causes.

Examples of Conventional Medicine Practices:

- **Pharmaceutical Drugs** – Use of prescription medications such as antibiotics, painkillers, and vaccines.
- **Surgical Interventions** – Procedures such as appendectomies, heart surgeries, and joint replacements.
- **Radiology and Imaging** – Diagnostic tools like X-rays, MRI scans, and CT scans.
- **Preventive Medicine** – Immunization programs, screening tests, and public health interventions.

Advantages of Conventional Medicine:

- Highly effective in treating acute and life-threatening conditions (e.g., heart attacks, strokes, infections).
- Well-regulated and based on scientific research, ensuring safety and efficacy.
- Provides rapid relief of symptoms through medications and medical procedures.
- Access to specialized care for complex and chronic diseases.

Limitations of Conventional Medicine:

- May focus more on symptom management rather than root cause resolution.
- Can be expensive, especially in regions with privatized healthcare systems.
- Potential side effects from pharmaceutical drugs and invasive procedures.
- Often lacks a holistic approach to wellness and prevention.

Understanding the differences and interactions between Complementary and Alternative Medicine (CAM), Integrative Medicine, and Conventional Medicine is essential for making informed healthcare choices. While CAM offers holistic and natural treatment options, conventional medicine provides scientifically validated and technology-driven healthcare solutions. Integrative Medicine bridges these two approaches, ensuring a comprehensive, patient-centered approach to health and wellness.

Public Health and Disease Prevention

2.1 Definitions

To understand public health comprehensively, we need to define key terms associated with it:

1. Health

The World Health Organization (WHO) defines health as:

"A state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity."

This definition highlights the holistic nature of health, which goes beyond merely not being sick.

It includes:

- **Physical health** – Proper body function and absence of disease
- **Mental health** – Emotional well-being and psychological resilience
- **Social well-being** – Ability to interact, build relationships, and participate in community life

Other definitions:

- The **biomedical model** defines health as the absence of disease.
- The **ecological model** considers the environment and its impact on health.

2. Public Health

Public health is the science and art of preventing disease, prolonging life, and promoting health through organized community efforts.

Key aspects include:

- **Prevention** of diseases before they occur
- **Health promotion** through education and policy changes
- **Intervention** in outbreaks and emergencies
- **Community-based approach** to improving overall well-being

Examples:

- Vaccination programs
- Clean water supply
- Anti-smoking campaigns

3. Risk Factor

A **risk factor** is any attribute, characteristic, or exposure that increases the likelihood of developing a disease or injury.

Types of risk factors:

- **Modifiable risk factors** – Can be controlled or changed (e.g., smoking, diet, physical inactivity)

- **Non-modifiable risk factors** – Cannot be altered (e.g., genetics, age, sex)
- **Environmental risk factors** – Pollution, unsafe water, occupational hazards

Examples:

- **Heart disease:** Risk factors include high cholesterol, obesity, smoking
- **Lung cancer:** Risk factors include smoking, air pollution, and occupational exposure

4. Disease Prevention

Disease prevention includes measures taken to reduce the occurrence and impact of diseases. It is divided into three levels:

1. **Primary Prevention** – Preventing disease before it occurs
 - Example: Vaccination, healthy diet, physical activity
2. **Secondary Prevention** – Early detection and treatment
 - Example: Cancer screening, blood pressure monitoring
3. **Tertiary Prevention** – Managing disease to reduce complications
 - Example: Rehabilitation for stroke patients, insulin therapy for diabetes

2.2 History of Public Health

Public health has evolved over centuries through various key milestones:

Ancient Civilizations

- **Egyptians (3000 BCE)** – Developed sanitation, clean water, and personal hygiene practices.
- **Greeks (400 BCE)** – Hippocrates introduced the concept of disease prevention and linked health to diet and environment.
- **Romans (100 BCE – 500 CE)** – Built aqueducts for clean water, public baths, and sewage systems.

Middle Ages (500 – 1500 CE)

- Public health declined due to poor sanitation and plagues.
- The **Black Death (1347-1351)** killed about 25 million people in Europe.
- Quarantine measures were introduced to control disease spread.

Renaissance and Early Modern Era (1500-1800s)

- **John Graunt (1662):** Created the first statistical study of population health.
- **Edward Jenner (1796):** Developed the smallpox vaccine, the first successful vaccination.

19th Century: The Foundations of Modern Public Health

- **Edwin Chadwick (1842):** Published a report linking poor sanitation to disease, leading to public health reforms.
- **John Snow (1854):** Identified contaminated water as the cause of the London cholera outbreak.
- **Louis Pasteur (1860s):** Developed germ theory, proving that microorganisms cause disease.

20th & 21st Century Advances

- **1900s:** Introduction of vaccines (polio, measles, hepatitis B)
- **1948:** WHO was established to coordinate global health efforts.
- **1950s-60s:** Eradication of smallpox through global vaccination efforts.
- **2000s-present:** Focus on non-communicable diseases, pandemics (COVID-19), and health equity.

[2.3 Core Competencies of Public Health](#)

Public health professionals need specific skills and knowledge to improve population health. The **Core Competencies for Public Health** are divided into the following areas:

1. Epidemiology and Biostatistics

- Collecting, analyzing, and interpreting health data
- Identifying disease patterns and risk factors
- Designing and evaluating public health interventions

2. Health Policy and Management

- Understanding how healthcare systems function
- Developing policies to improve healthcare access and quality
- Managing health services and programs

3. Environmental Health

- Studying how environmental factors (air, water, chemicals) affect health
- Ensuring safe drinking water, pollution control, and food safety

4. Social and Behavioral Sciences

- Examining how behavior affects health outcomes
- Developing programs for smoking cessation, mental health, and nutrition

5. Health Promotion and Disease Prevention

- Educating the public on health issues
- Designing campaigns to encourage healthy lifestyles

6. Global Health

- Addressing health disparities across different countries
- Responding to international health crises such as pandemics

7. Communication and Leadership

- Effectively communicating health information
 - Leading health initiatives and emergency responses
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2.4 Landmark Events and Epidemics in History

Several key public health events have shaped policies and interventions.

1. The Black Death (1347-1351)

- Caused by **Yersinia pestis** bacteria, spread through fleas and rats.
- Killed an estimated 25-50 million people in Europe.
- Led to early quarantine measures.

2. The Cholera Outbreak (1854)

- Investigated by **John Snow** in London.
- Linked cholera transmission to contaminated water.
- Resulted in improved sanitation and water safety.

3. The 1918 Influenza Pandemic (Spanish Flu)

- Infected 500 million people worldwide, killing over 50 million.
- Spread rapidly due to World War I troop movements.
- Led to the development of flu vaccines and surveillance systems.

4. The Eradication of Smallpox (1980)

- **Smallpox was eradicated through global vaccination efforts.**
- The last natural case was in Somalia in 1977.
- Considered one of the greatest achievements in public health.

5. HIV/AIDS Epidemic (1980s-Present)

- First identified in the early 1980s.
- Millions infected worldwide, leading to a major public health response.
- Antiretroviral therapy (ART) has significantly improved survival rates.

6. COVID-19 Pandemic (2019-Present)

- Caused by the **SARS-CoV-2 virus**.
- Led to global lockdowns, travel restrictions, and mass vaccination campaigns.
- Highlighted the importance of pandemic preparedness and global cooperation.

Public health has a rich history shaped by scientific advancements and major health crises. By understanding its core principles, competencies, and historical developments, we can continue to improve health outcomes and prevent future diseases.

Health Care System in Nigeria

3.1 Roles of the Federal, State, and Local Government in Improving Health Care in Nigeria

The Nigerian health care system is structured in a three-tiered format, where responsibilities are shared among the federal, state, and local governments. Each level of government plays a crucial role in ensuring effective health care delivery.

1. Federal Government's Role in Health Care

The federal government, through the Federal Ministry of Health (FMOH), has overarching responsibilities in the health sector, including policy formulation, regulation, coordination, and funding. The roles of the federal government in health care improvement include:

- **Policy Formulation and Regulation:** The federal government develops national health policies, strategic plans, and regulatory frameworks that guide health care delivery in the country. Examples include the National Health Policy and the National Strategic Health Development Plan.
- **Funding and Budget Allocation:** It provides substantial funding for tertiary health institutions, federal medical centers, teaching hospitals, and research institutions.

- **Provision of Tertiary Health Care:** It operates specialized hospitals, such as university teaching hospitals, psychiatric hospitals, orthopedic hospitals, and national reference laboratories.
- **Control of Epidemics and Disease Surveillance:** Agencies like the Nigeria Centre for Disease Control (NCDC) monitor and control disease outbreaks such as Ebola, Lassa fever, and COVID-19.
- **Immunization and Public Health Programs:** Through the National Primary Health Care Development Agency (NPHCDA), it supports immunization programs such as polio eradication, malaria prevention, and tuberculosis control.
- **Training and Capacity Building:** It establishes and funds medical schools, research institutions, and continuous medical education for health professionals.
- **Health Insurance and Social Security:** The federal government operates the National Health Insurance Scheme (NHIS) to improve access to affordable health care.
- **Collaboration with International Organizations:** It partners with the World Health Organization (WHO), United Nations Children's Fund (UNICEF), and other global health entities to improve health outcomes.

2. State Government's Role in Health Care

State governments are responsible for the secondary level of health care, which includes general hospitals and specialist hospitals. Their roles include:

- **Implementation of Federal Health Policies:** They adapt and implement federal policies at the state level while ensuring compliance with national health standards.
- **Management of Secondary Health Care Facilities:** State governments oversee and fund general hospitals and specialist hospitals, ensuring adequate staffing and medical supplies.
- **Recruitment and Training of Health Workers:** They employ doctors, nurses, and other health professionals to strengthen the health care workforce in state-owned hospitals.
- **Disease Prevention and Control:** State ministries of health collaborate with federal agencies on disease control programs such as malaria prevention and HIV/AIDS interventions.

- **Health Education and Public Awareness Campaigns:** States conduct health sensitization programs to educate citizens on hygiene, nutrition, and disease prevention.
- **Implementation of Health Insurance Schemes:** Some states operate their own health insurance programs to supplement the NHIS, making health care more affordable for residents.
- **Emergency Health Response:** States play a crucial role in responding to health emergencies such as cholera outbreaks, road accident injuries, and maternal health crises.

3. Local Government's Role in Health Care

Local governments are responsible for providing primary health care services at the grassroots level. Their roles include:

- **Management of Primary Health Care (PHC) Centers:** They operate health clinics, maternity centers, and dispensaries in rural and underserved communities.
- **Immunization and Maternal/Child Health Services:** Local governments ensure the implementation of vaccination campaigns and provide antenatal and postnatal care.
- **Community-Based Disease Surveillance:** They monitor and report disease outbreaks within communities, facilitating quick responses.
- **Health Promotion and Education:** Local health officers organize public enlightenment campaigns on sanitation, hygiene, and nutrition.
- **Provision of Safe Water and Sanitation:** Local governments implement programs for clean water supply and improved sanitation to prevent waterborne diseases.
- **Collaboration with Traditional and Alternative Medicine Practitioners:** They regulate and integrate traditional health care services where applicable.

3.2 Role of Non-Governmental Entities in Public Health in Nigeria

Non-governmental entities (NGOs), faith-based organizations (FBOs), private health organizations, and international agencies play a crucial role in complementing government efforts in public health. Their roles include:

1. Provision of Health Services

- NGOs such as Médecins Sans Frontières (Doctors Without Borders) provide free medical services in conflict zones and underserved areas.
- Faith-based organizations run mission hospitals and clinics, often offering subsidized or free treatment.

2. Health Education and Advocacy

- NGOs conduct awareness campaigns on critical public health issues, such as HIV/AIDS prevention, reproductive health, and mental health awareness.
- Organizations like the Nigerian Red Cross Society provide first aid training and emergency response education.

3. Disease Prevention and Control

- NGOs work on malaria prevention through the distribution of insecticide-treated nets (ITNs) and indoor residual spraying.
- Some groups focus on tuberculosis, HIV/AIDS, and neglected tropical diseases, supporting diagnosis, treatment, and rehabilitation.

4. Capacity Building and Training

- NGOs provide training for health professionals, community health workers, and midwives.
- International agencies like WHO and UNICEF support medical research and professional development initiatives.

5. Health Financing and Insurance Support

- Some NGOs provide financial assistance for medical treatment, particularly for indigent patients needing surgeries or specialized care.

- Organizations like PharmAccess Foundation support innovative health financing schemes, such as micro-health insurance.

6. Research and Data Collection

- NGOs collaborate with universities and government agencies to conduct research on diseases, health trends, and social determinants of health.
- Data from research helps shape health policies and interventions.

7. Emergency Response and Humanitarian Aid

- During crises, organizations like the International Committee of the Red Cross (ICRC) provide medical aid, food relief, and psychological support to affected populations.
- NGOs play a significant role in responding to natural disasters, armed conflicts, and pandemics.

8. Partnerships with Government and International Agencies

- NGOs collaborate with government agencies to implement public health initiatives, such as immunization programs and maternal health projects.
- They secure funding from donor organizations and global health partners to support large-scale interventions.

The Nigerian health care system relies on the collaboration of the federal, state, and local governments alongside non-governmental entities to improve public health. While the government provides policies, regulations, and essential services, NGOs and private organizations fill gaps in funding, health education, service delivery, and emergency response. Strengthening these collaborations will enhance health outcomes and ensure sustainable health care delivery in Nigeria.

Epidemiology and Biostatistics

4.1 Define Epidemiology and Biostatistics

Epidemiology is the study of the distribution and determinants of health-related states or events in specified populations and the application of this study to control health problems. It seeks to understand patterns, causes, and effects of diseases in different groups of people and helps inform policy decisions and public health strategies.

Biostatistics is the application of statistical methods to the collection, analysis, and interpretation of biological and health data. It plays a crucial role in designing epidemiological studies, analyzing data, and drawing conclusions about public health.

4.2 Types and Classification of Diseases

Diseases can be classified based on various criteria, including cause, mode of transmission, duration, and system affected.

- **By Cause:**
 - Infectious diseases (e.g., tuberculosis, HIV/AIDS, malaria)
 - Non-infectious diseases (e.g., diabetes, hypertension, cancer)
- **By Mode of Transmission:**
 - Communicable (e.g., influenza, COVID-19)
 - Non-communicable (e.g., stroke, obesity)
- **By Duration:**
 - Acute diseases (e.g., pneumonia, cholera)
 - Chronic diseases (e.g., arthritis, chronic kidney disease)
- **By System Affected:**
 - Cardiovascular diseases (e.g., heart attack, stroke)
 - Respiratory diseases (e.g., asthma, chronic obstructive pulmonary disease)
 - Neurological diseases (e.g., Alzheimer's, epilepsy)

4.3 Principles of Epidemiology and Biostatistics

- **Epidemiology:**
 - Distribution: Who, where, and when diseases occur.
 - Determinants: The causes and risk factors of diseases.
 - Application: Using findings to prevent and control health problems.
 - **Biostatistics:**
 - Collection of reliable data.
 - Use of appropriate statistical techniques.
 - Interpretation of health-related research.
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4.4 Methods of Epidemiology and Biostatistics

- **Epidemiology Methods:**
 - Descriptive Epidemiology (examines patterns of disease occurrence by person, place, and time)
 - Analytical Epidemiology (investigates causes and associations through observational studies like cohort and case-control studies)
 - Experimental Epidemiology (involves interventions such as clinical trials)
 - **Biostatistical Methods:**
 - Data Collection Techniques (surveys, censuses, health records)
 - Descriptive Statistics (mean, median, mode, standard deviation)
 - Inferential Statistics (hypothesis testing, confidence intervals, regression analysis)
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4.5 Practical Examples of Epidemiological Research and Investigations

- **John Snow's Cholera Study (1854):** Investigated cholera outbreak in London, identifying contaminated water as the source.

- **Framingham Heart Study:** A long-term study investigating cardiovascular disease risk factors.
 - **COVID-19 Pandemic Studies:** Tracking infection rates, vaccine efficacy, and risk factors.
 - **HIV/AIDS Research:** Epidemiological surveillance and prevention strategies.
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4.6 Measures of Disease Frequency and Association

- **Measures of Disease Frequency:**
 - Incidence Rate: New cases per population over time.
 - Prevalence: Total number of cases at a specific time.
 - Mortality Rate: Deaths due to a disease per population.
 - **Measures of Association:**
 - Relative Risk (RR): Compares risk in exposed vs. unexposed groups.
 - Odds Ratio (OR): Used in case-control studies to estimate risk.
 - Attributable Risk (AR): Difference in disease risk between exposed and unexposed.
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4.7 Sources of Health Data

- **Primary Sources:**
 - Surveys and censuses
 - Hospital records
 - Laboratory reports
- **Secondary Sources:**
 - Government reports (e.g., WHO, CDC)
 - Disease registries
 - Research publications

Infection, Disease, Risk Factors, and Determinants of Health

5.1 Differentiate between the following terminologies with relevant examples

1. Infection

Definition: Infection is the invasion and multiplication of pathogenic microorganisms (such as bacteria, viruses, fungi, or parasites) in the body, which may or may not lead to disease.

Key Features:

- Involves entry, colonization, and multiplication of microbes in a host.
- The immune system may fight off the infection without symptoms appearing.
- Can be asymptomatic or symptomatic.

Examples:

- **Bacterial infection:** Tuberculosis (caused by *Mycobacterium tuberculosis*).
- **Viral infection:** HIV infection (caused by the human immunodeficiency virus).
- **Fungal infection:** Candidiasis (caused by *Candida* species).
- **Parasitic infection:** Malaria (caused by *Plasmodium* parasites).

2. Infectious Disease

Definition: An infectious disease is a clinical illness caused by pathogenic microorganisms that spread from one person to another, either directly (through contact) or indirectly (through vectors or contaminated surfaces).

Key Features:

- Results from infections that cause symptoms and signs.
- Can spread through different transmission routes (airborne, direct contact, vector-borne, foodborne, etc.).

- Some infectious diseases can be prevented through vaccines or controlled by hygiene and sanitation.

Examples:

- **Airborne disease:** Influenza (spread via respiratory droplets).
- **Vector-borne disease:** Dengue fever (transmitted by *Aedes* mosquitoes).
- **Foodborne disease:** Salmonellosis (caused by *Salmonella* bacteria in contaminated food).
- **Sexually transmitted disease:** Syphilis (caused by *Treponema pallidum* bacteria).

3. Non-Infectious Disease

Definition: Non-infectious diseases are diseases that are not caused by pathogens and cannot be transmitted from one person to another. They often result from genetic factors, lifestyle choices, environmental influences, or aging.

Key Features:

- Not caused by microorganisms.
- Often chronic and long-term in nature.
- Can result from genetic predisposition, environmental factors, or unhealthy behaviors.

Examples:

- **Genetic disorder:** Sickle cell anemia (caused by inherited genetic mutation).
- **Lifestyle-related disease:** Type 2 diabetes (linked to obesity and poor diet).
- **Environmental disease:** Lung cancer (caused by smoking or exposure to pollutants).
- **Autoimmune disease:** Rheumatoid arthritis (where the immune system attacks body tissues).

5.2 Explain Risk Factors of Diseases

Definition: Risk factors are characteristics, behaviors, conditions, or exposures that increase the likelihood of developing a disease or health condition.

Types of Risk Factors

1. Behavioral Risk Factors

These are lifestyle choices and personal habits that increase disease risk.

- **Examples:**
 - Smoking (increases risk of lung cancer, heart disease).
 - Unhealthy diet (high sugar intake can cause diabetes).
 - Lack of physical activity (increases risk of obesity and cardiovascular diseases).

2. Biological Risk Factors

These involve genetic and physiological conditions that predispose individuals to diseases.

- **Examples:**
 - Family history of hypertension (increases risk of high blood pressure).
 - Being overweight (increases risk of diabetes and heart disease).
 - Aging (higher risk of dementia, osteoporosis).

3. Environmental Risk Factors

External conditions that affect health and increase disease susceptibility.

- **Examples:**
 - Air pollution (linked to respiratory diseases like asthma).
 - Exposure to chemicals (increases risk of cancer).
 - Poor sanitation (causes infectious diseases like cholera).

4. Socioeconomic Risk Factors

Conditions related to an individual's economic and social status that affect health outcomes.

- **Examples:**
 - Poverty (limits access to healthcare and nutritious food).

- Low education levels (less awareness about health risks).
- Occupational hazards (miners have higher risk of lung diseases).

5. Psychological Risk Factors

Mental health conditions or stress-related factors that contribute to diseases.

- **Examples:**
 - Chronic stress (increases risk of heart disease).
 - Depression (linked to poor physical health outcomes).
 - Sleep deprivation (increases risk of metabolic disorders).
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5.3 Explain the Role of Risk Factors in Disease

Risk factors play a crucial role in disease development, influencing both the onset and progression of various conditions.

1. Contribution to Disease Development

Risk factors can directly or indirectly trigger disease.

- **Direct role:** Smoking introduces carcinogens into the lungs, leading to lung cancer.
- **Indirect role:** Sedentary lifestyle leads to obesity, which increases the risk of diabetes.

2. Increased Susceptibility

People with multiple risk factors are more likely to develop diseases.

- **Example:** A person with obesity, high blood pressure, and diabetes is at a much higher risk of heart disease.

3. Disease Progression and Severity

Risk factors influence how quickly a disease progresses.

- **Example:** A person with uncontrolled diabetes may develop complications like kidney disease or nerve damage.

4. Preventability and Control

Understanding risk factors helps in prevention and control of diseases.

- **Reducing risk factors:** Quitting smoking lowers lung cancer risk.
- **Early intervention:** Regular health check-ups can help detect diseases early.
- **Lifestyle modifications:** Eating a healthy diet reduces the risk of heart disease.

5.4 Describe Determinants of Health

Definition: Determinants of health are broad factors that influence an individual's health and well-being. They explain why some people are healthier than others and why some are more prone to diseases.

1. Biological Determinants

These are inherent characteristics that affect health outcomes.

- **Examples:**
 - Genetics (some diseases are hereditary, such as sickle cell anemia).
 - Age (older adults are more prone to chronic diseases).
 - Gender (women are more prone to osteoporosis than men).

2. Behavioral/Lifestyle Determinants

Personal habits and choices that impact health.

- **Examples:**
 - Diet and nutrition (healthy eating prevents obesity and malnutrition).
 - Physical activity (reduces risk of heart disease).

- Alcohol and drug use (increases risk of liver disease and mental disorders).

3. Environmental Determinants

External factors that influence health outcomes.

- **Examples:**
 - Air and water quality (pollution causes respiratory diseases).
 - Housing conditions (poor sanitation spreads infections).
 - Workplace hazards (exposure to chemicals increases risk of chronic diseases).

4. Social and Economic Determinants

These include social, economic, and cultural factors affecting health.

- **Examples:**
 - Income and employment (poverty limits access to healthcare).
 - Education (higher education leads to better health choices).
 - Social support (strong networks improve mental health).

5. Healthcare System Determinants

Access to quality healthcare services affects disease prevention and treatment.

- **Examples:**
 - Availability of hospitals and clinics.
 - Cost and affordability of healthcare services.
 - Access to vaccines and medicines.
- **Infection** refers to the presence of pathogens in the body, while **infectious disease** causes illness and spreads from person to person. **Non-infectious diseases** are not caused by pathogens and are influenced by genetics, lifestyle, and environment.
- **Risk factors** increase the likelihood of diseases and can be behavioral, biological, environmental, socioeconomic, or psychological.
- Understanding risk factors helps in disease prevention, early intervention, and control.

- **Determinants of health** are broad factors affecting health outcomes, including biological, environmental, social, economic, and healthcare system influences.

DEMOGRAPHY

7.1 Definition of Demography

Demography is the scientific study of human populations, primarily concerning their size, structure, distribution, and changes over time due to birth, death, migration, and aging. The term originates from the Greek words:

- *Demos* (meaning "people")
- *Graphia* (meaning "writing" or "study")

Demography provides a statistical and analytical approach to understanding population dynamics and their social, economic, and political implications. It helps in planning for resources, development policies, and assessing the impact of population growth on society.

Key Elements of Demography

1. **Population Size** – Total number of people within a given area at a specific time.
2. **Population Distribution** – How people are spread across different geographical areas.
3. **Population Composition** – Characteristics such as age, sex, race, ethnicity, religion, occupation, and education.
4. **Population Growth and Change** – The increase or decrease in population size due to natural factors (birth and death) and migration.

7.2 Scope and Objectives of Demography

Scope of Demography

The study of demography encompasses various aspects of population dynamics, classified into two broad categories:

1. Formal Demography

This focuses purely on quantitative aspects of population, using statistical data to analyze:

- **Fertility Rates** (Birth rates, Total Fertility Rate)
- **Mortality Rates** (Death rates, Life Expectancy)
- **Migration Patterns** (Immigration and Emigration)

2. Social Demography

This branch explores the interaction between population dynamics and social, economic, and political factors, including:

- **Education and literacy levels**
- **Employment and labor force participation**
- **Health and nutrition**
- **Marriage and family structures**
- **Urbanization and housing**

Objectives of Demography

The primary objectives of demography include:

1. **Understanding Population Characteristics**
 - Analyzing age, sex, and occupational distribution to assess societal needs.
2. **Studying Population Growth and Trends**
 - Identifying factors influencing population increase or decline over time.
3. **Predicting Future Population Changes**
 - Estimating future population size to aid in national planning and resource allocation.

4. **Assessing the Impact of Population Policies**

- Evaluating how government policies affect fertility, mortality, and migration rates.

5. **Examining the Relationship Between Population and Development**

- Understanding how population growth affects economic growth, employment, and living standards.

6. **Aiding in Policy Formulation**

- Providing data to help governments and organizations make informed decisions on healthcare, education, housing, and employment.

7.3 Population Census and Demographic Surveys

1. **Population Census**

A population census is the official and systematic collection of demographic, economic, and social data from every individual in a country at a specific time. It is usually conducted every 5 or 10 years.

Characteristics of a Population Census

- **Universal** – Covers every person in the country.
- **Simultaneous** – Conducted at a specific point in time.
- **Periodic** – Repeated at regular intervals.
- **Comprehensive** – Collects data on population size, structure, occupation, housing, etc.
- **Government-Sponsored** – Usually conducted by national statistical agencies.

Importance of Population Census

1. **National Planning** – Helps governments allocate resources and develop policies.
2. **Infrastructure Development** – Assists in planning schools, hospitals, roads, and utilities.
3. **Political Representation** – Used in electoral districting and representation.
4. **Economic Planning** – Helps businesses understand market size and labor force availability.
5. **Social Welfare Programs** – Guides policies on health, education, and housing.

Challenges in Conducting a Census

- **High Costs** – Requires significant financial and human resources.
 - **Logistical Issues** – Reaching remote areas can be difficult.
 - **Cultural and Political Resistance** – Some groups may refuse participation.
 - **Data Accuracy** – Errors in enumeration can affect reliability.
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2. Demographic Surveys

Demographic surveys are sample-based studies that collect detailed information on various population aspects such as fertility, mortality, migration, and health. Unlike censuses, which cover entire populations, demographic surveys use representative samples.

Types of Demographic Surveys

1. **Sample Surveys** – Used to estimate population characteristics based on a representative sample. Examples:
 - **Demographic and Health Surveys (DHS)**
 - **Multiple Indicator Cluster Surveys (MICS)**
2. **Vital Statistics Surveys** – Collect data on births, deaths, marriages, and divorces.
3. **Household Surveys** – Focus on income, living conditions, and employment.
4. **Labor Force Surveys** – Analyze employment trends and workforce participation.

Importance of Demographic Surveys

- **Cost-Effective** – Less expensive than a full census.
- **More Detailed Data** – Provides in-depth information on health, fertility, and socio-economic conditions.
- **Frequent Updates** – Conducted more frequently than censuses, allowing for timely policy responses.
- **Improves Census Accuracy** – Helps in validating census findings.

Limitations of Demographic Surveys

- **Sampling Errors** – May not fully represent the entire population.
- **Response Bias** – Participants may provide inaccurate information.
- **Limited Scope** – Cannot replace the comprehensive coverage of a census.

Demography plays a crucial role in understanding population dynamics, which in turn impacts economic, social, and political structures. A **population census** provides an extensive dataset on the entire population, while **demographic surveys** help in collecting more detailed and specific information on various aspects of population change. Both are essential tools for policy-making, planning, and sustainable development.

COMMUNICABLE AND NON-COMMUNICABLE DISEASES

8.1 Explain Communicable and Non-Communicable Diseases

Definition of Diseases

A disease is a disorder or abnormal condition that affects the normal functioning of the body, leading to signs and symptoms. Diseases can be classified into **communicable** and **non-communicable** diseases based on how they spread.

Communicable Diseases

These are diseases that can be transmitted from one person to another through various means such as direct contact, air, water, food, or vectors (such as mosquitoes and flies). Communicable diseases are caused by **pathogens** like bacteria, viruses, fungi, or parasites.

Examples of Communicable Diseases

- **Malaria** – caused by *Plasmodium* parasites and transmitted by *Anopheles* mosquitoes.
- **Tuberculosis (TB)** – caused by *Mycobacterium tuberculosis*, spread through the air.

- **HIV/AIDS** – caused by the Human Immunodeficiency Virus (HIV), transmitted through body fluids.
- **Rabies** – caused by the rabies virus, transmitted through animal bites (especially from dogs).

Non-Communicable Diseases (NCDs)

These are diseases that do not spread from one person to another. They are typically caused by genetic, environmental, lifestyle, or physiological factors. They often develop over a long period and can be chronic or degenerative.

Examples of Non-Communicable Diseases

- **Hypertension (High Blood Pressure)** – caused by lifestyle factors such as poor diet, obesity, and stress.
- **Diabetes Mellitus** – caused by insulin deficiency or resistance.
- **Cancer** – uncontrolled growth of abnormal cells in the body.
- **Cardiovascular Diseases (CVDs)** – diseases related to the heart and blood vessels, such as stroke and heart attacks.

8.2 Control, Elimination, and Eradication of Diseases

Control of Diseases

Disease control refers to **reducing the incidence and prevalence of a disease** to an acceptable level through medical interventions, public health measures, and behavioral changes.

Methods of Disease Control

1. **Vaccination** – Immunization programs prevent diseases like polio, measles, and tuberculosis.
2. **Improved Hygiene and Sanitation** – Clean water, waste management, and personal hygiene reduce infections.
3. **Vector Control** – Controlling mosquitoes (e.g., using insecticide-treated nets) helps reduce malaria.

4. **Use of Medications** – Antibiotics, antivirals, and antiparasitic drugs help in controlling infections.
5. **Health Education** – Raising awareness on prevention and treatment of diseases.

Elimination of Diseases

Elimination means reducing disease incidence to **zero** in a specific geographic area, but continued public health efforts (like vaccinations) are needed to prevent re-emergence.

Examples of Eliminated Diseases in Some Regions

- **Polio** – eliminated in most parts of the world through vaccination.
- **Measles** – eliminated in some countries but still exists globally.

Eradication of Diseases

Eradication means the **complete and permanent worldwide removal** of a disease, with no further interventions required.

Examples of Eradicated Diseases

- **Smallpox** – eradicated globally in 1980 through mass vaccination.
- **Rinderpest (a livestock disease)** – eradicated in 2011.

Diseases such as polio and Guinea worm disease are close to eradication due to continuous public health efforts.

8.3 Strategies in Place to Control Various Diseases

Malaria

Cause: *Plasmodium* parasite, transmitted by *Anopheles* mosquitoes.

Control Strategies:

- **Use of Insecticide-Treated Nets (ITNs)** – to prevent mosquito bites.

- **Indoor Residual Spraying (IRS)** – applying insecticides on walls.
 - **Antimalarial Drugs** – preventive and treatment drugs such as Artemisinin-based Combination Therapies (ACTs).
 - **Environmental Management** – draining stagnant water and clearing bushes.
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Guinea Worm Disease (Dracunculiasis)

Cause: *Dracunculus medinensis* parasite, spread through drinking contaminated water.

Control Strategies:

- **Provision of Safe Drinking Water** – filtering water to remove the parasite.
 - **Public Health Education** – educating people on preventing infection.
 - **Case Containment and Treatment** – isolating infected individuals to prevent spread.
 - **Eradication Efforts** – Guinea worm disease is near eradication due to global efforts.
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Sexually Transmitted Diseases (STDs/STIs)

Examples: HIV/AIDS, syphilis, gonorrhea, chlamydia.

Control Strategies:

- **Promotion of Safe Sex Practices** – use of condoms and limiting multiple partners.
 - **Screening and Early Treatment** – regular testing and early diagnosis prevent complications.
 - **Public Awareness Campaigns** – educating people on risks and prevention.
 - **Vaccination** – HPV vaccine to prevent cervical cancer and hepatitis B vaccine.
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Onchocerciasis (River Blindness)

Cause: *Onchocerca volvulus* parasite, transmitted by blackflies.

Control Strategies:

- **Mass Drug Administration (MDA)** – using ivermectin to kill parasites.
 - **Vector Control** – spraying insecticides to eliminate blackflies.
 - **Public Health Education** – informing communities about prevention.
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Tuberculosis (TB)

Cause: *Mycobacterium tuberculosis*, spreads through airborne droplets.

Control Strategies:

- **BCG Vaccination** – protects against severe forms of TB.
 - **Directly Observed Treatment Short-course (DOTS)** – ensuring patients take their full course of TB medication.
 - **Improved Living Conditions** – reducing overcrowding to minimize airborne transmission.
 - **Early Diagnosis and Treatment** – rapid identification and isolation of TB patients.
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Rabies

Cause: Rabies virus, transmitted through the saliva of infected animals (mainly dog bites).

Control Strategies:

- **Vaccination of Dogs and Other Animals** – prevents transmission to humans.
 - **Post-Exposure Prophylaxis (PEP)** – immediate vaccination after a bite prevents the virus from spreading.
 - **Stray Animal Control** – reducing stray dog populations through sterilization and vaccination.
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Anthrax

Cause: *Bacillus anthracis*, transmitted through spores in soil, infected animals, or animal products.

Control Strategies:

- **Vaccination of Livestock** – prevents outbreaks in animals.
- **Proper Handling of Animal Products** – avoiding contaminated meat, hides, and wool.
- **Early Detection and Treatment** – using antibiotics like ciprofloxacin and doxycycline.
- **Quarantine Measures** – preventing the movement of infected animals.

Conclusion

- **Communicable diseases** spread through pathogens, while **non-communicable diseases** are caused by genetic and lifestyle factors.
- Controlling, eliminating, and eradicating diseases requires **vaccination, medication, vector control, and public health education**.
- **Specific strategies** are in place to combat malaria, Guinea worm disease, STDs, onchocerciasis, TB, rabies, and anthrax.
- Global health organizations like **WHO, CDC, and national governments** play a vital role in disease control efforts.

Complementary and Alternative Medicine (CAM) in the Nigerian Health System

9.1 Review of the Nigerian Health System The Nigerian health system is structured into three tiers: primary, secondary, and tertiary levels, which align with the country's federal system of government. The system is managed by different levels of government:

- **Federal Government:** Oversees tertiary health institutions such as teaching hospitals and federal medical centers.
- **State Government:** Manages secondary health facilities, including general hospitals.
- **Local Government:** Primarily responsible for primary healthcare (PHC) services.

Key features of the Nigerian health system include:

- **Underfunding:** The health sector has been underfunded, with healthcare spending below the WHO-recommended 15% of national budgets.
- **Infrastructure Challenges:** Many hospitals lack necessary equipment, and there is a shortage of qualified healthcare professionals.
- **High Disease Burden:** Nigeria faces challenges such as malaria, HIV/AIDS, tuberculosis, and an increasing prevalence of non-communicable diseases.
- **Dual System:** The formal health sector operates alongside traditional medicine and CAM, which many Nigerians rely on.

9.2 The Role of CAM as a Sector in the Public Health System Complementary and Alternative Medicine (CAM) refers to medical practices outside conventional allopathic medicine, including herbal medicine, acupuncture, homeopathy, and spiritual healing. The role of CAM in the Nigerian public health system includes:

- **Providing Healthcare Access:** CAM is widely used in rural areas where access to conventional medicine is limited.
- **Cost-Effectiveness:** Many CAM therapies are more affordable than conventional treatments.

- **Cultural Acceptance:** Traditional medicine aligns with indigenous beliefs and is widely accepted by the population.
- **Integration Efforts:** The government has made attempts to integrate CAM into the public health system through policies and regulatory frameworks.

9.3 The Role of Non-Governmental Entities in Public Health Non-governmental organizations (NGOs), faith-based organizations, and private sector entities play crucial roles in Nigeria's public health sector, including:

- **Healthcare Service Provision:** NGOs operate clinics and mobile health units in underserved areas.
- **Funding and Advocacy:** International organizations such as WHO and UNICEF fund vaccination campaigns and disease control programs.
- **Research and Policy Development:** NGOs contribute to health policy formulation and conduct research on healthcare interventions.
- **Public Health Education:** Many NGOs focus on health literacy, promoting preventive care and disease awareness.

9.4 The Cultural Context and Relevance of CAM in the Nigerian Health System

- **Traditional Beliefs:** Many Nigerians believe in the spiritual and holistic healing power of traditional medicine.
- **Community Trust:** Traditional healers enjoy significant trust within communities, especially in rural areas.
- **Historical Significance:** Indigenous healing practices have existed for centuries, influencing health-seeking behaviors.
- **Integration Challenges:** While CAM is popular, integrating it into formal health policies requires bridging gaps between traditional and modern medicine.

9.5 Factors Influencing the Inclusion of CAM within the Nigerian Health System

- **Regulatory Frameworks:** The Nigerian government has developed policies to regulate CAM practitioners.

- **Public Demand:** The widespread use of CAM influences policy decisions on inclusion.
- **Scientific Validation:** The effectiveness and safety of CAM practices are under scrutiny.
- **Economic Considerations:** CAM is cost-effective and can complement existing healthcare services.
- **Healthcare Workforce:** Training CAM practitioners to align with modern healthcare standards remains a challenge.

9.6 The Role of Clinical Trials in CAM

- **Scientific Validation:** Clinical trials assess the efficacy and safety of CAM therapies.
- **Regulatory Approval:** Trials help standardize herbal medicines and traditional treatments.
- **Evidence-Based Practice:** Research-based validation aids in integrating CAM into mainstream healthcare.
- **Ethical Considerations:** Ethical challenges include informed consent and appropriate methodologies for CAM trials.

9.7 Review of Publications Regarding CAM and Public Health Several studies highlight the importance of CAM in Nigeria's health sector:

- **WHO Reports:** Emphasize CAM's role in achieving universal health coverage by documenting case studies and health policy reports.
- **Local Research Studies:** Nigerian universities have conducted studies validating certain herbal remedies. For example, research from the University of Ibadan has assessed the efficacy of local herbal treatments for malaria and diabetes.
- **Policy Papers:** Government and health agencies publish policies on CAM regulation and integration. The Federal Ministry of Health has released guidelines on the safe use and standardization of herbal medicines.
- **Comparative Studies:** Research comparing CAM use in Nigeria to other countries provides insights into best practices. Studies from China and India, where traditional medicine is integrated with modern healthcare, serve as valuable references.

- **Peer-Reviewed Journals:** Articles in journals such as the African Journal of Traditional, Complementary, and Alternative Medicines present empirical evidence on CAM's efficacy and safety.
- **Clinical Findings:** Nigerian researchers have published findings on the pharmacological properties of indigenous medicinal plants, further solidifying CAM's role in healthcare.

9.8 Strategies to Improve CAM Implementation in the Nigerian Health System

- **Policy Strengthening:** Enforcing regulations to standardize CAM practices.
- **Education and Training:** Introducing CAM modules in medical schools and training practitioners.
- **Public Awareness Campaigns:** Educating the public on the safe use of CAM therapies.
- **Investment in Research:** Government and private sector funding for CAM clinical trials.
- **International Benchmarking:** Learning from countries like China and India, where traditional medicine is integrated with modern healthcare.
- **Collaboration:** Strengthening partnerships between traditional healers and biomedical professionals.

By adopting these strategies, Nigeria can leverage CAM to enhance its health system while ensuring safety and efficacy for its citizens.