

# Value Addition NOTES

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## Anthropology

### 9.8 Epidemiological



## 9.8 Epidemiological

(NOTE: THIS IS IN ADDITION TO THE CLASS NOTES AND COMPILATION NOTES)

### Infectious and Non-Infectious Diseases

#### Infectious Diseases

##### Definition:

Infectious diseases are illnesses caused by the invasion and multiplication of pathogenic microorganisms (such as bacteria, viruses, fungi, or parasites) in the body. These diseases can be transmitted from one person to another, either directly or indirectly.

##### WHO Definition:

"An infectious disease is caused by pathogenic microorganisms and can spread, directly or indirectly, from one person to another."

##### Examples:

- ❖ Tuberculosis – *Mycobacterium tuberculosis* (airborne)
- ❖ Malaria – *Plasmodium* (mosquito-borne)
- ❖ COVID-19 – SARS-CoV-2 (respiratory droplets)
- ❖ Cholera – *Vibrio cholerae* (contaminated water)

##### Modes of Transmission:

- ❖ Direct: Touch, droplets, sexual contact (e.g., HIV, COVID-19)
- ❖ Indirect: Contaminated food/water, vectors like mosquitoes (e.g., dengue)

#### Non-Infectious Diseases

##### Definition:

**Non-infectious diseases** are diseases that **are not caused by pathogens** and **cannot be transmitted** from one person to another. They usually arise from **genetic factors, environmental influences, lifestyle choices, or nutritional deficiencies**.

##### Definition:

"Non-infectious diseases are not caused by living organisms and do not spread from person to person."

##### Examples:

- ❖ **Diabetes** – due to insulin deficiency or resistance
- ❖ **Cancer** – uncontrolled cell growth
- ❖ **Hypertension** – high blood pressure due to lifestyle/genetics
- ❖ **Rickets** – Vitamin D deficiency
- ❖ **Sickle Cell Anaemia** – a genetic disorder

Criteria	Infectious Diseases	Non-Infectious Diseases
1. Cause	Caused by <b>pathogens</b> like bacteria, viruses, fungi, and parasites	Caused by <b>non-living factors</b> like genes, environment, and lifestyle
2. Transmission	<b>Transmissible</b> from person to person	<b>Non-transmissible</b> between individuals
3. Onset	Usually <b>sudden and acute</b>	Usually <b>gradual and chronic</b>
4. Examples	Tuberculosis, COVID-19, Malaria, Influenza	Diabetes, Cancer, Hypertension, Sickle Cell Anaemia
5. Prevention	<b>Vaccines, hygiene, quarantine, vector control</b>	<b>Healthy lifestyle, regular screening, balanced diet</b>

6. Treatment	Antibiotics, antivirals, antifungals	Long-term medication, surgery, and genetic counselling
7. Epidemic Potential	Can cause epidemics and pandemics	Do not cause epidemics
8. Diagnosis	Through the identification of the pathogen	Through genetic tests, scans, and blood tests
9. Affected Age Group	Can affect all ages, often suddenly	Often related to ageing or hereditary factors
10. Example of Cause	Plasmodium (Malaria), Mycobacterium (TB)	Insulin resistance (Diabetes), mutated genes (Cancer)

### Infectious Diseases:

Disease	Cause (Pathogen)	Key Symptoms	Treatment
<b>Tuberculosis (TB)</b>	<i>Mycobacterium tuberculosis</i> (bacterium)	Persistent cough, chest pain, weight loss, fever, night sweats	Long-term antibiotics (e.g., isoniazid, rifampicin), DOTS therapy
<b>Malaria</b>	<i>Plasmodium spp.</i> (parasite) via mosquito	Cyclical fever and chills, sweating, headache, muscle pain	Antimalarial drugs (chloroquine, artemisinin-based combination therapy)
<b>COVID-19</b>	<i>SARS-CoV-2</i> (virus)	Fever, dry cough, breathing difficulty, fatigue, loss of taste/smell	Supportive care, antivirals, oxygen therapy, vaccines (prevention)
<b>Influenza (Flu)</b>	<i>Influenza virus</i>	High fever, sore throat, runny nose, body aches, cough	Antiviral drugs (oseltamivir), rest, hydration, flu vaccine (prevention)
<b>Dengue</b>	<i>Dengue virus</i> (via Aedes mosquito)	High fever, rash, joint/muscle pain, bleeding in severe cases	Supportive care, hydration, fever management (no specific antiviral)
<b>HIV/AIDS</b>	<i>Human Immunodeficiency Virus</i> (HIV)	Fatigue, weight loss, infections, night sweats, immune suppression	Antiretroviral therapy (ART), lifelong medication
<b>Typhoid</b>	<i>Salmonella typhi</i> (bacterium)	High fever, weakness, abdominal pain, constipation or diarrhea	Antibiotics (azithromycin, ciprofloxacin), rehydration
<b>Cholera</b>	<i>Vibrio cholerae</i> (bacterium)	Profuse watery diarrhea, vomiting, dehydration, electrolyte imbalance	Oral rehydration salts (ORS), IV fluids, antibiotics in severe cases
<b>Hepatitis B</b>	<i>Hepatitis B virus</i> (HBV)	Jaundice, fatigue, abdominal pain, dark urine, liver inflammation	Antiviral medications, HBV vaccine (prevention)
<b>Measles</b>	<i>Measles virus</i>	Fever, cough, runny nose, conjunctivitis, red rash starting from face	Supportive treatment, vitamin A, MMR vaccine (prevention)
<b>Tetanus</b>	<i>Clostridium tetani</i> (bacterium)	Muscle stiffness, lockjaw, spasms, difficulty swallowing	Tetanus immunoglobulin, antibiotics, tetanus toxoid vaccine (prevention)

<b>Leprosy</b>	<i>Mycobacterium leprae</i>	Skin lesions, numbness, muscle weakness, nerve damage	Multi-drug therapy (MDT) provided by WHO
<b>Rabies</b>	<i>Rabies virus</i> (via animal bite)	Anxiety, hydrophobia, agitation, seizures, paralysis, fatal if untreated	Immediate wound washing, rabies vaccine, immunoglobulin
<b>Typhus</b>	<i>Rickettsia</i> spp. (bacteria via lice/fleas)	High fever, headache, rash, delirium	Doxycycline antibiotic

### Non-Infectious Diseases:

Disease	Cause(s)	Key Symptoms	Treatment
<b>Diabetes Mellitus</b>	Lack of insulin (Type 1) or insulin resistance (Type 2), lifestyle, heredity	Excessive thirst, frequent urination, fatigue, weight loss, blurred vision	Insulin (Type 1), oral medications (Type 2), diet, exercise
<b>Hypertension (High BP)</b>	Stress, obesity, high salt intake, genetics	Headaches, dizziness, fatigue, blurred vision, often asymptomatic	Lifestyle changes, antihypertensive drugs
<b>Cancer</b>	Uncontrolled cell growth due to genetic mutations, radiation, toxins	Tumor formation, unexplained weight loss, fatigue, pain, bleeding	Surgery, chemotherapy, radiation, targeted therapies
<b>Asthma</b>	Genetic factors, allergens, air pollution, exercise	Shortness of breath, wheezing, coughing, chest tightness	Inhalers (bronchodilators), corticosteroids, avoiding triggers
<b>Sickle Cell Anaemia</b>	Inherited mutation in the haemoglobin gene	Anaemia, fatigue, joint pain, delayed growth, organ damage	Pain management, folic acid, blood transfusions
<b>Thalassemia</b>	Inherited genetic defect affecting haemoglobin synthesis	Severe anaemia, bone deformities, fatigue, growth problems	Regular blood transfusions, iron chelation therapy, bone marrow transplant
<b>Osteoporosis</b>	Ageing, hormonal changes, calcium/vitamin D deficiency	Fragile bones, frequent fractures, back pain, stooped posture	Calcium/vitamin D supplements, bisphosphonates, exercise
<b>Rickets (in children)</b>	Vitamin D, calcium, or phosphate deficiency	Bone deformities, delayed growth, weakness, dental issues	Vitamin D and calcium supplements, sunlight exposure
<b>Alzheimer's Disease</b>	Degeneration of brain cells (age-related, genetic)	Memory loss, confusion, personality change, difficulty with daily tasks	Supportive care, medications (donepezil, memantine), therapy
<b>Parkinson's Disease</b>	Loss of dopamine-producing neurons in brain	Tremors, stiffness, slow movement, balance issues	Levodopa, dopamine agonists, physiotherapy



## Nutritional Deficiency Diseases

Disease	Cause (Nutrient Deficiency)	Key Symptoms	Treatment
<b>Rickets</b> (children)	<b>Vitamin D</b> , calcium, or phosphate deficiency	Bone deformities (bowed legs), delayed growth, soft skull, dental problems	Vitamin D and calcium supplements, sunlight exposure
<b>Osteomalacia</b> (adults)	<b>Vitamin D</b> deficiency	Bone pain, muscle weakness, fractures, difficulty walking	Vitamin D supplementation, dietary correction
<b>Scurvy</b>	<b>Vitamin C</b> deficiency	Bleeding gums, swollen joints, fatigue, poor wound healing, loose teeth	Vitamin C supplements, citrus fruits, green vegetables
<b>Pellagra</b>	<b>Niacin (Vitamin B3)</b> deficiency	<b>3 D's</b> : Diarrhea, Dermatitis, Dementia; can lead to death if untreated	Niacin supplementation, protein-rich diet (meat, legumes)
<b>Beriberi</b>	<b>Thiamine (Vitamin B1)</b> deficiency	Weakness, nerve damage, heart failure, paralysis	Thiamine supplements, whole grains, legumes
<b>Night Blindness</b>	<b>Vitamin A</b> deficiency	Difficulty seeing in low light, dry eyes, risk of blindness	Vitamin A supplements, carrots, liver, green leafy vegetables
<b>Xerophthalmia</b>	<b>Severe Vitamin A</b> deficiency	Dryness of eyes, corneal ulcers, blindness	High-dose Vitamin A therapy, eye care
<b>Goitre</b>	<b>Iodine</b> deficiency	Swelling of the thyroid gland in the neck, fatigue, weight gain	Iodized salt, iodine supplements
<b>Iron-deficiency Anaemia</b>	<b>Iron</b> deficiency	Fatigue, pale skin, weakness, dizziness, shortness of breath	Iron supplements, iron-rich foods (meat, spinach, lentils)
<b>Kwashiorkor</b>	<b>Protein</b> deficiency (with calories)	Edema (swelling), enlarged liver, skin lesions, irritability	Protein-rich diet, nutritional rehabilitation
<b>Marasmus</b>	<b>Severe calorie and protein</b> deficiency	Severe wasting, muscle loss, stunted growth, lethargy	Balanced diet, gradual refeeding, medical monitoring
<b>Hypocalcemia</b>	<b>Calcium</b> deficiency	Muscle cramps, brittle nails, numbness, osteoporosis risk	Calcium supplements, dairy intake
<b>Zinc Deficiency</b>	<b>Zinc</b> deficiency	Poor growth, delayed wound healing, loss of appetite, weak immunity	Zinc supplementation, meat, dairy, nuts
<b>Vitamin B12 Deficiency (Pernicious Anaemia)</b>	<b>Vitamin B12</b> deficiency	Fatigue, memory problems, tingling in hands/feet, megaloblastic anaemia	B12 injections or oral supplements, animal-based diet

## Lifestyle Diseases

### Definition:

Lifestyle diseases are ailments primarily caused by unhealthy daily habits and practices such as poor diet, physical inactivity, tobacco use, and excessive alcohol consumption. These diseases include conditions like obesity, cardiovascular diseases, type 2 diabetes, certain cancers, and respiratory ailments. They are also termed **non-communicable diseases (NCDs)**.

## Impact on Health

### 1. Rising Morbidity and Mortality:

- Lifestyle diseases are responsible for **nearly 70% of all deaths globally** (WHO 2022).
- In India, **cardiovascular diseases (CVDs)** cause more deaths than infectious diseases like tuberculosis or malaria combined.
- **ICMR (2020)** found that **one in four Indians** risks dying from an NCD before the age of 70.

### 2. Early Onset and Prolonged Illness:

- Lifestyle diseases now affect individuals as early as their **30s and 40s**, unlike the past where these were seen in old age.
- Leads to **long-term dependence on medication**, frequent hospital visits, and reduced quality of life.

### 3. Dual Burden of Disease:

- India faces a **"double burden"**: communicable diseases still persist while NCDs are rising fast.
- This strains public healthcare systems, especially in **low-income states**.

### 4. Mental Health Deterioration:

- Chronic diseases often co-exist with **anxiety and depression** due to limitations in lifestyle, financial stress, and social stigma.
- According to **NIMHANS Mental Health Survey (2016)**, there is a significant overlap between **depression and diabetes or hypertension**.

### 5. Multimorbidity and Polypharmacy:

- Many patients now suffer from **multiple lifestyle diseases** simultaneously (e.g., obesity with diabetes and hypertension).
- This increases risk of **drug interactions**, side effects, and hospitalization.

### 6. Impact on Women's Health:

- Urban women are increasingly at risk due to hormonal imbalances, poor dietary habits, and sedentary lifestyle, leading to diseases like **PCOS**, thyroid disorders, and early-onset osteoporosis.
- **NFHS-5 data (2019–21)** shows rising obesity among women, especially in urban areas (up from 20.6% to 24%).

### 7. Children and Adolescents at Risk:

- Increasing screen time, junk food, and inactivity are causing a surge in **childhood obesity** and **pre-diabetic conditions**.
- India has the **second-highest number of obese children** in the world (Lancet 2020).

### 8. Intergenerational Effects:

- Poor maternal nutrition and obesity contribute to a higher risk of **lifestyle diseases in offspring** (as per the DOHaD hypothesis – *Developmental Origins of Health and Disease*).

### 9. Social Inequities and Health Disparities:

- Urban poor are increasingly affected due to cheaper availability of unhealthy foods and lack of awareness.
- **Caste and class disparities** further impact access to preventive and curative healthcare.

### 10. Economic Dependency and Disability:

- A large portion of India's workforce becomes **economically dependent** due to lifestyle-related disabilities like **stroke**, **blindness (from diabetes)**, or amputations.
- This also increases **caregiver burden** on family members, often unpaid women.

### 11. Health System Overload:

- Public health systems, designed to handle infectious diseases, are **ill-equipped** for long-term lifestyle disease management.
- There is a critical shortage of **specialists and diagnostics** at the primary level.



## 12. COVID-19 and Lifestyle Disease Link:

- People with **underlying NCDs** had **significantly higher mortality** during **COVID-19**, showing the deadly synergy between infectious and lifestyle diseases.

### Causes of Lifestyle Diseases

Factors	Examples
<b>Dietary Patterns</b>	High sugar, salt, and fat intake; processed foods
<b>Physical Inactivity</b>	Sedentary jobs, reliance on transport
<b>Substance Abuse</b>	Smoking, alcohol, drugs
<b>Mental Stress</b>	Urban isolation, work pressure, lack of sleep
<b>Environmental Factors</b>	Pollution, lack of green spaces

### Theoretical Perspectives and Thinkers

#### 1. C. Wright Mills (Sociological Imagination):

- Encouraged connecting personal troubles with public issues.
- Lifestyle diseases reflect how individual choices (e.g., fast food, screen time) are shaped by broader structural issues like urban planning, food systems, and advertising.

#### 2. Michel Foucault (Biopower):

- Health becomes a tool for controlling populations.
- Modern societies regulate individuals through health norms, and lifestyle disease management reflects governmental focus on "self-responsibilities" rather than systemic reform.

#### 3. Pierre Bourdieu (Habitus and Lifestyle):

- People's habits and lifestyle choices are not merely individual but are shaped by **class, culture, and social capital**.
- Junk food and sedentary entertainment become markers of modern consumption patterns.

### Government Reports and Initiatives

- National Programme for Prevention and Control of Cancer, Diabetes, Cardiovascular Diseases and Stroke (NPCDCS)** – Launched in 2010 to promote awareness, screening, and control.
- Fit India Movement (2019)** – Aims to encourage fitness as a daily habit.
- Eat Right Movement** by FSSAI – Promotes healthy eating behaviours.
- Ayushman Bharat – Health and Wellness Centres (HWCs)** – Provide screening and early diagnosis of NCDs.
- POSHAN Abhiyaan (2018)** – Focuses on reducing malnutrition and obesity.

### Measures to Resolve Lifestyle Disease Crisis

#### 1. Policy-Level Interventions

- **Tax on unhealthy products** (sugar, tobacco, junk food)
- **Stricter regulations on food advertising**, especially to children
- **Urban planning reforms** to promote walkable cities and active transport

#### 2. Health System Strengthening

- Strengthen **primary healthcare** for NCD screening and counselling
- **Digitize health records** for tracking chronic disease management
- **Training of healthcare workers** for lifestyle disease counselling

#### 3. Community-Based Actions

- Promote **community exercise programs**, yoga, and fitness clubs
- **Local-level nutrition education** (schools, panchayats)

#### 4. Educational and Behavioural Change

- Integrate **health literacy** in school curricula
- Promote **digital detox programs** and mental health awareness

#### 5. Private Sector and Civil Society Involvement

- Incentivize corporate **workplace wellness programs**
- NGOs can support **low-cost lifestyle changes** in slums and rural areas

### Impact of Infectious Diseases on Indigenous Populations

#### 1. Biological Vulnerability and Lack of Immunity

**Anthropologist:** Jared Diamond – “*Guns, Germs, and Steel*”

- Diamond argues that **epidemics were decisive in colonial conquest**. Indigenous peoples in the Americas, Australia, and the Pacific had **no immunological exposure** to Old World diseases like smallpox, measles, or influenza.
- **Case Study:**
  - ✓ **Americas (Post-1492):** 90% of some indigenous populations perished due to smallpox and measles introduced by European colonizers.
  - ✓ **Aztec and Inca Empires** collapsed not just due to conquest, but due to disease outbreaks that killed leaders and weakened societal structures.

#### 2. Colonial Encounters and Depopulation

**Anthropologist:** Alfred Crosby – “*Virgin Soil Epidemics*”

- Crosby coined the term "Virgin Soil Epidemics" to describe how **entire populations with no prior exposure to diseases** faced catastrophic mortality when pathogens were introduced.
- **Case Study:**
  - ✓ **Tasmania (19th Century):** British colonization brought influenza and venereal diseases, leading to the **extinction of full-blooded Tasmanian Aborigines** within decades.

#### 3. Cultural Erosion and Spiritual Devastation

**Anthropologist:** Nancy Scheper-Hughes

- She emphasizes how disease does not just affect bodies, but **destroys entire cultural ecosystems**—rituals, elders, oral traditions.
- **Case Study:**
  - ✓ Among the **Yanomami of Brazil and Venezuela**, epidemics of measles and flu in the 1970s caused **loss of tribal elders**, which disrupted **knowledge transmission and cultural continuity**.

#### 4. Displacement and Exposure through Development

**Anthropologist:** Hugh Brody – “*The Other Side of Eden*”

- Brody highlights how **forced sedentarization and contact with outsiders**, such as loggers, miners, and missionaries, **expose indigenous peoples to novel diseases**.
- **Case Study:**
  - ✓ **Narmada Valley (India):** Tribal groups displaced due to dam projects were relocated to urban peripheries where **tuberculosis, malaria, and diarrhoeal diseases** increased due to poor sanitation and dense populations.

#### 5. Marginalization from Healthcare Services

**Anthropologist:** Paul Farmer

- Farmer’s concept of “**structural violence**” explains how unequal access to healthcare and systemic neglect exacerbates disease impact among the poor and marginalized.
- **Case Study:**
  - ✓ **Adivasis in Jharkhand and Chhattisgarh:** Disproportionately affected by **tuberculosis and malaria** due to lack of primary health centers, poor nutrition, and absence of targeted policy intervention.



## 6. COVID-19 Pandemic and Contemporary Impacts

**Anthropologist:** Sarah Willen – Health Human Rights Scholar

- Willen's work during COVID-19 highlights how **ethnographic methods** expose state failures in protecting vulnerable communities.
- **Case Study:**
  - ✓ In **India**, tribal regions saw **sharp drops in immunization and maternal health services** during lockdowns. In the **Amazon**, lack of testing and protective gear led to **COVID outbreaks among uncontacted tribes**, endangering survival.

## 7. Cultural Beliefs and Disease Misinterpretation

**Anthropologist:** Claude Lévi-Strauss – Structuralist Perspective

- Indigenous explanations of disease often differ from biomedical views. Failure to respect or integrate these beliefs results in **mistrust of modern health interventions**.
- **Case Study:**
  - ✓ Among some Indian tribes, diseases like cholera and smallpox are interpreted as **supernatural punishment**; vaccination efforts are sometimes resisted unless culturally negotiated.

## 8. Gendered Impact of Diseases

**Anthropologist:** Veena Das

- Das's work in South Asia explores how **disease intersects with gender and caste**. Among tribal communities, **women bear a disproportionate burden** of caregiving during epidemics.
- **Case Study:**
  - ✓ In **Odisha's tribal belts**, female caregivers faced **double workload and social stigma** during malaria outbreaks, affecting maternal health and child nutrition.

## Old Age-Related Diseases

### Definition:

Old age-related diseases refer to the health conditions that predominantly affect individuals in the geriatric (60+ years) population due to physiological aging, reduced immunity, and cumulative life stressors. These include **non-communicable diseases (NCDs)** like cardiovascular diseases, osteoporosis, dementia, arthritis, vision/hearing loss, and urinary incontinence, among others.

### Common Old Age-Related Diseases

Disease	Key Features
Alzheimer's & Dementia	Memory loss, cognitive decline, personality changes
Osteoporosis & Arthritis	Brittle bones, joint pain, reduced mobility
Cardiovascular Diseases	Heart attack, stroke, hypertension
Diabetes	High blood sugar, risk of kidney/eye complications
Cancer	Higher incidence with age due to reduced immune surveillance
Parkinson's Disease	Tremors, movement difficulties, neurological decline
Sensory Impairments	Cataract, hearing loss, macular degeneration
Urinary Incontinence	Loss of bladder control, social isolation

## Impact on Society and Health

### 1. Increasing Geriatric Population

- As per the **Elderly in India Report 2021** (Ministry of Statistics & Programme Implementation):
  - ✓ The elderly population is projected to **double from 10.1% in 2021 to 20% by 2050**.
  - ✓ This poses enormous challenges for health, social security, and caregiving systems.

## 2. Health System Pressure

- Geriatric diseases require **long-term, chronic care**.
- Overburdened public health systems are not adequately equipped for **palliative care, rehabilitation, or home-based services**.

## 3. Economic and Social Dependency

- Many elderly people suffer from **economic dependency** due to retirement, disability, or lack of savings.
- As per **Longitudinal Ageing Study in India (LASI) 2020**, about **27% of elderly live alone or with a spouse only**, leading to psychological stress and inadequate care.

## 4. Mental Health Impact

- Depression, loneliness, and elder abuse are common.
- WHO estimates **15% of elderly globally suffer from a mental disorder**, and it's often underdiagnosed in India.

## 5. Caregiver Burden

- Informal caregivers (mostly women) bear the **physical, emotional, and financial burden** of caring for elderly family members, often unpaid and untrained.

## 6. Gendered Impact

- Elderly women are more vulnerable due to longer lifespans, widowhood, and lower lifetime earnings, as noted in **UNFPA's 2022 India Ageing Report**.

## Theoretical Perspectives

### 1. Talcott Parsons – Sick Role Theory:

- The elderly often internalize the "sick role" and withdraw from active roles in society, which can lead to dependency and isolation.

### 2. Peter Laslett – Four Ages of Life:

- He differentiates the third age (active retirement) from the fourth age (dependent old age), stressing the need to support autonomy and dignity during aging.

### 3. Michel Foucault – Medicalization of Ageing:

- Old age is increasingly medicalized, shifting focus from well-being to pharmaceutical and institutional control, often ignoring the **social dimensions of ageing**.

### 4. Amartya Sen – Capability Approach:

- Advocates ensuring the elderly have the **freedom to lead dignified lives**, not merely survive with basic needs

## Government Initiatives & Reports

- ❖ **National Policy for Older Persons (1999)**: First major policy recognizing the rights of the elderly.
- ❖ **Maintenance and Welfare of Parents and Senior Citizens Act (2007)**: Mandates children to care for parents and provides legal recourse.
- ❖ **Rashtriya Vayoshri Yojana**: Provides physical aids to the elderly in BPL category.
- ❖ **Indira Gandhi National Old Age Pension Scheme (IGNOAPS)**: Offers financial support under NSAP.
- ❖ **NPHCE (National Programme for Health Care of the Elderly)**: Provides dedicated geriatric healthcare services.
- ❖ **SAGE Portal (2021)**: Supports elderly care startups and innovation.

## Measures to Resolve the Crisis

### 1. Health System Strengthening

- Establish **geriatric wards and mobile clinics** in primary health centers (PHCs).
- Expand **palliative and home-based care**.
- **Train ASHAs and ANMs** in elderly care and mental health screening.

## 2. Financial and Social Security

- Universal **old age pension** indexed to inflation.
- Strengthen the coverage and outreach of **health insurance schemes** like Ayushman Bharat for the elderly.

## 3. Community-Based Interventions

- Promote **intergenerational centers**, day-care units, and **senior citizen clubs**.
- Use **SHGs and Panchayats** for local support systems.

## 4. Legal and Policy Reform

- Update the **2007 Maintenance Act** to include neglect and emotional abuse.
- Introduce **caregiver support laws**, leave policies, and tax rebates.

## 5. Awareness and Social Change

- Campaigns against **ageism**, and promoting **respect and dignity for the elderly**.
- Media and education systems can integrate **positive aging narratives**.

## 6. Technological Solutions

- Promote **telemedicine**, wearable devices, and emergency apps tailored for elderly.
- Support **AI and robotics** in elder care (e.g., fall detection, reminders).

## Epidemiological Consequences of the Rise in Food Production and Sedentism

The **Neolithic Revolution** (ca. 10,000 years ago) marked the **transition from foraging to farming**. While this shift brought food surplus and population growth, it also led to **new patterns of disease**. Sedentism (permanent settlement) and domestication created environments conducive to the spread of **infectious, nutritional, and zoonotic diseases**.

### 1. Rise in Infectious Diseases

**Thinker: Jared Diamond – “The Worst Mistake in the History of the Human Race”**

- Diamond argued that agriculture led to **dense, sedentary populations**, increasing contact and the risk of epidemics.
- **Case Study: Early farming villages like Çatalhöyük (Turkey, 7500 BCE)** had **close animal-human proximity**, leading to zoonotic diseases (e.g., brucellosis).
- Diseases like **tuberculosis, smallpox, and measles** originated from domesticated animals (cattle, pigs, etc.).

#### Explanation:

- In sedentary societies, **waste accumulation, stagnant water, and poor hygiene** supported the spread of **waterborne and vector-borne diseases** like cholera and malaria.

### 2. Nutritional Deficiencies and Malnutrition

**Thinker: Mark Nathan Cohen – Paleopathology and subsistence studies**

- Compared skeletal remains of foragers and farmers; found early farmers suffered **more enamel hypoplasia, anemia, and stunted growth**.
- **Case Study: Dickson Mounds (Illinois, USA)** – Transition from foraging to maize agriculture led to a **decline in stature, increased dental caries, and anemia**, indicating **dietary narrowing**.

#### Explanation:

- Farming societies often **over-relied on a few crops (e.g., wheat, rice, maize)**, lacking dietary diversity.
- Foragers had more varied diets rich in micronutrients.

### 3. Emergence of Zoonotic Diseases

**Thinker:** William McNeill – “*Plagues and Peoples*”

- McNeill emphasized that **animal domestication** and permanent settlements led to **cross-species disease transmission**.
- **Case Study:**
  - ✓ **India’s early Indus Valley** sites show animal pens near human dwellings, suggesting early zoonotic pathways.
  - ✓ Modern parallels: Zoonotic diseases like **Nipah Virus in Kerala** trace back to **fruit bat-human interactions**—a pattern established since early sedentism.

### 4. Increased Population Density and Epidemics

- Sedentary farming enabled **larger population centers**, which allowed **pathogens to persist** in host populations.
- **Case Study:** In ancient Mesopotamia and Egyptian Nile civilizations, dense urban centers facilitated the rise of **cholera, typhoid, and parasitic diseases** due to contaminated water and poor sanitation.

### 5. Inequality and Differential Disease Exposure

**Thinker:** Ronald Barrett – Medical anthropologist focusing on health and inequality

- Sedentary agriculture led to **social stratification**, with elites accessing better diets and housing.
- **Case Study: Maya Civilization** – Elites had fewer health issues than commoners, who showed signs of **malnutrition and heavy labor stress** in skeletal remains.

### 6. Sanitation-Related Illnesses

- Permanent settlements without proper waste disposal saw increased spread of **helminths (intestinal worms)** and **fecal-oral diseases**.
- **Archaeological Evidence:** Human coprolites (fossilized feces) from Neolithic sites in **Europe and Asia** reveal high loads of **parasites**.

### 7. Epidemics in Agrarian Civilizations

- Large food-producing empires like Rome and China faced **recurrent plagues** due to interconnected trade and population mobility.
- **Case Study: Plague of Justinian (541 CE)** in the Eastern Roman Empire, facilitated by grain shipments and urban crowding—likely an early form of bubonic plague.

## Social Concept of Disease

The **social concept of disease** moves beyond the biomedical view and explores how social, cultural, and economic contexts shape our understanding of illness. It focuses not only on the physiological malfunction but also on how **disease is experienced, interpreted, and responded to** within a society.

### 1. Disease as a Social Construct

Diseases are not just objective, biological conditions; they are also **socially constructed**. What is considered a "disease" in one society may be seen as a **normal variation**, a spiritual condition, or even a gift in another. Anthropologist **Margaret Lock** highlights this in her work on menopause. In Japan, menopause is viewed more as a life transition than a medical disorder, unlike in Western biomedical frameworks, where it is often pathologized.

### 2. Illness, Disease, and Sickness: Distinct Concepts

**Arthur Kleinman**, a key figure in medical anthropology, proposed a crucial distinction:

- **Disease** refers to the biomedical pathology.
- **Illness** is the **individual’s subjective experience** of symptoms.
- **Sickness** is the **social identity** assigned to a person who is perceived as ill.

For example, a person with early-stage HIV may not feel physically sick (illness), but society may label them as "sick" and treat them differently (sickness), even before symptoms appear (disease). This framework helps understand how **stigma and social behavior** affect people’s experiences.

### 3. Cultural Interpretation of Disease

Disease causality varies across cultures—some societies attribute illnesses to **spiritual forces, social conflict, or supernatural punishment** rather than biological agents.

Anthropologist **Claude Lévi-Strauss** analyzed how tribal societies understand illness through **myths and symbolic thought**. In many tribal communities in India, illnesses like smallpox are seen as caused by deities like Sheetla Mata, leading to ritual-based treatment rather than clinical care.

### 4. Stigma and Social Exclusion

**Erving Goffman** introduced the idea of “**spoiled identity**”, where individuals with certain diseases (e.g., leprosy, mental illness) are **socially marked** and excluded.

This is especially evident in rural India, where leprosy sufferers are often denied access to housing, jobs, or marriage. The disease’s **social meaning often outweighs its medical reality**, affecting the patient’s mental and social well-being far more than the physical symptoms.

### 5. Social Inequality and Disease Burden

Disease does not affect everyone equally. **Paul Farmer** introduced the concept of “**structural violence**” to show how poverty, caste, gender, and marginalization **increase vulnerability to illness** and reduce access to healthcare.

For example, in tribal regions of Jharkhand and Odisha, **malaria and tuberculosis** are more prevalent, not just due to geography, but due to **poor housing, undernourishment, and lack of public health facilities**. These are not mere medical issues but deeply social problems

### 6. Medicalization and Control

**Michel Foucault** argued that modern medicine doesn't just heal—it also **regulates populations**. Through institutions like hospitals, prisons, and schools, societies define what is “normal” and “deviant” under the guise of health.

Childbirth, aging, sadness, and even hyperactivity are now increasingly viewed as **medical conditions** needing intervention, showing how **power and knowledge** work through medicine to shape behaviour.

**Example:** In urban India, rising diagnoses of ADHD or depression among schoolchildren reflect this **medicalization of everyday life**.

### 7. Emotional and Moral Dimensions of Suffering

Anthropologist **Nancy Scheper-Hughes** studied mothers in Brazilian shantytowns who had to emotionally detach from sick children due to extreme poverty. This “moral economy of suffering” shows how **social conditions influence not only disease outcomes but emotional responses to them**.

In Indian slums, similar dynamics are seen when families must prioritize one child’s treatment over another's due to limited resources, highlighting the **ethical complexity of health choices under poverty**.

### 8. Local Healing Systems and Pluralism

In many societies, people navigate between **traditional healers, religious practices, and biomedical care**. This phenomenon—called **medical pluralism**—reflects how different systems of meaning coexist.

Anthropologist **Byron Good** emphasizes that even modern patients often seek **meaning** for their illness beyond science, turning to spiritual or moral explanations, especially when diseases are chronic or life-threatening.

### 9. Gendered Experiences of Disease

Women and men often experience illness **differently due to gender roles**, biological differences, and social expectations.

- **Example:** Women are more likely to delay treatment for heart disease, as their symptoms are often dismissed or misunderstood (both by doctors and themselves).



- Anthropologist **Veena Das** has shown how **urban poor women in India** face emotional silencing and neglect when dealing with domestic violence-induced trauma, which manifests in psychosomatic complaints.

## 10. Historical and Colonial Legacies

Diseases are not isolated in time—they are shaped by **colonial histories**, environmental changes, and political economies.

- **Nancy Scheper-Hughes** documented how decades of inequality in Brazil led to **chronic hunger**, violence, and disease.
- **Example:** In India, British colonial policies during famines and urban planning contributed to **plague outbreaks** in Bombay (1890s), which were blamed on “native habits” instead of policy failures.

## 11. Commercialization of Disease and Medical Consumerism

Pharmaceutical companies and private hospitals play a powerful role in **defining and promoting diseases**.

- Overdiagnosis of depression, ADHD, or PCOS is now driven partly by **medical marketing and profit motives**, not just genuine health needs.
- **Foucault’s medical gaze** becomes commercialized—disease is not only controlled but also **sold and advertised**.

## Concept of Nutritional Ecology

Nutritional ecology is the **biocultural and ecological study** of human dietary behaviour, focusing on how food habits are shaped by environmental constraints, biological needs, socio-cultural factors, and evolutionary adaptations.

It integrates principles of ecology, human biology, anthropology, and evolutionary theory to understand the interactions between diet, health, environment, and culture.

### Characteristics

#### 1. Ecological Adaptation of Diet

- Human dietary strategies evolve in response to ecological constraints like seasonality, biodiversity, and resource availability.
- Julian Steward, in his theory of Cultural Ecology, emphasized that human food systems reflect adaptation to local environmental conditions.

**Case Study:** The Inuit of the Arctic rely on high-fat animal-based diets (seal, whale) to survive extreme cold — a direct ecological adaptation.

#### 2. Biocultural Perspective on Nutrition

- Nutritional ecology adopts a biocultural approach, integrating genetic, physiological, and cultural responses to diet.
- Claude Lévi-Strauss argued that “food is good to think with,” emphasizing symbolic and structural aspects of diet in culture.

**Example:** Indian vegetarianism is both culturally prescribed and has long-term biological consequences like lower rates of colon cancer but higher risk of B12 deficiency.

#### 3. Foraging vs. Agricultural Diets

- Nutritional ecologists compare **forager diets** (rich in fiber, protein, micronutrients) with **early agricultural diets** (carbohydrate-heavy, low diversity).
- **Mark Nathan Cohen** and **Richard Steckel** showed through paleopathological studies that **early farmers had worse nutrition and more disease** than foragers.

**Case Study:** Skeletal remains at **Dickson Mounds (USA)** show **increased enamel hypoplasia and iron deficiency anemia** after maize-based agriculture.



#### 4. Energetics and Subsistence Strategies

- Focus on how **energy intake and expenditure** affect human health, body composition, and reproduction.
- **Leslie Aiello and Peter Wheeler's "Expensive Tissue Hypothesis"** suggests that **better nutrition (meat-eating)** allowed energy to support larger brains in human evolution.

**Example:** Among the **Hadza of Tanzania**, high physical activity and mixed diet (hunting + gathering) maintain energy balance and metabolic health.

#### 5. Food Taboos, Rituals, and Symbolism

- Cultural rules around food (taboos, fasting, feasting) affect nutrition.
- **Marvin Harris**, in his materialist approach, argued that food taboos (e.g., pork in Islam) can be **adaptive to ecological and economic contexts**.

**Example:** In Indian tribes, **seasonal food taboos** (e.g., avoiding certain fish during monsoon) align with breeding cycles and ecological sustainability.

#### 6. Micronutrient Ecology and Local Deficiencies

- **Nutritional ecology studies trace nutrient deficiencies like iodine, iron, vitamin A, which vary by ecological zone.**
- **Solomon Katz** explored how traditional diets evolve mechanisms (like fermentation or spice use) to enhance nutrient availability and reduce toxins.

**Case Study:** Goitre in Himalayan regions is linked to low iodine soils; traditional communities use iodine-rich salt and river fish to adapt.

#### 7. Globalization and Nutritional Transition

- Nutritional ecology critiques the shift from traditional diets to highly processed, low-nutrient “global diets” under globalization.
- Laurie Thorp and Nancy Scheper-Hughes studied how urbanization, food marketing, and poverty lead to obesity and undernutrition coexisting in poor communities.

**Case Study:** Among urban Indian Adivasis, the introduction of junk food and rice rations has led to rising diabetes and anemia side by side.

#### 8. Ecological Feedback Loops and Sustainability

- Human diets impact and are impacted by the ecosystem: overhunting, deforestation, and monocropping affect long-term food availability.
- Roy Rappaport's study on the Tsembaga Maring of Papua New Guinea shows how ritual pig feasting regulates population, food supply, and land use in a sustainable cycle.

**Nutritional ecology includes long-term sustainability of food systems, not just short-term intake.**

#### Notable Case Studies

1. **Dickson Mounds, USA** – Early maize agriculture → nutritional decline
2. **Inuit Diet, Arctic** – High-fat survival diet adapted to cold
3. **Hadza, Tanzania** – Balanced forager diet and energy-efficient mobility
4. **Tsembaga Maring, PNG** – Ritual feasts maintain ecological balance
5. **Indian Tribal Belts** – Micronutrient deficiencies tied to soil and ecology
6. **Brazilian Urban Poor** – Obesity + hunger due to processed foods and inequality

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