GEC1015 Public Health in Action
AY23/24, Y1S2
Notes

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Contents

1 What is Public Health? (Chapter 1)

1.1 Definition and Concept

- **Public Health** is the Science and Art of preventing disease, prolonging life, and promoting health through the organized efforts and informed choices of society, organizations (public and private), communities, and individuals.

- Public health focuses on **Policies that affect the population and prevention**, not individual patients and treatment.

- We need to value health as much as wealth, as wealth $\leftrightarrow$ health.

- **Health** includes physical, mental, and social well-being.

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2 Public Health Framework (Chapter 2)

2.1 Public Health Approach

1. **Monitor and Survey the problem** (What is the Problem).

2. **Identify risk and protective factors (causes)**: Determine if the problem is Preventable or Controllable, and set Priorities.

3. **Develop and evaluate interventions (Solution)**: Determine what works and for whom.

4. **Implementations (Effectiveness) and monitor**: Scaling up effective policy and programs.

2.2 Prevention Levels

- **Primary Prevention**: Healthy Population, health promotion, and protection.

- **Secondary Prevention**: Screenings.

- **Tertiary Prevention**: Effective treatment to delay death and complications, rehabilitation to improve QOL.

2.3 Socio-Ecological Model (SEM)

- **Individual**: Age, Sex, Genes, Ethnicity, SES, Individual Knowledge, attitudes, and beliefs.

- **Interpersonal**: Family, Peers, Social Networks and Associations.

- **Institutional**: Access to facilities, goods, and services within the institution, Living and working conditions, Structural factors.

- **Community**: Access to facilities, goods and services within a larger social environment, Healthcare, Safety and Sanitation, Sociocultural norms and values.

- **Policies**: Policies and laws.

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3 Health Systems (Chapter 3)

3.1 Definition and Goals

- A health system consists of all organizations, people, and actions whose primary intent is to promote, restore, or maintain health.

- **Goals**: Better Health, Fairness in Financial Contribution, and Responsiveness to people's expectations.

3.2 Levels of Care

- **Primary Care**: Target population of $5k$–$50k$ (Locally). Manages common health problems (80-90% of visits). Acts as a gatekeeper.

- **Secondary Care**: Target population of $50k$–$500k$ (District). Acute care, specialized.

- **Tertiary Care**: Target population of $500k$–$5M$ (Region). Management of rare disorders.

- **Intermediate and Long-Term Care (ILTC)**: Community Hospitals, rehabilitation, nursing homes.

3.3 Health System Structure in Singapore

- **Integrated Healthcare Clusters**: NHG (North), NUHS (West), SingHealth (East, South).

- **Agencies/Stat Boards**: HPB (National Steps Challenge, Healthier Choice), AIC, HSA (Drug Evaluation, Forensics, Blood Transfusion), Synapxe (HealthHub, EMR).

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4 Health Interventions (Chapter 5)

4.1 Intervention Definition and Levels

- An intervention is an act performed for a person or population whose purpose is to assess, improve, maintain, promote, or modify health, functioning, or health conditions.

- Interventions are built around **Target**, **Action**, and **Means**.

4.1.1 Levels of Intervention

- **Micro** (Individuals and Family): Changes in knowledge, attitudes, and behaviours. Examples: Project Silver Screen, ACP, Caregiver Training.

- **Meso** (Targeting groups and organisations): Changes in practice, culture, and operations. Examples: Silver Generation Ambassadors, Primary Care Network, Hospital to Home.

- **Macro** (Targeting large-scale systems): Changes in laws, policies, and funding. Examples: Nutri-Grade Mark, CHAS, Hospital Subsidies.

4.2 Key Intervention Examples

- **Three Beyonds Goal**: Beyond Hospital to Community, Beyond Quality to Value, Beyond Healthcare to Health.

- **Screening**: Screen for Life (Chronic disease and cancers), Project Silver Screen (Vision, hearing, and oral for > 60).

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5 Nutrition, Diet and Health (Chapter 6)

5.1 Diet Quality and Concerns

- **Quality Carbohydrates**: Minimally processed whole grains, fruits, vegetables; maintain steady blood sugar.

- **Protein Rich Foods**: Meat, Milk, Tofu, Eggs, etc. (must be properly prepared).

- **Concerns**: High protein without fiber $\rightarrow$ Constipation, worsens kidney function, Red Meat $\rightarrow$ Heart Disease risk.

5.2 Vegetarian Classifications

- **Lacto-Vegetarian**: Allows Dairy.

- **Ovo-Vegetarian**: Allows Eggs.

- **Lacto-ovo-Vegetarian**: Allows eggs and dairy.

- **Pescatarian**: Allows Fish.

- **Pollotarian**: Allows Poultry.

- **Vegan**: Bans everything.

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6 Infectious Diseases and Surveillance (Chapter 7)

6.1 Disease Cycle and Epidemiology

- **Cycle**: Causative Agent $\rightarrow$ Incubation Period $\rightarrow$ Infectious Period $\rightarrow$ Mode of Transmission.

- **Epidemiology**: Study of incidence and spread of infectious diseases in populations over time.

6.2 Surveillance Types

- **Passive**: Lower Cost, ongoing reporting. Overlooks unknown pathogens.

- **Active**: Timely, accurate, complete data. Resource intensive.

- **Types**: Sentinel, Serological, Syndromic, Genomic, Social Media, Notifiable.

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7   Robotics in Healthcare (Chapter 8)

7.1   Surgical Assistance

- **Laparoscopy**: 2D Camera, limited dexterity, less expensive.

- **Robotics Assisted Surgery**: 3D Camera, 360° rotation, no hand tremors, expensive.

7.2   Modular and Service Robots

- **Modular (Rehabilitation)**: Exoskeleton robots, prosthetic limbs. Improves QOL, monitors patient forms.

- **Service**: Logistics, cleaning, disinfection, blood drawing.

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8   Substance Misuse and Toxicity (Chapter 9)

8.1   Substance Use Disorder (SUD)

- Treatable chronic disease characterized by use leading to impairments in health, social function, and control.

- **Related Terms**: Dependence (Withdrawal), Addiction (Loss of control), Tolerance (Diminishing response).

8.2   Specific Substances

- **Meth**: Effects include euphoria, energy, irritability, panic, stroke, heart failure. Mitigation: Class A drug, Screening, Preventive Drug Education.

- **Alcohol**: Effects include violence, traffic injuries, cancer, heart disease. Mitigation: Taxes, Legal Age (18), Police Enforcement. Standard drink guidelines (2/day men, 1/day women).

- **Opioids**: Reduce pain. Effects: Sedation, respiratory depression, seizures. Withdrawal: Bone/Joint aches, anxiety. Mitigation: Controlled Drug guidelines, limit over-the-counter sales.

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9 Workplace Safety and Health (Chapter 10)

9.1 Definition and Impact

- **Goal**: Preventing and controlling occupational diseases and accidents, enhancing worker well-being.

- **Work Affects Health**: Accidents, injuries, hidden/incurable diseases.

9.2 Industrial Revolutions and WSH

- **First IR**: Hazardous work, little WSH legislation.

- **Third/Fourth IR**: Sedentary work, rising NCD, changing conditions (WFH, 24/7 digital platforms).

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10 Genomics in Public Health (Chapter 11)

- **Genome**: DNA/RNA instructions.

- **Genomics**: Study of genome, traits, and disorders.

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11 Global Health (Chapter 12, 13, 14)

- **Global Health**: Focuses on issues that transcend national boundaries.

- **Humanitarian Emergencies**: Crisis threatening health/safety of large groups.