Lecture 10: non communicable diseases

**Definition:**
NCDs are long duration diseases, that have slow progression, and are not communicable to others, and normally can’t be cured completely.

**Characteristics:**
- complex causes, multiple risk factors, long latency period, non-contagious origin, prolonged course, functional impairment
- Non communicable diseases are the leading cause of mortality in the world
- They have health and economic burden and complications

**Four main types:**
- cardiovascular, chronic respiratory distress, cancer and diabetes
- others include neurologic diseases, musculoskeletal and injuries

- Most NCD deaths occur in low and middle income countries
  - NCDs affect men and women almost equally
  - they affect people’s finance (expensive treatment) and productivity (disabilities)

- All NCDs mostly depend on modifiable and preventable risk factors, working on these factors is suggested to be promising to decrease NCD

**Definition of risk factors:**
any element or aspect that increases the risk of occurrence of a certain disease, injury or condition.

**Modifiable:** can be reduced, controlled (major four: physical inactivity, tobacco use, alcohol use and unhealthy diets)

**Non modifiable:** can’t be reduced nor controlled (genetics, age)

**Types of risk factor differ depending on the source:**
- non modifiable, modifiable (include: behavioural, environmental, physiological) → you can check them in the slides, they’re v. easy, page 4

Today we focus on preventing rather than treating by targeting risk factors

The major four risk factors lead to 4 key metabolic changes (biochemical processes in the body):
- 1) raised BP
- 2) obesity/Ov-wt
- 3) raised blood glucose
- 4) raised cholesterol

**Cardio-vascular diseases:** disorders of heart and BVs

Include: coronary heart disease, cerebrovascular disease, peripheral arterial disease, congenital heart disease

CVDs are the #1 cause of death globally, the number of deaths is estimated to increase

- Most of them occur in low and middle income countries

**CVD risk factors:**
- major modifiable: high BP, abnormal blood lipids, tobacco use, physical inactivity, obesity, unhealthy diet
- other modifiable: Low socioeconomic status - Mental ill health (depression) - Psychosocial stress - Heavy alcohol use - Use of certain medication - Lipoprotein(a)
- non-modifiable: genetic aspects
- novel risk factors (related to biochemistry of the body) e.g. blood excess homocysteine, inflammatory markers
Diabetes: a disorder of metabolism

Has 4 types: 1, 2, gestational and pre-diabetes

- **Type 2** is caused by **modifiable risk factors** and is the most common worldwide. (90% of all adult cases)
- **Most diabetes deaths occur in low- and middle income countries.**  
  Diabetes deaths are estimated to **increase**
- **Modifying risk factors can prevent or delay diabetes 2**
  **Major modifiable Risk Factors:** Unhealthy diets - Physical Inactivity - Obesity or Overweight  
  - High Blood Pressure - High Cholesterol  
  **Other Modifiable:** Low socioeconomic status - Heavy alcohol use - Psychological stress - High consumption of sugar-sweetened beverages - Low consumption of fiber
  **Non-modifiable:** Distribution of fat
  **Other Risk Factors:** Low birth weight - Presence of autoantibodies (T1)

---

Cancer: large group of diseases that can affect any part of the body

70% (most) of all cancer deaths occur in low- and middle-income countries.

About 30% of cancers are attributable to behavior risk factors (no certain direct causes, many risk factors)

Cancer epidemiology:

**Highest incidence:** breast > prostate > lung  
**Highest mortality:** lung > breast > stomach

---

Chronic respiratory disease:

A leading cause of death

**Most deaths occur in Low income countries**

**Risk factors:**
- Cigarettes, occupational dust and chemicals, environmental tobacco smoke, air pollution  
- Genes, infections, socio-economic status, aging populations

**Targeting risk factors is key to decrease them, why?**

Surveillance for NCD can be difficult because relationships between exposures and conditions are complex and appearance of the disease takes time
Lecture 11: the global burden of mental health problems

World Mental health day: 10-10

Read and understand:

Mental health definition: a state where every individual realizes his or her own potential, can cope with the normal stresses of life, can work productively and fruitfully, can find fulfilling relationships with other people, have the ability to adapt to change and to cope with adversity, and show behaviors that are age-appropriate and congruent with local and cultural norms.

Mental illness: Is a term used to mean all diagnosable mental disorders. Any malfunction in the mental health definition.

Mental disorder: a syndrome characterized by clinically significant disturbance in an individual’s cognitions, emotional regulation, or behavior that reflects a dysfunction in the psychological, biological, or developmental processes underlying mental functioning.

Mental health problems: Is a term used when signs and symptoms of mental illness occur but do not meet all criteria for a disorder. It’s the best time to catch a mental problem.

Mental illness protective factors: read and understand it’ll be easier to remember

Individual: related to one’s nutrition, attachment, temper, faith, spirituality, sense of purpose & resilience

Family: stability of the family, support, caring of parents and well spacing of siblings

School: Positive environment, feeling safe, Supportive & positive peers, Opportunities to be responsible/helpful, Success and achievement

Other: economic security, connection to community, faith, access to mental and physical Health care, no violence or trauma exposure.

The undefined and hidden burden: problem with those is that they’re hard to quantify

The Undefined: economic and social burden on people that are not measured, they take a toll one the one suffering from them and on the people around them, on emotional and socio-economic aspects

The hidden: burden associated with stigma and violations of human rights and freedoms

Specific economic and social losses:
- Lost productivity of the mentally ill and people taking care of them and from premature deaths caused by MIs, and reduced productivity of people working with MI
- Cost of accidents caused by MI people (if they work, like airplane captains for ex.)
- Financial costs of taking care of them
- Unemployment, alienation and crime in people with unaddressed childhood issues
- Poor cognitive development in the children of mentally ill parents, and the emotional burden and diminished quality of life for family members.

Stigma can be defined as a mark of shame, disgrace or disapproval which results in an individual being shunned or rejected by others. The stigma associated with all forms of mental illness, increases with severity of MI presentations, and odd behavior of the mentally ill,

-Because of stigma MI people are rejected causing feelings of anger, loneliness, sadness and they’re denied normal participation in family life, normal social networking and employment.

-Stigma has an effect on the recovery, the treatment and the type of support a mentally ill person receives, it also affects their families and caretakers and leads them to humiliation.

It originates from myths, misconceptions and negative stereotypes.

Global burden of mental illness:

Five types of mental illness appear in the top 20 causes of global burden of disease (GBD):
1. Major depression (second)
2. Anxiety disorders
3. Schizophrenia
4. Dysthymia or persistent depressive disorder
5. Bipolar disorder

Poor people carry the greatest burden because they’re exposed to the risk factors and deprived from treatment.

People with mental disorders experience disproportionately higher rates of disability and mortality owing to physical health problems that are often left unattended (such as cancers, cardiovascular diseases, diabetes and HIV infection) and suicide.

Mental disorders are among the leading causes of ill health world wide.
Depressvie disorders are the commonest ranking after ischemic heart disease.

Health systems aren’t dealing adequately with mental illness so, more mentally ill people and lesser available treatment.

A further compounding problem is the poor quality of care for those receiving treatment, because most of the money put into mental illness treatment go to stand-alone mental hospitals despite their association with poor health outcomes and human rights violations.

The number of specialized and general health workers dealing with mental health in low-income and middle-income countries is grossly insufficient.

Responsibility of taking action about MI is majorly on governments.
<table>
<thead>
<tr>
<th>Disorder</th>
<th>Definition and characteristics</th>
<th>Burden and epidemiology</th>
<th>Notes, prognosis and treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Major depression</td>
<td>An alteration in mood that is expressed by feelings of sadness, despair, and pessimism. Loss of interest in usual activities, and somatic symptoms may be evident. Changes in appetite and sleep patterns are common.</td>
<td>One of the main causes of disability worldwide. More women are affected than men. Long lasting or recurrent. Affects people’s coping with everyday life. Most severe ( \rightarrow ) leads to suicide. Prevention programs reduce it in children and adults. First line treatment is talking therapy (mild to moderate). Antidepressants are used more for moderate to severe. Second line for adolescents. Not used in children. Management should include psychosocial aspects, identifying stress factors (e.g., financial problems, difficulties at work or physical or mental abuse) and sources of support like family and friends. Maintenance of social networks and social activities is important.</td>
<td></td>
</tr>
<tr>
<td>Adolescent depression</td>
<td>Depression, but in teenagers</td>
<td>20% of teenagers have at least one episode of depression before 18. 20% of those seek help. And 40% of those get the support needed (don’t mind percentages).</td>
<td>Adolescent depression shows with atypical presentations. Knowledge of the most commonly used suicide methods is important to devise prevention strategies. Suicide facts: (the opposite is not real) READ AND UNDERSTAND. Most suicidees give signs about it. Most suicidees don’t want to die for sure, they just cry for help. People who are suicidal, only want to die for a transient period of time. Most suicidal deaths occur after months of depression improvement because they have more energy to do it. Suicidal tendency is not inherited, it’s an individual matter, but we’re affected by close ones’ acts. Suicidees are very unhappy, but they aren’t all mentally ill. All suicidal thoughts should be attended to with the possibility of the actual act taking place.</td>
</tr>
<tr>
<td>Suicide</td>
<td>“the act of choosing to end it all, because all is unbearable” 😞</td>
<td>For every suicide, many many attempts take place. A prior suicide attempt is the single most important risk factor for suicide. Suicide is the second leading cause of death among 15–29-year-olds. Most suicides occur in low and middle income countries. Most common methods are Firearms, hanging and pesticides -L&amp;M income C. Gun shot wounds are the leading cause of death among suicide victims. The link between suicide and mental disorders (in particular, depression and alcohol use disorders) is strong, but many suicides happen impulsively in moments of</td>
<td></td>
</tr>
</tbody>
</table>
### Crisis with a breakdown in the ability to deal with life stresses.

**Factors:** conflict, disaster, violence, abuse, or loss and a sense of isolation are strongly associated with suicidal behavior.

**High risk groups:** People who experience discrimination, such as refugees and migrants; indigenous peoples; (LGBTI) persons; and prisoners.

### Suicide is preventable, by taking certain measures at different levels:
- Reducing access to self-harm means
- Reporting by media responsibly
- Reducing the harmful effect of alcohol
- Early identification, treatment and care of people disorders, chronic pain and acute emotional distress
- Training of non-specialized health workers in the assessment and management of suicidal behavior
- Follow-up care for people who attempted suicide and provision of community support.

### Bipolar disorder

**Disregulation of mood**
That consists of both manic and depressive episodes separated by periods of normal mood. Some classified bipolar people only have manic episodes.

**Manic episodes** involve elevated mood, over-activity, pressure of speech, inflated self-esteem and a decreased need for sleep.

Effective treatments (mood stabilizers) for the acute phase of bipolar disorder and the prevention of relapse. **Psychosocial support is important.**

### Schizophrenia spectrum

A bad, sad mental disorder -psychosis characterized by distortions in thinking, perception, emotions, language, sense of self and behavior. Include hallucinations and delusions (fixed false beliefs or suspicions).

The disorder can make it difficult for people affected to work or study normally.

- Begins in late adolescence or early adulthood
- Treatment with medicines and psychosocial support is effective
- Facilitation of assisted living, supported housing and supported employment can help people with it lead a relatively normal life.

---

**Mental health action plan 2013-2020 objectives:**

1- to strengthen effective leadership and governance of mental health

2- to provide comprehensive, integrated and responsive mental health and social care service in community based settings

3- to implement strategies for promotion and prevention in mental health

4- to strengthen information systems, evidence and research for mental health
Environmental Health: Studies how environmental factors (physical, chemical, and biological factors external from human) affect health. Its goal is to prevent diseases and create safe environments. Social and cultural factors, as well as genetics, are not included here. We will focus on five topics.

1- Air pollution: almost everybody now breathes polluted air. The highest to lowest air pollution levels are in Eastern Mediterranean > South-East Asia > Low and middle-income countries in Africa and western pacific > High-income countries in Europe, Americas, and West pacific. African and western pacific countries are not reporting much data, while Europe is doing well in this field. Air pollution lowers average life expectancy and causes 1 in 9 deaths worldwide through NCDs. One third of stroke, lung cancer, chronic respiratory disease cases and one fourth of Ischemic heart disease cases are caused by air pollution. Mechanism: tiny particles enter with air, infiltrate into your lungs and cause inflammation. They can even enter the bloodstream and induce vasoconstriction, causing hypertension, stroke, and ischemia.

2-Chemical safety: is achieved by controlling the presence, natural extraction, synthesis, transport, use, and disposal of chemicals in a way that does not harm humans and environment. These chemicals include: Air pollution, Pesticides, Mercury, Lead, Flouride, Cadmium, Benzene, Arsenic, Dioxin and Aspestos. Poisoning by chemicals (intentionally and unintentionally) causes many deaths and DALYs. This can be prevented by limiting the availability of pesticides (developed countries are already doing that), also by putting safety standards of using chemicals in food.

3-Water Sanitation: By 2025, half of the world's population will be living in water-stressed areas. Clean water is important for public health, whether it is used for drinking or other purposes. Poor water supply and sanitation leads to poor economy, poverty, bad education and lives for children, and the transmission of certain diseases such as cholera, diarrhea (the most common one), dysentery, hepatitis A, typhoid, and polio. This is particularly important in hospitals where people are at higher risk, especially in low-income countries. Other dangers include schistosomiasis, and dengue fever of which covering water containers might be enough to solve the problem.

4-Environmental health in Emergencies: Emergencies happen frequently, causing damage to environment and humans and they include:

* Natural disasters: Catastrophic natural events where people normal lives are disrupted and they need shelters, food, etc.

* Chemical and Radiological incidents

* Complex emergency: which combines internal conflict with mass displacement of people, famine, or failing politics and economy. They can become worse by adding natural disasters.

* Deliberate (intentional) events: they can be as small as “contaminating food in a restaurant to get money from them” or as big as releasing chemicals and radiations for terrorism.

-Vulnerability is being unable to cope with disasters. Children, pregnant women, elders, poor and malnourished people, and people who are ill or immunocompromised, are all examples of vulnerable people. Political problems the number of people displaced internally (in the same country) as well as refugees. These people usually live in bad environmental conditions.
5-Climate change: the change in the normal environmental state (like the occurrence of extreme weather states), recently caused by human activities (like fossil fuel burning), which emits gases that trap heat in the atmosphere.

- Climate change can induce some localized benefit, but the overall effect is very negative. For example: In the next 30 yrs, climate change will cost much directly & indirectly (through malnutrition, malaria, diarrhea, heat stress), mostly in low income countries

*Extreme heat*: extremely high temperatures contribute directly to deaths from, CVDs and respiratory disease directly and indirectly through increasing ozone and other pollutants like pollen which causes asthma

*Natural disasters and variable rainfall patterns:*
Weather related disasters tripled since 1960, most related deaths occurring in developing countries

Rising sea levels and increasingly extreme weather events will destroy homes and facilities, forcing people to move and risking them by physical and mental health issues.

Increasingly variable rainfall patterns are likely to affect the supply of fresh water. A lack of safe water can compromise hygiene and increase the risk of diarrheal disease, in extreme cases cause draught and famine.

Floods and extreme precipitation are also increasing in frequency and intensity and expected to increase more

*Outcome*: Rising temperatures and variable precipitation are likely to decrease the production of staple foods in many of the poorest regions → malnutrition and undernutrition

*Patterns of infection*: climate change affects water and vector-borne diseases

It can lengthen their transmission season and widen their geographic range. like malaria, dengue and snail borne schistosomiasis.
Lecture 13: global health ethics

Definitions:

*Health ethics: Health ethics is the interdisciplinary field of study and practice that seeks to understand the values undergirding decisions and actions in health care, health research and health policy, and to provide guidance for action when these values conflict. Health ethics has a broad focus, taking in ethical issues faced by anyone involved in the medical area including patients and their families, concerning any issue related to the term health. It’s broader than “medical ethics” and is part of “bioethics: ethics concerning all living things.”

They’re now included and studied in many health-related fields.

Difference between ethical, social and personal values in health:

Values describe what is important to an individual, a group, or a society. Values that are commonly invoked include autonomy, fairness, equity, compassion, honesty, freedom, solidarity, trust and respect.

Sometimes a situation may give rise to a conflict between different values on different levels, or on the same levels but in groups with different values, mutual respect is crucial.

The relationship between health ethics and the Law:

“Normative frameworks”; they define how people should act.

They’re normally complementary but can conflict; something that isn’t against the law can be unethical and vice versa.

Ethics is concerned with a broader set of relationships and behaviors than most forms of legal regulation.

Ethical analysis of the law can stimulate important reform efforts or acts of civil disobedience.

In sum, while ethics and law are different in certain ways, ethics remains a foundation for law, and often provides a justificatory basis for legal norms.

Major concepts in health research: (understand)

*Human rights: Fundamental freedoms and rights enshrined in a set of universal legal statements.

Important characteristics of human rights: they are acknowledged in international declarations; states and state actors are obliged to respect them; they cannot be waived or taken away (violated sometimes); they are interdependent and inter-related; and they are universal.

*Autonomy: the ability of someone to be their own self and be independent.

*Beneficence: principle requiring responsible people to do what benefits people.

*Non-maleficence: principle requiring that healthcare providers and researchers do not inflict undue harm, intentionally or unintentionally.

*Confidentiality: The obligation to keep information secret unless its disclosure has been appropriately authorized.

Key ethical issues in health research:

- Does the research have value for the study population?
- Who benefits from it?
- Are subgroups of the population treated fairly?
- Are the rights and well-being of individual research participants protected?
Major concepts in health research: (understand)

*Equity*: unequal distribution of some goods to bring about an equal outcome, responding to unjust and unfair health differences.

*Egalitarianism*: A belief in equality. However, egalitarians disagree about what it is that should be equal.

*Justice:* “giving people what they deserve.”

*Informed consent*: Agreement to a certain course of action on the basis of complete and relevant information by a competent individual without coercion (persuasion)

*Privacy*: seeks to protect a person from scrutiny by others. A person sharing information only when they choose to.

*Health maximization*: as large as possible beneficial impact on health obtained by resources allocation

The Importance of Ethical and Human Rights Issues in Global Health:

Ethics and human rights stop the violation of peoples health, whether intentionally or unintentionally, show the way for researches to be humane and ethical, stop the violation of one group for the sake of the other and laws bind governments to respect the people’s health, all this contributes to better global health

Future Challenges in Global Health Work

Students of global health get insufficient exposure to ethical issues, No mechanisms of enforcement of humans rights, Shortage of trained personnel for reviewing research for ethical issues, Lack of reviews of how investments are made, There is no clear definition regarding the human rights in global research in particular in low and middle income countries.

So basically, unethical violations of human rights are prone to happen, especially in misfortunate people.

Health issues regarding groups:

1- because of socio-economic differences at multiple levels, some people might benefit from studies at the expense of less fortunate others, Unfairness can be reduced or eliminated by ensuring that study populations enjoy the benefits of the research.

2- Research tends to find a drug, to sell it and benefit; because of less commercial success in poor communities, they receive less care from investigators.

3- when businesses patent new drugs or devices and want to ensure that product sales recoup investments and generate profits. laws increase the price of new drugs and devices and can thereby severely restrict or prevent access to life-saving therapies for resource-limited populations. (problem in HIV-AIDS community)

4- related to cultural relativity. It is sometimes asked whether ethical standards are universal, given that different people in different countries may hold different values or place different weights on common values.

5- concerning international research, especially where investigators from wealthy countries conduct research in impoverished settings where participants are especially vulnerable or where language and cultural barriers make informed consent difficult. (heated example → standards of care: how much care should study participants receive?)