***Module one Assignment***

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1. **In your own words, what is your understanding of public health:**

Public health refers to "the science and art of preventing disease, prolonging life and promoting health through organized efforts and informed choices of society, organizations, public and private, communities and individuals. It is concerned with threats to health based on population health analysis or Public health refers to health care and health promotion that targets a population or particular group within the population (Institute of Medicine, Division of Health Sciences Policy, 2001).

**And what are its key elements?**

**Key elements of public health are:**

* Monitor health status to identify community health problems
* Diagnose and investigate health problems and health hazards in the community
* Inform, educate, and empower people about health issues
* Mobilize community partnerships to identify and solve health problems
* Develop policies and plans that support individual and community health efforts
* Enforce laws and regulations that protect health and ensure safety
* Link People to needed personal health services and assure the provision of health care when otherwise unavailable
* Assure a competent workforce for public health and personal health care
* Evaluate effectiveness, accessibility and quality of personal and population based services
* Research for new insights and innovative solutions to health problems

1. **Explain the three population indicators that aid in decision making for public health practitioners**

Total fertility refers to the mean number of children born per woman in a particular population. On average this figure ranges between 1 and 10. The crude birth rate, on the other hand, is based on the number of children born in a given year per 1,000 populations. This indicator may range from 10 to 50. Age-adjusted fertility rate is determined by the number of live births/1,000 women 15-44 years old, or some other defined age group. The crude death rate refers to the number of deaths in a year per 1,000 people. Infant mortality rate (IMR) is one of the most widely used demographic measures in public health because it has come to be recognized as the most sensitive indicator for overall health and quality of life of a population. The IMR is determined by the total number of deaths among infants in the first year of life, per 1,000 live

births. Because deaths among adults occur less frequently than among infants and children, the adult mortality rate is calculated using a larger denominator than infant mortality; it is the number of deaths over a year per 100,000 in a population. Population growth is a function of fertility and mortality, and net migration. Population growth rates can be slow, moderate, rapid or explosive. Overpopulation occurs when there are too many people to meet basic needs, but having too few people, or under population, also can pose problems. Mal-distribution of the population can take a variety of forms, including geographic and social dimensions. Overconsumption results when populations use excessive amounts of nonrenewable energy and natural resources and exceed the carrying capacity of their ecological niches.

Three important developmental transitions that have important ramifications for public health include the **demographic transition, the epidemiologic transition and the health transition:**

**(i)Demographic transition**:

As societies undergo the shift from rural agricultural economies to urban industrialized ones, population processes follow a predictable course of change referred to as the demographic transition. The pre-transition period is characterized by high rates of fertility and mortality, particularly infant and child mortality, producing moderate rates of population growth. During the period of transition, death rates first begin to decrease in response to improvements in living conditions and health care, but there is a lag time during which fertility remains high. This is because the factors favoring large family sizes, such as expectations for high mortality among children, are slow to change. This results in elevated population growth rates, characteristic of many developing countries today and the reason that population growth is sometimes used to define underdevelopment. Over time, fertility decreases in response to falling mortality, producing the low growth rates characteristic of industrialized nations.

**(ii)Epidemiologic transition:**

Along with the demographic changes just described, corresponding changes occur in the pattern of diseases which dominate the health profile of a society. The pre-transition situation is characterized by high rates of infectious disease including diarrheal diseases, respiratory infections, and parasitic diseases, which coupled with poor nutritional status leads to excess deaths in the younger age groups. As infectious diseases decline, more children survive to adulthood, life expectancy increases, and chronic diseases affecting the older population become the major health problems of a society, as currently seen

in industrialized countries. These processes are referred to as the epidemiologic transition, and most developing countries are currently in the early stages of this transformation.

**(iii)Health transition:**

The concept of the health transition is a more recently defined area of study which seeks to understand the cultural, social and behavioral determinants of health which underlie the epidemiologic transition.

The above descriptions are the population indicators that help in decision making for public health practitioners but are not limited to the following points:

1. The health of populations is the fundamental concern of global public health. The first step in the pursuit of population health improvement is the measurement of health and disease. Measurement is required to establish the magnitude of disease problems, define causal factors, explore potential solutions, and determine the impact of interventions. Measuring the impact of diseases on populations in terms of mortality and morbidity and their consequences is essential for planning effective ways to reduce the burden of illness and for setting priorities.
2. The burden of disease in populations has been gauged in many ways. Examples include measures of mortality such as infant mortality rates, demographic measures such as expectation of life at birth, and measures of morbidity such as days away from work. However, for purposes of comparison among populations, and for assisting in health planning and resource allocation, a common denominator combining these factors is needed. Summary measures of population health based upon the amount of healthy life time lost from disability and from death have been developed to serve that purpose.
3. Composite indicators (such as HeaLYs, DALYs and QALYs) use duration of time (years, weeks, days) to measure the loss of healthy life from disease and the gain from interventions. These are increasingly recognized as being important tools for assisting health related decision making. However, in order to avoid misuse, it is critical for those using them to understand the underlying assumptions and limitations, and also to meet the rather formidable data requirements. These summary measures could be used to examine the burden of disease amongst sub-populations, according to socio-cultural-economic category and especially to those groups most vulnerable, and used for ensuring that health-related decisions consider equity as well as cost-effective criteria.
4. Having said that, it is important to mention that while these composite measures take ICD diagnoses as a starting point for mortality and disability, the appropriateness of the latter has been criticized. The UN Convention on the Rights of Persons with Disabilities defines disability as an evolving concept resulting from the interaction of impairment (when the disease process is already underway) and physical and attitudinal environments. In this way, disability cannot be disentangled from the social context in which these interactions take place, and this understanding is not necessarily reflected in the current measures. New approaches for measuring disability in the general population based on the WHO’s International Classification of Functioning, Disability and Health (ICF) have been developed and may be complementary to ICD.
5. Trends in disease burden provide important clues to the success of ongoing health programmes and the need for development of new interventions. At the same time, they reflect non-health factors that are important to the production or maintenance of health in populations. Inter-country and inter-regional comparisons allow for measuring progress among nations. They can highlight inequalities in health status and examine these in relation to social, economic, educational, and other factors as well.
6. Health systems across the world are greatly affected by changes in disease profiles and population dynamics. These systems must develop the capacity to respond to such changes effectively within the resources of each nation. Decisions should be based on evidence about the patterns of diseases, their risk factors and effectiveness of alternative interventions. Timely collection and analysis of appropriate, high-quality data to support such evidence are a prerequisite for improving equitable global health development.
7. **Explain any five functions of a Public Health Personnel in emergency situations**

To respond during **emergencies** or disasters, **public health** systems need to have five core system capacities in place:

* **The assessment and monitoring of the health:** of communities and populations at risk to identify health problems and priorities.
* **The formulation of public policies designed:** to solve identified local and national health problems and priorities.
* **To assure that all populations have access:** to appropriate and cost-effective care, including health promotion and disease prevention services.
* **Public health professionals monitor and diagnose:** the health concerns of entire communities and promote healthy practices and behaviors to ensure that populations stay healthy. One way to illustrate the breadth of public health is to look at some notable public health campaigns:
* **Safe drinking water:** the use of water from the right source that is water collected from hand pump and transport to home with close bucket or pot so people should use water wisely to contamination which can cause affection during use, water from open source can cause diarrhea which some time led to death if water is lose from the body, therefore as a public officer you can launch the campaign on dirty water vs safe water so that public can aware on consequences get from dirty water nor safe water which is from good source of collection.

**The above mentioned points are functions of public health personnel in emergency situation but not limited to the following**

* **Protection;** The first and foremost mission of public health is to protect the population against exposure to illnesses that are contagious person-to-person or transmissible from environmental sources (e.g., tainted food, polluted water, lead paint and asbestos in lodgings, air pollutants associated with asthma and cardiovascular diseases, and, arguably, cigarette smoke). This basic function, which protects the public against “enemies of the people” – in this case not foreign militaries but rather foreign (or domestic) microbes, brings the formal power of the State to bear against biological and/or environmental threats.
* **Prevention:** Public health practitioners also work to identify and arrest threats to health (which may or may not originate in contagions or environmental assaults) before they strike. The strategies deployed – vaccinations, screening for an ever-longer list of conditions (e.g., diabetes, cancers of the breast and colon), and disease management (which aims to keep ailments such as diabetes from worsening) – create an ambiguous partnership between public health and the medical community in defining (sub) populations at risk and identifying and applying procedures and treatments.
* **Promotion:** In its quest to keep people well, public health increasingly adopts means that transcend the conventional preventive agenda. Strategies conducive to “healthy living” – which may extend from encouragement to eat more fresh fruits and vegetables and fewer fatty, salty foods and to get more exercise, all the way “out” to engagement with a myriad social determinants of health – thrust public health into unfamiliar preserves that tend to feature complex and sometimes indecipherable interactions between the public and private sectors (e.g., the design of the built environment, the location of stores that sell fresh food, the distribution of income and status).
* **Prognosis:** Because public health professionals try to anticipate threats to the health of the public, surveillance and monitoring of health conditions in communities are traditional tools in their strategic kit. That these tools ought to be broadened and put in service of genuine planning that would replace institutional fragmentation with the comprehensive, coherent, coordinated arrangements communities deserve has long been a central tenet among public health aficionados. Needless to say, these arguments have never found much of an audience by public health community itself, and even the relatively powerless local Health Systems Agencies the US federal government sponsored between 1974 and 1986 tended to treat public health agencies as one constituent among many others. Some nations, and some US cities, however, now require that Health Impact Assessments be crafted and presented to policymakers who thereby presumably gain an accurate understanding of the implications of existing arrangements and of proposed public and private decisions for the health of the public. By envisioning and estimating in advance as many potential threats to health as is feasible, such prognostic exercises are essentially prospective syntheses of the familiar protective, preventive, and promotional functions of public health. Beneficiaries are, in principle, the community as a whole, and by its nature the strategy may implicate a virtually limitless range of public and private stakeholders.
* **Provision:** In many developed countries across the world, public health institutions – especially city, county, and state health centers, clinics, and hospitals – deliver medical services to disadvantaged citizens (particularly the uninsured and some of those covered by Medicaid) and non-citizens, including illegal aliens. This public “safety net” cares for a distinct subset of the community and in doing so, negotiates incessantly with the purchasers, payers, and philanthropists about the resources from Medicare, Medicaid, the Children’s Health Insurance Program, Disproportionate Share funds, state appropriations, local tax levies, commercial payments, and foundation grants that allow them to stay in operation. This activity has been a chronic sore point for a contingent of public health leaders who have hoped that the federal government would one day create equitable and universal healthcare coverage and thus, by no longer “draining vital resources away from population-wide services,”4(p.13) let them get on with their proper roles and missions. Until 2010, the profession’s pleas for universal coverage fared little better than those demanding health planning and the rationalization of community healthcare systems; indeed, the safety net duties of public health personnel appeared to be growing. The national health reform will doubtless change the picture. The measure authorizes the expansion of Medicare and the creation of income-related subsidies for most of the presently uninsured, aiming to increase coverage to roughly 95 percent nationally. However, it does not address the needs of illegal immigrants, who will presumably continue to get care from the safety net, as will (presumably) insured Americans who cannot readily find “mainstream” providers to treat them. In short, provision is likely to remain as insubstantial function of public health authorities for the indefinite future. How these duties are acquitted in the future will depend, then as now, on a set of little-studied political variables that include: the legal status and strength of state and local public health agencies; the power of local medical societies (which may resist public health encroachments on any and all patients but the unprofitable and unappealing – e.g., substance abusers and those with sexually transmitted disease); and the entrepreneurial energies of local public health leaders. Provision enmeshes public health not only in debates about the financing of healthcare in federal and state capitals but also in painful disputes about the role of the field in health affairs at home. The public components of local safety nets are big business: city and county politicians control sizable shares of their budgets, residents benefit from the jobs these institutions sustain, suppliers of their goods and services make money. Not a few public professionals, however, view safety nets dominated by large municipal hospitals as an anachronism and urge that such facilities, and the money they now consume, be used to create accessible primary care centers, leaving inpatient activities to increasingly under-occupied voluntary hospitals. Outcomes of these intra- professional fights span a continuum from hard-won successes to bitterly-fought fiascos, and rarely fail to consume sizable time, attention, and political capital.

1. **You have been appointed the head of Public Health in an emergency area with dilapidated sanitation facilities as well as the infrastructure has been destroyed. Explain some of the diseases as well as conditions that you are likely to encounter, and the therapeutic measures that you will put in place to ensure that people in that place lead a dignified life?**

*The health impact of improving sanitation*

*The survival of excreta-related pathogens in the environment outside the host, excreta-related pathogens will usually die off over time. Most pathogens can remain viable in the environment for some time, however, and Table 6.4 shows the maximum time of survival of some. As a general rule, pathogens survive longer when they are in lower temperatures, in a moist environment, and protected from direct sunlight. Again as a general rule, helminthes and viruses will survive longer then bacteria and protozoa. Except for roundworm, all the infections in Table 6.4 are faecal-oral. It is less useful to look at the survival times of pathogens which need intermediate hosts, as these usually remain viable for as long as the intermediate host survives.*

*The health risk of contaminated material (water, food, other objects) will usually decrease over time if no multiplication or recontamination occurs. As the number of pathogens discharged is often very large, the potential for transmission can remain high, even if most pathogens die off or if the excreta is diluted in surface water. A person with cholera can defecate up to 1x1012 bacteria per liter of diarrhea, for example, a person with urinary schistosomiasis is can discharge 50,000 eggs per liter of urine, and people infected with hookworm disease can shed 1x106 eggs per day*

*Several bacteria and helminthes can multiply outside the host. The bacteria Salmonella spp. (causing salmonellosis and (Para-) typhoid), Shigella spp. (causing bacillary dysentery) and E.coli (causing bacterial enteritis) can all multiply in food. The food can be contaminated through faeces, hands, utensils, domestic flies, or cockroaches. Meat and dairy products pose the greatest risk. Thus food which is not initially harmful because it contains too little bacteria can become infectious over time because the bacteria have multiplied.*

*Several water-based helminthes (schistosomiasis, fasciolopsiasis, fascioliasis, clonorchiasis, and opisthorchiasis) can multiply in freshwater snails, and strongyloidiasis can multiply in soil. Here again, a light contamination of water or soil can become very infectious because the pathogen has multiplied outside the host. Excreta poses a large and prolonged health risk because of its potentially high load of pathogens, the persistence of pathogens in the environment, and the potential for multiplication outside the host, so excreta-related wastes must be dealt with carefully.*

1. **What are the negative impacts of open defecation and a s a Public Health officer how will you curb the habit from a society that is deep rooted in the same.**

Open defecation: allows the transmission of all excreta-related infections and is therefore a serious health threat. Open defecation is not acceptable close to the household plot, or in urban communities or other areas with high or medium population densities.

Some of their negative impacts are discuss here:

Each infected person usually has great potential to spread pathogens, so sanitary structures will only be effective in preventing disease if they are used by everyone, all the time.

Even if only some people in the population (e.g. children) defecate in the open, the health benefits of sanitary structures will be limited.

Some examples to illustrate this problem:

A person with bacillary dysentery excretes 1x109 bacteria in a small stream. Ingesting 10 to 100 bacteria can cause infection. The number of pathogens excreted in the water could in theory pollute 10,000m3 of water with 100 bacteria per liter. A person with a hookworm infection can easily release 1,000,000 eggs per day. If this person does not always use a latrine, and we assume that 1 per cent of the eggs end up in favorable soil, become infectious, and remain viable for six weeks, then this person will be responsible for over 400,000 infectious larvae in the soil at any time for as long as the infection lasts.

**The habit from a society that is deep rooted in the same.**

There should be public awareness on issues related to poor sanitation in the village done by public health personnel, so the chief and elders of the area as know the sickness affected people when the environment is poorly maintain

Even though open defecation is a serious health threat, it should not be condemned categorically in areas with low population densities. Open defecation might be preferable to using poorly maintained latrines which can become foci for the transmission of diarrhea and hookworm

**Open defecation can also cause Poor hygiene of sanitary structures**

Sanitary structures can play an important role in disease transmission if they are not kept clean Faecal-oral infections can be spread through direct contact with faeces, contaminated material, or through flies or cockroaches. Latrines with floors contaminated with faeces can transmit hookworm.

Sanitary structures must be kept clean to reduce health risks and to make them acceptable to users. Installing a SanPlat, which is a smooth concrete latrine slab? Makes it easier to clean the latrine. A SanPlat can be built into a new latrine or an existing latrine can be upgraded. The slab should slope towards the drop-hole so that spilled water or water used for cleaning, flows into the hole.

**Open defecation can also make Water supply and the sanitary structure dirty which can cause diarrhea when use**

There should be a reliable source of water near the sanitary structure. Water is used for hand washing and cleaning the structure, and possibly for flushing or anal cleansing. The water does not have to be high quality as it is not used for drinking.

1. **Public health is about partnership between the different players. Explain how the role of international non-profit/NGO in terms of**

i**). recruitment:** NGO do best practices in term (of capacity/level of Education relevant with public health course, skills relevant and experienced related to public health.

ii) **Training:** NGO do train public health workers/officers on hygiene water and sanitation approaches of WASH projects

iii**) funding:** NGO/Donors offer donations to Government/communities that are in crisis to address health issues, these funds are use for communities that are in emergencies situation and communities that their government is not able to see health issues due to circumstance of government seeing other developmental issues and crisis of the country, therefore the funds are allocated for improving access to water, sanitation, safe disposal and good food to the community

**And IV) monitoring for public health projects contribute to the success or failure of those projects in the developing countries:**

**The following points were contributed for the success of organization:**

* Proper payment of health workers
* Capacity building of health personnel
* Maintenance and building of new health infrastructures
* strengthening of the health system
* Reduction of health cases related to basic health case

**The above mentioned points contributed to the success of organization but not limited to the following points**

1. Monitor environmental and health status to identify and solve community environmental public health problems.
2. Diagnose and investigate environmental public health problems and health hazards in the community.
3. Inform, educate, and empower people about environmental public health issues.
4. Mobilize community partnerships and actions to identify and solve Environmental health problems.
5. Develop policies and plans that support individual and community environmental public health efforts.
6. Enforce laws and regulations that protect environmental public health and ensure safety of people.
7. Link people to needed environmental public health services and assure the provision of environmental public health services when otherwise unavailable.
8. Assure a competent environmental public health workforce.
9. Evaluate effectiveness, accessibility, and quality of personal and population based environmental public health services.
10. Research for new insights and innovative solutions to environmental public health problems