**African Centre for Project Management,**

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**Course: Post Graduate Diploma in Public Health**

***Course Unit: Module Five Assignment***

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1. *Define Environmental Health, what is its purpose?*

Environmental health is a Public health discipline addressing human [health and disease](https://www.sciencedirect.com/topics/earth-and-planetary-sciences/health-and-disease) and the factors in the environment that can potentially affect health.

Humans interact with the environment constantly affecting quality of life, years of healthy life lived and health disparities. The World Health Organization (WHO, 2006), defines environment, as it relates to health, as “all the physical, chemical, and biological factors external to a person, and all the related behaviors.” Environmental health consists of preventing or controlling disease, injury, and disability related to the interactions between people and their environment.

According to WHO (1993), Environmental health comprises those aspects of human health, including quality of life, that are determined by physical, chemical, biological, social and psychosocial factors in the environment. It also refers to the theory and practice of assessing correcting, controlling and preventing those factors in the environment that can potentially affect adversely the health of present and future generations.

Environmental health is the science and practice of preventing human injury and illness and promoting well-being by;

* Identifying and evaluating environmental sources and hazardous agents and
* limiting exposures to hazardous physical, chemical, and biological agents in air, water, soil, food, and other environmental media or settings that may adversely affect human health.

According to Dale A. D & Karen E. I (2017), Environmental health sciences is that discipline of public health that seeks to identify factors outside the body, which impact overall health, and then transmits that knowledge to the public and health-care workers to improve the health of the public.

Environmental factors include not only food, water, and air, but also physical agents such as temperature and radiation, biologicals including bacteria and fungi, chemicals including Polychlorinated biphenyls ([PCBs](https://www.sciencedirect.com/topics/medicine-and-dentistry/polychlorinated-biphenyl)) and food coloring, and social agents such as violence and depression.

The purpose of environment health is to identify and evaluate environmental sources and hazardous agents that can harm health and limit exposures to hazardous physical, chemical, and biological agents in air, water, soil, food, and other environmental media or settings that may adversely affect human health through;

**Better Air Quality**

Ensuring better quality of air free from pollutants such as particulate matter as seen in quarry sites and smoke, soot and ash produced from burning fuels, Sulphur dioxide produced from fuels containing Sulphur, carbon monoxide produced due to incomplete combustion of fuels from motor vehicles, Nitrogen oxides causing yellowish appearance of smog reducing visibility, ozone the reactive form of oxygen produced when photochemical reaction between sunlight and oxygen occurs and lead mainly from lead containing products such as paints. These air pollutants affect health in different ways ranging from irritation, respiratory diseases, blockage of oxygen carrying capacity of the blood, reduction of visibility which can lead to road traffic accidents, respiratory damage and organ failures as well as reduced intellectual ability in children.  [Industry, transport and agriculture emits high volumes of air pollutants. According to WHO (2019), nine out of ten people breathe polluted air](https://www.who.int/news-room/detail/02-05-2018-9-out-of-10-people-worldwide-breathe-polluted-air-but-more-countries-are-taking-action) every day. In 2019, air pollution is considered by WHO as the [greatest environmental risk to health](https://www.who.int/air-pollution/news-and-events/how-air-pollution-is-destroying-our-health) where the microscopic pollutants emitted into the air penetrate respiratory and circulatory systems, damaging the lungs, heart and brain causing death to around 7 million people prematurely every year from diseases such as cancer, stroke, heart and lung disease with around 90% of the deaths occurring in low- and middle-income countries which South Sudan is one. As mentioned above, with the increased use of automobile means of transport, there is increased emission of pollutants. Taking for example South Sudan, there are no laws regulating the importation of machinery such as manufacturing industries, cars for transportation and agricultural machineries. This puts the population in danger of inhaling polluted air which is a major cause of cancer and other noncommunicable diseases. Environmental health therefore considers preventing air pollution through limiting air pollution by mandating changes in automobile engineering with reduced pollution. Other measures imposed by public health include reformulation of gasoline and installation of vapor recovery systems in cars as well as introduction of electric vehicles and use of green energy. Reducing on the number of vehicles on road using public transports and encouraging physical activity.

**Biological safety**

Biological safety is not only focusing on human health but also on ecological issues with the primary purpose of following strict guidelines designed by environmental specialists to protect people and environment from exposure to the natural hazards that can cause harmful effects. Natural hazards such as floods affect the ecological setting of the environment such as destroying natural species in water such as fish and on land such as vegetable both of which have a direct link with the health of humans.

**Climate change**

Climate change has severe effect on human health. Climate change is one of the challenges facing health. Air pollution is a major contributor to [climate change](https://www.who.int/globalchange/en/), which impacts people’s health in different ways such as the frequent floods in areas such as the twice hit Mozambique in less than a month. This leads to poor food production leading to malnutrition and loss of property and lives. These natural hazards can cause destruction of infrastructure such as waste deposal systems and water systems causing contamination of water and even foods. Environmental health therefore is working to reduce the effect of these through the reforms and laws or acts mentioned in the air pollution measures.

**Emergency management**

Emergency management for example, the recently declared Ebola as a public health emergency of international concern draws in environmental health specialists to organize and control resources which are supposed to be effective in dealing with the emergency in order to reduce on the harm caused by the emergency.

**Food safety**

Food contaminated by bacteria and chemicals causes diseases. Environmental health therefore is concerned with ensuring food is safe from contamination with bacteria and chemicals. It is environmental health department that is concern with approving what type of pesticides and growth busters as well as fertilizers are to be used in farms. Environmental health specialists recommend the use of organic fertilizers to prevent foods from contamination with chemicals. Environmental health specialist also advice on how food in hotels and homes should be handled and kept preventing bacterial contamination.

**Proper improved Housing**

Proper improved Housing to ensure safety. Houses need to be inspected by environmental health professionals in order to see into it that the houses are safe to occupy both in public buildings such as hospitals and schools and homes. The materials for constructing are also inspected to ensure items such as asbestos are not used which are harmful to health.

**Hazardous material management (Solid waste and medical waste disposal)**

Hazardous material management such as solid waste disposal as well as medical waste disposal is a core function of environmental health specialist to prevent humans from these hazardous materials such as sharps from the health facilities which are potentially infectious to transmit diseases such as Hepatitis and HIV to the public when not properly managed.

**Lead**

Lead poisoning prevention is also another key area of environment health. Lead is poisonous and causes serious symptoms such as headache, abdominal pain, memory issues irritability and constipation such that it is always key to test its presence in water as it can be lethal.

**Land use and planning**

Land use planning is the regulation of land use to promote better environmental and social outcome. Example of this planning is where land reclamation of wetlands and swamps for construction of houses is prohibited by the environmental health specialists. Land planning by the environmental health departments meant to restrain unrestricted urban growth, environmental protection such as the wetlands, prevention of misunderstanding relating to the use of land and reducing contamination.

**Liquid waste disposal**

Liquid waste disposal is the concern of environmental health. Liquid wastes such as urine and sewerage and waste waters need to be disposed off safely through recycling the water which must be treated properly to eliminate harm to human health.

**Occupational health.**

This occupational health deals with workers and their safety at the work place with the primary goal of creating a safe and healthy environment. For example, environmental health specialist will have to ensure that in every work place such as offices there is an emergency fire exit and/or a fire extinguisher. This all are to create a safe environment for the workers. Emphasis on wearing personal protective equipment (PEP) at work such as gowns, helmets and reflector jackets are all the work of environmental health to ensure occupational safety of workers.

**Safe drinking and recreational waters**

Safe drinking and recreational water are also the concern of environmental health as contaminated waters can be harmful to human health. It is the responsibility of environmental health professionals and the department to test and ensure the drinking water is clean and safe to drink free from contaminants such as chemicals and microorganisms. Environmental health professionals always take special measures to control water quality of recreational waters.

**Vector control**

Vectors such as mosquitos, snails and flies are responsible for disease spread in a community. The environmental health component of public health is the one concerned with their control. They use measures such as limitation to exposure as well as chemical and biological control methods. Controlling the vectors means closing the cycle of transmission of the disease.

**Radiological health**

In the radiological health, environmental health is concerned with prevention of people from exposure to all kinds of radioactive substances including ionizing radiations from X-rays and isotopes as well as some used previously in medications.

1. *Identify and explain the five focal practice areas of environmental health*

The practice of environmental health is inextricably involved with the prevention of chronic diseases such as cancers, asthma, cardiovascular diseases and birth defects. The general state of knowledge about causation of these many chronic diseases is less advanced than for communicable diseases such that while statistical excesses of chronic disease are often attributed to environmental exposures, in many cases the cause is unknown. Thus, practitioners of environmental health are often called upon to address not only known exposures and links to disease but also diseases of unknown aetiology and public concern about the potential for environmental links.

The components or the focal practice areas of environmental health that aim at addressing these aetiology and links include;

**Environmental epidemiology**

This deals with the study of the relation and interactions between human health and various kinds of exposure to harmful environmental agents. It is defined as the ongoing systematic collection, analysis, and interpretation of data on specific health events affecting a population (Thacker and Stroup 1994). Surveillance of hazards and exposures, as well as diseases, is critical to the practice of environmental health (Wegman 1992). By tracking exposures and diseases, we can identify and respond to different kinds of public health problems.

Examples of environmental health surveillance includes, air pollution monitoring, blood lead monitoring, poison center surveillance for pesticide and chemical ingestions, pesticide illness reports, asthma surveillance, and birth defects registries which are tools for monitoring trends, and identifying opportunities to prevent and control environmental disease and exposures as a fundamental purpose of environmental health.

However, Environmental epidemiology grieves from some limitations which include;

* It cannot detect risks of concern when there is little variation in exposure across the population. For example, dioxin exposures are difficult to evaluate in the general population because most people have dioxin body burdens within a narrow range.
* Epidemiology cannot be applied before approving the introduction into commerce of a chemical, product, or technology. This means the product must be released to the market before it is being followed making humans to be used as specimens.
* Studies of environmental exposures often rely on measurements for the ambient environment rather than measurements of individual exposures. Such studies are known as ecological studies and they are often the only feasible way to study exposures; air pollution is often studied this way which keeps moving and it can’t give exact results.

**Exposure science**

This is the scientific branch that focuses on studying the human exposure to the factors that contaminate the environment that are harmful to the health of the population. It assesses the vulnerability of the population and quantifying them unlike the toxicology which provides the effect of the toxic products on the human health. For example, exposure science looks at thinks like what threats are available here such as radiations from an X-ray machine that can affect the people whoring in there who become the vulnerable people. It then decided to come up with PPEs to prevent the workers from those rays.

**Environmental engineering**

This branch or component of environmental health deals with the principles of science and engineering which could be applied to protect the population of the planet from harmful environmental factors such as protection of humans and the environment from destructive effects of human activities as well as enhancement of the ecological wellbeing. Worldwide, there are large numbers of unnecessary deaths and injuries due to earthquakes, storms, and floods, which are completely preventable with appropriate environmental measures like construction standards for homes and buildings.

Environmental engineering has played a very important role in identifying alternative methods for pollution prevention and control such as recycling of waste materials such as solid and liquid wastes.

**Toxicology**

This deals with the study of health results caused by exposure to toxic environment using animals to understand the human effect of the same. Toxicity testing is done under good laboratory practices, standards established by governments to eliminate extraneous factors, such as poor nutrition of animals, sloppy laboratory practices, or unclean environments, which would tend to bias or distort the results of laboratory tests. The most highly tested substances are food-use pesticides, for which numerous health tests are required including tests of acute and chronic toxicity, neurotoxicity tests, cancer bioassays, and multiple generation studies to assess reproductive and developmental toxicity.

Despite efforts to carry out accurate toxicity tests, these tests have limitations.

* To be cost-effective and humane, they are designed with as few animals like mice as statistically possible, while dosing animals at high levels.
* Outcome measures of these exposed animals have been polished over the years but may be cruder than the measurements that can be taken in humans. For example, a mouse cannot report a headache as it could have been reported by humans.
* There can be phenomena that occur in the high-dose groups that are not relevant to human risk assessment as human tolerance to a particular toxic substance may not be same as for a mouse. This therefore means that a lot needs to be done regarding interpretation of the results in order to come up with a conclusion or judgement.

**Environmental law**

This is the study of the regulations, treaties, statues and laws that are concerned with the post effect of human activities in the environment.

Stronger environmental laws in the industrialized nations have resulted in cleaner air, safer drinking water, and recovery of some water bodies that in 1970 had unacceptable levels of pollution for fishing and recreation. In the United States, air lead levels are 98 per cent lower than 20 years ago, and from 1976 to 1993, the percentage of children 1 to 5 years old with elevated blood lead levels decreased from 88 per cent to 4 per cent. Reports to the nation’s Toxic Release Inventory indicate that emissions of toxic wastes from American manufacturers decreased nearly 50 per cent between 1988 and 1996 (US EPA, 1998). Such successes are indicative of the important role of management of environmental health hazards through stronger environmental law enforcement a fundamental role of environmental health.

Principle 2 of the United Nations Commission on Environment and Development (UNCED) Treaty that formally adopted the goal of sustainable development and 27 principles of sustainable development is fundamental which describes a ‘sovereign right’ of states ‘to exploit their own resources pursuant to their own environmental and developmental policies, and the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction’ (UN 1992).

This principle mandated the individual countries to exploit their resources while taking care of their own citizens from contamination such as what happened in western Japan in 1968 when a leak at a cooking factory contaminated rice with the exchanger fluids from the factory containing PCBs that resulted to the Yusho incident (Masuda Y., 1994).

1. *What role can the government in your Country play to ensure environmental health*

Protection and promotion of environmental health and safety is a shared responsibility of both the central and state governments in my country South Sudan with the state or the local government having a crucial role for environmental health through various legislation including health, public health, food, planning and environment and local government acts and other regulations.

This involves about seven areas of operations with the specific roles as follows;

**Governance**

In governance, the government is concerned with community planning and health risk mitigation;

* Assessing factors that impact on health and wellbeing of residents and visitors to the area under the said government (State) territory. This include risk identification such as identification of active volcanic mountains that can erupt and affect human health, life and property and ensuring safe residence for the residents away from such environmental risks.
* Developing appropriate plans, policies, strategies and projects to protect environmental health and maintain and improve the sustainability of the environment. This include the policy making and issuance of polices to protect air, water and land pollution. It was in 2013 that the ministry of environment in South Sudan issued the ban to public smoking in order to reduce public air pollution which affects the population through passive smoking. Policies such as restriction on importation of old model cars which are believed to pollute the environment more than recent modern cars fitted with systems that reduce on the amount of pollutants released to the environment is also another role of the government to ensure safe environment.

**Safety and protection of public health**

This encompasses planning, managing and monitoring numerous illnesses, infection or diseases causing activities carried out in the area by business, industry and community organization. The activities/roles include;

* Food safety which include inspection of food processing industries as well as inspection of food selling stalls such as fish and meat stalls including hotels and restaurants.
* Vector control such as mosquitos and other pests through indoor and outdoor residual spraying and issuance of insecticide treated bed nets to pregnant mothers and the under five years children.
* Animal management including vaccination of animals by the veterinary department to ensure the animal products are safe for human consumption. It also includes the inspection of animals entering and leaving the country in order to prevent infected animals from entering the country as well as preventing mistrust by other country importing animals and animal product from the country that can negatively affect the economy of the country.
* Recreation water such as swimming pool monitoring usually done to ensure the water is safe.
* Oversight of immunization programs to ensure the population is safe from environmental contaminants such as hepatitis viruses, polio and other vaccine preventable diseases.
* Oversight of commercial accommodations such as lodges and hotels to ensure that these places are safe for people to stay in.

**Water quality**

This involves monitoring and managing public waters used for activities which include the following to ensure no or reduced possibility of pollution and contamination.

* Recreational waters including beaches and others.
* Water supplies quality and management to ensure adequate water supply to the public.
* Water transport so as to make sure the water transport is safe with standby rescue speed boats that can be used during accidents.

**Environmental management**

Environmental management is the back bone of environmental health and safety. It involves the government in minimizing pollution and contamination and the protection and management of environmental health. Several effective state environmental health programs have been built on a foundation of state policies and standards that support, promote, or require the public to implement practices that promote environmental health. It includes;

* Development of local plans, policies and programs that promotes sustainability and degradation of air, water and land. Climate change is one of the global concerns which all governments worldwide is working harder to minimize through advocacy of usage of environmentally friendly technologies such as green energy and the likes.
* It also maximizes the safety of natural and built environment for both domestic and industrial constructions. Policies such as land reclamation, protection of natural forest reserves and approval of construction plans in order to offer the best housing for human occupancy.
* Maximizes the safety of its residents both nationals and non-nationals through natural resource management such as the oil wells in upper Nile where the citizens are by law protected from contaminants that result from the petroleum companies.
* The location of specified areas for residential and industrial purposes are meant to protect the populations from pollutions such as air pollution and nuisance caused by manufacturing and processing factories.

**Waste management**

Waste management involves the government in planning, management and monitoring of waste collection and disposal to minimize adverse effects to the environmental health and the health of the population. They include;

* Solid waste management where the government designate specific areas for solid waste disposal. It is responsible for municipal waste collection, transportation and disposal as well as treatment. Despite the government of South Sudan and the state governments failing to have proper and better garbage treatment plans, it is their mandate to treat these solid wastes.
* Liquid waste management one of the roles of the government is a key in environmental health safety. Liquid waste such as sewerage are dangerous to the environment when not disposed off well. It is therefore the responsibility of the government to manage liquid waste appropriately to prevent environmental contamination. This though is the role of most governments, it is not with my government of South Sudan as they have not put in place the plan of liquid waste management such as treatment and recycling of the liquid waste but rather they have identified a designated area for the liquid waste disposal which is done by private commercial companies that collect the liquid wastes from the public/ individual residencies at a cost and disposing off in the open a dangerous way of liquid waste management practiced.
* Medical waste management in health facilities is a role of the government where the government is in charge of its collection, transportation and disposal by the use of incineration.

**Land use planning and development**

Land use planning and development covers the development and assessment of plans, policies and programs to ensure the safety of the proposals for development of natural or built environment. Government’s role in town planning allows better road connectivity for easy communication and transportation as well as easy access to services such as water and health services.

Selection of areas for land fill used in the disposal of solid wastes which otherwise if not properly disposed will affect the environment and public health is the role of the government in land use planning. It also includes shielding off of land areas such as wetlands that need not to be occupied for residential purpose as it leads to destruction of its fauna.

Land use and planning include policies that restrict the destruction of natural vegetation such as forests for fuels without replacing the trees by planting more. Governments always issue warnings such as reserve natural forests. Please don not lumber and so on.

**Disaster and emergency management**

In disaster and emergency management, the government is involved in planning for and managing potential disasters and emergencies and developing appropriate range of responses that minimize negative impacts on public and environmental health and safety. Disasters such as floods, fires and other natural disasters, disease outbreaks and civil unrest are all examples of disasters and emergencies that require the government to respond in order to prevent the public from harm.

1. *Older people are more vulnerable to diseases, why is this so? Identify and explain four diseases that are common among the older generation*

According to WHO (2002), most developed world countries have accepted the sequential age of 65 years as a definition of 'elderly' or older person, but like many westernized concepts, this does not adapt well to the situation in Africa. Credibly, if a definition in Africa is to be developed, it should be either 50 or 55 years of age, but even this is somewhat arbitrary and introduces additional problems of data comparability across nations.

The more traditional African definitions of an elder or 'elderly' person correlate with the chronological ages of 50 to 65 years, depending on the setting, the region and the country. Adding to the difficulty of establishing a definition, actual birth dates are quite often unknown because many individuals in Africa do not have an official record of their birth date.

While this definition is somewhat arbitrary, it is many times associated with the age at which one can begin to receive pension benefits. At the moment, there is no United Nations standard numerical criterion, but the UN agreed cutoff is 60+ years to refer to the older population.

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The age of 60 or 65, roughly equivalent to retirement ages in most developed countries, is said to be the beginning of old age. In many parts of the developing world, chronological time has little or no importance in the meaning of old age. Thus, in contrast to the chronological milestones which mark life stages in the developed world, old age in many developing countries is seen to begin at the point when active contribution is no longer possible." (Gorman, 2000).

Aging can be defined as a progressive and generalized impairment of function resulting in the loss of adaptive response to stress and increased risk of age-related diseases.

Aging is gradual and spontaneous change, resulting in maturation through childhood and adolescence, and then decline through middle and late ages while;

Senescence is the process by which the capacity for cell division, growth, and function is lost over time the main cause of vulnerability of the elderly to diseases.

The overall effect of these alterations is an increase in the probability of declining health and dying and which is also often associated with social, emotional and financial marginalization in old age.

These changes manifest the following physical signs of old age which include

* Wrinkles on the face and body.
* Sight, hearing, taste, and smell become less acute.
* Hair begins to thin and turn gray.
* Gain weight, particularly around the waist and hips.
* Loss of bone density over time (especially in women)
* Slower reflexes and altered gait; development of motor dysfunction
* Less acute mental agility, and declining memory.

There are two main groups of aging theories. The first group states that aging is natural and programmed into the body, while the second group of aging theories says that aging is a result of damage which is accumulated over time. In the end, aging is a complex interaction of genetics, chemistry, physiology, and behavior.

**Programmed Theory**

The programmed Theory assert that, the human body is designed to age and there is a certain biological timeline that our bodies follow.

***Programmed Longevity***

Aging is caused by certain genes switching on and off over time.

[***Endocrine Theory***](https://www.verywellhealth.com/the-hormone-theory-of-aging-2224223)

Changes in hormones control aging.

[***Immunological Theory***](https://www.verywellhealth.com/immunological-theory-of-aging-2224224)

The immune system is programmed to decline over time, leaving people more susceptible to diseases due to low immunity as one ages.

**Error Theories**

The error theories state that aging is caused by environmental damage to our body's systems which accumulates over time. ​

### **Genetics and Aging**

Studies have demonstrated that genetics can play a major role in aging. When researchers adjust the genes in certain mice, yeast cells, and other organisms, they can almost double the lifespan of these creatures though this is unknown for humans, but researchers think that genetics account for up to 35 percent of the variation in aging among people with some central concepts in genetics and aging as below;

***Longevity Genes***

There are specific genes which help a person live longer a reason why some people live longer than others despite same environmental factors.

[***Cell Senescence***](https://www.verywellhealth.com/senescence-healthy-aging-and-longevity-2224345)

The process by which cells deteriorate over time. It is the process by which the capacity for cell division, growth, and function is lost over time the main cause of vulnerability of the elderly to diseases.

***Telomeres***

Structures on the end of DNA that eventually are depleted, resulting in cells ceasing to replicate.

***Stem Cells***

These cells can become any type of cell in the body and hold promise to repair damage caused by aging.

### **Biochemistry**

No matter what genes you have inherited, the body is continually undergoing complex biochemical reactions. Some of these reactions cause damage and ultimately, aging in the body. Studying these complex reactions is helping researchers understand how the body changes as it ages. Important concepts in the biochemistry of aging include:

***Free Radicals***

These are unstable oxygen molecules as well as superoxide (O2 -), hydroxyl (OH-), nitrogen dioxide (NO2) and hydrogen peroxide (H2O2) which can damage cells.

***Protein Cross-Linking***

Excess sugars in the bloodstream can cause protein molecules to literally stick together.

***DNA Repair***

For unknown reasons, the systems in the body to repair DNA seem to become less effective in older people.

***Heat Shock Proteins***

These proteins help cells survive stress and are present in fewer numbers in older people.

***Hormones***

The body's hormones change as we age, causing many shifts in organ systems and other functions such as the sex hormones responsible for menopause in older women.

### **Body Systems changes**

As we age, our body's organs and other systems make changes. These changes alter our susceptibility to various diseases. Understanding these processes is important because many of the effects of aging are first noticed in our body systems. Here is a brief overview of how body systems age:

[***Heart Aging:***](https://www.verywellhealth.com/top-ways-to-live-long-with-heart-disease-2223999)

The heart muscle thickens with age as a response to the thickening of the arteries. This thicker heart has a lower maximum pumping rate.

***Immune System Aging:***

The T cells take longer to replenish in older people and their ability to function declines. This is responsible for the vulnerability of the older people to infectious diseases.

***Arteries and Aging:***

Arteries usually to stiffen with age, making it more difficult for the heart to pump blood through them. This in turn leads to the heart muscles to thicken to be able to pump blood a cause of cardiovascular disease.

***Lung Aging:***

The maximum capacity of the lungs may decrease as much as 40 percent between ages 20 and 70. This is due to the thickening of the wall of the lungs making them less elastic.

***Brain Aging***

As the brain ages, some of the connections between neurons seem to be reduced or less efficient.

***Kidney Aging:***

The kidneys become less efficient at cleaning waste from the body.

[***Bladder Aging***](https://www.verywellhealth.com/incontinence-2696159)***:***

The total capacity of the bladder declines, and tissues may atrophy, causing incontinence.

***Body Fat and Aging:***

Body fat increases until middle age and then weight typically begins to decrease. The body fat also moves deeper in the body as we age.

***Muscle Aging:***

Muscle tone declines about 22 percent by age 70, though exercise can slow this decline.

***Bone Aging:***

Starting at age 35, our bones begin to lose density leading to cases of fractures, osteoporosis and spondylosis. Walking, running and resistance training can slow this process.

***Sight and Aging***

Starting in the 40s, difficulty seeing close detail may begin.

[***Hearing and Aging***](https://www.verywellhealth.com/tinnitus-in-older-people-2223696)

As people age, the ability to hear high frequencies declines.

These changes produce the below mentioned impacts as summarized in the table;

|  |  |
| --- | --- |
| Change: Decrease in | Impact: Decrease in |
| * Basal metabolic rate * Pulmonary function * Renal function * Bone mineral * Gastro-intestinal function * Sight * Dentition * Taste | * Calorie needs * Exercise capacity * Ability to conc/dilute urine * Fracture resistance * Bowel motility * Independence * Eating ability * Appetite |

### **Behavioral Factors**

Behavior and life choices are important in modifying aging through the following behaviors,

By eating foods loaded with antioxidants such as fruits (Banana, apples, oranges and lemons) you can minimize damage caused by free radicals. Antioxidants are substances that reduce damage caused by oxidation (when chemicals or substances combine with oxygen). More specifically, it is thought that antioxidants protect your cells from the effects of free radicals which are molecules that are produced as the body breaks down food or through environmental exposure such as smoking or radiation.

* Physical activity by exercising is one way one can limit bone and muscle loss. It not only increases longevity, but it also helps one to feel better
* By keeping your Cholesterol low, you can slow the hardening of your arteries and protect your heart. Eating foods low in cholesterol means slower aging. a lot of talk about how to lower high cholesterol levels, but not about what to do in order to prevent high cholesterol. There are things that you can do in order to prevent high cholesterol from happening and they all begin with making a few changes to your lifestyle including exercising, eating low fat foods such as Vegetables, fruits, and whole grains and stop smoking.
* By practicing mental fitness, one can keep one’s brain sharp. Brain fitness has basic principles of variety and curiosity. When anything one does becomes second nature, one need to make a change to a new challenge in order to get the best workout for one’s brain. Curiosity about the world around, how it works and how one understands it will keep the brain working fast and efficiently.

There are so many chronic conditions that seem to trouble older persons and are most often referred to as the diseases of older people leading to the mistaken perception that diabetes, arthritis and the like, are just part of growing old and nothing can be done about them yet most of these diseases and conditions are treatable and should be addressed by a physician. According to the American Society of Consultant Pharmacists, the most common chronic diseases afflicting the elderly are:

* Adult onset diabetes
* Arthritis
* Kidney and bladder problems
* Dementia
* Parkinson's disease
* Glaucoma
* Lung disease
* Cataracts
* Osteoporosis
* Enlarged prostate
* Alzheimer's disease
* Macular degeneration
* Depression
* Cardiovascular disease

**Cardiovascular disease**

Cardiovascular disease generally refers to conditions that involve narrowed or blocked blood vessels that can lead to a heart attack, chest pain (angina) or stroke. Other heart conditions, such as those that affect your heart's muscle, valves or rhythm, also are considered forms of heart disease

Cardiovascular disease remains the most common cause of death of older adults, although death rates have dropped in the last 20 years. This category includes chronic ischemic heart disease, congestive heart failure, and arrhythmia. Ischemic heart disease may be underdiagnosed in the oldest-old.

### **Cancer**

Cancer is a group of diseases involving abnormal cell growth with the potential to invade or spread to other parts of the body. These contrast with benign tumors, which do not spread. Possible signs and symptoms include a lump, abnormal bleeding, prolonged cough, unexplained weight loss, and a change in bowel movements. While these symptoms may indicate cancer, they can also have other causes. Over 100 types of cancers affect humans.

According to Rachel (Nov. 12. 2018), in addition to smoking, risk factors for cancer include; heavy alcohol consumption, excess body, physical inactivity and poor Nutrition while other causes of cancer are not preventable.

Currently, the most significant unpreventable risk factor is age which according to the American Cancer Society, doctors in the U.S. diagnose 87 percent of cancer cases in people ages 50 years or older.

Examples of cancers include bladder, colon and rectal, endometrial, kidney, leukemia, liver, melanoma, non-Hodgkin's lymphoma, pancreatic and thyroid.

Cancer is the second leading cause of death in older adults. However, by age 85, the death rate from cancer begins to fall (Gorina Y. et all 2006). Slow-growing tumors seem to be common in this population.

Response to cancer treatment depends on functional status rather than age. Individuals in their ninth or tenth decade should not be denied aggressive cancer treatment simply due to age.

According to the National cancer institute the most common cancers (listed in descending order according to estimated new cases in 2018) are breast cancer, lung and bronchus cancer, prostate cancer, colon and rectum cancer, melanoma of the skin, bladder cancer, non-Hodgkin lymphoma, kidney and renal pelvis cancer, endometrial cancer, leukemia, pancreatic cancer, thyroid cancer, and liver cancer.

* The number of new cases of cancer (cancer incidence) is 439.2 per 100,000 men and women per year (based on 2011–2015 cases).
* The number of cancer deaths (cancer mortality) is 163.5 per 100,000 men and women per year (based on 2011–2015 deaths).

### **Diabetes Mellitus**

By far, the most common form of diabetes is type 2 diabetes, accounting for 95% of diabetes cases in adults. Some 26 million American adults have been diagnosed with the disease. Diabetes rates have been increasing as populations age and become more overweight. The prevalence of diabetes among American older adults may increase more than 400% by 2050 (Kirkman et al 2012).

Type 2 diabetes which used to be called non-insulin-dependent diabetes and adult-onset diabetes, but with the epidemic of obese and overweight kids, more teenagers are now developing type 2 diabetes. Type 2 diabetes was also called non-insulin-dependent diabetes. is often a milder form of diabetes than type 1. Nonetheless, type 2 diabetes can still cause major health complications, particularly in the smallest blood vessels in the body that nourish the kidneys, nerves, and eyes. According to Odden et al (2014), Diabetes remains a strong risk factor for cardiovascular disease at age 85. Diabetes is also associated with peripheral arterial disease and peripheral neuropathy, contributing to diabetic foot ulcers and amputations. Type 2 diabetes also increases your risk of heart diseases and stroke.

Type 2 diabetes can, however, be controlled with weight, Nutrition, and exercises. Unfortunately, type 2 diabetes tends to progress, and diabetes medications are often needed.

### **Osteoarthritis**

Osteoarthritis (OA) is the most common form of arthritis in the US. and is often referred to as “wear and tear” arthritis or degenerative joint disease. Osteoarthritis patients are mostly affected in the hands, hips and knees, experiencing pain, aching, stiffness, decreased range of motion and swelling.

Osteoarthritis is estimated to affect over 30 million people in the Unites States alone, this equals almost 1 in every 10 people dealing with the painful effects of arthritis.

According to Federal Interagency Forum on Aging-related Statistics (2016), osteoarthritis is the second most common chronic condition among American older adults and a common cause of chronic pain and disability and fifty-two percent of 85-year olds had a diagnosis of osteoarthritis in one study (Collerton J et al 2009).

As a degenerative joint disease, this disease over time, causes inflammation and loss of cartilage in the joints and inflexibility, pain and stiffness, and is primarily felt in weight-bearing joints such as the knees, hips and spine. It can, however, occur in any joint. Unlike systemic, autoimmune forms of arthritis such as Lupus and Rheumatoid Arthritis, Osteoarthritis does not affect organs in the body.

## **Symptoms**

Osteoarthritis signs and symptoms often develop slowly and worsen over time and include;

* **Pain of the a**ffected joints which might hurt during or after movement.
* Joint stiffness which might be most noticeable upon awakening or after being inactive.
* **Tenderness** of the joint that feels tender when you apply light pressure to or near it.
* **Loss of flexibility leading to in**ability to move the affected joint through its full range of motion.
* **Grating sensation leading to the** feeling of a grating sensation when using the joint and might produce a popping or crackling sound.
* **Formation of bone spurs** are extra bits of bone, which feel like hard lumps that form around the affected joint.
* **Swelling around the joint** which might be caused by soft tissue inflammation.

1. *Identify one health effect that is associated with contaminants in the work place*

Health effects (or health impacts) are changes in health resulting from exposure to a source here referred to as a contaminant which is defined as a polluting or poisonous substance that makes something impure or unsafe and can cause a health effect. While a workplace is defined as a place where people work in order to earn their daily living, such as an office, the farm, health care setting (Hospitals, health care centers and specialized treatment centers) or a factory.

Therefore, contaminants at workplace that causes health effect are referred to as workplace hazards. Workplace hazards are any aspect of work that cause health and safety risks and have the potential to harm or cause ill health. Some hazards are more likely to be present in some workplaces than others, and depending on the work that you do, there will be hazards that are more or less relevant to your business.

There are many types of workplace hazards, which tend to come under four main categories as follows;

**Physical hazards**

Physical hazards are the most common workplace hazards, including vibration, noise and slips, trips and falls. Examples are experienced in factories such as grinding mills that produce a lot of noise an example of physical hazard that can lead to impairing the hearing.

**Ergonomic hazards**

These arephysical factors that harm the musculoskeletal system, such as repetitive movement, manual handling and poor body positioning such as poor sitting posture leading to musculoskeletal diseases (MSDs) that mainly affect the back or the legs and other musculoskeletal systems.

**Chemical hazards**

Chemical hazards areany hazardous substance that can cause harm to the workers such as acids for workers of a battery company as well as chemicals from a petroleum company. Lead is also another example of a chemical hazard at a paint manufacturing industry.

**Biological hazards**

Biological hazards such as bacteria and viruses that can cause health effects including hepatitis, HIV/AIDS and Legionnaire’s disease. Sources of biological hazards may include bacteria, viruses, insects, plants, birds, animals, and humans which can cause a variety of health effects ranging from skin irritation and allergies to infections (e.g., tuberculosis, AIDS, Ebola viral disease, Hepatitis), cancer and many other health effects.

Understanding the risks that workers face in the regular execution of their jobs is a critical component of occupational health and safety and has emerged as an important discipline. A range of safety officers, industrial hygienists, radiologic technicians, and health professionals are involved in assessment, prevention and treatment of occupational exposures.

**Infection as a health effect to medical workers**

Taking for example biological exposures as the risk medical workers such as nurses, laboratory personnel and doctors as well as cleaners and other professionals involved in management of disease outbreaks such as cholera and Ebola viral diseases, these professionals are exposed to the risk of infection by these infectious diseases. Taking for example the worst Ebola outbreak ever which occurred in the western African region which led to more than 11,300 people and the current outbreak in DRC that has led to the death of over 1,700 people so far.

On August 8, 2014, WHO declared the deteriorating situation in West Africa a Public Health Emergency of International Concern (PHEIC), which is designated only for events with a risk of potential international spread or that require a coordinated international response. Over the duration of the epidemic, EVD spread to seven more countries: Italy, Mali, Nigeria, Senegal, Spain, the United Kingdom, and the United States. Later secondary infection, mainly in a healthcare setting, occurred in Italy, Mali, Nigeria, and the United States.

overall, eleven people were treated for Ebola in the United States alone during the 2014-2016 epidemic. On September 30, 2014, CDC confirmed the first travel-associated case of EVD diagnosed in the United States in a man who traveled from West Africa to Dallas, Texas and died on October 8, 2014. Two healthcare workers who cared for him in Dallas tested positive for EVD. Thank God both of them the nurses who cared for the patient recovered.

On October 23, 2014, a medical aid worker who had volunteered in Guinea was hospitalized in New York City with suspected EVD. The diagnosis was confirmed by the CDC the next day. Thank God she too recovered from the deadly infectious disease that threatened the medical professionals.

According to Bell BP et al (2016), seven other people were cared for in the United States after they were exposed to the virus and became ill while in West Africa, the majority of whom were medical workers. They were transported by chartered aircraft from West Africa to hospitals in the United States. Six of these patients recovered, with only one who unfortunately died.

Healthcare workers caring for patients with EVD were among those at highest risk for contracting the disease. During the epidemic, Liberia lost 8% of its doctors, nurses, and midwives to EVD (David K Evansa et al. 2015).

According to MSF (2019), DRC declared their tenth outbreak of Ebola in 40 years on 1 August 2018. The outbreak is centered in the northeast of the country with cases passing 2,700, making it by far the country's largest-ever Ebola outbreak and the second-biggest Ebola epidemic ever recorded, behind the West Africa outbreak of 2014-2016. Between April and June 2019, the number of cases has doubled, with a further 1,000 new cases reported in just these three months. Since early June, the number of new cases notified per week has remained high, averaging between 75 and 100 each week.

On 14 July, the first case of Ebola was confirmed in Goma, the capital of North Kivu, and a city of one million people. On 30 July, a second person in Goma was diagnosed with Ebola; they died the next day and a third case was announced.

In reaction to the first case found in Goma, on 17 July 2019, the World Health Organization (WHO) announced that the current Ebola outbreak in DR Congo represents a public health emergency of international concern (PHEIC).

As of 4 August 2019, a total of 2,763 EVD cases were reported in the Democratic Republic of Congo (DRC), including 2,669 confirmed and 94 probable cases, of which 1,849 cases died (overall case fatality ratio 67%). Of the total confirmed and probable cases with reported sex and age, 57% (1562) were female, and 28% (787) were children aged less than 18 years. Cases continue to be reported among health workers, with the cumulative number infected rising to 149 (5% of all confirmed and probable cases) (WHO, 06. August 2019).

Where ever there is the possibility of contact with blood and other bodily fluids such as vomitus, urine, sweat and urine in the workplace, workers should take precautions to prevent contact with the skin, eyes or mucous membranes (e.g. mouth) in order to prevent infection with these bacteria and viruses at their work place. All in all, these medical workers wouldn’t have died if not because of their duty call that exposed them to the risk of infection with the deadly Ebola virus. The health effect of infection with biological hazards is not only restricted to Ebola but including other infectious diseases such as HIV, Tuberculosis, Hepatitis and many other infectious diseases that are got from the work place.

Routine preventive practices are recommended to prevent the spread of these infectious diseases including; HIV, EVD, Hepatitis and other related infections in the workplace. Routine practices are based on the principle that all blood, body fluids, secretions, and excretions including sweat, non-intact skin, and mucous membranes and other samples, may contain transmissible infectious agents. Steps involve using protective clothing such as gloves, gowns or aprons, masks and protective eye wear when dealing with people's blood and other body fluids such as semen and vaginal secretions as well as other body fluids including Vomitus in cases such as the EVD.

The spread of infectious disease among health workers is fast because they share so many in common such as their staff rooms which are usually small in size, equipment’s such as thermometers, stethoscope and BP machines as well as handling utensils like kidney discs and their clients who may be uncooperative and expose the medical workers to infections.

1. *Globalization has played a major role in environmental health. Discuss both positive and negative effects of globalization on environmental health.*

Globalization is the connection of different parts of the world resulting in the expansion of international cultural, economic, and political activities. It is the movement and integration of goods and people among different countries.

According to definition by Merriam Webster dictionary, globalization is the development of an increasingly integrated global economy marked especially by free trade, free flow of capital, and the tapping of cheaper foreign labor markets that relate to economic, cultural and political integration.

Globalization is about the interconnectedness of people and businesses across the world that eventually leads to global cultural, political and economic integration. It is the ability to move and communicate easily with others all over the world in order to conduct business internationally (Fox P. & Hundley S., 2011).

Thomas Friedman (2007), described ten forces in the world that flattened the world making it global and these are;

New age of creativity, New age of connectivity, work flow software, uploading (Harnessing the power of communities), outsourcing, Offshoring/Competition (running with gazelle, eating with lions), Supply chaining, Insourcing, In-Forming and the steroids.

It is a term which may be used broadly to mean doing things as distant people do them, or more narrowly to mean complying to global standards in economy, politics, culture, education, environment or other matters. It describes the way countries and people of the world interact and integrate. Many things have become globalized as people come into contact.

### Technology allows businesses, such as large multi-national corporations, to serve customers, source from suppliers and even gain the business of customers from competitors on a world-wide basis. Examples of globalization include but not limited to Cultural Globalization, Diplomatic Globalization, Economic Globalization, Automotive Industry Globalization, Food Industry Globalization, Technological Globalization and Banking Industry Globalization.

There are advantages and disadvantages to globalization, all of which have economic, social, political, and cultural impacts.

**Advantages**

### **Improved Living Standards**

One of the main benefits of globalization is the massive rise in living standards in developing nations which South Sudan is one. According to World Bank (2005), extreme poverty has been reduced by 35% since 1990. The number of people living in extreme poverty declined from 1.5 billion (40% of the world’s population) in 1980 to 1.2 billion (28 percent of the population) in 1990 to 1.1 billion (21% of population) in 2001. Further, the first Millennium Development Goal target to cut the 1990 poverty rate in half by 2015 was achieved five years ahead of schedule, in 2010. Nearly 1.1 billion people have moved out of extreme poverty since then. This means there is improvement in the living standards of the world because of it being one of the determinants of health. This improvement is linked to globalization in that people have been able to access the global market to acquire global products as well as selling their own products globally.

### **Increased Creativity and Innovation**

Global competition can encourage creativity and innovation, helping companies to stay one step ahead of competitors. This drive toward better quality and price can improve products and keeps costs low. The free movement of labor and capital means that ideas from developing nations can drive innovation around the world. For example, the competition in the global market has made companies and countries producing same products to improve on their quality of products. When the peace agreement was signed in Sudan between the Northern Sudan (Now Sudan) and Southern Sudan (Now South Sudan), there were only two telecommunication companies and by then a sim card of a mobile phone was going for $ 100 but with the coming in of more telecommunication companies including Zain, MTN and the Vivacel which was then later closed down by the government, a sim card was selling at only 3 South Sudanese pound (SSP) just about $1 which allowed access of the mobile telecommunication by majority South Sudanese. Communication is key in improving the health of the population. The fact that a sim card was selling highly at $ 100 means that families of those who value it important and bought it at that skyrocketed price were deprived by some vital and important determinants of health including access to quality foods and health services.

### **Easy Access to Foreign Culture**

Globalization has also made it easier to access foreign culture, including food, movies, music, and art. Cultural differences are getting cleared by globalization. The free flow of people, goods, and information has made it possible to change some primitive cultures such as open defecation, hand washing after visiting the toilet and before handling, touching, preparing and eating food. These traditional cultures are changing as people get to learn other cultures which are globally acceptable.

**Easy Technology transfer**

There is much access to developed countries resulting in easy technology transfer resulting in higher productivity and has raised the living standards of people. It provides greater opportunities for those who have to access larger markets around the world. For example, Africa has had famines for the past decades due to droughts caused by the global warming, but due to transfer of technology, some African countries including South Africa have adapted modern farming technologies including irrigation which is to fight malnutrition through production of food by the use of irrigation during dry seasons and droughts. This has impacted positively on developing countries.

**Increased Productivity**

With the increased reliance of the people on the private capital and resources, international organizations are playing an important role in the development of developing countries. Globalization has brought up many opportunities resulting in increased productivity and increased flow of capital within the economy. This has also resulted in increased investment providing greater job opportunities which has improved standards of living for the people. As humanitarian and development organizations including UN Agencies and Programs get to the developing countries such as South Sudan, they have led to increased job opportunities. These job opportunities mean better earnings for the employee and hence improved standards of living as employability is a key determinant of health and increased productivity.

**Legal effects**

Human rights have been improved as a result of globalization since media coverage on violations of the rights receives attention from all over the world.  It is through globalization that leaders address inequalities since information and openness get promoted. Human rights such as gender-based violence has become top on the global agenda. The media due to globalization have been able to report cases of violations of human rights including gender-based violence such as FGM which is condemned, and the world is fighting globally to eradicate it due to its negative health effects. All human right violations impact negatively on health and therefore globalization has made legal frame works regarding human rights violations.

**Stable security**

Although the effect cannot be seen directly, globalization has contributed greatly in enhancing the world security. For example, it is extremely difficult to see two countries attacking each other if the economy of one of the countries depends largely on the economy of the other country although for the case of Uganda and Rwanda closing their boarders recently, it has impacted negatively on their economies and the citizens of these countries who are involved in cross boarder businesses.

Another example of improved global security is the global fight on terrorism, where all countries are against terrorism which is a threat to global development.

### **Disadvantages**

The disadvantages of globalization are as follows

### **Job Mobility**

One of the most common critiques of the global trade system is how it ships jobs, especially manufacturing jobs, from less developed countries to developing countries. For example if a manufacturing company have been employing a good number of casual staff and the company decides to move from a slightly developed country to a developing country like South Sudan, the Lower-skilled workers (Casual staff) will lose their manufacturing jobs in the slightly (less) developed countries and they will have a difficult time finding another new job as they become abandoned by their employer who has relocated to a developing country where there is market for their products. This company will then be only of advantage to the country they have relocated to as it will employ the locals there for these same jobs. This will mean reduced income for the lower skilled workers and therefore poor health.

### **Western Dominance**

Despite huge growth in emerging markets, the western developed world still holds controls on international order and on how capital flows from country to country. For example, organizations like the International Monetary Fund and the World Bank make it simple to acquire a loan. Western values, however, are not universal; applying them to non-western countries can bring disastrous financial results. Even worse, some ways that the developed world tries to help the developing world such as African countries deepens poverty rather than alleviating it. Taking for example china’s aid to African country including Zambia and Kenya where it is taking control of parts of those countries in compensation of the debts. South Sudan is inclusive and is heading towards that control by China with its unending loans despite the flow of the crude oil that accounts for about 98% of its revenue. This will impact the harder on the socioeconomic standards of the country that directly affects the citizens of these countries. Another example of western dominance is seen in the huge number of humanitarian organizations that are working in providing humanitarian assistance to the developing world. In most cases, these organizations are dominated and headed by people from the country of origin of those organizations. Examples include, Concern Worldwide and Goal Ireland both originating from Ireland are dominated by Irish with always people in the senior management from Ireland who are paid huge salaries compared to the national staff making them take back their donations to their country.

### **Loss of Cultural Identity**

While globalization has made foreign cultures easier to access, it has also begun to blend cultures together. The success of certain cultures throughout the world have caused other countries to match these lifestyles and culture while losing their own cultures. When cultures begin to lose their distinctive features, we lose our global diversity. For example, South Sudanese girls who used to be black beauties have resorted to bleaching their skins by use of bleaching creams to look brown and white which unfortunately leave them spotty with black marks allover due to the complexity of the black color. This is all because of globalization as they see movie stars and people used to advertise international products on televisions are usually of a light skinned people whom they think is the best than their original admired black color. These bleaching creams are responsible for most skin Cancers and other cancers in the long run.

**Widened gap between the rich and the poor**

Globalization has also thrown open varied challenges such as inequality of purchasing across and within different nations resulting in a widening gap between rich and poor.

For example, people in developing countries are competing for the same products in the global market such as health care products such as food supplements and immune boosters which are accessed globally, but with the globalization, the poor are made to buy these same products at the same cost with the rich who are in most cases in developed countries and with the improved banking systems in developed countries, the rich will pay lee for the product as they pay these products online as compared to the poor man in South Sudan with poor banking services who will need to travel to either China or Bangkok to acquire these same products. The cost of transport or the cost of money transfer from developing countries such as South Sudan with poor and no online banking will make the cost of the products more expensive resulting to a widened gap between the rich and the poor. This leads to abandonment of such products and hence poor health one reason the life expectance in South Sudan is about 47 years while in United Kingdom is 80.99 years and in Japan 85.77 years (The World, 2019) with **the United States now having the lowest life expectancy levels of 78.6 years among high-income developed countries, including Western Europe, Australia, and Japan (**[Chris Kresser](https://chriskresser.com/about), May 9 2019).

**Environmental Damage**

Increased production means increased utilization of natural resources.  Besides, increased trade results to increased transport, which uses fossil fuels.  As a result, pollution both air and water as has increased, leading to climate change.  The changes in climate are now a serious threat to humanity and the future of the world, all because of globalization. The major factor responsible for the current deadly floods and droughts globally which affect food production leading to famine and malnutrition as some people have little or no access to foods while other developed countries end up consuming non organic foods but GMF that are dangerous and linked with causation of cancer and other non-communicable diseases.

**Fluctuation in prices**

Globalization has led to increased market competition, hence leading to fluctuation in prices.  For example, developed countries like the USA have been forced to reduce their products prices, because countries such as China offer the same products at cheaper prices.  This is because the production cost in China is lower than in the USA. As a result, for developed countries like the US to withstand the competition and have customers, they are forced to lower their prices.  The impact is adverse, as the ability to sustain social welfare in the US gets reduced. This competition and price fluctuation will lead to low quality in order to maximize profits.

**Disease transmission**

Free movement of people and services leads to cross boarder infections such as the current Ebola outbreak in DRC. As the health professionals continue to contain the Ebola in DRC, the free movement of people across the boarders has led to the spread of the disease to neighboring countries such as the case that was identified in Uganda’s Kasese district. It was also this globalization that let to the spread of the worst Ebola outbreak ever that occurred in West African in 2014-2016.

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