Human population

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The human population has been changing over time. According to the UN, as of 2020, the world population is estimated to be around 7.8 billion people. Throughout history, the human population has been increasing gradually since the Great Famine of 1315-1317. The world population can be traced from 1,000 BC to today. The population has increased from 1 billion in 1800 during the industrial revolution to 7.8 billion today. The industrial revolution brought improved technology and better living conditions that made the population shoot. In the original years of humankind, the human population was extremely low. The population growth rate was equally slow. Around 1000 BC, the population was relatively stable due to high birth rates, high death rates, and unsanitary conditions (Bacci, 2017). Generally, the population has been increasing over the last 12,000 years. To put this to perspective, today's human population is 1860 times larger than its size 12,000 years ago when the population was around 4 million people. It is estimated that in the year 1800, the world population was approximately 1 billion people only. Since then, the population has increased 7-fold to 2021. This means that there has been an average of 10,000 population increase since 1800 (Cleland, 2013). It is also estimated that around 108 billion people have ever lived on earth. Before 10,000BCE, the population was thought to be under one million, and the human species was under the threat of extinction (Cleland, 2013). However, since then, the population has been increasing almost exponentially.

The highest population growth rates were experienced between 1955 and 1975, when the rate was at 1.8%. The rate further increased to 2.1% between 1965 and 1970 but declined to 1.2 between 2010 and 2015. The human population is projected to grow in the course of the 21st century to about 9-10 billion people by 2050. By the end of the 21st century, the population is estimated to hit 10 billion people. The human population is distributed differently over the six

continents. The most populous continent is Asia while the least populated is Oceania. The most populous country in the world is China, with about (1.43 billion) followed by India (1.37 billion), United States (330 million), Indonesia (270 million), and Brazil (211 million).

Historical overview of the changes that have happened technologically, medically, culturally, and nutritionally to result in significant population changes over time

Technology has played a significant part in contributing to population changes over time. Technology has helped boost the human population. One of the most remarkable technological changes was the Industrial Revolution that took place in the 17th and 18th centuries. The industrial revolution saw changes from agrarian to industrial and machine manufacturing. The process started in Great Britain, Europe and spread to other parts of the world (Hudson, 2014). It was a transition from hand production methods to machines, new energy sources, and the development of machine tools. The process led to massive production of food which saw the world population increase rapidly. The industrial revolution was one of the remarkable changes in history as both population, and per capita income increased simultaneously. For example, England's population increased (doubled) from 8.3 million in 1801 to 16.8 million in 1850 (Mays, Brickley, & Ives, 2008). Britain's population increased from 10 million to 40 million in the 1800s while the population of Europe increased from 100 million to 400 million in 1900. The industrial revolution also led to enormous urbanization and the growth of new towns (Ashton, 1997). Much of the population in Europe moved from rural areas to urban areas. Since the Agrarian revolution happened, the world's population has been increasing steadily until the 21st century. The industrial revolution was the precursor to global population growth. New machines were later invented, which led to massive production of food. Modern technologies like machinery enhance food production through mechanization and large-scale farming, which

contributes to population growth. It is important to note that food production and population growth go hand in hand.

Technology has also brought changes in population growth in terms of sanitation and cleanliness. Proper sanitation has helped prevent many diseases that caused death earlier on. Contaminated waters led to many deaths during the medieval period, but thanks to technology, such deaths have been averted (Cleland, 2013).

Technology has also brought changes in family sizes through birth control measures. In the 1800s, the use of family planning methods and contraceptives was unheard of. However, due to changes in technology, families have been able to control the children they have through contraceptives. Thus, we can say that technology has slowed population growth because many people nowadays use contraceptives to avoid having many children. In the 21st century, almost all cultures have embraced birth control measures, resulting in low birth rates.

Medicines have been of great importance in determining population growth because they reduce death rates. Around 4000 BC, plant herbs were used to treat diseases. Society used primitive methods of treating illnesses that led to high death rates, leading to slow population growth. Traditional healers and doctors were used to treat diseases. However, at around 1200 BC, modern medicine began. During this time, doctors and researchers treated diseases professionally and emphasized the importance of cleanliness and healthy living. Later on, in 1865, disinfectants and antiseptics were used during surgeries. During the 19th century, viruses could be discovered, X-rays began to be used, and more vaccines developed. Today, the field of medicine has made significant strides in reducing death rates. Vaccines for vaccine-preventable diseases like tetanus and polio are available in many countries. Also, new methods for treating diseases are available. For example, chemotherapy and radiotherapy for treating cancer patients.

Due to these changes in medicine, people are living longer, and fewer people are dying from illnesses. Generally, drugs have played an enormous part in reducing death rates, leading to population increase globally (Cleland, 2013).

Culture has also played a significant part in determining world population size. Cultural advances have changed the size of families and how people perceive childbearing. In the past, many cultures promoted having as many children as possible. Children were seen as a source of wealth to the family. Children were also seen as a source of labor. In African society, the family status was determined by the number of children the family had. Families with many children were respected and were privileged in society. Again, most African cultures supported polygamy, which led to big family sizes. However, with time, these cultures have faded away, and now people are embracing small families. Children are no longer regarded as assets; now, they are regarded as a burden to the family.

Furthermore, due to urbanization, many families live in cities and towns, which forces them to have few children which they can comfortably take care of and give them a decent lifestyle. Also, changes in culture have seen women empowerment which means women can dictate how many children they will have, whether to get married or not, and even choose whether to keep the baby or terminate the pregnancy. Modernity has also brought changes in how people perceive marriages. While marriages were meant for recreation, today, people value marriage for companionship and not for procreation in some societies. These cultural beliefs have led to slow population growth over time (Cleland, 2013).

Nutrition deals with the eating habits of people. In the early days, people used to have healthy eating, but due to modern technology, people are consuming food with a lot of fats and cholesterol, which has been a recipe for many deaths. Today, there are more cases of people with

diabetes, cancer, hypertension, and cardiovascular diseases than there were in the last hundred or fifty years. These diseases have led to many deaths. Healthy living is a big challenge in the 21st century than before. People are consuming foods with a lot of fats and cholesterol and live a sedentary lifestyle, which jeopardizes their health. The changes in nutrition have led to many deaths, especially in the USA, which has slowed population growth.

Relate the growth of the human population to our ecological footprint and explain the idea of limits to population growth known as the carrying capacity

Carrying capacity is the maximum population size of a biological species that can exist in a certain environment without hurting it. The species population size is limited by factors such as shelter, food, water, and mates. The gradual increase in population growth has been pointed to as being a threat to the environment and the carrying capacity. The gradual increase in the human population has affected the earth's ecology, although developments in technology have helped combat these effects (Barrett & Odum, 2000).

Relative to carrying capacity, what may result from the unbridled continued growth of our population?

If human population growth is not tamed, the carrying capacity will be broken, and many plant and animal species are bound to be extinct. An increase in population has seen humans encroach on forests and riparian lands. This has led to adverse effects on the environment, such as deforestation, pollution, climate change, acid rain, and the greenhouse effect. The more the human population continues to increase, the more we hurt the environment. Soil erosion, acid rain, less rain, and desertification are bound to increase if the population is not checked. The

carrying capacity will reach its limit, and there will be less water, food, and space for living organisms to live on (Barrett & Odum, 2000).

How does the size of the human population contribute to environmental degradation?

An increase in population contributes to environmental degradation by reducing the natural resources available, loss of biodiversity, greenhouse effect, pollution (air, land, and water), and soil erosion. When the population increases, people require more land for cultivation and settlement. For this to happen, trees must be cut down; when trees are cut down, carbon dioxide in the atmosphere increases (trees absorb carbon), and since carbon dioxide is a greenhouse gas, global temperatures rise, leading to global warming (Crist et al., 2017).

Why must we take the human population size into account when we attempt to develop environmental restoration projects?

Population size affects the environment a great deal. Thus, if we want to restore the environment, the human population must be taken into account; otherwise, our efforts will be in vain. We must consider natural resources, food, and energy consumption to help us consider changes that need to be implemented.

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Links

https://ourworldindata.org/world-population-growth

https://www.healthknowledge.org.uk/public-health-textbook/health-information/3a-populations/historical-changes

Encyclopedia of Death and Dying, Population Growth, http://www.deathreference.com/Nu-Pu/PopulationGrowth.html#ixzz4KRVs71B5

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