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Opinion

Advancement of Human Health Technology with Forest Health is like the Zeno Paradoxes

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Digital Health and Improvement in Health Technology

Since the beginning of 2023, the international community has been experiencing a reduced number of COVID-19 cases. Although, some countries are still overwhelmed dealing with the COVID-19 pandemic due to the emergence of new and more dangerous variants, such as what is being experienced in China. Changes in the replication processes of viruses or making copies of themselves are known as mutations. Viruses with one or several new mutations are referred to as "variants" of the original virus. Also, it easily multiplies when a whole lot are in circulation and the characteristics of the virus change as a result of mutation, make these micro-organisms spread faster during transmission. This can also make its level of severity worse once in circulation [1]. The global current dominant COVID-19 variants are XBB.1.5 present in 43% of cases and BQ.1.1 found in 29% of cases, with the original Omicron variant no longer existing [2]. During crisis period as a result of COVID-19 pandemic, there is need to explore new measures in tackling it. Worthy of mention is the fact that the stakeholders in healthcare have made much progress in terms of managing this problem by controlling spreads through personal contacts by creating spacious waiting rooms in laboratories and hospitals. According to Thomas & Ellis [3], the advancement of artificial intelligence (AI) technology in disease diagnosis and providing some customized solutions is another aspect that the health sector has excelled.

Moreover, some advances have been recorded in machine learning, virtual care, the use of the internet in medical research, 5G and improvement of other medical facilities. The use of this technology in the medical field has a huge capacity of creating new opportunities for patients and medical personnel, thereby enhancing a more sustainable environment to fight against some of these diseases that seemed to be previously incurable [4]. It is important to note that health care and technology go hand in hand and trends in digital health have been attracting massive investment which will eventually impact positively on the industry worldwide. According to [5], five of the most important digital health trends that must be considered include: telehealth, IoT and medicine, employee health applications, Continuous Innovation in the Management of Infectious Diseases and Virtual-Augmented Reality. The development of digital health must be through the principles of transparency, accessibility, replication, scalability, interoperability, privacy, security and confidentiality. Additionally, it must be an integral part of health priorities and benefit people in ethical, safe, secure, fair, reliable and sustainable ways. Hence, there is need for a global digital strategy with emphasis on health data classified as personally identifiable information, which goes with high safety and security standards [6].

Considering the high number of hackers that can break into an organization's database, there is need to establish a strong legal and regulatory framework to ensure privacy, integrity, confidentiality, availability of data, as well as its processing. In addition to addressing cyber security, other parameters such as governmental accountability, trust, equity, capacity building and literacy should not be neglected in providing standard health to the people. In other words, transparency and effective communication should also be of high paramount in ensuring security of the health data and its management strategies. Thus, the development of digital health requires adequate data security, especially those of personal health.

Increase in Infectious Diseases due to Climate Change

The negative impacts of climate change have been intense in the last four decades which have brought unexpected disasters to humans, animals and plants. Over the past three years, COVID-19 pandemic has also demonstrated a high magnitude of threat to the global health. Part of these reasons is the fact that climatic changes play a major role in the spread of diseases generally in humans and animals, and the way living things naturally respond to this

spread. For example, infectious diseases have decreased globally due to some advances in health technology achieved through cleanliness, prevention and control efforts, but now appearing again as experienced with this COVID-19 pandemic. Increase in air and sea temperatures as a result of global warming has affected the survival of various insects useful for pollinating vegetation and the existence of some marine animals in the oceans. Global rise in temperatures marked by melting polar ice caps have expanded the areas where diseases such as malaria and dengue fever thrive. Also, deforestation and degradation of forest ecosystem, drought, floods, landslides, and frequent storms, all impact negatively on the risk of contracting these diseases.

Urbanization and migration due to increase in world population also make it more difficult to prevent and control diseases. Examples of infectious diseases currently increasing its spread to new areas in the United States include Lyme disease, Valley fever and West Nile virus disease. All these are enhanced by warmer summers, milder winters and fewer frosty days, thereby developing and expanding to new geographical regions under these conditions. Apart from understanding the impact of climate change, it is important to pay attention to several common ways of spread such as through ticks and mosquitoes bites, contact with fungi, infected animals and water [7].

Development of Zoonotic Diseases due to Environmental Damage

Some animal species move to new habitats due to climate change and in the same way, destruction of some habitats lead to the expansion of living organisms to other regions. For example, the movement of wild animals is usually triggered by deforestation and forest degradation, and when it is close to human settlements, there will be conflicts of interest between the local residents and these wild animals. Worthy of note is the fact that some of these animals go into extinction in the region, thereby reducing the biodiversity of the habitat. The movement of wildlife to new areas increases the probability of contact with humans, thereby spreading zoonotic diseases.

Primarily, zoonoses are infectious diseases transmitted from animals to humans. It is usually caused by pathogens such as bacteria, viruses, or parasites. This is because pathogens originating from animals are able to move and develop in the human body after going through a series of genetic mutations, thereby infecting humans. For example, wild animals such as bats and snakes living in forested caves transmit rabies virus found in new geographical areas in China, hence aiding the emergence of COVID-19. This is as a result of changes in the environment influenced by various human activities. Except these destructive human activities are controlled, the environmental damage will get worse thereby increasing the spread of these disease-causing organisms.

Zoonoses only progress from animals to humans at the initial stage, but the causative virus can mutate into another form capable of spreading directly between humans. It spreads through direct contact with animals, as well as the consumption of meat, eggs, fruit, and milk containing the pathogens. This is made worse by the existence of markets that sell wild animal meat commodities such as bats, snakes, crocodiles, dogs, rats and others. Also, environmental changes in the forests, wildlife population structure and biodiversity can modify the distribution of host vectors and/or pathogens. For example, changes in the landscape due to infrastructure development, as well as conversion of agriculture and plantations, have led to the outbreaks of malaria. According to the Food and Agriculture Organization, preservation of ecosystems and endemic biodiversity has the capacity of reducing the prevalence of infectious diseases [8].

There is need for serious considerations in the future as regards landscape changes in every country's development planning agency. This helps in planning spatial mapping and regional layouts supporting low-carbon development and green economy in achieving the Sustainable Development Goals. According to [9] the relationship between human well-being and forest lives, provided an initial framework linking both and highlighted the key variables influencing this relationship. Further review showed most of the variables to be health-related parameters which provide limited information for planners, practitioners and forest managers.

Conclusion

It is clear that the advancement in health technology is not in par with the rate of environmental damage due to slow conservation efforts. Although, the stage of overcoming the disease virus with the current health technology has been achieved, preparations are not always in place to deal with the next evolution of the virus, which seems to follow Zeno's paradox. According to Zeno, a Greek philosopher who sparked the paradox theory, a moving object must first arrive at half-way the distance before arriving at the goal. Suppose an object wishes to move from position 0 to 1 on the number line, then it must first reaches 1/2, then 3/4, then 7/8 and so on. In stage n, it will be in position 1 – 12n. Hence, there is no motion from n to 1 – 12n = 1 and the motion of the object can never be in position 1. Thus, it cannot go from infinite to finite numbers [10].

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