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The question of the impact of an aging global populace
The question of the use of telemedicine and technology in healthcare
The question of the ethics of genetic editing and modification

World Health Organization Chair Report

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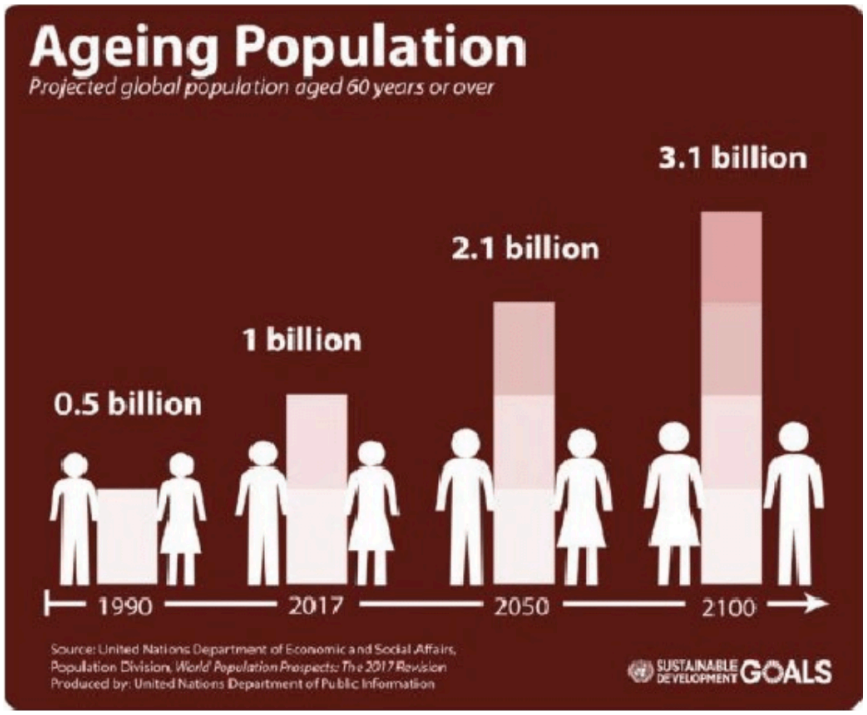
Topic 1: The Question of the Impact of an Aging Population

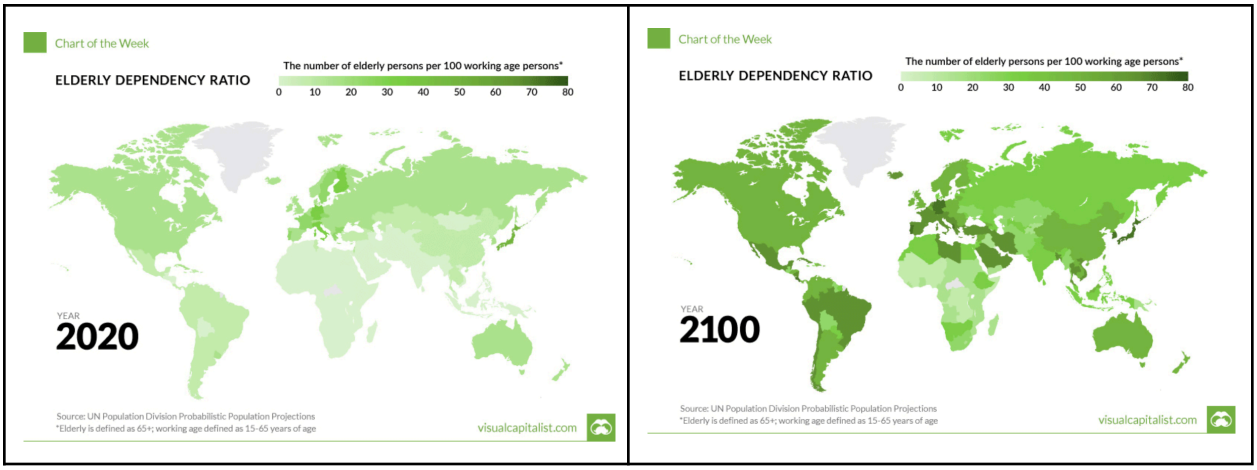


The projected global population aged 60 years or over (UN department of Economic and Social Affairs)

INTRODUCTION

An aging global population is an issue which was solely deemed significant in recent times. As life expectancy rose coupled with the drop in fertility rates worldwide, a shift in the distribution of the population occurred leaning greatly towards the elderly side. This rise in life expectancy can entirely be attributed to the immense advances in technology regarding healthcare and modern medicine, which stemmed during the midst of the 20th century. Alternatively, the global drop in fertility rates can be a result of increased emphasis on employment and economic gain, as well as growth in the status of women. This duo of rising life expectancy

and declining fertility rates ignited the dawn of an aging population. With this arose many global issues, such as the lack of employees in the workforce, the strain on government funds targeting healthcare and retirement programs, and increases in tax to accommodate for this strain. Therefore, the United Nations officially deemed the aging population to be a global issue, with plans of action to tackle the looming problem.



The dependency ratio by country on the world map (Steve Bosse)

The issue of an aging population is a global one, which involves every nation in the committee. Generally speaking, the issue is impacting high income countries (HICs) more than it is impacting low income countries (LICs), however, in the coming years, nations of every income bracket will likely face the issue themselves.

KEY TERMS

Term	***Definition***
Aging Population	Increasing proportion of the population being over 64 years old; lots of older dependents.
Youthful Population	Large proportion of the population being under 15 years old; lots of young dependents

Dependents	Those under 15 years old or over 64 years old
Dependency ratio	Ratio of dependents (Under 15s and Over 64s) to non-dependents
Pro-Natalist Policies	Policies to encourage births in a nation through incentives/assistance/programs to parents (Example: providing monetary stipends to parents)
Anti-Natalist Policies	Policies to discourage/prevent births in a population; aiming to reduce the fertility rates using deterrents (Example: The one child policy in China)
Life Expectancy	The average age of death in a country
Fertility Rate	The average number of births per female in her child-bearing years
Contraceptives	Drugs to prevent pregnancy
Elderly	Aged 65 or older

Countries Involved

Japan

Over 15% of Japan's population is aged 75 or older, denoting the nation as having the oldest population in the world. With 48 dependents per 100 employees, this dependency ratio is one of the highest in the world. Japan is struggling to manage this crisis, as the dropping fertility rates is causing the youth population to decline. Furthermore, this aging population is resulting in economic demise, as the number of people in the working age is steadily decreasing. To combat this, Japan has attempted to increase the retirement age, as well as promote pro-natalist policies in an attempt to increase the fertility rate.

Italy

With 23% of Italy's population being aged 65 or older, the nation is struggling to provide proper care to all the elderly. Some of the solutions being implemented are increased funding towards welfare schemes, as well as increasing the age of retirement. With Italy having the longest life expectancy in Europe with 81.5 years on average and rising, an aging population is expected.

Portugal

A similar trend to Italy can be seen in Portugal in regards to an aging population. With 21.8% of the population being aged 65 or older, Portugal is in the midst of an aging population crisis. A high life expectancy coupled with a declining fertility rate can be credited for this, as the status of women improves, and healthcare in the country continues to advance. Portugal is facing the looming issue of a decline in employment due to the lack of employees, however so far, the economy is yet to take a large hit.

France

With 20.3% of the population being considered elderly in the nation, France is additionally facing the looming prospect of an aging population. The nation is benefitting from the rise of the gray economy, which produces items and paraphernalia for the elderly population. Similar to Portugal, the nation is yet to experience any direct economic impact from the aging population, however the issue is definitely close on the horizon.

WHAT CAN BE DONE?

> “Every industry is going to be affected by an aging population. This creates tremendous opportunities, and tremendous challenges”

Pat Conroy, Minister for International Development

The question of *what can be done* to help mitigate the crisis will be up to the delegation to decide. Current measures being taken include the increase of the retirement age, which hopes to mitigate the economic impact of an aging population. Furthermore, the implementation of pro-natalist policies can assist in increasing the fertility rate, driving up the youth population. Solutions can be found by delving into the root causes of the problem, which can be social, political or economical issues.

ADDITIONAL RESOURCES

Aging as a Global Crisis

The Cost of Aging

Japan's Aging Problem

How Europe Will Deal With it's Aging Problem

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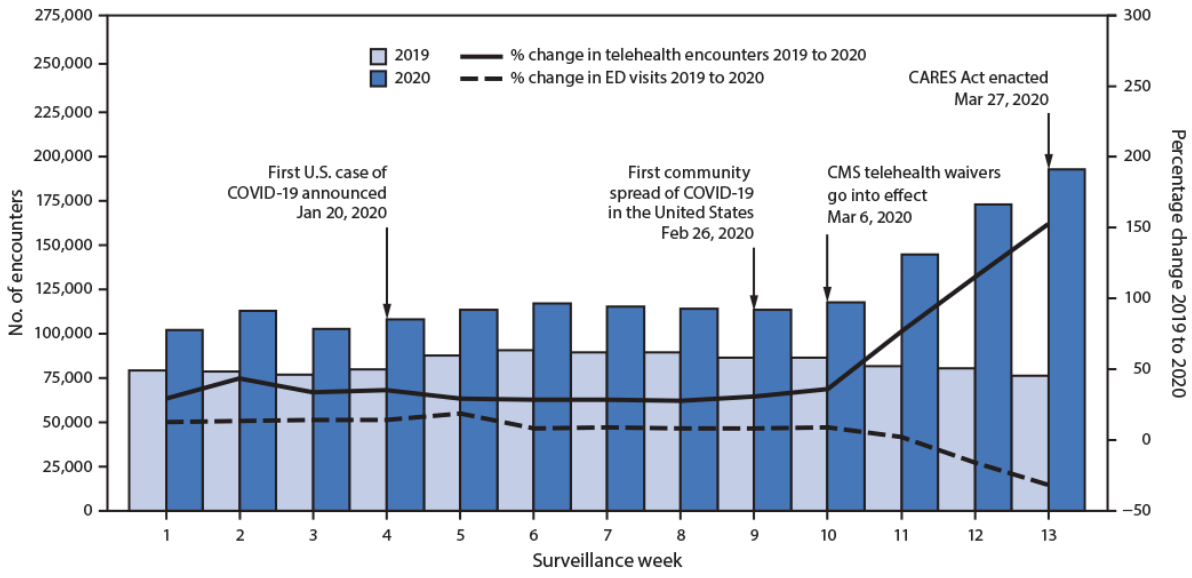
Topic 2: The Question of the Use Telemedicine and Technology in Healthcare

INTRODUCTION

With the rise of COVID-19, the medical landscape has changed drastically, the implementation of Telemedicine and technology have only skyrocketed. What was once a field that had no interest in being developed, is now globally transformed into medical practice. Telemedicine is referred to as technology and telecommunications that provide remote clinical and health services, which is especially beneficial in eliminating distance barriers and safety protocols, in order for healthcare to be more accessible. Prior to the COVID-19 pandemic, the practice of telemedicine had an abundance of backlash towards it. Medical professionals were not familiar with the technological opportunities that were opened via telemedicine, logistics of training staff were seen as a challenge. With the European Union failing to apply synchronized policies, regarding medical technology across the region, this ultimately restricted and limited the development and supply of telemedicine.



KEY TERMS

Term	***Definition***
Telemedicine	The distribution of health-related services, aid, and information through telecommunication technologies.
Telecommunication	Communication over a distance by telegraph, telephone, or broadcasting.
Diagnosis	Identification of an illness or other through examination of the symptoms by a medical professional..

WHAT'S HAPPENING NOW

With the COVID-19 pandemic on the rise, the restriction to access to hospitals, overflowing patients and quarantine were issues faced worldwide. Having in-person appointments was extremely difficult, as different policies aimed to limit contact between both infected and non-infected people. Medical clinics and hospitals would also not be available to patients seeking aid and information on their symptoms or ongoing diseases.

The adoption of advanced healthcare technologies was able to combat these issues from various sides. Countries such as China have administered telemedicine services and systems in order to safely but effectively monitor patients that have contracted diseases. This allowed for easier maintenance of the influx of COVID-19 patients and a lesser risk of exposure to the virus. Additionally, with the increasing demands of service, telemedication allowed for workers to manage the increase in patient volume, which grants more aid and service.

In the week of April 2020, there were 1.7 million telemedicine visits, up from 13,000 in the pre-COVID period, according to data from the Centers for Medicare and

Medicaid Services. In October 2020, these visits surged by more than 3000% when compared to statistics from 2019. Nearly all medical professions saw this remarkable growth in telemedicine, which encompassed a wide range of services including secure email, video and audio-only visits, care chat, and remote crucial data transmission through telemonitoring.

THE MAIN ISSUES

Although telemedicine certainly tackles various issues regarding the COVID-19 pandemic, it is with no doubt that it leaves many prominent disadvantages and challenges. These include:

- How will medical experts be certain to make a diagnosis without thorough physical examination or diagnostic data?
- Will the lack of a patient-doctor relationship lead to implications in receiving health care?

KEY PLAYERS

UNITED STATES OF AMERICA

Numerous hospitals and medical practices used telemedicine strategies designed exclusively for stroke treatment, to address the neurologists' shortage. Neurologists can speak with patients online via telemedicine. 76% of hospitals in the US communicate with patients via telemedicine in some form of telecommunication. Researchers identified physicians working in radiology, psychiatry, and cardiology as the most frequent users of telemedicine. Telemedicine not only is helpful for provider-patient interactions but also provides a better linked network amongst health care providers. Telemedicine has contributed to a further strengthening of ties between patients, healthcare, professionals, and other stakeholders as the demand for a multidisciplinary approach to care and patient provider collaborations have increased.

CHINA

China promotes the implementation of telemedicine to control chronic illnesses and the prevention and treatment of COVID-19. A regulation allowing medical institutions to establish online hospitals and direct telemedicine treatments for returning patients with common and chronic ailments was released in China in 2018. There are already 158 internet hospitals in China that offer telemedicine consultations to patients. In China, a policy was introduced in 2018 to encourage telecom companies to offer medical institutions high-quality dedicated internet access and VPN services, as well as to encourage the development of reliable networks for telemedicine and ensure the quality of data transmission services for medical purposes. It is foreseeable that private networks will predominate in the future.

AUSTRALIA

In order to assist the introduction of telemedicine, the Australian government has allocated A$106 million ($76 million) over four years. This will guarantee flexibility in the delivery of healthcare and ongoing health consultations over the phone or online. Since March 2020, the Medicare Benefits Schedule has covered more than 80 million COVID-19 telemedicine services for more than 16 million patients. Currently, telemedicine services are utilized by over 89,000 physicians. More than 200 telemedicine programs have been made permanently accessible, building on the pandemic response. These modifications imply that GPs, medical experts, and other healthcare providers can now provide MBS video and telephone services nationwide.

UNITED KINGDOM

Another issue with telemedicine is the protection of patient data. Much of the data collected via telemedicine will be considered "data concerning health" under the UK General Data Protection Regulation, and therefore "special category data". This means there will be much more stringent requirements for processing than for other data. Healthcare providers must ensure that they correctly determine the category of data and comply with the appropriate requirements. For more detail see our Towards big data in health article by Mattias Rättzén.

ADDITIONAL RESOURCES

The Ethical Implications of Telemedicine – The Bioethics Project

How coronavirus turned telemedicine into the new face of health care - YouTube

COVID-19 and Telemedicine: Experience from China, India, and the United States – China Health Partnership

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Topic 3: The Question of the Ethics of Genetic Editing and Modification

"A visual representation of the process of Genetic Modification." (AdobeStock)

Introduction

With the world transitioning towards a more technologically advanced landscape, new innovations are integrating with our lives as we know it. Some of these advancements have greatly benefited humanity, however, many of these have also raised questions regarding whether or not these integrations cross the line between ethical and unethical. Genetic modification is the process which uses laboratory based technology to alter the DNA makeup of an organism. In advanced terms, this can be done by either simply altering a base pair of DNA, or removing or adding new regions of it.

Genetic engineering was first carried out in 1973, with the first genetically modified consumer product being approved by the FDA in 1982. Sparsely known is the fact that genetically modified products are overwhelmingly present in our current lives. This can generally be seen in livestock produce, and fruits and vegetables. 80% of the world's soybean production is genetically modified, signifying the complete integration of genetic modification into our lives.

Questions arise when moving away from genetically engineered foods and products, and focussing on its use on human beings.

This leads to the following questions:

How can "good" and "bad" uses of these technologies be distinguished?

Who decides which traits are normal and which constitute a disability or disorder?

Will the high costs of gene therapy make it available only to the wealthy?

Key Terms

Term	***Definition***
Genetic Modification	The process which uses laboratory based technology to alter the DNA makeup of an organism.
Gene Therapy	The transplantation of normal genes into cells in place of missing or defective ones in order to correct genetic disorders.
DNA (Deoxyribonucleic acid)	A self-replicating material that is present in nearly all living organisms as the main constituent of chromosomes. It is the carrier of genetic information.

KEY PLAYERS

CHINA

Research on germline genetic editing is permitted, but using an embryo that has been genetically altered to get pregnant is illegal under several laws. A Chinese scientist who claimed to have produced the first gene-edited offspring in history has been sentenced to three years in prison. He Jiankui was found guilty of breaking a government order by doing his own research on human embryos in an effort to safeguard them from HIV. He was also given a three million yuan ($430,000 in US dollars) fine in addition to his jail.

UNITED STATES

Despite the fact that there is no federal regulation dictating methods or limitations involving human genetic engineering, germline genetic editing and modification are prohibited in the United States by acts of Congress. There are federal restrictions on using public funds for research initiatives, tampering with human embryos, and conducting gene therapy clinical trials. They propose that, like other assisted reproductive technologies, gene editing be strictly controlled for security and effectiveness. To avoid immoral researchers from relocating to whichever country has the loosest legislation, US Senators from both parties sponsored a resolution in 2019 promoting global standards for germline gene editing.

ADDITIONAL RESOURCES

China may be the future of genetic enhancement - BBC Future

Ethical Issues With Genetic Modification - Free Essay Example - Edubirdie

Human Genetic Modification | Center for Genetics and Society

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