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Covid-19 reaction digital solutions, related to public administration Health Challenges

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CONTENTS

ABSTRACT

Due to the widespread spread of SARS-CoV-2 and thousands of deaths caused by coronavirus disease, the World Health Organization declared a pandemic on March 12, 2020 (COVID-19).

On a global scale thus far, the epidemic has killed millions of people and slashed the world's GDP by billions.

These findings are presented in this review in terms of epidemiology, serological and molecular diagnostics, and the potential hazards to people of SARS-CoV-2 infection.

In the present work, all the changes brought about by the coronary pandemic in the evolution and development of e-health will be studied, while special reference will be made to government policies for e-health and pandemic management.

In the context of this work, research was conducted in order to research, study and analyze the attitude and response of Greeks to the use of social media in the context of government policies for pandemic management.

INTRODUCTION

Because of the COVID-19 epidemic, health care systems throughout the globe are facing an unprecedented challenge. It was reported by WHO on March 25, 2020, that there had been 413,467 confirmed cases and 18,433 deaths.

The disease, which is highly infectious, can manifest itself in a variety of ways, ranging from moderate illness to respiratory collapse or death. The elderly and those with pre-existing medical issues are at a higher risk. Healthcare systems must respond quickly to the evolving situation for three primary reasons: there is a requirement to treat a large number of individuals suffering from respiratory illnesses; second, there is a need to safeguard the healthcare staff in order for them to treat patients; and thirdly, it is necessary to protect the elderly and the most vulnerable against infection. To combat this disease effectively, quick and broad-based innovation was required.

As a result of this demand for novel modes of operation, digital health has made significant strides. In any case, these tactics either sprang out of nowhere or were imposed from above. All the components are provided, including digital communication techniques, educational exercises, and a patient management system.

The current work examines the deployment of new rules and procedures in response to the coronary epidemic that began in early 2020 and swiftly spread globally.

Chapter 1 examines the coronary pandemic phenomena, as well as how it began and spread over the world.

Chapter 2 provides a bibliographic overview of the innovative techniques that governments have adopted and implemented in the sphere of health in order to handle the epidemic effectively.

The third chapter will evaluate the study conducted for the purposes of the current work, which investigates Greeks' responses to e-health and the usage of social media.

CHAPTER 1st: The outbreak of COVID-19

1. The outbreak of COVID-19

The COVID-19 pandemic is the century's worst health calamity and the greatest threat since World War II. A new respiratory disease has emerged COVID-19 was identified in December in Wuhan, Hubei province, and was designated COVID-19 by the World Health Organization (coronavirus disease 2019) (Wu et. al., 2020).

The cause of this illness has been identified as SARS-CoV-2, a new corona virus. Throughout human history, several viruses have caused large-scale outbreaks of disease. According to the World Health Organization's study, the current COVID-19 outbreak has infected over 2,164,111 individuals and killed over 146,198 in more than 200 countries.

Antiviral medications and vaccinations have not been found to be effective against COVID-19 in a scientific study. The rapid expansion of the COVID-19 has enormous health, economic, environmental, and sociological ramifications for the whole human population (Farzanegan, 2021).

The coronavirus outbreak is wreaking havoc on the global economy. Almost all governments are attempting to stem the spread of COVID-19's effect on society and the global environment by testing and treating patients, quarantining suspicious persons via contact tracing, prohibiting large gatherings, and maintaining absolute or partial lockdowns (Gabutti et. al., 2020).

Pandemics are not just a threat to public health; they also have disastrous financial and political repercussions.

Apart from being the greatest threat to global public health this century, COVID-19 is considered as a symbol of societal unfairness and a lack of social progress. COVID-19 implies that the letters 'CO' stand for 'corona,' 'VI' for 'virus,' and 'D' for disease. Coronavirus is a single-stranded RNA virus measuring 80–120 nm in length (Gabutti et. al., 2020).

COVID-19 outbreaks were detected in December 2019 in Wuhan, Hubei province, with the majority of cases being attributed to a seafood wholesale market. Since then, the disease has spread to all continents except Antarctica, making it the most contagious disease on the planet (Torales et. al., 2020).

It has been recognized as a pandemic by the World Health Organization. The International Committee on Taxonomy of Viruses has dubbed the virus severe acute respiratory syndrome coronavirus 2 (ICTV) (SARS-CoV-2) (Torales et al., 2020).

According to the World Health Organization, SARS, a coronavirus, killed 774 people between 2002 and 2003. In 2012, there were about 2,494 instances of MERS-CoV outbreak, with 858 fatalities worldwide. Coronaviruses are members of a large and diverse family of viruses (Torales et. al., 2020).

SARS, MERS-CoV, and SARS-CoV-2 are all -coronaviruses that cause pandemics to spread globally.

Following COVID-19, the present century has seen at least five further pandemics, including H1N1, polio, and Ebola.

On January 30th, 2020, the World Health Organization (WHO) declared the COVID-19 outbreak a public health emergency of global significance. As a direct result of these epidemics, a large number of fatalities, diseases, and billions of dollars were incurred.

COVID-19 is anticipated to inflict as much or more human misery than any other infectious illness on the planet when compared to other diseases and their respective burdens. Additionally, as a result of other global environmental changes such as soil degradation, ozone layer depletion, pollution, and urbanization, a changing environment poses a clear danger to our planet and human health (Torales et. al., 2020).

Carbon dioxide emissions increased dramatically during and after the industrial revolution, allowing greenhouse gases to build and eventually cause global warming. To a certain extent, the COVID-19 pandemic can be attributed to global environmental changes. Apart from its catastrophic impact on human life, the new coronavirus infection (COVID-19) has the potential to have a significant influence on global economic growth.

Healthcare experts, government authorities, and the general public must work cooperatively to prevent and limit the pandemic. The study discusses the environmental and social consequences of COVID-19 and recommends measures to decrease the risk factors associated with it (Wang et. al., 2020).

It was in December 2019 in Wuhan, China's Hunan seafood market when the new coronavirus sickness COVID-19 began to spread globally within a few months.

Animals such as bats, frogs, snakes, birds, marmots, and rabbits are frequently offered for sale at the Hunan seafood market (Wang et. al., 2020).

Bats may be the primary source of the evolutionary link between SARS and CoV-2. Although the intermediate site of origin and transmission to humans are unknown, the virus's ability to spread rapidly from person to person has been established (Peng, 2020).

The COVID-19 epidemic has expanded to over 200 nations since the most current WHO report was published on April 18th, 2020. Out of about 2,164,111 confirmed cases, 146,198 individuals died from the respiratory virus; nevertheless, more than 402,989 people recovered from infection (Peng, 2020).

These variables are always changing. Specific information on COVID-19 may be found at "https://www.who.int/emergencies/diseases/new-coronavirus-2019.html". COVID-19 infections have been rapidly growing on a global scale (Kuteifan et. al., 2020).

After striking China in January 2020, COVID-19 expanded fast in late February and early March of the following year. The United States is the most populated country, followed by Spain, in terms of the number of people infected with COVID-19 (Kuteifan et. al., 2020).

Over 30,000 individuals died of this illness in the United States of America. According to the Chinese government and WHO, the current outbreak has infected over 84,180 people in China, with over 4,642 deaths as of April 18. The first coronavirus epidemic in India was reported on 30 January 2020 in Kerala's Thrissur district, following the return of a student from Wuhan University in China.

India's Health Ministry reported 14,378 cases of coronavirus infection and 480 deaths on April 18, 2020. International travel and tourism may contribute to the virus's continuous worldwide expansion, on the one hand, due to the virus's high transmissibility and ease of transmission (Kuteifan et. al., 2020).

Every year, numerous religious, sociocultural, scientific, athletic, and political mass gatherings take place worldwide. Large-scale events, such as sporting events, concerts, and fairs, have long been linked to disease epidemics, both locally and globally. COVID-19's expansion from Asia to the United States of America, Africa, and Europe poses threats to generate a global pandemic (Ma et. al., 2020).

2. The global health under the COVID-19

Health and illness are not novel notions or themes. COVID-19's outbreak in China at the end of the year has raised severe public health concerns around the world. A virus-infected droplet or close contact may be used to propagate this infection. The virus is transferred from person to person by close contact with an infected person who has coughed, sneezed, or breathed respiratory droplets or aerosols (Pollard et. al., 2020).

These aerosols may reach the human body by breathing (respiratory system). Individuals infected with COVID-19 exhibit a wide array of clinical signs and symptoms. These include mild to moderate symptoms such as fever, cough, drowsiness, and shortness of breath, as well as severe pneumonia with respiratory failure and septic shock (Pollard et. al., 2020).

In adults, COVID-19 illness presents with distinct symptoms. Clarifying the link between COVID-19 and immune-rheumatologic patients is critical. The health of rheumatic patients is of paramount importance because of the epidemic's rapid and frenzied expansion. Some organs and tissues may potentially be damaged by the respiratory illness COVID-19; however, this has not yet been confirmed (Jakovljevic et. al., 2020).

Coronaviruses may be transmitted via the transfusion of labile blood products since viral shedding is frequent in respiratory tract illnesses. People in middle and old age are especially vulnerable to COVID-19, which is the primary cause of hospitalization and mortality in the afflicted nations (Cash & Patel, 2020).

For the first time since the Second World War, the most severely afflicted nations by a disease pandemic are reversed. The world's wealthiest nations accounted for more than 90% of all fatalities caused by the coronavirus illness 2019 (COVID-19) by early May 2020; if China, Brazil, and Iran are included in this group, the percentage climbs to 96%. The rest of the world, which has long been characterized as a reservoir of sickness and plague that wealthier nations have attempted to shield themselves from, is wary of COVID-19's arrival in these places (Lal et. al., 2021).

Reversal of fortunes does not mean that all countries are receiving a one-size-fits-all message from the world's wealthiest nations on how to deal with the crisis. Lockdowns and tertiary hospital care are two of the main pillars of this system, but Sweden and South Korea are significant exceptions (Peeri et. al., 2020).

It's not clear to us if these tactics are acceptable for nations with lower resources, different population dynamics, and drastically different public health demands, as well as a lack of health-care resources and a lack of citizen participation in government (Peeri et. al., 2020).

We believe that these methods might undermine two of the most fundamental concepts of global health: the importance of the context and the importance of social justice and fairness.

We've known for ages that context is critical to controlling epidemics, but current pandemic makes it appear as though we've neglected it. In the colonial history of medicine, the disorders that afflicted Europeans were thought to be universally significant, whereas those that plagued non-European groups that were colonized were confined to "tropical medicine" (Dalglish, 2020).

In the instance of COVID-19, it is clear that context is important. Nations in sub-Saharan Africa and South and Southeast Asia have a distinct demographic profile than wealthier countries in the OECD and East Asia.

In wealthier nations, up to half of all fatalities have happened in care facilities, where the elderly is more likely to reside. These communities have a decreased risk of COVID-19 mortality because of these differences in age structure and social systems. Nevertheless, several nations have implemented curfews (Dalglish, 2020).

Only a minuscule proportion of the total number of fatalities in the year 2020 have been caused by COVID-19 since the outbreak started.

Lockdowns, on the other hand, have made it considerably more difficult for certain individuals to get the health care they need. In India, for example, public transportation has been prohibited since the end of March, despite an announcement of a limited reinstatement on May 4, 2020. In March 2020, data from India's National Health Mission shows that there was a 69 percent reduction in measles, mumps, and rubella vaccination in children, a 21 percent reduction in institutional deliveries, a 50 percent reduction in clinic attendance for acute cardiac events, and a 32 percent fall in inpatient care for pulmonary conditions (Akpan et. al., 2021).

There have been similar allegations from other countries, such as the stoppage of polio vaccinations, interruptions in insecticide-treated net programs, and access to antimalarial drugs. COVID-19's arrival in these places is being watched closely by the adnations (Akpan et. al., 2021).

COVID-19 testing that depends on pricey kits and a concentration on intensive-care facilities is paired with lockdowns to establish physical distance.

This strategy has dominated most of the health-system response in affluent nations, but in many low-resource settings, access to intensive care or anything beyond basic diagnostics is very limited. History implies that if COVID-19 vaccines are created, they are likely to be accessible first in nations that can afford to acquire them, and only then will they trickle down to low-income countries (Akpan et. al., 2021).

In contrast, syndromic diagnosis (clinical diagnosis based on the constellation of symptoms and signs that are a characteristic of infection), the function of community health workers, primary care nurses, and physicians, and the significance of community participation are rarely mentioned.

COVID-19 patients will not be able to get treatment in constrained health-care systems that are already short on money, beds, equipment, and personnel. There may be an increase in non-COVID-19 related mortality rates as a result of a decrease in the accessibility to and availability of necessary health care (Akpan et. al., 2021).

1.4. The outbreak of COVID-19 in Europe

The coronavirus disease outbreak of 2019 (COVID-19) was designated a pandemic by the World Health Organization (WHO) on March 11, 2020. As of March 20, 2020, Italy has the second-highest number of confirmed cases behind China in the epidemic. The disease has spread across Europe.

As Andrea Remuzzi and Giuseppe Remuzzi so eloquently describe, the Italian national health system is under considerable strain due to the restricted capacity of critical care unit sections. Between March 9 and 11, 2020, the Italian government implemented a series of progressive mitigation measures aimed at reducing social contact and preventing disease transmission. According to the exponential model developed by Andrea and Giuseppe Remuzzi, data patterns before to March 8 indicated more than 30,000 incidents by March 15, 2020 (Remuzzi & Remuzzi, 2020).

Johns Hopkins University data indicates a modest deviance from those predictions, with 24,747 cases recorded by March 15, 2020, suggesting that actions implemented by March 11, 2020, were reducing new cases within 3–4 days. The Johns Hopkins

University Center for Systems Science and Engineering appears to be in a similar predicament, with only a few weeks of delay (Dalglish, 2020).

The number of fatalities caused by COVID-19 has fluctuated by a factor of more than 100 in European countries. Low intrinsic (e.g., low population density) or forced contact rates among individuals (e.g., non-pharmaceutical interventions), as well as lesser exposure or susceptibility to infection, may explain for particular nations' low coronavirus fatality rates (e.g., smaller populations) (Vervoort et. al., 2021).

Rather than that, nations with a smaller population and fewer mortality experienced shorter epidemics that peaked sooner. As a result of the easing of lockdowns, we anticipated and observed a resurrection of COVID-19 across Europe.

COVID-19-related mortality in European countries varied from as little as 100 in Croatia to as much as 45,000 in the United Kingdom, as of 31 July 2020 (Jacobsen, 2020).

In terms of the virus's dynamics, it is possible for a nation to have extremely few fatalities from coronavirus transmission. In other nations, for example, the coronavirus SARS CoV-2 transmission rate is lower because infected and susceptible people come in touch less often in less dense populations (Gilardino, 2020).

After the lockdown, the daily increase rate of deaths gradually decreased (daily change in the 7-day running mean), and by the second week of April, the death toll had ceased to climb (negative growth). The relaxation of restrictions coincided with a resurgence, precisely as the lockdown appeared to have halted COVID-19 spread (Gilardino, 2020).

The CHI reached a record high of 75% on April 12 and remained over 70% for the following 46 days. When lockdowns were lifted in several countries around Europe, the decline in deaths stalled (Gilardino, 2020).

By late July, the CHI had dropped to an average of 50% and the daily increase in mortality had ceased. When COVID-19 outbreaks were recorded in June in Europe, the daily growth rate was typically greater than zero, confirming that the preceding deaths surge had been partially controlled by lockdowns (Gilardino, 2020).

It is worth noting that this study is unique in that it employed an empirical model (skewed-logistic, developed specifically for this purpose) to investigate the variables that determine the extent of COVID-19 outbreaks (as measured by reported deaths) across Europe (Hope et. al., 2020).

By March 2020, COVID-19 had been designated a pandemic in Europe, wreaking havoc on a several industries. Italy announced its first coronavirus cases on January 30, 2020. On January 31, the virus was reported to have diffuse to Spain (Hope et. al., 2020).

Italy, Spain, and the United Kingdom reported the highest number of cases. As a result, the Spanish government implemented restrictions on March 14th in response to the declared state of concern. All non-essential workers have been urged to stay at home following the implementation of new, harsher restrictions on March 29 (Biscaryat et. al., 2020).

As of March 9, Italy's whole population was subject to a protracted quarantine, which prohibited residents from leaving their homes except in emergency situations. During the lockout, non-essential establishments and businesses were forced to close.

On March 23, the United Kingdom's government imposed a state of lockdown, compelling all enterprises but the most critical to close their doors. Outside of jobs deemed "essential," such as firefighters or police officers, citizens were only permitted to engage in shopping, health, and one type of exercise per day (Biscaryat et. al., 2020).

Belgium has the highest COVID-19 death rate per capita of any European country. The Belgian government took a variety of measures on March 12, including the closure of schools, cafés, and other public spaces, as well as the cancellation of all public activities. On March 17, non-essential shops were closed, non-essential travel was forbidden, and all gatherings were prohibited (Abbas, 2021).

The Netherlands, on the other hand, took a less stringent approach to infection containment. Schools and day care facilities have been closed, and individuals have been advised to stay at home and work from home as much as possible to avoid large-scale public gatherings. On the other hand, the Swedish authorities opted against implementing a lockdown. People displaying symptoms of a respiratory infection and those over the age of 70 were urged to remain at home (Abbas, 2021).

In response to the COVID-19 crisis, European governments implemented a series of measures that profoundly altered citizens' daily routines. Electrical systems reflect this shift in behavior in terms of power usage.

With the exception of Sweden, all nations with population restrictions have different patterns of energy consumption than the Netherlands and Belgium, which have less restrictive policies in place.

As of this writing, there have been no confirmed cases of the virus in the United States. Weather fluctuations, in addition to the day of the week and the time of day, have an impact on power consumption. We picked a comparable time period in 2019 for the reference week, which resulted in a similar daily average temperature. Comparisons cannot be perfect since other factors influence demand (Bali et. al., 2020).

Domestic demand has risen as individuals staying at home more during the shutdown. As a result, the drop in commercial and industrial demand has been far greater than the increase in residential demand.

To reduce the spread of COVID-19, social distancing measures such as a 2 m distance or even a nationwide lockdown were recommended. The primary goal was to reduce the extent of the illness in order to retain the healthcare system from being overburdened, particularly in intensive care units (ICUs). After consulting with infectious disease and epidemiology experts, who advocated an early lockdown, Greek officials took a more aggressive stance (Bali et. al., 2020).

The increase in the proportion of fatalities that occurred outside of a hospital setting was found to be statistically insignificant. While violent fatalities were not statistically significant in the 2020 period, fatal injuries from road traffic accidents were shown to be substantially lower, despite the lack of statistical significance. A slight but statistically significant increase in sudden deaths, particularly myocardial infarctions, was observed (Bali et. al., 2020).

There are no notable differences between the two time periods in the first month following the lockdown. When new data becomes available, more study should be conducted. Although fatal road traffic accidents have fallen dramatically, fatal myocardial infarctions are unaffected by COVID-19. Homicide and suicide rates appear to have been unaffected by the COVID-19 outbreak and lockdown in our jurisdiction area (Philipps et. al., 2020).

The Greek government's preventive measures appear to have prevented the healthcare system from becoming overwhelmed, allowing it to function regularly. On February 27, Greece implemented early containment measures at the municipal and regional levels.

All educational institutions ceased operations on March 10. All restaurants, retail centers, and sports venues were closed on March 13. On March 16, all commercial businesses were forced to close (Wardman & Lofstedt, 2020).

These limitations were eventually expanded throughout the country. On 23 March, the partial lockdown was upgraded to a complete lockdown due to the limited effect it had on the movement of individuals.

With the exception of traveling to and from employment, health care facilities, and vital commodities providers, the usage of personal automobiles was outlawed (e.g., supermarkets, drugstores, gas stations). In addition to operating on a less regular schedule, public transit was prohibited from traveling outside of the region's borders in passenger vehicles (Wardman & Lofstedt, 2020).

On 4 May, once the SARS–CoV–2 outbreak was brought under control and a decline in the number of new illnesses was seen, all restrictions on passenger vehicle movement within the limits of each regional administrative unit were lifted.

On May 11, thousands of people returned to their occupations, kicking off Greece's post-lockdown era, and business activity resumed with the reopening of the majority of commercial establishments (Wardman & Lofstedt, 2020).

CHAPTER 2nd: DIGITAL SOLUTIONS ON HEALTH CARE SYSTEMS DURING COVID-19

2.1. The framework of "E-health" systems

Due to the rapid development of new technology, health care may now be provided remotely using information and communication technologies (ICTs). Electronic health is a term that refers to health services and up-to-date health information that are made available via the Internet and accompanying technologies such as smartphones, tablets, and laptop computers (Rabe et. al., 2020).

This integration aims to increase the emphasis of healthcare on the needs of patients. Electronic health records, computerized entry for physician's orders, electronic prescription and consumer health information are just a few examples of the extensive variety of services that may be provided to patients and their caregivers. UN Sustainable Development Goal (SDG) No. 3 stresses the need of ensuring the well-being of people of all ages via sustainable development and monitoring healthcare services (Rabe et. al., 2020).

Scientific and public interest in the Internet's usage for health-related objectives has grown dramatically in recent years. There have been a number of health-related digital platforms that have emerged since these recommendations (Rabe et. al., 2020).

The literature shows that social sustainability and involvement are linked. Engagement, according to Rogers (2005), is the key to a sustainable/resilient society. Max-Neef and colleagues (1991) used the social sustainability indicators to show that societies where individuals learn together, interact and exchange information and expertise are more likely to succeed than those where people are isolated. ICT can aid a company's efforts to adopt sustainability and involve its customers and partners. New digital engagement platforms may therefore be seen as an ecosystem in which users generate value together by cooperating and participating. In spite of the literature's emphasis on the relevance of engagement platforms in social sustainability, the function of engagement in digital health engagement platforms in social sustainability mechanisms has not yet been studied. Furthermore, research that combine user engagement and social sustainability in the health setting are still limited. Other studies have looked at the influence of online consultation and the usage of blogs and forums on patients' health and their desire to take care of themselves, as well as the impact of the profiling systems of physicians (Physical Profiling System, PPS) (Kirchberg et. al., 2020).

Knowledge mediated by ICT in healthcare is increasingly being researched. The co-creation of value is a key factor in the success of digital engagement platforms, according to a number of studies that have examined the processes that are triggered in these platforms.

As a general rule, platforms that enable the co-creation of value are regarded to be instruments for sustainability. Recent studies have proposed models that encourage virtuous models based on sustainable behaviors, and in which the relational and experiential realms are essential to attain economic development as well as human well-being (Kirchberch et. al., 2020).

Aquilani et al. have already highlighted the critical importance of value co-creation platforms for the occurrence of sustainable processes based on the genuine demands of all stakeholders. Because of this, aspects and criteria of sustainability have lately been regarded to include stakeholder participation, knowledge, transparency, and co-creation of value amongst stakeholders. A "health goal-oriented approach" is a term used by Adams to describe the growing importance of sharing and co-creating knowledge in the healthcare field in order to increase patient wellbeing. We are now living in a digital information age where data and knowledge management have become strategic resources. As a result, we are seeing an increase in the use of engagement platforms developed by private organizations to manage data and relationships with patients in socially sustainable environments (Bokolo, 2021).

Because they allow patients and doctors to exchange and co-create meaningful information, digital health interaction platforms may be seen as instruments for co-creation of value. The three components of participation within the health engagement platform and the three facets of social sustainability were thought to be linked in our framework because of these considerations, which led us to develop our model (Eslami et. al., 2021).

The co-creation of value in the health engagement platform and perceptions of socially sustainable platforms have tight ties that are both medium- and long-term.

Expert health researchers like Professor Umberto Veronesi have long argued that the social component of sustainability should be given more weight in the healthcare setting. Baumgartner and Ebner drew attention to the link between social responsibility and shareholder loyalty (Eslami et. al., 2021).

Social sustainability aims to have a beneficial impact on all the stakeholder relationships, both current and future. Participation, knowledge, and sharing are the most important effects of implementing social sustainability procedures. Social sustainability has been defined as having three types of consequences in the literature: information sharing (sustainability of the customer value co-creation process); solidarity and increased knowledge as a means of personal enrichment and an expression of social sustainability in the workplace; and, finally, "customer learning" (Kouroubali et. al., 2020).

Similarly, Espinosa et al. voiced their hopes for a shift in welfare culture toward shared responsibility, including private and governmental sectors, for the sake of society's well-being. Co-social sustainability, as defined by the author, refers to long-term viability that includes not only the engagement of all stakeholders, but also the development of social responsibility procedures in concert with them. The interactions between companies and their stakeholders may be better understood with the use of a long-term platform (Espinosa et. al., 2021).

Service providers, both for-profit and nonprofit, as well as governmental institutions, have a chance to help community members grow as individuals. In this light, physician involvement activities are an opportunity for personal growth as well as for the safety of patients' health. Despite the fact that physician involvement is an important problem in the health industry, there is currently a dearth of research on the impact of social media sustainability on physician behavior-based CRM effectiveness. Customer relationship management (CRM) has been shown to increase hospital quality and profitability as well as physician performance (Norris & Al-Muzaffar, 2021).

Using information management systems, the authors looked at how e-platforms may help physicians perform better by improving the quality of their interactions with patients, increasing the effectiveness of their clinical operations, and increasing patient satisfaction. In light of what has just been stated, accessible platforms designed to assist doctors in their role of safeguarding and preserving patient health may be able to establish a beneficial feedback loop that results in excellent word-of-mouth and virtual well-being for all stakeholders (Jendle, 2020).

2.2. COVID-19 and the new situation

Globally, health-care systems are confronted with unprecedented problems as a result of the COVID-19 outbreak. The WHO reported 413,467 confirmed cases and 18,433 deaths as of March 25, 2020. It has been shown that the illness is extremely contagious, with symptoms ranging from asymptomatic infection to respiratory failure and death. The disease appears to be more severe among the elderly and individuals with pre-existing medical issues.

There are three main reasons why healthcare systems have had to adapt quickly to the changing situation: first, the need to triage and treat large numbers of patients with respiratory illnesses; second, the need to protect healthcare workers so that they can treat the sick; and third, the need to protect the elderly and most vulnerable from infection.

Rapid and wide-reaching innovation was required to properly implement efforts to address the COVID-19 epidemic. As a consequence of this quest for alternative modes of work, digital health has made tremendous progress. Certain tactics evolved naturally, while others were imposed by a central authority. It includes digital communication methods, educational activities, and care management tools (Tarricone & Rognoni, 2020).

The fast spread of COVID-19 over the world, coupled with the virus's uniqueness, has necessitated creative solutions. Fresh digital communication tactics have been developed as a consequence of the constant influx of new knowledge and new ways of practice. Slack and WhatsApp are two of the most popular messaging applications used by clinical groups to communicate and manage staff rotas in the face of high levels of staff illness or self-isolation.

Professionals are increasingly using social media platforms like Facebook and Twitter to communicate with clients and colleagues. Doctors Association UK's COVID

Doctors Forum (UK) has the most members in the United Kingdom (UK), with 11,354 as of March 23 (Petracca et. al., 2020).

Healthcare workers' safety and self-isolation practices have been discussed on the platform in depth, as well as lessons learned from other countries' healthcare workers.

Health Education England Topol Digital Health Fellow Sarah Hudson's blog entry on managing staff safety during the pandemic of the coronavirus has also been a popular one (Maulik et. al., 2020).

The Discourse Digital Health Network, a "Discussion and cooperation for UK and worldwide digital health communities," is one example of how better digital communication has evolved via more organized forms.

There were 27 discussions on the digital response to COVID-19 by the 23rd of March, with top digital health executives actively participating. Live webinars are becoming more popular as alternatives to face-to-face meetings, and NHX participated in one on the digital response to the epidemic on March 24 (Maulik et. al., 2020).

New models of care, underpinned by digital health innovation, have been the driving force behind the largest digital health change. The necessity to safeguard fragile patients from the dangers of entering a hospital has led to the development of these digital methods. In the UK, this has been made possible through the adoption of telemedicine consultation procedures in both primary and secondary care.

As a result of the quick introduction of digital tools and packages, there has been a substantial innovation and support from the MedTech industry. As an example, EMIS

(Egton Medical Information Systems), the UK's leading provider of electronic health records for primary care, has made a number of interventions available to all UK EMIS online general practitioners (GPs), including changing coding, alert monitoring, and permitting video consultations (Nicolas et. al., 2021).

NHS Trusts have also been hurrying to embrace remote consultations. Remote consultations, from simple phone calls to more elaborate video-conference telemedicine or App-based solutions, have replaced the great bulk of in-person appointments. Many multi-disciplinary team meetings are being held through Zoom and other videoconferencing technologies to avoid the danger of huge groups of healthcare workers colliding in person. To execute these digital care procedures quickly, the COVID-19 pandemic necessitated the fast navigation of governance and digital integration. In the absence of this, the implementation process may have been far more time consuming (Azizy et. al., 2020).

2.3. Healthcare systems development

The phrase "digital health" refers to the incorporation of cutting-edge medical technology, disruptive ideas, and digital communication into healthcare. Chronic illnesses are becoming more expensive, and doctors are becoming scarce throughout the globe, yet healthcare and medicine have not kept pace with the tremendous advancements in medical technology (Fagherazzi et. al., 2020).

Strict rules, the unwillingness of healthcare stakeholders to adapt, and neglecting the relevance of cultural shifts and the human aspect in an increasingly technology environment all impede down this transformation. The likelihood of patients relying on an unregulated, but easily accessible, technological remedy for their health concern is anticipated to rise as technology becomes more widely available. Disruptive technologies are helping to shift medicine from a one-sided relationship between doctors and patients to one where both parties are equal participants (Alwashmi, 2020).

Digital health, a new phenomenon we describe as "the cultural transformation of how disruptive technologies that provide digital and objective data accessible to both caregivers and patients results in an equal level doctor-patient relationship with shared decision-making and the democratization of care," has led to significant changes in the way healthcare is delivered. A paradigm change is on the horizon as healthcare systems throughout the globe become financially unsustainable because of technology advancements (Alwashmi, 2020).

For much of the history of medicine, doctors have relied on a small number of instruments and a growing body of knowledge passed down from one generation to the next in order to make sound medical judgments. While Dr. Laennec, a French physician, invented the first stethoscope in the early 1800s, it took decades for the notion of using such invention to propagate across the medical community. However, medical education and the regulations and norms that govern health care have not kept pace with technological advancements in the field (Crawford & Serhal, 2020).

Patients began to gain control over their healthcare in the 2010s, despite stakeholders' inability to keep up with the fast growth in medical knowledge (3). (4). Under the weight of all the duty, physicians burn out quickly; patients feel dissatisfied by hunting for answers in a tangle of information, and decision makers are reluctant to modify the system (Bayram et. al., 2020).

Technology like genome sequencing and smartphone-connected ECGs have been made more widely accessible thanks to digital health. But it also bears the danger of dehumanizing treatment. There is a strong case to be made for embracing technology in the healthcare sector, but only if cultural obstacles and patient expectations are addressed (Bayram et. al., 2020).

It is in this way that disruptive innovations such as deep learning algorithms, VR, or health sensors could contribute to value-based healthcare and assist in determining the success of interventions and the doctor-patient relationship from clinical judgement and experience to creative problem solving. A new normal and new responsibilities for patients and caregivers are on the horizon as a result of the shift to digital health care (Bayram et. al., 2020).

Medicine became a science-based profession in the 19th century, and only a few professionals had the knowledge and expertise to practice it.

People's health was safeguarded by medical experts under an implicit bargain with society that included governmental funding and adherence to their professional autonomy.

A new contract is necessary, in part because of financial considerations as well as the emergence of technology that give patients more control over their own health. As a result, stakeholders' roles, responsibilities, and rights, as well as their levels of openness, should be clarified (Sust et. al., 2020).

The World Health Organization predicts that there is a global shortage of 4.3 million health professionals in the twenty-first century due to an increase in the number of patients with chronic disorders and an increase in the expense of delivering current treatments.

In the meanwhile, technology continues to grow at an astronomical rate. The healthcare industry is experiencing a hardware and software transformation.

According to hardware, internet connection, mobile phone and smartphone penetration is on the rise. Emerging technologies in medicine are having a significant impact. These include artificial intelligence (AI), robots, genomics, telemedicine, and virtual and augmented reality (VR). A significant quantity of open access clinical papers and recommendations are becoming publicly accessible in the software/ information component. As a result, not only is the quality and amount of healthcare information improved, but the chance for self-care is also increased (Sust et. al., 2020).

As a result of these changes, medicine's human side is shifting. Traditionally, patients were not included in the decision-making process about their own health and illness treatment. The onus and accountability for all medical choices and outcomes fell on the shoulders of medical practitioners.

To now, patients have relied entirely on the procedures, infrastructure and information provided by healthcare professionals and systems, as well as their own judgments. Patient empowerment, which included the use of disruptive technologies that were also becoming accessible, was primarily motivated by this sense of insecurity and vulnerability to choices over which they had no influence. Rights and transparency should be specified and clearly communicated (Sust et. al., 2020).

In 2009, Dr. Tom Ferguson created the phrase "e-patient," and since then, it has gained popularity among the general public. Individuals who are empowered to make health care decisions feel themselves as having an equal interest in those decisions and are eager to become involved.

There are times when they seek a second opinion and include other caregivers and other patients in the decision-making process.

Patients with previously unmet demands have broken the patriarchal structure of conventional medicine. Medical and technology-related inquiries are expected to be answered by their caretakers. Self-determination, access to knowledge and new technology, as well as the ability to choose or reject therapy, has become more important to patients. E-patients don't want to rely only on the choices of others. Medicine's "ivory tower" becomes untenable in this reality (Sust et. al., 2020).

"Clinical factories" would be the finest term to characterize the current state of medicine, where people are viewed as commodities and dispersed experts are delivering treatment. After World War II, doctors and patients began to make decisions together rather of relying just on the doctor's authority.

One of the main causes for this shift was the increased prevalence of chronic disorders, which need a long-term partnership between doctors and patients. Furthermore, informed consent became the most important bioethical concept that emphasizes the therapeutic decision making, presuming an equal and partner-like connection and true communication between the patient and the clinician. Another possible factor is that of technical advancements, such as the ability to monitor one's own physical health using sensors at home, as well as the ability to participate in treatment decisions (Tilahun et. al., 2021).

Rather of being an authority, physicians are becoming guides for their patients in the healthcare information and technology jungle. Despite the fact that they no longer have the necessary skills and experience, they are nevertheless vital to the status quo. However, instead of being the gatekeepers to the ivory tower, they become participants in the patient's journey through the healthcare system (Tilahun et. al., 2021).

The healthcare industry has seen similar technological shifts, but none have resulted in a significant shift in the way things are done. E-health was born in the 1990s as personal computers became more readily accessible to the public.

As soon as these computers were able to connect to the Internet, telemedicine services were born. As social media networks grew in popularity, so did mobile health, which was spurred on by the widespread use of mobile phones and smartphones. It's getting more difficult for both patients and caregivers to keep up with the rapid pace of new technology (Gerke et. al., 2020).

Innovators have a difficult time integrating their ideas into the overly regulated healthcare systems throughout the world because policymakers are struggling to keep pace with innovation. Reluctance to adapt on the part of patients and caregivers causes problems.

Knowledge and attitude are essential if digital health is to fill in the gaps and work efficiently. As a result, healthcare stakeholders must support patients and caregivers in integrating digital health into regular practice. This can only work if we establish the fundamentals of incorporating digital health into patient care, which necessitates a shift in research design (Vokinger et. al., 2020).

Thomas Kuhn wrote about scientific paradigm changes in The Structure of Scientific Revolutions. Health and medicine are essentially distinct from physical sciences, yet there is an underlying principle that governs the social shift.

Rather "maybe science does not evolve by the accumulation of individual discoveries and inventions, but that discovery begins with the knowledge that nature has somehow defied the paradigm-induced assumptions that govern conventional research," he said.

Giving a disruptive technology to a patient and expecting better health results has not been shown to be effective. In our view, digital health embodies this shift, yet most medical research have concentrated on the technology aspects rather than the human aspects (Vokinger et. al., 2020).

Web-based interventions and monitoring services have been studied to see whether they may improve the management of medical disorders such as hemoglobin A1c levels or blood pressure.

Patient access to a web portal was not associated with significant improvements in any of these parameters, indicating that complicated portal interfaces may be a barrier for users who had difficulty registering or using tools designed to allow them to track their own health and self-report health information (Robbins et. al., 2020).

However, when coaching was included in the research design, the adoption of disruptive technology such as VR gadgets resulted in measurable, meaningful improvements.

Those patients who were able to spend up to 20 minutes immersed in virtual reality environments by donning a headset and choose to visit Iceland, work in an art studio, or swim with whales in the ocean, characterized their experiences as pleasurable and effective at relieving pain and stress.

Patients with gastrointestinal, cardiac, neurological, and post-surgical pain were included in another trial. A 15-minute nature movie with soothing music was shown to half of the participants, while the other half donned VR goggles and played a 15-minute animated game called Pain RelieVR, which was created particularly for patients who are confined to bed or have restricted movement (Health, 2021).

Virtual reality dramatically decreased pain in hospitalized patients compared to a controlled distraction condition. These findings show that VR is a safe and effective treatment option for acute inpatient pain management.

Continuous positive airway pressure treatment (CPAP) for individuals with sleep apnea has been found to enhance health outcomes when used consistently. Providing feedback to patients was critical to their success with the therapy. For those patients who had access to the myAir smartphone app, they utilized the device for an average of 46 minutes longer each night than other patients; and they had a greater level of adherence to the device, 81% compared to 68% at the end of the eight-week study period (Kadakia et. al., 2020).

This shows that just stating, "Patients should just follow physicians' instructions," is futile. Giving them feedback on how well their efforts are functioning is more effective. There are new ethical questions raised by digital health because of its benefits and impact on the status quo.

In the absence of the ivory tower, patients' lives may be jeopardized by medical judgments based on incorrect information gleaned from digital health equipment and untrustworthy web sites.

As a result, unauthorized third parties may be able to get sensitive information about patients' health through devices that are accessible to both stakeholders and patients. Hacking medical equipment from afar has been shown. Direct-to-consumer genetic testing findings are supposed to protect patients from their employers and/or insurance obtaining data from their results, which may result in disadvantages for them (Southwick et. al., 2021).

Distrust in the healthcare system might lead consumers to seek out less-than-effective treatments and online medical quackery. If doctors aren't engaged as experts in the development of digital health solutions, the same may happen.

The validation of health sensors, other digital health equipment, and smartphone apps is also essential to ensure that the information they offer is accurate and trustworthy. Double-blind trials involving large patient populations are also necessary in order to compare their accuracy to established technologies (Rammo et. al., 2021).

As a result of doctors' hesitation and lack of incentives, patients are leading the charge in starting these cultural reforms. When it comes to technical issues, they aren't encouraged to seek help from their carers, so they're forced to resort to technology as their only choice.

The #WeAreNotWaiting campaign initiated by diabetics led to the development of DIY artificial pancreas devices that were not subject to governmental supervision. Regulators' inability to quickly integrate new technologies into the healthcare system is evident in this case. Patients may be able to self-manage in certain circumstances without the assistance of a medical professional, as this study illustrates (Rammo et. al., 2021).

As a long-term consequence of digital health, patient health outcomes should not be determined by an individual's entrepreneurial talents. There are cases of cancer sufferers using crowdsourcing platforms to pay for their medical bills. Additionally, there is the case of an amputee who offers advertising space on his prosthetic leg. Neglecting to properly adopt digital health technology leads to these kinds of initiatives as well (Rammo et. al., 2021).

However, despite the widespread use of digital technology, the evolution of health status is still heavily reliant on health literacy. People with a lower degree of health literacy are more likely to be unwell, see the doctor more often, use fewer preventative measures, and end up costing the healthcare system more money.

Health literacy is a better predictor of health outcomes than income, education, or ethnicity, according to a WHO report published in 2013.

According to the European Health Literacy Survey (HLS-EU), just one in two people have adequate health literacy. Additionally, individuals with poorer levels of health literacy are less likely to take use of eHealth's benefits.

It is clear that digital health literacy encompasses a broader range of topics than traditional health literacy. Digital health requires an understanding of computers and digital media (Mosnaim et. al., 2020).

We are confronted with a huge question: would technology change increase health literacy or, on the contrary, will digital health widen the already-existing digital gap?

2.5. Healthcare systems' digital development due to COVID-19

As a direct result of SARS-recent CoV-2's outbreak of Coronavirus Disease (COVID-19), communities throughout the globe have had to adapt to a new way of life.

COVID-19 has been implicated in the deaths of more than 500,000 people by the end of June 2020. Due to the COVID-19 pandemic, countries have faced a variety of healthcare, financial, and social issues. Overburdened healthcare institutions are facing pauses in the provision of routine health services as a result of the fast increase of new COVID-19 patients. In addition, healthcare workers are being infected with COVID-19, which is putting even more strain on hospital resources. Efforts to halt the spread of the virus need rigorous controls and limitations on movement inside and between nations. Certain occupations become outdated while remote work was considered an alternative with limits. Even in the strongest economies, unemployment is on the rise. Government spending on jobless workers and the loss of revenue from tourism-related industries including airlines, hotels, local transportation, and the entertainment industry were all significant issues for the economies in question (Scott et. al., 2020).

To stop the spread of the virus, governments had to implement new standards on social distancing. As a consequence of this, schools were shut down, cities were isolated, and public contacts were severely restricted. As a result of these interruptions, people might lose their physical and mental health. Since the COVID-19 epidemic is so severe, it's a huge challenge to keep the public safe (Scott et. al., 2020).

In the contemporary period, technical innovation is one of the most important factors in overcoming the challenges of the COVID-19 pandemic. To secure and control the post-COVID-19 environment, it is critical to implement suitable technologies in a timely manner.

New ICT technologies such as Internet of Things (IoT), Artificial Intelligence (AI) and Big Data, 5G communications, cloud computing, and blockchain may play a crucial role in facilitating the environment supporting the protection and enhancement of people and economies, as well. The pandemic-related concerns may be alleviated by their ability to offer widespread and accessible health care (Lian et. al., 2020).

2.5.1. Telehealth

Telehealth refers to the delivery of healthcare services using telecommunication technologies in a remote way. Health-related education and public health are also included in these services, which include a larger range of services. Telecommunications infrastructure is used by healthcare professionals to provide care to patients at distant locations such as diagnosis, consultation, and treatment through remote clinical services such as healthcare delivery, diagnostics, and treatment (Hewitt & Loring, 2020).

Telenursing is the practice of using telecommunication technology to provide and perform nursing care and practice. Tele-pharmacy is described as a service that provides distant pharmaceutical care to patients who do not have direct touch with a pharmacist through telecommunications (e.g. remote delivery of prescription drugs). With telesurgery, surgeons may carry out operations at a distance rather than in a hospital or operating room (Patel et. al., 2020).

For a variety of reasons, telemedicine services for healthcare are strongly recommended in the post-COVID-19 time. Patients with COVID-19, social distancing guidelines imposed by authorities and the need to keep healthcare services running while adhering to new guidelines imposed by healthcare administrations are factors that are driving the use of tele-serve (DiGiovanni et. al., 2020).

These teleservices may need the use of advanced technology in order to perform properly. It would be necessary to use 4K/8K video streaming with low-latency and low jitter for a telemedicine follow-up between the patient and a doctor. Students should be able to access telehealth-based remote health education programs from any Internet connection with enough bandwidth (Bautista et. al., 2020).

Video streaming between patient and nurse through telenursing must also be uninterrupted in HD/4K quality. Unmanned Aerial Vehicles (UAV) may be used for remote drug distribution; however, this needs a reliable connection to a base station in order to transmit and receive control instructions.

Communication between surgeon and patient must be ultra-low latency (less than 20 msE2E latency) and connected to a huge variety of devices such as cameras, sensors, robotics, Augmented Reality (AR), wearables, and haptic feedback devices for extreme use cases such as telesurgery (Ding et. al., 2020).

2.5.2. Digital health innovation policies

An epidemic is like a gateway. The epidemic of COVID-19, according to author and academic Arundhati Roy, is more than just an epic disaster. In other words, it's given us a whole new window through which to reevaluate our entire way of life and work, as well as our contributions to the advancement of science, medicine, and human well-being in general (Bayram et. al., 2020).

To combat social isolation and improve health care in a "no contact" situation as the epidemic spreads, digital health solutions like the Internet of Things (IoT), biosensors, and artificial intelligence (AI) are being implemented. Governments and technology companies throughout the globe are considering a permanent integration of digital technologies into every area of post-pandemic civic life—health care, illness monitoring, education, employment, and beyond (Sharma et. al., 2020).

Although the health care and industry sectors are undergoing digital transformation, we must guard against "digitalism," which we define as an unchecked and misguided belief in extreme digital connectivity without considering the associated negative consequences on science, human rights, and everyday democratic practices (Sharma et. al., 2020).

Amidst a pandemic that has claimed the lives of millions, the ongoing erosion of key public policy space raises fundamental issues about the long-term effects of digital technology on democratic government. As a result, the COVID-19 pandemic poses a broad spectrum of technological, biological, temporal, geographical, and political uncertainties.

Therefore, it is necessary to implement foresight-driven innovation strategies to lead the health sciences and related services in the direction of democratic goals. In the midst of a pandemic, when the facts are ambiguous, the stakes are high, and choices must be made quickly, we provide fresh and critically informed ways to democratizing COVID-19 digital health innovation policy (Sharma et. al., 2020).

To counteract the pandemic innovation policy juggernaut and its accompanying power imbalances, we present the idea of epistemic competence, which is a viable solution to democratize pandemic innovation policy.

It is our belief that if the importance of epistemic competence and attention to not only scientific knowledge but also its framing is widely acknowledged, it can help reduce the disparity between the enormous technological progress and investments in digital health and our currently inadequate understanding of the societal dimensions of emerging technologies like AI, IoT, and extreme digital connectivity on the planet (Kushal et. al., 2020).

It is now being used in digital health technologies such as the Internet of Things (IoT), biosensors, and artificial intelligence in order to satisfy the dual aims of social distancing and emergency health care. Despite its potential, the Internet of Things (IoT) isn't always a good thing, and its consequences aren't restricted to a technical setting. As the Internet of Things (IoT) expands, it also allows for a "Quantified Planet," where high digital connectedness enables surveillance.

The notion of innovation policy is a popular one, yet it may be difficult to grasp. Initially, the word can be interpreted as an oxymoron or a mission impossible. Innovations, by definition, are new methods and products that disrupt the status quo. Is there a way to create policy for events, processes, and things that we can't even imagine now? However, innovation policies are critical. They can, in the ideal case, broaden our thinking, enhance the reflexivity of people and communities, and conjure up collective imaginations on the (Kushal et. al., 2020):

(1) Broader social and political contexts in which scientific discoveries emerge,

(2) Alternatives to proposed technology solutions,

(3) Proponent as well as dissenting views on new technologies,

(4) Multiple possible future(s) and scenarios in which innovation trajectories evolve, and

(5) Unintended (positive or negative) consequences of emerging technologies.

One method of collaborative decision-making is innovation policy.

As new technologies and scientific fields arise, they contribute to ensuring that various perspectives are heard in public policy arena and to the formation of alternate futures. Therefore, new scientific areas may arise in ways that are experiential and sensitive to larger societal values, and therefore socially equitable, democratic, and sustainable, thanks to an innovation strategy that is critically informed. Knowledge-based inventions may thrive on democratic and strong paths if they are driven by policies that are well-considered and anticipatory, like a well-tended garden. As a result, an innovation strategy may be seen as a chance to democratize the futures in the making, by adopting a prefigurative politics by asking "what sort of a society do we want to live in?", and thus moving the technological "genie" out of its tight constraints in an experimental laboratory (Lin & Wu, 2020).

In the COVID-19 pandemic, there is a broad spectrum of uncertainties—technological, biological; chronological, geographical, and political. This precariousness necessitates digital innovation strategies that are foresighted and proactive. An essential component of developing an innovation strategy is considering, analyzing, and discussing on the values that form and are influenced by the pandemic's uncertainties (Lin & Wu, 2020).

To provide a year's worth of protection for the whole planet's population, current research estimates that a safe, effective, and properly tested vaccine is at least a year away. As a result of global capital flows, patent laws, and the ways in which unchecked industry funding can divert research away from questions that are most relevant to public health, spatial uncertainties are a significant issue for manufacturing capabilities and equitable distribution across unevenly affected areas (Lin & Wu, 2020).

COVID-19 might potentially benefit from the repurposing of safe drugs, although only a tiny percentage of medication candidates are shown to be efficacious and safe in long-term clinical studies. A viable cure for COVID-19 may never be found, but it doesn't change the fact that President Obama was foolish in suggesting that hydroxychloroquine was an effective treatment for COVID-19 without enough current data (Sust et. al., 2020).

A second problem and source of future unknowns is government overreach and disinformation. To put it another way: As the virus adapts to its new host (humans) across varied demographics, geographies, and healthcare systems, it is always evolving, adding to the aforementioned uncertainty (Cory & Stevens, 2020).

SARS-CoV-2 genomes from across the globe were analyzed using a phylogenetic network to identify three distinct genetic groupings. This study indicated that the two groups A and C, as well as group B, were more prevalent in Europe and the United States.

There are a number of novel mutational variants that might help explain individual and group differences in illness symptoms, spread, and outcomes.

COVID-19 vaccine and medication design may be improved by taking into consideration the possible clinical implications of the viral variations. COVID-19 is a zoonotic illness that spread from animals to people, and then from humans to humans, before becoming the present epidemic (Cory & Stevens, 2020).

Three out of every four new or developing infectious illnesses in humans originate from animals. As people continue to encroach on wildlife's natural habitats, SARS-

CoV-2 is unlikely to be the final zoonotic epidemic of the twenty-first century. Nature and scarce planetary resources were extracted unrestrained by people, dissolving human-nonhuman animal boundaries.

Interspecies transmission has been increased by human need to eat animals as a source of food. Nearly a million animal and plant species are presently at risk of extinction on the world, and the billions more that serve as gears in the mechanism of global capitalism's fixation with industrial farming are evidence of this tragedy.

Biodiversity loss has several detrimental effects, including an increase in zoonotic disease. Map and critical analysis of the values, preferences, aspirations, fears, and power imbalances that shape science and technology creation, development, and implementation are crucial to formulating innovation policy (Cory & Stevens, 2020).

How might societal values linked to COVID-19 biology and genetics, therapeutic and vaccine technology, or other disease-related uncertainties be included into the pandemic policy making process in the case of COVID-19 digital health innovation?

It's important to consider an extra level of uncertainty in the context of the pandemic digital health policy. "Politics of data" and "data science" both play an important role in the development of digital health. In the framework of COVID-19, we need to explain what politics means to a scientific and technology readership: Politics is the study of power in society and how it is established and contested (Cory & Stevens, 2020).

When there is a power imbalance or a disparity between what is stated and what is really occurring in society, there is "politics" If you want to impose influence and authority over others, even a grin may be political. There are several political considerations involved in illness testing: who should be tested, how to test, whether to centralize or disperse testing, and how to disclose test findings, to name just a few (Kalhori et. al., 2021).

Anti-intellectual populism has taken hold in our day. "Words can be depended on only if one is confident that their job is to expose and not to hide," political thinker Hannah Arendt (1906–1975) observed.

COVID-19 testing, which is based on open, independent research, is required for this. Consider the word "raw data" as an example. In scientific and technical circles, particularly digital health and data science, data from a DNA sequencer, for example, are commonly referred to as "above the fray," implying that they are not susceptible to politics and thus free of human values and power (Kalhori et. al., 2021).

Recall that data are not neutral nor apolitical, nor merely a physical object. This means that every piece of data has a provenance: a collection of technological, social, and political elements that influence it as it moves through the many stages of its life cycle, from research design to financing to transmission to analysis and dissemination.

There is a sociotechnical provenance to Big Data that is often disregarded in data science applications. COVID-19's digital health innovation strategy, therefore, would benefit from addressing the political aspects of data and data science. It's impossible to get rid of the social and political context that accompanies data (Kalhori et. al., 2021).

Political science study provides an alternative to the politics and power imbalances that are built in COVID-19 biology, as well as data science.

However, despite social distancing and pandemic lockdown, we must ensure that "digitalism" does not degenerate into an unchecked and misguided belief on extreme digital connectivity without considering the associated adverse repercussions on science, human rights, and everyday practices of democracy (Anthony Jnr, 2021).

2.5.3. The outbreak of COVID-19 in Europe and the innovation policy

Unprecedented in scope, the SARS-CoV-2 epidemic presents a public health dilemma. SARS-CoV-2 has infected 163 million individuals throughout the world, and the coronavirus illness has claimed the lives of 3.38 million (COVID-19). According to the most current projections of the European Center for Disease Control and Prevention, Europe alone has more than 31 million illnesses and 700,000 fatalities as of May 2021 (Machleid et. al., 2021).

As a second wave of SARS-CoV-2 expanded over Europe in late summer 2020, the continent's health services have been under great strain, and governments have been forced to reintroduce restrictions similar to those put in place in the first quarter of the year (Machleid et. al., 2021).

The introduction of digital contact tracing (DCT) systems by governments throughout the globe during the initial wave of the pandemic was made with the belief that this new digital health technology would aid in restricting the virus' spread.

Smartphone applications that make use of basic features like Bluetooth data exchange and GPS to determine the vicinity of other apps on a user's device are the most typical way that DCT systems are implemented (Machleid et. al., 2021).

The SARS-Cov-2 virus may be transmitted between people who were in close proximity to one other for an extended period of time. DCT applications may issue alerts to other users who have been in close vicinity to the user who tested positive for the virus, based on the proximity data captured by the system (Sipido et. al., 2020).

Therefore, users who have been informed may test and isolate the virus, which reduces its spread in the local community. The DCT was originally used in a number of Asian nations. In the spring, several European nations began building their own national contact tracking systems in an effort to better serve the public health (Sipido et. al., 2020).

DCT's launch sparked a heated controversy about its ethical, legal, and social repercussions, despite its great promise (ELSI). The Asian method is seen as incompatible by many with European legal rules and ethical beliefs regarding the importance of individual privacy, in particular because of its mandated usage, centralized protocols, and GPS or cell tower-based geolocation (Sipido et. al., 2020).

As a result, European authorities began drafting DCT standards based on the sharing of anonymous Bluetooth data in partnership with technological experts and IT firms.

Guidelines released by the European Commission (EC) on April 17 2020, describe the European approach to DCT. Based on a concept of data minimization, this advice includes exact restrictions on data disclosures, use and storage (Pagliari, 2021).

A common toolset of fundamental needs for European DCT applications was provided by the eHealth Network in mid-April. Decentralized protocols that only save anonymised proximity data on users' mobile phones, rather than protocols that store data on centralized servers operated by national health authorities, were prioritized in this toolkit (Sipido et. al., 2020).

Decentralized approaches are better suited to "keep personal data processing to an absolute minimum," increase citizens' willingness to download and use DCT apps, and prevent "risks of data breaches and cyberattacks," as this guidance emphasizes, echoing the opinion of the European General Data Protection Board (Zimmerling & Chen, 2021).

Even at this point in time, several European technology specialists were still working together on a single, central protocol known as the Pan-European Privacy-Preserving Proximity Tracing protocol (PEPP-PT) (Lee & Trimi, 2021).

In the end, certain participants of the PEPP-PT project left from this consortium to develop a new protocol. Several European academic institutions worked with the Swiss Federal Institutes of Technology to create the decentralized protocol that protects user privacy (Papadopoulos et. al., 2021).

The protocol is now being implemented on Android and iOS devices through an application programming interface (API) offered by both companies. This protocol is used by most decentralized DCT systems in Europe, including the Swiss variant. When Germany and the United Kingdom launched their national DCT applications on June 16 and September 24, 2020, they elected to employ Google and Apple's decentralized systems instead of the centralized ones they had used in the past (Papadopoulos et. al., 2021).

There are now national DCT apps in 19 EU Member States and Switzerland. A centralized approach has been used by only France and Hungary.

To better understand the European approach to DCT and how it changed during the first and second waves of SARS-CoV-2, we compared national proximity tracking applications (Budd et. al., 2020).

European DCT systems are growing to include new elements that extend their capabilities beyond basic proximity tracking, which need careful investigation and proper monitoring.

The German statutory health insurance system is the world's biggest. Germany's 75 million citizens are covered by statutory, state-funded health insurance, while the remaining 10% of the population is privately insured (Budd et. al., 2020).

For persons covered by one of Germany's independent statutory health insurance providers, the Digital Healthcare Act – DVG provides coverage advantages for some digital health apps by amending the Social Security Code V (Sozialgesetzbuch V—SGB V)9. Insurance companies will have to foot the bill for digital health solutions, making them more widely available (Brem et. al., 2021).

Digital health apps that fulfill the following requirements are eligible for coverage benefits for those who are insured (Brem et. al., 2021):

1. They are medical equipment with reduced risks.

2. Digital technology is the primary means through which they perform their primary duties.
3. A third use of these devices is to aid in the diagnosis and treatment of disease or injury in those who have been hurt or are receiving care from a service provider.
4. Because of this, they have been included to a newly created official record kept by the German Federal Institute for Drugs and Medical Devices and the German Medical Devices Agency.
5. They may be prescribed by a doctor or psychotherapist and used with the agreement of the health insurance company.

First and foremost, Italy was one of the worst-hit nations by SARS-CoV 2. As of July 21, 2020, Italy has the greatest mortality and case fatality rates globally, with 244,708 confirmed cases and over 34,000 fatalities linked to COVID-19 (Brem et. al., 2021).

Decentralization and universal access to treatment are hallmarks of the Italian National Health Service (SSN). All 21 regions—which vary greatly in size and economic development as well as their level of autonomy when it comes to health care management decisions—are responsible for the organization and delivery of health care services via local health authorities (LHAs) (Secundo et. al., 2021).

In Italy and internationally, digital health adoption was a barrier prior to the COVID-19 emergency. We wanted to highlight the best practices, unanswered questions, and hurdles that were faced during the first wave of the epidemic in Italy—a nation that was on the front line of the pandemic.

Those who have tried to incorporate digital health into their systems, institutions, and organizations in the previous several months and are hoping to continue the momentum following COVID-19 have encountered similar difficulties. Some of these issues include reimbursement for digital health services, the experience of using contact tracing apps, the search for a balance between local experiences and national stewardship, the arduous involvement of all health care professionals and the coexistence of digital and analog pathways, to name just some (Secundo et. al., 2021).

All health care experts and stakeholders participating in the design of a successful digital health solution must have their interests aligned. As the COVID-19 epidemic unfolds, health care systems will face several challenges, including the need to maintain a healthy equilibrium between hospital and community care duties.

COVID-19 instances with a less severe severity should be monitored at home by primary care providers, maybe utilizing digital technologies. This has become obvious over time. General practitioners, on the other hand, are salaried workers in Italy (Secundo et. al., 2021).

To ensure interoperability between services offered by local health authorities (LHAs) and those given in primary care clinics, it has been more difficult to extend institutionally funded digital tools to these third parties (Rapaccini et. al., 2020).

Other places, on the other hand, have used this as a key component of their digital strategy during the epidemic.

There has been a dramatic shift in the manner that primary care in the United Kingdom manages the streaming of care to where it's needed.

Only a few months ago, anything like this would have seemed impossible.

Because of three factors, this quick transformation was feasible. To begin, rather of creating new software from scratch, many businesses might provide solutions by modifying existing software. COVID-19 hit at a time when the technology was ready for large-scale deployment. The General Data Protection Regulations (GDPR), which apply in the UK and the EU, already include a clause excepting work in the overwhelming public interest, which is another reason why many countries have relaxed privacy and data protection regulations for video and other communications technologies during the crisis.

Third, governments mandated that any care that does not need face-to-face contact must now be offered through remote consultation, therefore the shift was essential.

Many patients treated in primary care and outpatient clinics may be managed remotely. Patients who have COVID-19 and may benefit from guidance on symptom management and self-isolation can also be included in this group. In addition, healthcare personnel who have been isolated after an illness or exposure may continue do this sort of treatment (Budd et. al., 2020).

An electronic personal protective device (PPE) that allows acute care professionals to examine hospitalized patients while avoiding physical closeness has also been proposed using telehealth technologies. A 'nearly ideal solution' for COVID-19 has previously been characterized as telemedicine.

After the COVID-19 epidemic, the big issue is whether or not face-to-face encounters in healthcare will and should return. When COVID-19's interim protections expire, old roadblocks to digital transformation may reappear.

It has been said by some practitioners that although they would want to maintain remote consultations when feasible, bigger structural reform is needed to prevent exacerbating health disparities. There are severe worries about the safety of certain distant digital technologies, such as digital-first primary care. More high-quality study on these technologies is required so that our societies may make well-informed choices for the long term (Budd et. al., 2020).

Health Service Regulations have been activated by Secretary of State for Health and Social Care, providing an exceptional legal basis in the UK, requiring affected organizations to 'process confidential patient information... where the confidentiality of patients is required for a COVID-19 purpose and will be processed solely for that COVID-19 purpose' in accordance with the regulations.

2.5.4 The innovation policy in the digital healthcare system in Greece

The Greek public administration has often been accused of inefficiency, sluggishness, a lack of technical innovation, and patronage practices. According to scholars, its performance is lacking because of its centralization and politicization, as well as the fact that its bureaucratic culture has a strong emphasis on legal formality, hierarchy, and centralization (Bayram et. al., 2020).

On the eve of the pandemic, it looked as though the national and regional administrations would be unable to work together effectively because of the latter attribute. Greece's public administration was enhanced in some ways by the eurozone crisis and the execution of three Economic Adjustment Programs (EAPs), although these austerity measures applied across the board affected the delivery of public services.

Because of this, the country's policymaking approach tends to be less logical than that of other developed countries, such as the United States (Ladi, 2013). Political and electoral considerations, as well as last-minute fixes that lack strategic forethought, are often the driving forces behind policymaking choices.

According to some, Greece is an example of party democracy, in which political parties have considerable influence over their constituents, while party officials and political consultants play a significant role in developing and executing governmental policy. Since a result, the public administration's ability to function has been hampered by this trait in the past, as public officials' career advancement was related to their political connections rather than their performance criteria (Bayram et. al., 2020).

Greece has had issues with its healthcare system in addition to its public administration woes. Most administrative organizations in Greece are extremely centralized, including the Greek national health system, which was established in 1983.

It has been unable to provide complete healthcare coverage for as long as it has existed, leaving a substantial chunk of primary care to the private sector. Until recently, it seemed to be rife with clientelism, with certain occupational-based insurance funds having preferential access to it (Bayram et. al., 2020).

Measures included in the three Gross Domestic Products (GDPs) that were implemented between 2010 and 2018 included both cost-cutting measures to lower public sector expenditure and reforms intended to correct the aforementioned inefficiencies and disparities. EOPPY (the National Health Services Organization) was created to ensure that healthcare was provided equally to all members of society, and the health insurance funds were also unified as a result of these changes (Anthopoulos et. al., 2021).

Furthermore, despite several provisions in the Gross Domestic Products (GDPs) calling for decentralization, the health system remained primarily centralized in terms of the division of labor between the federal government and regional authorities. When Greece was hit with the Covid-19 crisis, its health care system was still in the process of implementing these changes when it was struck.

At the start of the pandemic, health expenditures accounted for about 8% of GDP, which was below the EU average of 9.9%. As a result, the country's medical infrastructure was in a state of decline, with the majority of services concentrated in the cities of Athens and Thessaloniki. In addition, the primary health care system is still in its infancy, resulting in difficulties in access and coordination of services.

At the beginning of the epidemic, there was also a lack of staff. It was only the number of doctors and especially specialists that stayed above the EU average that was a favorable result for Poland.

Even though a minimum infrastructure for epidemiological surveillance existed before to the Covid-19 outbreak, the services provided in this area were not prioritized and were left understaffed. Centrally, infectious illnesses are handled and monitored by the Directorate of Public Health of the Ministry of Health alongside regional and local services (Anthopoulos et. al., 2021).

For communicable disease control, the National Public Health Council (ESYDY) is responsible for the coordination of public health organizations. Since 2005, there has been an influenza pandemic action plan in existence, which was significantly revised in 2009 due to the influenza A (H1N1) pandemic.

While the first National Action Plan for Public Health (2008–12), produced by ESYDY, was never executed, it was only enacted as a reaction to the changing crisis in March 2020 (Greek Law 4675/2020) notwithstanding the aforementioned division of labor and duties (Tzifopoulos, 2020).

Greece's viral transmission was far less than the EU average despite the country's weak capability in public administration, healthcare facilities, and pandemic preparation (even when under-reporting was in place). On February 26, 2020, the first index case was verified, and further positive cases were reported in late February and early March among persons who had traveled to places with high infection rates and their contacts. On March 12th, 2020, the first Covid-19-related fatality in Greece was announced (Tzifopoulos, 2020).

Greece, like many other nations, has come under fire for conducting a comparatively low number of tests. Patients with severe symptoms and healthcare workers who acquired symptoms were the only ones subjected to testing during the first phase. At the same time, a tight tracking and quarantine system was put in place, followed by mandatory self-quarantine (Joshi & Sharma, 2021).

Another factor that helped handle the crisis and ensured public cooperation was the Greek government's quick shift toward electronic services. E-governance has been a focus for the Mitsotakis administration since it was elected in July 2019, but this was not the first time a Greek government has made such a statement.

When the new comprehensive site (gov.gr) was opened on March 26, it surprised everyone by giving services like on-line prescriptions and other e-services for which residents would normally be forced into long lines to get in. Offering online courses has become more common at colleges and universities. Additional phone lines were also set up in a matter of minutes (Kallou & Kikilia, 2021).

The Ministry of Digital Governance played a pivotal role in this time period. In the first three months of the pandemic, certain innovative e-services were already in the works but were accelerated because to the crisis (Hazakis, 2021).

The timely and efficient coordination between the central government and regional/ local governments was also crucial in terms of successful crisis management. To be sure, efficient cross-government collaboration was a constant source of frustration for the Greek administration during times of crisis.

On 15 March 2020, the head of the General Secretariat of Civil Protection and Crisis Management was elevated to Deputy Minister of Civil Protection and Crisis Management.

As long as the central government remained the primary player in the decision-making process, the directives given by the various levels of government did not seem to conflict with one other. Even if local authorities had a significant role in the pandemic's control, this was the case. Furthermore, they were responsible for implementing and maintaining measures to safeguard the health of the general public, such as health inspections of commercial establishments and restaurants (Fouda et. al., 2020).

Moreover, they were responsible for informing citizens about public health issues; about the implementation of public health programs planned by the Ministry of Health or other ministries; and about the publication of local health provisions and measures for public health.

Despite this, the government decided to take the lead in pandemic management in order to save coordination expenses. The centralized structure of the Greek state, translated in this context to the General Secretariat of Civil Protection and Crisis Management taking the lead and delegating tasks to regional and local level authorities, contributed significantly to building consensus between different levels of government and managing the crisis more effectively (Fouda et. al., 2020).

While the epidemic was in its final stages, local surges and the necessity for lockdowns imply that greater power should have been devolved to the local level, which may have resulted in more effective actions.

While the Greek plan was effective in the initial phase, it seems to have lost tenacity with time. Restrictions were put on hold until the second phase was in full swing since there were no warning country instances and a low number of fatalities and infections registered during phase one, which enabled Greece to delay implementation.

Because of the government's renewed emphasis on the economy, the government's pick of the second option may be credited. When it came to making judgments on incarceration, economists played a far more active role due to the increased prominence of economic concerns.

The Greek government made an effort to keep the country open as long as possible throughout the summer and autumn since tourism is a significant source of income for the nation. In terms of evidence-based policymaking, the prolonged crisis highlighted the government's weak ability to develop a robust and adaptable medium- and long-term plan (Papouli et. al., 2020).

According to the advice of the government's experts' committee, the second phase was quickly followed by a severe lockdown. In addition, Greece's testing capability has grown significantly since the beginning of the project. Confinement weariness set up as the crisis carried on, leading to less compliance. In the second phase, this method was less successful than in the first (Papouli et. al., 2020).

Experts on compliance and weariness were notably absent from the group, which remained mostly composed of medical specialists. There were a few nations that used a committee of medical specialists alone, including Greece. Although the government had limited experience working closely together, it seemed to be persuaded that its first plan was effective, and it did not recognize the value in gathering interdisciplinary input that would add to a complete and robust crisis-management policy. Doctors' guidance was less effective because of the absence of interdisciplinary knowledge.

As a result, there were issues with the communication plan. Experts' committee members went public practically every day during the second phase, stating their own opinions and highlighting conflicts with each other and with the government, despite unanimous guidance from Professor Tsiodras in the first phase.

Changes in the format of televised news conferences amplified the effects of this issue. A few times a week after May 2020, news conferences were conducted on an as-needed basis. Ongoing meetings were conducted by a range of people, including the Minister for Health as well as other senior government figures and members of the Experts' Committee.

To top it all off, some government officials choose to participate in big unauthorized gatherings or ask for special exclusions, undermining the government's public message of restraint and prudent behavior. Additionally, the administration had to contend with a more divisive political climate (Papouli et. al., 2020).

The government's severe lockdown tactic was publicly criticized by the opposition parties. Some of them also objected to the fact that during an emergency moment, the administration chose to legislate on matters that needed significant discussion.

Lockdown weariness and heightened polarization resulted in an explosion of demonstrations that fueled the virus's growth. Finally, the government's economic ability to help people most impacted by the pandemic steadily reduced, resulting in significant political debates over the post-pandemic recovery process. The crisis's persistence has sparked a debate over the government's emergency policymaking strategy. A feeling of urgency to preserve lives prompted the government to legislate at the outset of the crisis. Because of the high level of ambiguity and lack of information on Covid-19, this kind of rule performed effectively (Skarpa & Garoufallou, 2021).

It was questioned as the crisis went on, though. Re-politicizing this issue was a goal of societal and political actors, who questioned both the decision-making process and the policies themselves whether a strict lockdown was the optimal policy. Policymaking in this way must be adapted to incorporate public participation, as opposed to relying only on the input of experts and legislators. The Greek state was less successful in this more complex phase of the epidemic than it was in the first phase.

CHAPTER 3rd: Research

3.1. Methodology

In the present study, research was conducted on the involvement of Greeks with social media during the COVID-19 period. Using the questionnaire this study attempts to investigate how Greek are shown to interact with technology during the covid era.

We utilized the data obtained from the Google Forms questionnaire. The questionnaire was sent by email to the data base of the International Hellenic University. Due to a shortage of responses and the research's sample criteria, which included age and employment, the questionnaire was also distributed via Facebook and Messenger. This data set contains replies from 209 (N=209) of the 212 participants, since three declined to allow their responses to be utilized in the survey.

Before presenting the results from analyzing the data set, it is important to present some information about the sample. The sample consists mostly of females (61,2%), people that are between the ages of 18-32 (60,3%) most and have a university degree (50,7%). While not the majority, there is also a significant portion of the sample that works in the health sector (23%).

Table 1. Gender of the participants in the research

Frequencies (Demographic Variables)

1. Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	81	38,8	38,8	38,8
	Female	128	61,2	61,2	100,0
	Total	209	100,0	100,0	

Table 2. Age of the participants

2. Age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	18-32 years old	126	60,3	60,3	60,3
	33-45 years old	32	15,3	15,3	75,6
	46-54 years old	21	10,0	10,0	85,6
	55-64 years old	24	11,5	11,5	97,1
	65 or older	6	2,9	2,9	100,0
	Total	209	100,0	100,0	

Table 3. Educational Level

3. Educational level

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	High school graduate	34	16,3	16,3	16,3
	University/TEI graduate	106	50,7	50,7	67,0
	Holder of a Master's degree	58	27,8	27,8	94,7
	Holder of a Doctoral degree	9	4,3	4,3	99,0
	Other	2	1,0	1,0	100,0
	Total	209	100,0	100,0	

Table 4. Work in health sector

4. Do you work in the health sector?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	48	23,0	23,0	23,0
	No	161	77,0	77,0	100,0
	Total	209	100,0	100,0	

In the next table, there will be combined all the demographic characteristics that are shown in Table 1-4.

Table 5. Demographic characteristics

		Count	Layer Column Valid N %
1. Gender	Male	81	38,8%
	Female	128	61,2%
	Total	209	100,0%
2. Age	18-32 years old	126	60,3%
	33-45 years old	32	15,3%
	46-54 years old	21	10,0%
	55-64 years old	24	11,5%
	65 or older	6	2,9%
	Total	209	100,0%
3. Educational level	High school graduate	34	16,3%
	University/TEI graduate	106	50,7%
	Holder of a Master's degree	58	27,8%
	Holder of a Doctoral degree	9	4,3%
	Other	2	1,0%
	Total	209	100,0%
4. Do you work in the health sector?	Yes	48	23,0%
	No	161	77,0%
	Total	209	100,0%

In summary, as we can see in the table below, the men who participated in the survey amount to 81 (n = 81), while the women amount to 128 (n = 128).

34 respondents have graduated from high school, while the largest number (n = 106) have obtained a higher education degree.

Only 48 (n = 48) participants work in the health sector, while 161 (n = 161) do not work in the health sector.

As the reason for conducting this research focuses on the search for social media, which began to be used by the Greeks during the COVID-19 period, useful conclusions were drawn, which are directly related to government policies and innovations around the management of COVID-19's pandemic.

Within the sample, the most frequently used Apps were Instagram which was used by 78,5% of the sample, Facebook by 74,2% of the sample and YouTube by 72,2% which was followed by Viber in the fourth place by 57,4%.

Table 6. Use of applications

		Count	Column Valid N %
Facebook	Not selected	54	25,8%
	Selected	155	74,2%
	Total	209	100,0%
Instagram	Not selected	45	21,5%
	Selected	164	78,5%
	Total	209	100,0%
LinkedIn	Not selected	158	75,6%
	Selected	51	24,4%
	Total	209	100,0%
Twitter	Not selected	177	84,7%
	Selected	32	15,3%
	Total	209	100,0%
YouTube	Not selected	58	27,8%
	Selected	151	72,2%
	Total	209	100,0%
Viber	Not selected	89	42,6%
	Selected	120	57,4%
	Total	209	100,0%
WhatsApp	Not selected	153	73,2%
	Selected	56	26,8%
	Total	209	100,0%

As we can conclude the use of Instagram now surpasses the use of Facebook, an application that was first on the list for over 10 years.

One issue that became quickly clear after completing the first phase of coding the questionnaire answers, is that some of the variable values had less than 5 answers, something that if remained as is would significantly diminish the statistical significance of the study. Therefore, some of the variables had to be recoded. While testing potential relationship among the variables in the sample, one relationship that stood out as significant was that one between one's familiarity to use technology and their ability to navigate and find practical the Gov.gr site that is responsible for informing the public about the pandemic and new public policy regarding it.

Table 7. Crosstabulation No1

			I consider it practical to use the GOV.GR website recoded			
			Agree	Neutral	Disagree	Total
Familiarity with technology recoded	Familiar	Count	111	29	49	189
		% within Familiarity with technology recoded	58,7%	15,3%	25,9%	100,0%
		% within I consider it practical to use the GOV.GR website recoded	95,7%	76,3%	89,1%	90,4%
	Not so familiar	Count	5	9	6	20
		% within Familiarity with technology recoded	25,0%	45,0%	30,0%	100,0%
		% within I consider it practical to use the GOV.GR website recoded	4,3%	23,7%	10,9%	9,6%
Total		Count	116	38	55	209
		% within Familiarity with technology recoded	55,5%	18,2%	26,3%	100,0%
		% within I consider it practical to use the GOV.GR website recoded	100,0%	100,0%	100,0%	100,0%

189 individuals identify as being as being familiar with new technologies while only 20 admit that they are lacking in that area. Keeping in mind the significant difference in representation between the two groups, people who are not so familiar with technology are more likely to either be neutral or find it hard to navigate the

government’s website; Within the not so familiar group 45% were neutral and 30% disagreed that it is practical to use gov.gr. To prove the statistical significance of this relationship a Pearsons Chi^2 test was performed along with the crosstabulation. The p-value shown by the test should be < 0.05 which indicates that there is a 95% probability that the relationship present in the data set can be found in the general population as well. In this case the p value was .002 which is lower than 0.05 and hence the statistical significance of the bivariate relationship was proven.

Based on the sample that participated in the survey and the variables we tested, it is concluded that 45% of the sample showed that they accepted and reconciled with the innovation practices pursued by the government to manage the pandemic, while only 30% did not embraced health innovations.

The increased use of social networking applications and media has created a fertile ground for the application of new innovation techniques by the government.

The pandemic and the lockdown led to the remote provision and demand of services, due to the fact that people could not move freely. Nevertheless, the reason for the embrace of innovation practices is the already high use of social media by the largest number of all respondents.

Their use through social networking has penetrated deep into people's daily lives, with many of the latter even performing work through social media.

Discussion

The COVID-19 initiative has resulted in the development of a number of innovative tools and techniques. In countries throughout the world, technology is progressing at a rapid pace. It is becoming more common for people to work from home, particularly white-collar professionals, students to attend online lectures, health ministries and judiciaries to have roundtable talks, and basics to be delivered to people's homes.

Thanks to the new technological environment, we were able to survive the revolutionary corona virus without harm. Social media, online portals and even smart phones weren't available during the time of epidemics since there were no smart phones at the time, just low-speed internet, and other technical appliances.

However, technology was still helpful in recognizing and battling the issue at the time.

People were increasingly agitated and apprehensive as a result of the broad coverage of the COVID -19 issue and the practice of social isolation.

Everyone is restless due to their overreliance on cellphones and other electronic devices. Many smartphone applications are now available to help people cope with stress and anxiety. Several digital and well-being applications are now available to everybody at no cost.

Many public and private sector organizations, academic institutions, and businesses have created applications to track the progress of COVID-19 in real time. Additionally, these applications offer us with information on the number of instances of the corona virus in our immediate area.

Pandemics lead to social isolation and in many instances, no human contact, although the world is still linked via online social networks. Families that were separated from each other were able to communicate with each other without difficulty.

It provided a sense of belonging and emotional support for those who needed it. These social media platforms, as well as YouTube and Facebook's video-sharing sites, have been entertaining people across the world with anything from hilarious videos to informative information.

Some of the pandemic's difficulties may be alleviated with the help of technology in this new normal. This is the new reality, which is predicting growth in virtual meetings, online education, artificial intelligence-based communication, rural broadband, IoT solutions, satellite-based asset tracking solutions, 5G to name a few.

As a result of the revolution, technology has proved to be a valuable asset in times of crisis. As a source of pleasure and knowledge, it has helped many people overcome mental health issues such as anxiety and depression.

Technology will play a major role in molding the world after COVID-19, according to all these tendencies. It has been shown that our data science has shown its value and vulnerability, allowing us to survive in adverse conditions.

State reactions to the COVID-19 epidemic have varied greatly. A few countries have managed to stop the virus from spreading, but the fragmentation of public health responses in capitalist liberal countries has been especially noticeable, with persistent challenges in reducing community transmission, managing hospital capacity, and mobilizing centralized contact tracing and increasing the provision of personal protective equipment (PPE) and protecting vulnerable populations.

It is not unusual for governments and corporations alike to call for "technological solutions" to the COVID-19 pandemic, creating fertile ground for Big Tech to fill the void in public health services and accelerating the "viral" diffusion of data solutionism throughout many regions.

Big Tech companies have been able to get lucrative government contracts and achieve record-breaking profits throughout the epidemic because of their unique command over population data and their ability to serve customers remotely.

A few examples are the use of consumer wearables and home-based smart appliances for illness monitoring, the outsourcing of PPE procurement, and the continued emergence of private telehealth technologies to offer remote treatment, such as Apple's and Google's contract-tracing apps.

The COVID-19 epidemic, for example, has created new possibilities to use mobile data for monitoring and data sharing between private enterprise and state and municipal governments.

As the COVID-19 epidemic has accelerated Big Tech's rising impact in the global economy, we believe that adding more frameworks from political economy into STS is increasingly crucial, especially in the areas of healthcare and public health.

Using this approach to STS to examine the political economy of digital health technologies is a two-pronged strategy: first, we are able to dig beneath the dominant techno-determinist discourses that portray technological innovation as the only solution to deal with the "unprecedented" COVID-19 crisis, and second, we are able to locate science and technology in a more expansive context.

Applying this perspective to digital health technology shows how digitization occurred with significant trends in global governance that promoted market-based methods.

There has been an increase in the use of private-sector technology in public health systems across the globe because of perceived crises. While the effectiveness of technological responses to the COVID-19 pandemic has yet to be fully assessed, the rapid adoption of digital health technologies has often substituted for or detracted from large-scale public health interventions, at the risk of exacerbating underlying social and health inequalities.

CONCLUSION

In the present work, a review was carried out around the new treaty created by COVID-19 worldwide and, in particular, in the field of health.

The literature review analyzed the use of social media and the implementation of innovation practices in the health sector due to the new requirements created by the spread of the COVID-19 pandemic.

Following the literature review, the results of the research conducted in the context of fulfilling the objectives of the present work on how the Greeks responded to the use of social media in the context of COVID-19 were analyzed.

From the present research, useful conclusions were drawn on how the Greeks responded to the use of applications in the field of health, in order to manage the pandemic of COVID-19.

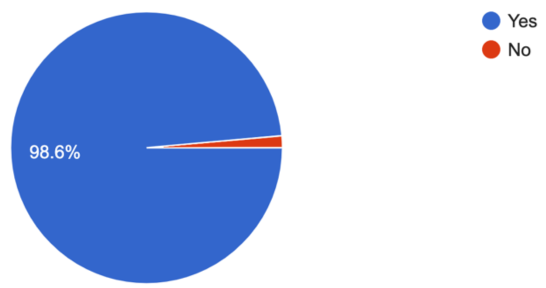
It was found that 45% of Greeks responded positively to the government's innovation practices regarding the management of the COVID-19 treaty in the field of health.

Nevertheless, it is necessary to conduct further research and compare existing research to obtain more objective results on the use of social media for health services.

The questionnaire may be found below:

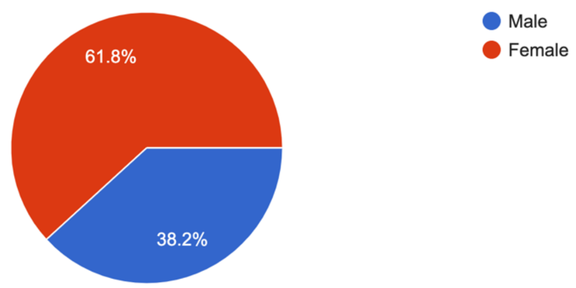
I accept the terms and conditions regarding the use of my personal data and participation in this research questionnaire.

212 responses

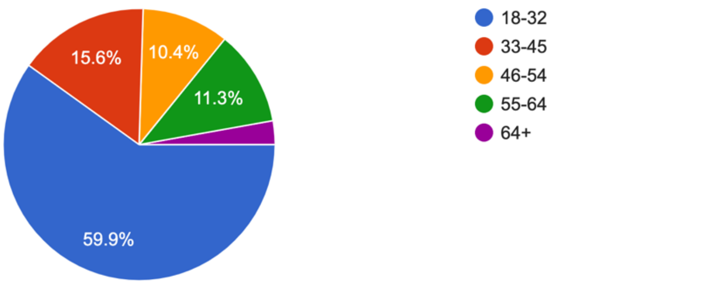


1. Gender

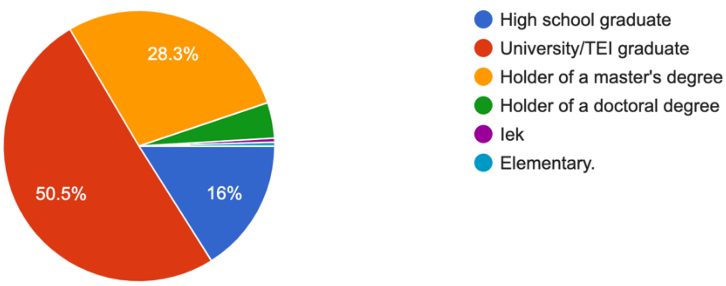
212 responses



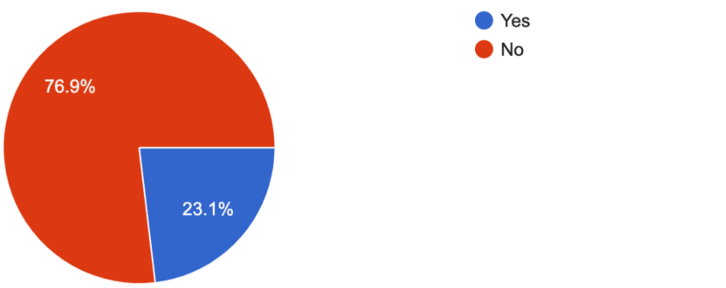
2. Age
212 responses



3. Educational level
212 responses

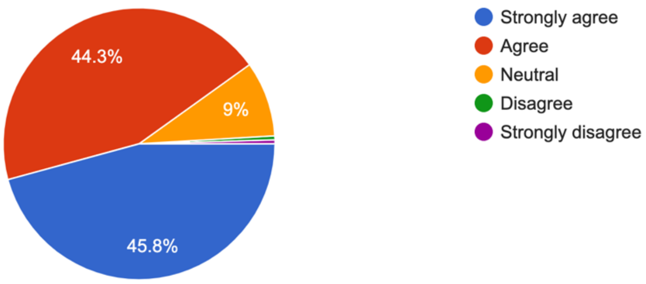


4. Do you work in the health sector?
212 responses



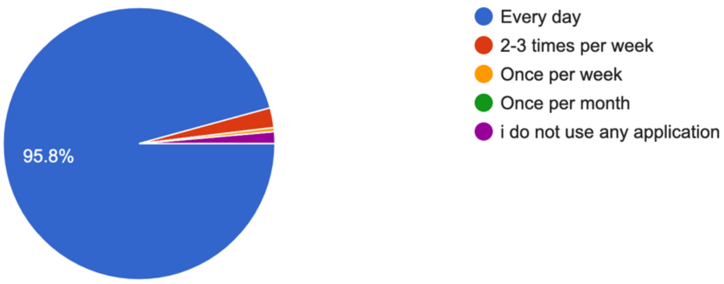
5. I am familiar with technology

212 responses



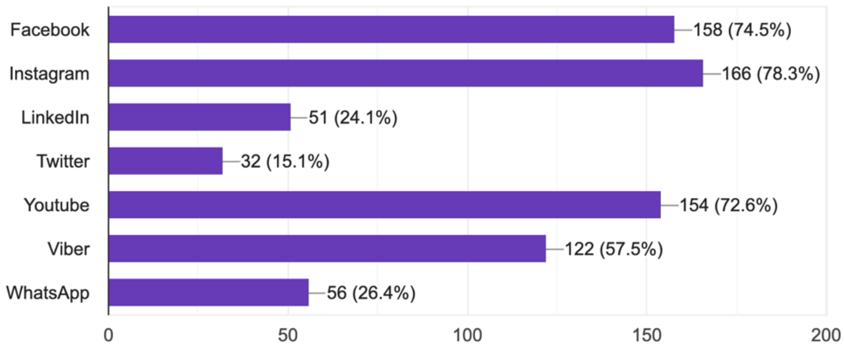
6. How often do you use applications?

212 responses



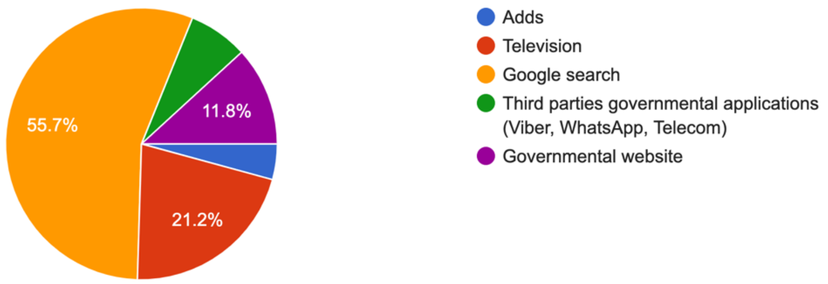
7. Applications that I use mostly every day

212 responses



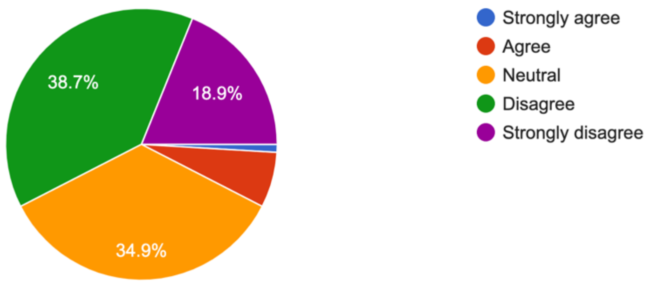
8. I am informed about the latest developments regarding covid-19 by

212 responses



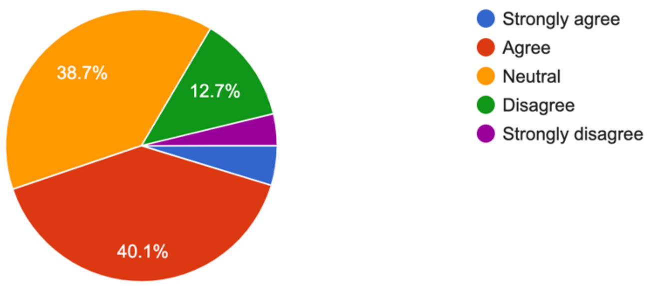
9. All cases of covid19 can be treated with telemedicine

212 responses



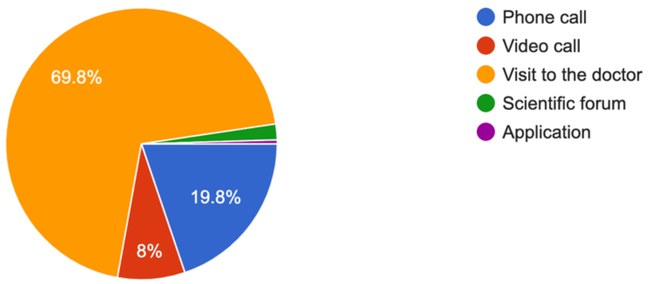
10. Only mild cases of covid19 can be treated with telemedicine

212 responses



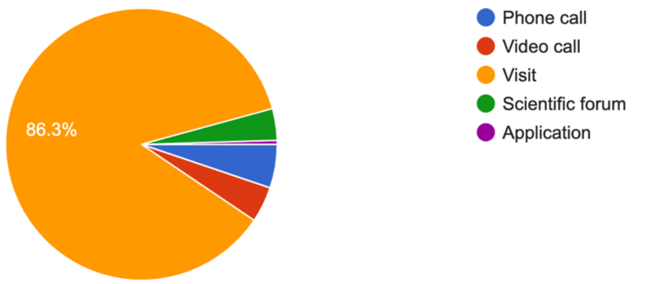
11. If I became infected with covid-19, I would trust a medical advice through

212 responses



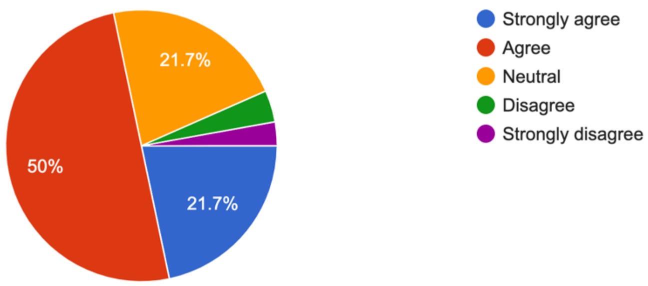
12. I feel more secure about a medical advice that I give/receive through

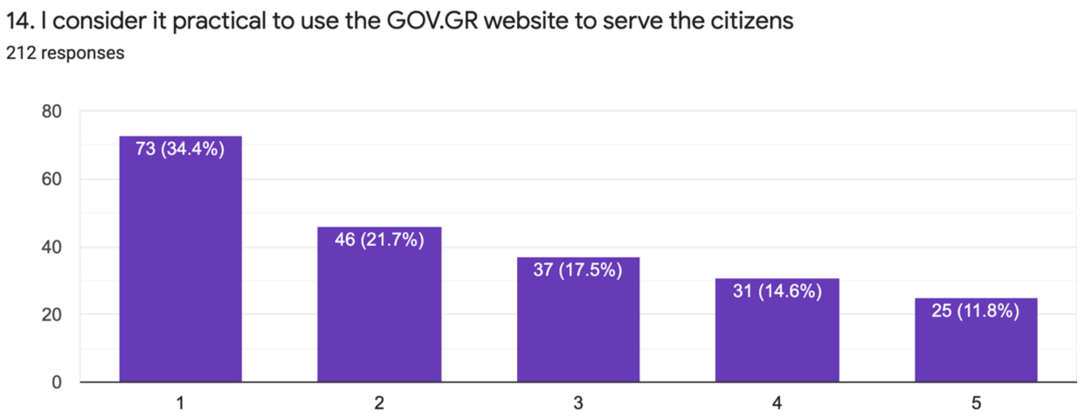
212 responses



13. I consider it necessary to use the technology used by government agencies during the COVID-19 pandemic

212 responses





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