

THE COMPLEXITIES OF BIOTERRORISM: CHALLENGES AND CONSIDERATIONS

Dr. Muhammad Asif

Assistant Professor, FUUAST, Islamabad

dr.asifmails@gmail.com

Received: July 15, 2024

Revised: August 15, 2024

Accepted: August 29, 2024

Published: September 10, 2024

ABSTRACT

Bioterrorism: A Threat beyond Politics

While traditional terrorism uses violence or fear to achieve political or ideological ends, bioterrorism takes a more insidious approach. It weaponises biological agents like bacteria, viruses, or toxins to inflict harm on humans, animals, or even entire ecosystems. These biological weapons, in contrast to bombs or guns, can spread silently and result in widespread disease or even death.

A Range of Threats

Bioterrorists could target a variety of diseases, including some mentioned like anthrax, plague, tularaemia, and smallpox. While COVID-19 isn't currently classified as bioterrorism, this research explores how a naturally occurring pandemic can have similar disruptive effects.

The Reality of Bioterrorism

This research aims to dispel any misconceptions that bioterrorism is a mere myth. The increasing accessibility of biological knowledge and materials makes bioterrorism a real threat. Highlighting the potential consequences, just as the COVID-19 pandemic has done, serves as a crucial wake-up call.

Research Methodology

This study employs exploratory research methods, combining qualitative, historical, analytical, and predictive approaches. By examining past events and current trends, the research aims to anticipate future threats.

The Global Impact of a Pandemic

The COVID-19 case study serves as a stark example of how a biological agent can disrupt the world on a massive scale. The research will delve into the pandemic's impact on Pakistan and beyond, exploring areas like tourism, public health, education, and the spread of misinformation.

Learning from the Pandemic

By analyzing the effects of COVID-19, this research aims to prepare for potential future bio-terror attacks. Understanding how novel viruses or bacteria can spread and cause devastation is vital to developing effective prevention and response strategies.

Keywords: Bioterrorism, biological agents, exploratory research methods, COVID-19, global impact, 5GW, prevention and response strategies

INTRODUCTION

Terrorism has been a chronic global concern due to its profound ideological, historical, and political origins. Though it has a major effect on regional stability, it is not the only underlying cause of all global problems. Several characters have abused fear to gain control throughout history. Furthermore, the possibility of intentional or inadvertent biological strikes continues to be a top concern on regional, governmental, and global

agendas. As Finn and Momani (2017) argued, non-state actors usually carry out politically motivated, planned acts of terrorism, focusing on certain audiences to maximise their impact.

Serdouk (2021) argued that the Pentagon presented a horrifying image of terrorism: intentional acts of violence or threats intended to frighten people and compel governments or societies to comply with political, religious, or ideological agendas.

Because they are attention-seekers, terrorists take use of social flaws to their advantage. Recognising the application of "Fifth Generation Warfare" against adversaries, a former U.S. Army general listed the three main components of this strategy: "convince," "confuse," and "conflict." The officer emphasised that this tactic advances America's self-interest. Those who are young and adept at social media are the main targets of this unconventional warfare. Comprehending warfare across many historical periods is enlightening. Three generations of combat have come into view: the first, which used linear formations; the second, which used trench warfare during World War II; and the third, which relies more on manoeuvres. While the fifth generation uses technology to empower people, the fourth generation witnessed unusual conflicts (Krishnan, 2022). These two approaches; conventional and unconventional, are combined in hybrid warfare.

Conventional approaches give way to the terrifying spectre of bioterrorism, the "advanced shape of terrorism" that is wreaking havoc on our planet. The opponent is unseen; he has no uniforms or organisation. They use unconventional weapons, such as nuclear, chemical, and biological ones. The intentional release of bacteria, viruses, and other microorganisms to infect or kill humans, crops, or livestock is known as bioterrorism or biological attack (Pal et al., 2017). The development of the twenty-first century shows that we have reached a period of "new-world terrorism," in which terrorists use a horrifying arsenal that includes biological weapons.

Literature Review

The Secretary General of International Criminal Police Organization (INTERPOL) Jorgen Stock divided the background of bio warfare into three distinct eras in his analysis of the topic. The primary section examines epochs prior to and including the twentieth century. In this time period, germs were already being blamed for a wide range of ailments before the advent of modern science. The period from 1900 to 1945, which includes the two world wars and the employment of bio-warfare by non-state entities like criminals, is the second. Germany initiated the first state-sponsored act of bioterrorism. Time period three covers the end of the Second World War in 1945 and the present (Stock, 2020). The United States and the Soviet

Union deployed their top-of-the-line biological weapons during the cold war. Although Seth provided a thorough overview of the development of bioterrorism, he did not elaborate on how to handle potential crises in the future; this research aims to fill that gap.

Barras and Greub (2014) and Jansen et al. (2014) provided an account of the biological weapons used in biological warfare. Widespread terror and turmoil resulted from it, either naturally from people's fears or deliberately from nation-states trying to topple the government of their enemy. Crimes are actions taken by non-state actors with the intention of making money. Historically, the use of biological weapons or the threat of using them has been referred to as "biowarfare". But as the world entered the third decade of the twenty-first century, misinformation and disinformation operations helped to quickly accomplish the same objectives. Regarding the epidemiology, natural history, and clinical effects of the COVID-19 pandemic, contradictory scientific and political information has been available nonstop. As countries rushed to respond, information about the pandemic's impacts spread rapidly. Epidemics and disinformation are closely related, and the spread of false information on social media has made the issue worse. This study aims to investigate how people's actions during times of crisis are influenced by misinformation and deception disseminated by 5GW.

Loike and Fischbach (2013) and Qamar et al. (2023) reported that following 9/11, letters containing anthrax germs were addressed to two U.S. Senators and several media outlets, resulting in five fatalities and seventeen illnesses. There was Bob Stevens from the outset. Despite the fact that there was considerable concern over the five deaths from the anthrax attack. Unlike nuclear bombs, biological weapons can kill countless numbers of people and animals without being discovered if they are introduced into the food, water, or air supplies. It is imperative that you are well-prepared to tackle this assignment. Any individual driven by the pursuit of financial gain is capable of acting in such a dishonest manner. Public awareness must be raised and ethical ideals emphasised in education if bioterrorist attacks on the United States are to be avoided. This page doesn't include any topics related to countries other than the US. There are numerous strategies that can be employed to

address this circumstance. This is the gap that the current inquiry will fill.

According to Dass (2021), bioterrorism is becoming a more popular tactic for terrorist groups. Terrorist groups used the worldwide pandemic as a publicity tool for their organisations. With the advent of the virus, terrorists suddenly possess a simple-to-use tool with terrible long-term effects. Modern technological developments have simplified and reduced the cost of producing biological weapons. Bioterrorist assaults started in 1990, when they first had the technology to utilise bio agents. He also issued a warning, saying that we must assess the risk that biotechnology may pose. Dass has covered a wide range of subjects, but he hasn't talked about crisis management.

According to Loike and Fischbach (2013), anthrax-containing letters were sent to two U.S. senators and several news media outlets following 9/11, which resulted in the deaths of five people and the illness of many more. Bob Stevens was the first of them. Even yet, there was cause for concern when five people died in this planned anthrax attack. When applied through food, water, or the air, a biological weapon can have the same devastating effects as a nuclear bomb, killing countless numbers of people and animals covertly. It is essential to plan ahead in order to handle this difficulty. Any individual could partake in these unethical activities in order to benefit financially. To prevent another attack of this kind using bioterrorism in the United States, moral education for young people and public awareness-building are necessary. The only country covered in this article is the USA; the rest of the world has not been covered. We need to approach this situation in a number of ways. This research will fill the void.

Dass (2021) also drew attention to the anticipated worldwide threat posed by terrorist organisations' use of bioterrorism. The global pandemic served as a marketing tool for terrorist organisations. Terrorists have acknowledged the virus's long-lasting effects and ease of use as a weapon. The advancement of technology in the modern era has made it feasible to create biological weapons quickly and inexpensively. The earliest instances of bioterrorism date back to 1990, when they were able to use bio agents. He went on to caution against using biotechnology to evaluate the anticipated threat. Dass has covered a lot of ground

regarding this, but he has left out something that could be called crisis management in wider terms. Dr. Boyle, who talked about the Wuhan corona virus outbreak and the BSL-4 facility where the virus escaped, was mentioned by Robert (2020). According to him, the illness could be really hazardous. Because this information could be used to create a versatile bio weapon, Chinese officials initially wished to keep it secret. The 2019-CoV infection is most likely a weaponized strain of the NCoV, which Saudi Arabian physicians initially identified in 2012. The Wuhan Seafood Market is still cited by the media establishment as the origin of COVID-19. Researchers from the United States, China, and India researched individuals and bats in the north-eastern province of Nagaland (near China) that have antibodies to fatal diseases like Ebola. India has initiated a thorough investigation into the Chinese Wuhan Institute of Virology. An inquiry into the Wuhan outbreak is necessary. This study will close the knowledge gap on how to neutralise this kind of biological weapon.

Stock (2020) brought to light a recent INTERPOL study that looks at the effects of COVID-19 on international terrorism, as well as present patterns and possible threats related to assaults on vulnerable targets (such bioterrorism). We refer to the analysis of COVID-19 as well as the tactics and capacities of terrorists and other non-state actors (NSAs) as "bioterrorism" in this study. The study emphasises how vital it is to keep an eye on how violent extremist organisations, terrorist networks, and other potentially dangerous non-state actors respond when COVID-19 incidents decline in some areas while rising in others.

Bioterrorism is a natural tool for terrorists to use, as Asif et al. (2022) noted in his analysis of the COVID-19 pandemic. It is an inspiration as well as a useful tool for terrorists. Get cities ready for bioterrorist attacks by putting international strategies into action. Bioweapons are more hazardous the easier they are to manufacture. It became clear how terrible terrorism was, and it made social and economic instability worse. While biological agents have always constituted a threat, international organisations have only recently started to take this threat seriously. Many cities are unprepared to deal with this threat. As fellow members of the social contract, each individual citizen has an obligation to assist the state in anticipating and responding to the growing threat

of bioterrorism. This report has improved the consistency of bioterrorism preparedness and crisis response at the local, national, and international levels. An abundance of guidance has been provided regarding responses to bioterrorism in metropolitan settings. The current research aims to close this gap by concentrating on the crisis management components of a hypothetical bioterrorist attack in a developing nation. These suggestions are general and not location-specific.

Bioterror Attacks: Consequences and Countermeasures

Based on empirical evidence, microbes possess a far more terrifying and deadly potential than nuclear weapons, as demonstrated by the catastrophic impacts of COVID-19 on individuals, families, communities, and the global community. Nuclear bombs are incredibly difficult to make compared to how easily diseases can be utilised and spread. Terrorist groups and nations are driven by an unquenchable desire for supremacy and power to turn to such drastic methods of biological warfare. Then there are the laboratories that have grown up with the intention of creating incredibly harmful and destructive microorganisms for scientific investigation. These pose a threat to all of humanity, much like the Sword of Damocles (Bierer et al., 2020).

Global Consequences of Bioterrorism

Bioterrorism can have a wide range of repercussions, some of which are quite severe and may significantly impact various aspects of society worldwide.

Financial Implications

Because the world has become a global community, every significant event positive or negative has an impact on the world economy that is far-reaching. The historical data provided in this study supports the strong hypothesis that bioterrorism will have a significant impact on the economy. We can learn about how bioterrorism attacks have altered the global landscape in particular locations by examining historical events. In order to battle the increasing frequency and severity of infectious disease outbreaks and epidemics, a concerted international effort is required. These factors include urbanisation, globalisation, and environmental change.

With the use of domestic resources and foreign donor monies, low-income and high-risk nations can strengthen their public health capacities in a number of areas, including workforce preparation, monitoring of humans and animals, and improving laboratory resources. Even yet, the majority of developed countries, particularly those in Europe and North America, have strong real-time surveillance and health systems in place to prevent the spread of infectious diseases. To hasten the creation of innovative responses to newly developing diseases that have the potential to become pandemics, governments, non-governmental organisations, and corporate alliances have needed to work together internationally.

By the end of 2020, economists predicted that the COVID-19 pandemic will have reduced global economic growth by 3.0-6.0% (Hashemi et al., 2022). The Chinese output index dropped by over 54% in February compared to January. Customers frequently changed their buying habits as a result of the pandemic's fear and anxiety, as well as reduced household income and finances (Asif et al., 2023). This had an effect on the economy's productivity. Due to the decline in travel and taxi usage, these industries have suffered greatly. Today, COVID-19 is known to us from all around the world. The latest study's confirmation of the existence of COVID-19 and bioterrorism will have a big impact on the world economy. Travel to and from the COVID-19 impacted countries was prohibited, almost every country on Earth went into lockdown, and airline operations were suspended, causing the global economy to collapse and the whole globe's topography to change. The new norm of "work from home" has a radical impact on the market economy (Asif, 2023).

Those without computer literacy saw a worsening of their economic circumstances. Due to the COVID-19 laws, their enterprises had to close, and as a result, their stores and warehouses quickly ran out of food and other perishables. As a result, they suffered significant financial losses. In the meantime, those who were already well-versed in IT or who knew very little about the internet used their free time to learn as much as they could about the industry and start profitable online ventures, which helped them, get by financially. The COVID-19 pandemic concentrated a great deal of money in the hands of a select few, including

hospital facilities, pharmaceutical companies creating cures and diagnostic instruments, mask manufacturers, and suppliers of other essentials like gloves and masks. Like every other bioterrorism attack, COVID-19 will have a significant impact on the economy, upending the financial and economic power of the populace, society, nation, and the entire globe (Asif et al., 2022).

Disinformation's Threat to Public Health

False and inaccurate medical information on a variety of ailments has been widely disseminated through virtual entertainment for a number of years, presenting a serious risk to public health. Misinformation tactics can be organised, and countering them requires a coordinated effort from all parties. In other instances, the dissemination of incorrect advice is solely the result of unfamiliarity with trustworthy sources of data. The risks associated with spreading misleading information have increased due to the corona virus pandemic. False allegations are spreading faster than the corona virus itself, according to the World Health Organisation. The World Health Organisation has dubbed this epidemic a "global information pandemic." The term "Infodemics" was derived from the words "Information" and "Pandemic." Because of its fundamental importance to contemporary health, epidemiology, the field of medicine that examines the distribution and control of disease in human populations, has gained widespread recognition. Another term that needs to be invented is infodemology. This phrase has been defined as the dissemination and distribution of information for the benefit of electronic media, particularly the internet, or people who will be informed about public policy or public health. People found it difficult to obtain reliable information, which left them either too confident in their safety or too afraid to act. The strategies of social distancing used to contain the illness, together with the fear and anxiety resulting from incomplete knowledge, give rise to worries that the true harm to public health might be greater. Due to unique health issues brought on by the coronavirus, such as a decreased ability to fend against infection, according to Julie Torode, director of special projects at the Union for International Cancer Control (UICC). The 2020 book "Fake News: A Threat to Public Health"

issues a warning that false information can be harmful if it suggests risky health-preserving measures or treatments, in addition to misleading and causing anxiety.

Social Media Minefield: False Information & Disinformation

When an information source is unsupported by data or the opinion of an authority, it becomes disinformation. In the scientific community, preconceived notions can be updated in light of fresh evidence and expert consensus, but inaccurate information is frequently difficult to alter. Negative, subjective voices have the power to sway misinformation and disinformation, which in turn can cast legitimate institutions in doubt and unease. This is especially concerning in terms of health and issues related to disinformation because of the potential for wide-ranging effects. Numerous countries, including the US, Japan, Philippines, Ukraine, Italy, Venezuela, France, and Brazil, have experienced measles epidemics. Numerous diseases that can be prevented by vaccination have returned as a result of false information and misinformation regarding vaccines. During the COVID-19 pandemic, false information spread on social media has caused people to self-medicate with illegal and perhaps harmful pharmaceuticals and to buy in panic because they are afraid of a complete closure and out from their daily life.

The Quest for Global Influence

The exact origin of the coronavirus has remained unknown despite numerous theories since COVID-19 first appeared in Wuhan, China. The Americans and the Chinese both identified the other as a suspect. Chinese authorities claim the coronavirus initially emerged in nature at the Huanan seafood market in Wuhan. However, the United States and other nations were hesitant to accept it as genuine; instead, they firmly believed that the virus had been developed in a Wuhan laboratory. China and Taiwan come to an agreement to resolve their concerns regarding the Bat markets. Rather than pursuing the claims further, China just made the spyware illegal. It was questioned if China was using the virus as a bioterror weapon and was responsible for its spread in order to support other nations' economies and further its own aspirations for worldwide hegemony. Other states may contest China's breach of its international obligations

before the International Court of Justice. China failed to assist the WHO by giving essential information or sufficient detail regarding the virus's possible public health concern. The struggle for global supremacy changed the face of the entire world (Zhang, 2021).

Regional Impacts of a Bioterror Attack

Regionally, bioterrorism has far-reaching consequences. With its rapid spread to almost every country, COVID-19 practically stopped international trade. The behaviour of COVID-19 varies, but it differs in various ways in different locations. We will concentrate on the repercussions of bioterrorism in South Asia because that is where the researcher and the study are based. The foundation for this is found in South Asian culture. Not only does it supply food and nourishment, but millions of people in the area rely mostly on it for their income. One of the world's greatest population densities is found in South Asia. On just 5% of the world's agriculture, farmers in South Asia tend to the needs of almost 20% of the world's people. One-third of the world's destitute people live in South Asia, making it one of the world's poorest regions. On a continental level, bioterrorism can have disastrous and far-reaching effects.

The Food Crisis in South Asia, Climate Change, and the COVID-19 Pandemic. The new coronavirus, COVID-19, has affected many agricultural and supply chain activities, making it harder to ensure food and nutrition security as well as the sustainability of livelihoods in South Asia. South Asian farmers also have to contend with the aftermath of the Covid19 pandemic and the effects of climate change, which exacerbates the situation. To address the exceptional corona virus issue and restore food and nutrition security, swift and decisive action is required, safeguarding human life and maintaining economic production. Together, we can mitigate the effects of COVID-19 and global warming at the local, national, and international levels. Together, the nations of South Asia should share knowledge and carry out necessary fixes to rebuild the shattered network of horticultural production. New approaches and techniques are needed to address the issues of the corona virus and climate change. The disruptive dynamics and recovery strategies of the COVID-19 pandemic allow for a faster than typical transformation towards resilient and sustainable

food systems. A portion of the immediate assistance for COVID-19 issues might be connected to long-term investments in natural capital that will increase resilience and productivity.

One of the most pressing issues that South Asian and other developing countries must deal with is how to construct agricultural and food systems that are robust to the effects of climate change, environmentally friendly, and good for public health. Global warming and the COVID-19 pandemic are making these issues worse. Despite significant improvements in irrigation infrastructure in recent decades, a large portion of the region's agricultural land still depends on precipitation, making it extremely vulnerable to the effects of global warming. The region's agricultural and food security are in jeopardy because to temperature fluctuations, modified precipitation patterns, and faster glacier melting brought on by global warming. In South Asia, the novel corona virus COVID-19 has made it even more difficult to secure food and nourishment, as well as to support one's family (Rasul et al., 2021). The COVID-19 pandemic has notable effects on South Asian education.

During the COVID-19 pandemic, children in South Asia were the primary victims. Most of them missed out on their universal right to education because they attended closer schools for longer periods of time and had less or no access to the internet (UNICEF, 2020). Beginning with the COVID-19 lockdown, it is projected that schoolchildren missed about 1.8 trillion hours of face-to-face instruction. According to a UNICEF report, COVID-19 has caused global losses of two thirds of an academic year on average (UNICEF, 2021).

Children were largely affected by the COVID-19 pandemic in South Asia. Because they lived too far away from schools and had poor or nonexistent internet connectivity, they were denied access to remote learning possibilities for a long time (UNICEF, 2020). Around 1.8 trillion hours of in-person instruction were wasted by schoolchildren due to the lockdown caused by the COVID-19 pandemic. Based on UNICEF's estimate (UNICEF, 2021), COVID-19 has squandered two-thirds of a school year on average. A World Bank Education Group report claims that COVID-19 stopped all university-related research, teaching, and

administration. Almost 220 million students' educations had been seriously disrupted by the closure of almost 175 schools worldwide by April 2020. Colleges and universities across were rushing to address the economic crisis. Bangladesh, India, Nepal, Bhutan, Pakistan, the Maldives, Sri Lanka, and Bhutan have to figure out a method to keep providing their services to universities.

These institutions implemented cutting-edge techniques that did away with the necessity for meetings and face-to-face interaction in order to continue with daily activities such as teaching, studying, administrative work, producing jobs, and so forth. Teachers, students, and other field or office workers must reorganise their schedules to conduct business virtually instead of in person in the workplace. Consequently, syllabi, course outlines, and other pedagogical resources were reorganised as a result of remote teaching and learning. However, insufficient electricity in remote regions, ineffective use of digital equipment, and a lack of technical expertise on the part of both teachers and students resulted in the construction of obstacles. However, distant learning is no longer relevant due to the pervasive poverty among today's students. As a result, several schools temporarily suspended their online activities. Both educators' and their students' mental health suffered as a result of the epidemic's uncertainty (Rasul et al., 2021). This resulted in some colleges being forced to immediately stop and started offering online courses. The group most severely affected was students between the ages of 18 and 26 (Rasul et al., 2021).

The Poverty Pendulum and Effects of Economic Actions

Due to its dense population, highest rates of poverty in the globe, and inadequate healthcare infrastructure, South Asia has been most affected by the COVID-19 epidemic. The nation's economic and social conditions are poor due to a lack of investment and infrastructure. South Asia is the world's poorest region overall, home to one-third of the world's impoverished population. Rural areas are home to about two thirds of the nation's population, most of whom are employed in agriculture. There was a great deal of food insecurity before COVID-19 spread. Approximately 271 million individuals in South

Asia, out of a total population of 649 million, experienced extreme food insecurity. In addition, 16% of the children were very malnourished and 36% of the children were small for their age. The situation is anticipated to deteriorate due to COVID-19 (Rasul et al., 2021).

Countries in South Asia took drastic measures to stop the COVID-19 outbreak. Some of the measures that were put into place by various countries were the closure of companies, lodging facilities, schools, international borders, and restaurants; the suspension of visas; the imposition of total travel prohibitions both domestically and internationally; and the ban on public gatherings. Experts forecasted that the economic difficulties facing South Asian nations would be the worst they have experienced in the past 40 years. A significant section of the population would experience income loss and rising inflation as a result of the sharp decrease in GDP in South Asian nations. A decline in GDP will have an impact on per capita income, which will negatively impact the standard of living for the majority of people.

Struggle with Mental Wellbeing

The public can be made to feel fear and panic by the use of biological agents. As fewer people will go out in public and spend money, this could have a detrimental impact on the economy and society at large. When H1N1 spread through South Asia, the same thing occurred there. Nearly all of South Asia has high rates of anxiety and despair, which suggests that the epidemic had a significant psychological impact. These countries must prioritise the socioeconomic determinants of mental health in addition to clinical and public mental health interventions (Necho et al., 2021).

The employment of biological agents in the community may result in an epidemic of illness, incapacity, or even death. All of the South Asian nations have similar socioeconomic foundations and inadequate healthcare systems. The COVID-19 pandemic has highlighted the inadequate infection control infrastructure in the area. Due to the premature and sudden lifting of social distancing rules, early in the pandemic, insufficient facilities and the consequent spread within communities were not sufficiently addressed by regional authorities.

Bioterror in Pakistan: A Looming Threat

This report concludes that the phenomenon of bioterrorism is as concerning in the researcher's native nation of Pakistan, after illustrating its implications on a global and regional scale. Nonetheless, there were many different responses to the epidemic based on factors including social class and educational attainment. An essay could never hope to address the whole gamut of COVID-19's influence in Pakistan. The globe soon discovered that a pandemic had broken out after hearing about the coronavirus's terrible impact on human health from China. In response, China established a large number of emergency facilities dedicated to the treatment of COVID-19 infections. All of these things combined to put Pakistan particularly at danger of catching the epidemic due to its proximity to China, which led to a volatile political environment.

The first COVID-19 case in Pakistan was reported on February 26, 2020. The global and local economic crises had a negative impact on people's mental health and standard of living. The lethal virus started to cause significant changes and revolutions in healthcare systems. Both beds and ventilators have been upgraded in terms of capacity. A number of long-term zones were designated as detachment wards in order to treat patients with coronavirus. Numerous medical professionals were assigned to isolation wards where personal protective equipment (PPE) was mandatory. Without a doubt, HCWs' mental health was impacted by this dangerous and erratic influence (Yu et al., 2022). According to a study, 36.2% of healthcare workers reported sadness and 50.4% had anxiety during the pandemic.

Those who learnt about the COVID-19 epidemic through the media while staying at home are likely to have felt a variety of negative feelings, such as depression, anxiety, fear, and low self-esteem. The lockdown caused a generalised feeling of anxiety and hopelessness throughout society. For fear of catching a sickness, people were reluctant to shake hands. For several months, Pakistani society as a whole suffered from the psychological repercussions of the 2020 epidemic. The emotional impact of isolation was a great distress on Pakistani society at large.

Financial Turmoil: Covid-19's Impact on Pakistan

Global economic conditions were significantly impacted as word of the Covid-19 outbreak spread. This pandemic had a significant impact on both the global economy and the stock markets. Numerous countries have directly suffered from revenue losses, employment losses, and disruptions in transportation, services, and industry as a result of disease control measures. The travel ban and other limitations placed on Pakistan result in a decline in production, an increase in the number of deaths, the closure of businesses, disruptions to trade, and the complete collapse of the tourism sector. When the epidemic struck, Pakistan's already fragile economy had to work even harder to be stable.

The COVID-19 epidemic had a major effect on the economy. Financial specialists caution that COVID-19's repercussions on the economy will seriously impede Pakistan's attempts to recover from the virus's initial devastating blow to economic growth. Due to the pandemic-related loss of 12.3 million jobs, Pakistan's economy has decreased and unemployment has skyrocketed. The rate of economic growth has decreased from 5.8% in 2018 to 0.9% currently, indicating further decreases in the years to come. Pakistan's fiscal deficit is currently approximately 10%, and over the last two years, revenues have also decreased. In light of these conditions, the COVID-19 pandemic had a disastrous impact on the nation.

The risk investigator master calculated that Pakistan's economy will lose at least \$15 billion as a result of the coronavirus epidemic. He projects a 10% decline in Pakistan's GDP during the fourth quarter of the 2020 fiscal year. If comprehensive or intelligent lockdowns were put in place, the first quarter of 2021 would see negative GDP growth of 2.0% or no real GDP growth in 2020. By year's end, the nation's jobless rate is predicted to soar to a startling 28%, citing a Gallup Pakistan survey. Forecasts indicate that the number of unemployed people will rise from 5.8 million to 6.65 million in 2020–21 (Hashemi et al., 2022).

The authorities realised that if the complete lockdowns persisted, the situation would only worsen and take unmanageable turns because of the dire economic consequences. Finding a substitute that would lessen stress in the economic, political, and social spheres without endangering individuals is therefore essential. This substitute

might be referred to as a "smart lockdown," which is a lockdown that has been sufficiently meticulously prepared to safeguard individuals while preserving their ability to earn a living. But if lockdowns are reinstated, the number of people afflicted with the diseases would increase, necessitating the implementation of fresh lockdowns.

Conclusion and Recommendations

The current study looked at measures to decrease the impact of bioterrorism strikes, which have the potential to go out of control very quickly. The good news is that researchers are creating state-of-the-art defence mechanisms. These are instruments such as biotechnology and artificial intelligence (AI) that are referred to as Emerging Technologies for Defence (EDTs). Because AI has the ability to analyse vast volumes of data, spot patterns, and even assist in the identification of new illnesses, it is especially potent and effective. This makes it possible to identify possible biothreats early on.

An apparatus known as the Rapid Agent Aerosol Detector (RAAD) created by the MIT Lincoln Laboratory researchers which is highly sensitive and reliable trigger in case of bioterrorism. This device continuously scans the atmosphere for any odd particles that might point to a bioterrorism strike. It resembles a germ early warning system. Both these technologies and qualified professionals are essential. The symptoms of a bioweapon strike must be recognised by medical professionals and nurses.

Additionally, the public must be informed. It's crucial to comprehend how illnesses spread and what people may do to be safe. Everyone has witnessed the rapid spread of false information, particularly on social media. False information has the power to exacerbate a terrible situation, as it did during the most recent pandemic. According to the report, the government must intervene to stop the dissemination of false information, particularly online.

These tactics, high-tech equipment, skilled personnel, and public awareness campaigns, when combined can greatly increase our chances of stopping bioterrorism. It's a joint effort from every side. Everyone has a part to play in keeping everyone secure.

References

- Asif, D. M. (2023). Causes of Youth Unemployment in Pakistan and its Solution. <https://epaper.pakobserver.net/?s=2023-03-24>
- Asif, M., Pasha, M. A., Mumtaz, A., & Sabir, B. (2023). Causes of Youth Unemployment in Pakistan. *Inverge Journal of Social Sciences*, 2(1), 41-50. <https://doi.org/10.1022/ijss.v2i1.21>
- Asif, M., Pasha, M. A., Shafiq, S., & Craine, I. (2022). Economic impacts of post COVID-19. *Inverge Journal of Social Sciences*, 1(1), 56-65.
- Barras, V., & Greub, G. (2014). History of biological warfare and bioterrorism. *Clinical Microbiology and Infection*, 20(6), 497-502.
- Bierer, B. E., White, S. A., Barnes, J. M., & Gelinas, L. (2020). Ethical challenges in clinical research during the COVID-19 pandemic. *Journal of Bioethical Inquiry*, 17(4), 717-722.
- Dass, R. A. S. (2021). Bioterrorism. *Counter Terrorist Trends and Analyses*, 13(2), 16-23.
- Finn, M., & Momani, B. (2017). Building foundations for the comparative study of state and non-state terrorism. *Critical Studies on Terrorism*, 10(3), 379-403.
- Hashemi, H., Rajabi, R., & Brashear-Alejandro, T. G. (2022). COVID-19 research in management: An updated bibliometric analysis. *Journal of Business Research*, 149, 795-810.
- Jansen, H.-J., Breeveld, F. J., Stijnis, C., & Grobusch, M. P. (2014). Biological warfare, bioterrorism, and biocrime. *Clinical Microbiology and Infection*, 20(6), 488-496.
- Krishnan, A. (2022). Fifth Generation Warfare, Hybrid Warfare, and Gray Zone Conflict. *Journal of Strategic Security*, 15(4), 14-31.
- Loike, J. D., & Fischbach, R. L. (2013). Ethical challenges in biodefense and bioterrorism. *J Bioterror Biodef*, 12, 2.
- Necho, M., Tsehay, M., Birkie, M., Biset, G., & Tadesse, E. (2021). Prevalence of anxiety, depression, and psychological distress among the general population during the COVID-19 pandemic: A systematic review and meta-analysis. *International Journal of Social Psychiatry*, 67(7), 892-906.
- Pal, M., Tsegaye, M., Girzaw, F., Bedada, H., Godishala, V., & Kandi, V. (2017). An overview on biological weapons and bioterrorism. *American Journal of Biomedical Research*, 5(2), 24-34.
- Qamar, B., Irfan, A., & Siddique, N. (2023). Influence of Bioterrorism: Challenges and Prospects. *Global Strategic & Security Studies Review*, VIII.
- Rasul, G., Nepal, A. K., Hussain, A., Maharjan, A., Joshi, S., Lama, A., . . . Sharma, E. (2021). Socio-economic implications of COVID-19 pandemic in

- South Asia: emerging risks and growing challenges. *Frontiers in sociology*, 6, 629693.
- Robert, R. (2020). Coronavirus is a biological warfare weapon. *Research Review*, 1(1), 01-09.
- Serdouk, A. (2021). Hollywood, American politics, and terrorism: When art turns into a political tool. *Arab Studies Quarterly*, 43(1), 26-37.
- Stock, J. (2020). *Terrorist groups using COVID-19 to reinforce power and influence*. Retrieved 23.04.2024 from <https://www.interpol.int/en/News-and-Events/News/2020/INTERPOL-Terrorist-groups-using-COVID-19-to-reinforce-power-and-influence>
- Yu, S., Draghici, A., Negulescu, O. H., & Ain, N. U. (2022). Social media application as a new paradigm for business communication: the role of COVID-19 knowledge, social distancing, and preventive attitudes. *Frontiers in psychology*, 13, 903082.
- Zhang, L. (2021). *The origins of COVID-19: China and global capitalism*. Stanford University Press.

