



RESEARCH PAPER

Bioterrorism in the backdrop of Covid-19: Past, Present and Future

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Abstract

This study conducted within the context of COVID-19, empirically examines the historical context of bioterrorism. The objective of the study is to investigate if bioterrorism is a myth or reality, and whether COVID-19 constitutes an act of bioterrorism. Terrorism, which has its roots in political, ideological, and historical motivations, is a crime that has persisted throughout history. The study adopts a qualitative research method to analyze scholarly literature, papers released by international organizations such as the UN' WHO, and so on. The research sheds insight on the Geneva Protocol, the Biological Weapons Convention, and the Patriot Act, all of which were signed to combat bioterrorism. Terrorism is highlighted as the most critical security concern of the twenty-first century as a result of the 9/11 attacks, which have brought it to the forefront of international affairs. In the post-Cold War global political climate, non-traditional security threats providing new challenges to security architecture have been addressed in the current research, as have the mechanics of terrorism, which have grown increasingly intricate since the 9/11 disaster. The findings provide a full understanding of bioterrorism as a reality rather than a myth. The events of bioterrorism that have occurred in history are clear evidence that it is a reality. COVID-19, the act of bioterrorism, advises being prepared to counter any future act of bioterrorism.

Key Words Bioterrorism, Cold War, COVID-19, Warfare Programs, Waves of Terrorism

Introduction

Because of its political, ideological, and historical roots, terrorism is considered a criminal act. The earliest form of using force or aggression against the government or any other authority figure is terrorism, and history is replete with examples. Bioterrorism is a more advanced kind of terrorism. Bioterrorism is a real, apparent, and persistent threat in today's world. Bioterrorism is a worldwide issue that needs to be appropriately acknowledged. Understanding the underlying, ambiguous concept of terrorism is necessary in order to comprehend it. Terrorism, as we know it now, arose during the end of the 18th century, following the French Revolution. Terrorism as it exists now, arose during the end of 18th century, following the French Revolution.

Bioterrorism is defined as the intentional or inadvertent use of biotechnological agents or toxicological agents to harm humans, plants, animals, or both. All the biological terrorism incidents listed in the history from the early microbiological era through to the present day are indisputably evidence of biological terrorism. As time passes and advances in science and technology occur, biological terrorism has emerged as the world's most pressing problem. Bioterror events are revealed in the form of diseases that spread and killed people and animals and destroyed crops around the world. The diseases that have caused bioterrorist incidents around the world include: Anthrax Plague Tularemia Smallpox Dengue fever COVID-19 In 1925, the world signed the

"Geneva Protocol" to limit the application of bioterrorism. The "Biological Weapons Convention" was signed by nations as an additional measure to combat bioterrorism in 1972. In 2001, the United States signed the "Patriot Act" which expanded the counterterrorism capabilities of federal and state.

The 9/11 attacks elevated terrorism to a major international issue. In the post-9/11 world, terrorism is considered the biggest threat to national security in the twenty-first century. In the international political setting of the post-Cold War era, non-traditional security issues have surfaced. The security infrastructure that was in place before to the conclusion of the Cold War has faced new challenges from nontraditional security threats. Although terrorism is not a new phenomenon, its dynamics have evolved. The events of 9/11 show how non-traditional security threats, like terrorism, are always evolving.

Literature Review

In this survey, Carus (2017) divided the background of bio warfare history into three time periods. The main section examines antiquity through 1900. Even before scientific progress, this era believed that microbes were the root cause of many diseases. Bio warfare emerged in the second period, from 1900 to 1945, and was used by non-state actors like criminals and in both world wars. The first state-organized bioterrorism act was initiated by Germany. The third time span spans from 1945 to the present, encompassing the Cold War era. The USA and the Soviet Union employed the most advanced bio agents during the Cold War.

The biological warfare weapons were described by Bernard, Bowsher, Sullivan, and Gibsen (2020). It caused anxiety and unrest among the populace, or nation states typically incite it in an effort to topple their adversary state. The term "biocrime" refers to actions taken by non-state actors with the intention of making money. Conventionally, biowarfare involves the use of biological weapons or the threat of using them, but as soon as the third decade of the twenty-first century began, the same goals began to be quickly attained through campaigns of disinformation and misinformation. The COVID-19 pandemic turned into a constant supply of conflicting scientific and political data regarding the disease's epidemiology, natural history, and clinical results. Governments, in their desperation to implement policies, used information from the media and other channels of communication to emphasize the pandemic's effects. False information and epidemics coexist, with social media helping to legitimize false information.

After 9/11, certain letters were sent to two U.S. senators and various major media outlets, according to Loike and Fischbach (2012). These letters contained anthrax germs, which killed five people and sickened 17. Bob Stevens was the first of them. Even yet, there was cause for concern when five people died in this planned anthrax attack. A biological weapon delivered by food, drink, or the air can be as deadly 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 practises 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.

While Rapoport claimed that terrorist violence was largely motivated by religion, according to Kaplan (2021), the initial group of researchers studying terrorism, which included Walter Lacquer, Alex Schmid, Martha Crenshaw, and others, mostly approached the subject as a political phenomenon. Rapoport's trilogy of papers, "Terror and the Messiah: An Ancient Experience and Some Modern Parallels" (1982), "Fear and

Trembling: Terrorism in Three Religious Traditions" (1984), and "Messianic Sanctions for Terror" (1988), launched the field of study on terrorism driven by religion.

The events that followed established the foundation for the study of religiously inspired terrorism and encouraged several terrorism specialists to investigate the relationship between religion and terrorist violence. According to his generational hypothesis, Social activism always comes in waves, each one followed by a lull in the movement. During this time, a generation of politicians, dissatisfied with the seeming inability to bring about significant change, goes back to focusing on acquiring material possessions and achieving financial security, mostly for themselves and their families. His significant research on ancient terrorism from the 1980s, which has connections to several contemporary terrorist concerns, came next.

Ryan (2016) dubbed the twenty-first century, the terrorism century and effects of it on the global community. He highlighted the importance of the biological danger and explained it from the perspective of terrorism when he mentioned that terrorist groups might now be interested in developing weapons capable of wreaking massive destruction. Ryan divided diseases and their agents into three groups in order to further clarify the dangers posed by bioterrorism. If employed in a bioterrorist attack, Category A agents have the most potential to cause significant morbidity and fatality in their victims. These include smallpox, tularemia, plague, anthrax, etc. Zoonosis that fall under Category B include psittacosis, ganders, bronchiolitis, viral encephalitis, and Q fever. Their morbidity is lower than that of Category A diseases. Category C includes recently discovered illnesses like Nipah Virus, Hantavirus, SARS, etc. He went on to describe every virus that is connected to agriculture. The food and agriculture sectors are particularly susceptible to threats from biological agents. The consequences are frequently disastrous when these chemicals are used to contain accidental or natural outbreaks of crop or animal illness. Terrorists find it very appealing to use any of the categories to further their own agendas.

According to Obeta (2020), numerous compounds have the potential to be used as bioterrorism weapons against both humans and animals. Humans are exposed to zoonotic and parasite agents in food and water supplies, which can lead to a variety of ailments and worry. The identification of diseases in both humans and animals is necessary to anticipate an attack by bioterrorism. Typically, germs that cause zoonotic and parasitic diseases like coronavirus, hemorrhagic fever, anthrax, and Ebola are the threat agents of bioterrorism. Governments, counterterrorism agencies, and disease-fighting groups need to develop a long-term plan in order to be ready with drugs, shots, and antibodies in case of bioterrorism attacks.

Khan (2021) focused on spreading misinformation and disinformation through propaganda, which he divided into three categories: grey propaganda, which circulates false information and has an uncertain source, black propaganda, which has an unknown origin and spreads false information, and white propaganda, which has a known source and is regarded as true. Its history predates the existence of humans. Every generation of warfare is closely linked to propaganda of all types as well as misinformation and disinformation. The Fifth Generation of Warfare depends entirely on it. He is using the war in Iraq as an example. Pakistan will be used as a case study in this study to examine the circumstances against the backdrop of COVID 19.

3. Historical evolution of events and Bioterrorism

Going through the pages of history from ancient periods to the present era will be helpful for achieving the study's purpose. Bioterrorism and bio warfare during the

classical era, about 500 BC–1000 AD. While some writers assert that the use of bio warfare dates back to antiquity, most credible sources regarding the subject are sparse, with the exception of the use of poisoned arrow tips against enemies (Carus, 2017). The Athenians thought that the Spartans had poisoned the water to destroy their enemies, which led to an epidemic in 430 BC, during the Peloponnesian War. The Hittites used tularemia to send infected rams to their enemies in the 14th century BC. Similarly, Herodotus from the same century provided the hint that the Scythian people had been using decomposing corpses for the purpose of infecting them with their arrows (Barras & Greub, 2014).

Table 1
Number of pre-microbiology occurrences

| Annum | Incident |
|--------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| 1155 | Barbarossa poisoned water wells in Tortona, Italy, with human remains. |
| 1346 | The Mongols besieged Caffa City in Crimea, and they hurled the bodies of those afflicted by the plague over the walls. |
| 1422 | The Lithuanian army invaded Carolstein, a town in Bohemia, using cowpats that were contaminated. |
| 1495 | Spanish wine that was supplied to their French adversaries at Naples, Italy, was laced with the blood of leprosy victims. |
| 1650 | The Polish army blasted saliva from rabid dogs at the enemies. |
| 1710 | The Swedish army was ambushed with plague-affected corpses using a catapult in Reval, Estonia. |
| 1763 | The British commanders generously donated blankets from smallpox hospitals to Native Americans. |
| 1797 | In order to accelerate the spread of malaria among their adversaries, Napoleonic troops encircle Mantua, Italy, by flooding the fields. |
| 1863 | During the American Civil War, Confederates sold clothing from patients suffering from smallpox and yellow fever to Union soldiers. |

(Barras & Greub).

Biological Terrorism: The First Generation of Biological Weapons and Early Modern Era's Instrument for Armies (1900–1945)

The 20th century saw the commencement of the ruthless and largely modest development of numerous bio warfare programs, particularly in the early decades. The Germans initiated the first state-organized and documented program during the early phases of World War I, most likely in late 1914 or early 1915. Along with the BW campaign, the Germans experimented with biological weapons for the first time, and over the course of the following several years, they used biological agents in numerous nations. In the interim between the two World Wars, Japan, Hungary, Poland, France, and the Soviet Union all appeared as users of BW programs, albeit to varying degrees. The largest program of all was the Japanese one. During World War I, the Germans were the ones to start the incapacitation operations, which involved choosing to target animals. Others used BW as a strategy for dealing with casualties among people on the battlefield.

Biological weapons were employed by the Japanese in World War II. By using aircraft to disseminate fleas afflicted with the plague, their primary goal was to biologically incapacitate its adversaries. Biological agents were used as a form of resistance against the German invading forces (Carus, 2017).

3.1. Bioterrorism in the Context of World Wars I and II

Louis Pasteur (1822–1895) and Robert Koch (1843–1910) created the disease's germ theory and laid the groundwork for microbiology towards the close of the 19th

century. Table 2 provides a detailed account of the numerous instances of bioterrorism throughout World Wars I and II following this development.

Table 2
After World Wars I and II, bioterrorism

| Year | Incidents |
|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| WW I 1914-1918 | <ul style="list-style-type: none"> • The German forces sold the allies donkeys and horses that were infected with glanders and anthrax. • In Romania, the Germans shipped animals afflicted with glander and anthrax to Russia. • The same diseased sheep were sold to the Indian and British Armies once more. • German forces attempted to spread cholera in Italy and the plague in St. Petersburg (Tu, 2017). |
| WW II 1939-1945 | <ul style="list-style-type: none"> • In order to study cholera and typhus outbreaks, the Japanese army poisoned water wells in Chinese villages. • The Japanese forces in Manchuria ran a covert biological warfare research centre (Unit 731). The substances that caused anthrax, plague, gas gangrene, cholera, dysentery, and meningitis were administered to the prisoners of war as vaccinations (Harris, 2015). |

(Carus, 2017)

The Second Generation of Biological Warfare Programs and the First Effective Biological Weapons

Several nations launched Programs for second-generation biological Warfare, which enabled them to produce the first potent and effective biological weapons and employ them against humans for the first time (Geissler & Ellis, 2001).

The Program for French Warfare

France's role as a depositary state under the 1925 Geneva Protocol most likely had an impact on its policies between 1926 and 1934. Fears of biological assaults had returned by 1934 as a result of German rearmament. Botulinum toxin was added to the list of compounds utilized after tests with non-pathogenic bacteria were conducted in the Paris Metro.

Fears of conflict with Germany led to the creation of a specialized laboratory at Le Bouchet in 1937. (Dando, 2006). A complete committee meeting in 1938 supposedly reflected a full year's worth of reports on the spread of botulinum toxin as the usual cause of disease or death. Air protects its body from ricin and offers a shield. The majority of people/citizens can spread an epidemic in a number of ways, as the Paris Metro experiments demonstrated.

Around 1939, the program saw a significant improvement. utilized to defend against ricin as well as ricin attacks. Beetles that contribute projectiles to the mixed illness that infects humans with gangrene or tetanus often attack crops in Germany. Early in 1940, there was talk that cattle could become infected by the bovine plague virus aerosols.

The British warfare program During WW II

A Bacteriological Warfare Subcommittee was formed by the UK's Imperial Defence Committee in November 1936 as a result of concerns over comparison to France. Reconvening as the War Cabinet Committee on Biological Warfare in late 1939, the Bacteriological Warfare Subcommittee was also given permission to remember paintings

"from the offensive angle." Activities in Canada and, subsequently, the US were intimately linked to the work done in the UK (Balmer, 2001).

Canada participated in the British biological warfare program due of its strong ties to the British government and military and its exceptional scientific community, which includes Sir Frederick Bantin. In 1937, concerned about recent reports of German involvement, Banting thoroughly investigated potential biological attacks, which he regarded as a serious and immediate threat (Guillemin, 2006). In 1957, the UK ended its offensive bio warfare research program, wiping out all of the reserves in the process (Riedel, 2004).

The Japanese Program during World War II

During World War I, Germany launched the first officially recognized BW program. The next country to launch a BW program was Japan in 1932 (Oliveira et al., 2020). Without a doubt, Japanese military physician Ishii Shiro played a significant and pioneering role in the development and application of biological weapons, which were produced on a massive scale. Using techniques developed by Ishii, a sizable amount of the bacterias were generated at his facility for research purposes. In 1939, the manufacturing range for anthrax was 500–600 kg and for plague, 300 kg. The research was provocative and had the covert goal of using all biological warfare agents to infect 50% of the human population. Agents that destroy crops have also drawn a lot of interest. Numerous studies have examined the impact of nematodes, bacteria, and fungi on nearly all grains and vegetables, particularly those cultivated in Manchuria and Siberia. (Geissler & Ellis, 2001).

The United States' involvement in World War II

At the instruction of President Franklin D. Roosevelt, the United States of America likewise started a clandestine bio warfare program in 1942 (Oliveira et al., 2020). When hundreds of Japanese hot air balloons touched down on the West Coast in 1944 and 1945, some intelligence officials claimed the balloons were carrying biological anti-plant agents, which sparked fears of biological warfare (Whitby, 2002). By the end of the war, the US programme had generated effective anti-plant chemicals, such as rice brown spot (code name E), rice blast (code name IR), and plant growth regulator (code name LN). Plans to destroy thirty percent of Japan's rice fields were made by 1946, but they were abandoned because to possible Japanese reprisals (Rogers et al., 1999).

The Soviet Union's Program for Bio warfare

Additionally, it was stated that the Soviet Union began its program covertly somewhere in 1920 and continued it until 1972. It was also claimed that the Soviet Union started its clandestine program in 1920 and carried it out until 1972., (Oliveira et al., 2020) at which time it possessed the most potent, advanced, effective, and aggressive ballistic weaponry in the world. Genetically engineered agents were fully created as a new class of weaponry under this program. For instance, in the 1980s, strains of antibiotic-resistant bacteria were produced for glanders, anthrax, plague, and tularemia. Soviet Union made progress towards creating so-called fully biological weapons. Eighty-six of the most virulent anthrax strains were aerosolized, stable, and persistent in the atmosphere. When these 836 anthrax strains were compared to all other strains worldwide, they were found to be of lower grade (Tucker, 1999).

Biowarfare Programs Following World War II

During the years after World War II, newspapers were full of stories about illness outbreaks brought on by foreign agents and operatives with biological weapons.

The Soviet Union, China, and North Korea accused the United States of using biological warfare agents against North Korea throughout the Cold War and the Korean War. Subsequently, the US acknowledged that it was producing such weapons, but it denied using them.

But the United States' failure has damaged its reputation. by open admission, confirm concerns about its own offensive biological warfare program, which involved working with experts from Unit 731 that had previously been subject to the Geneva Protocol of 1925 (Riedel, 2004).

The US program has expanded with the establishment of a new production facility in Pine Bluff, Arkansas, during the Korean War (1950–1953). Furthermore, a defensive program was started in 1953 to develop a defense against biological attacks for troops, such as antisera, vaccines, and therapeutic medications. The US military had a vast array of biological weapons by the late 1960s, including poisons, fungal plant pathogens, and diseases that could destroy crops and cause starvation. Numerous investigations were carried out between 1951 and to emphasize how vulnerable US cities are. Cities on both coasts were employed as covert laboratories to test dispersal and aerosolization techniques, with simulations released during covert trials in New York, San Francisco, and other sites. *Aspergillus fumigatus*, *Bacillus subtilis globigii*, and *Serratia marcescens* were employed in these investigations. In order to investigate the effects of environmental conditions and sun irradiation on the survivability of organisms, the organisms were dispersed over large areas. There were worries over possible risks to the public's health after Stanford University Hospital experienced epidemics of nosocomial *S. marcescens* urinary tract infections from September 1950 to February 1951. The outbreak in San Francisco was caused by clandestine investigations using *S. marcescens* as a simulant.

In the years following World War II, other accusations appeared. In 1957, for example, the press in Eastern Europe claimed that the United Kingdom had used biological weapons in Oman. The Soviet journal Pravda revealed in July 1964 that biological agents had been used against Bolivian and Colombian peasants by the US Military Commission in Columbia and Colombian troops. In 1969, Egypt accused the "imperialist aggressors" in the Middle East of using biological weapons, citing the 1966 cholera epidemic in Iraq as evidence. Researchers used *S. Marcescens* in simulation studies carried out in San Francisco (Riedel, 2004).

After 9/11, discussions about bioterrorism and the biological danger became significantly more than security-related issues, particularly those pertaining to the anthrax attack through letters (Reville & Jefferson, 2013). Quick developments in the fields of biotechnology and other sciences have been crucial in reducing the impact of the COVID-19 pandemic. Furthermore, during the next 20 years, The NATO Science and Technology Organization (STO) Trends 2020–2040 report predicts that biotechnology and other Emerging Disruptive Technologies (EDTs) will become more significant. (NATO, 2020).

According to the World Health Organization, biological weapons are any pathogen or poison, such as bacteria (anthrax), viruses (Ebola and smallpox), or poisons (ricin). These are all purposefully created and if released, they have the potential to cause both disease and death (WHO, 2022).

The best way to describe bioterrorism is as "mass-casualty weapons" because it is not the cause of the destruction of buildings, transportation, and cities. Sadly, they merely put human lives in jeopardy (Tucker, 1999).

Currently, while discussing biohazards and biological threats, we need to be more inclusive. Simple microbe exposure to the deliberate release of biological agents that cause infection and epidemic diseases are among the situations that could occur. Specifically, varying occurrences with varying degrees of purpose can be divided into three groups: naturally occurring, inadvertent, and purposeful.

Potential Biological Terrorizations and its Classification

The possible biological terrorizations have been divided into three groups by the US Centres for Disease Control and Prevention (CDC). Given that COVID 19 belongs in Categories A and C, the CDC's specified categories unquestionably mention it as a biological weapon (Enitan et al., 2020). These classifications aid the reader in comprehending the relative importance of each bioterrorism agent.

Table 3
Lists and classifies bioterrorism agents.

| A (Group) | B (Group) | C (Group) |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| High-priority agents are organisms that pose a risk to national security because they are: | The agents with the second-highest priority are the following: | The third most important class of agents is emerging pathogens: |
| <ul style="list-style-type: none"> • Easily obtainable • Have a high death rate • incite social unrest and public fear • demand particular steps to ensure public health readiness. | <ul style="list-style-type: none"> • Relatively simple to send • Lead to a little morbidity • Demand greater capacity for public health diagnostics and disease surveillance | <ul style="list-style-type: none"> • May result in significant health effects, death, and serious morbidity. • May be created for widespread distribution in the future |

Variety of Biological Agents and Weapons

There are many different kinds of biological weapons in use today, and you can list them by using the biological agents that gave rise to them. They are as follows:

- a. **Microorganism-based biological weapons** – Among them include parasites, rickettsia, viruses, fungi, and bacteria.
- b. **Weapons based on toxins** – These weapons use a toxin found in nature as a biological weapon. Generally speaking, biological toxins are significantly more harmful than toxins produced by humans.
- c. **Chemicals that have undergone genetic engineering or modification** – Certain types of toxins can be chemically altered to increase their toxicity or develop resistance to vaccines or antibiotics.

With today's advanced genetic engineering, it is now quite possible to produce an infinite number of man-made toxins.

Historically, biological weapons have only targeted humans, but more recently, they have also attacked household animals and crops. It is impossible to list and examine every kind of biological weapon due to the vast and varied range of biological agents (Tu, 2017).

Bioterrorism via the use of diseases.

Different illnesses have been utilized and regarded as bioterrorism weapons at different points in time.

Using Anthrax as a Bioweapon

The primary characteristic that sets anthrax apart is its ease of fabrication. Anthrax is stable in the environment and has a long shelf life. The long half-life of anthrax spores makes them useful for producing explosives. According to Fong and Alibek (2011), anthrax is a highly fatal disease for which the untreated inhalation rate approaches 100%.

It is well known that using anthrax as a weapon is a threat. Anthrax has been used as a weapon regularly for over 80 years. During World War I, for example, Germans used glanders and anthrax to contaminate sheep, cow, and horse imports from at least five nations, including the US. As the animals waited to be put onto ships, Dockers prodded them with infected needles. (Barnaby, 1999).

Using a Plague as a Bioweapon

The idea of using the disease as a weapon is not new. Anecdotal evidence suggests that plague cadavers were thrown into the enemy's defence during conflicts in the 14th and 18th centuries (Marty, 2001). At their enigmatic Manchurian natural exploration offices, the Japanese military investigated various avenues regarding the effects of plague on human subjects during World War II. They occasionally dropped *Y. pestis*-infested insects on common Chinese civilians from low-flying aircraft, which led to small-scale epidemics of the bubonic plague and the start of disease cycles in rats (Bellamy, 2001).

Tularemia in conjunction with bioterrorism

There have been historical names for tularemia, including "deer-fly fever," "rabbit fever," and "market men's disease." According to the most prevalent clinical indications, tularemia is divided into six clinical types (Deathersage et al, 2022). By the middle of the 20th century, *F. tularensis* had been weaponized and tested for resistance to streptomycin by both the US and the former USSR (Dennis et al., 2001). Tularemia would definitely be delivered in an aerial structure in populated cities in the event of a bioterror attack (Dennis et al., 2001). The World Health Organization (WHO) projected in 1970 that if 50 kg of *F. tularensis* were released by aeroplane over a population of 500,000, it would result in around 30,000 deaths along with 125,000 paralysis cases (Organization, 1970).

Utilizing Smallpox as a Tool for Bioterrorism

Smallpox, the only disease ever totally eradicated, is one of six ailments that have been found to pose a serious risk to biological terrorism. Wilson (2003). Smallpox has a number of traits that make it potentially dangerous. It grows readily in large quantities. Through the respiratory system, it spreads. Its death rate is thirty percent. President Bush has advocated for the gradual immunization of a sizable portion of the American medical and public health workforce due to the potential of smallpox attacks (Grabenstein, 2003).

Smallpox has been used as a weapon for over a century; in fact, Tartar was around as early as the 14th century. Forces launched the bodies of smallpox victims into besieged cities in an attempt to trap the defenders by weakening and destroying them. This may be the first, but it certainly won't be the final instance of biological warfare; it uses biological weapons and results in a high death or injury rate among the populace.

Soldiers under the commander of Fort Pitt utilized smallpox as a biological weapon (1754–1767) during the French-Indian War. Their intention was to start smallpox outbreaks among American Indians, thus they provided blankets that had previously been used by patients. When an epidemic struck, about half of the affected tribes perished (Tucker, 2002).

The Coronavirus from a Historical Perspective

A patient in Saudi Arabia was identified as having Middle East Respiratory Syndrome Coronavirus (MERS COV) for the first time in September 2012. MERS COV is the term used to refer to the novel coronavirus. Since 2012, there have been reports of sporadic instances or outbreaks in several countries throughout the world. Regrettably, human-to-human transmission has been documented; nevertheless, study into the transmission and source lines is still ongoing. There are numerous ways for an infection to spread from one sick animal to another, including direct contact with an infected animal. The infected animal may be the host or reservoir species. When these host or reservoir species come into contact with fruit-bearing items, places, or plants, their waste products or excrement contaminate the other species. Its effects are seen in other zoonotic illnesses, and viruses such as coronavirus go through the same process. Steps have been attempted to prevent the virus from transmitting from animal to human and from human to human through a number of investigations and studies. Through studies, known cases and their exposure to the uninfected general public, the risk factors for infection can be evaluated (WHO, 2022).

Coronavirus traces were discovered in 1918, 1930, 1965, 1975, 1997, 2005, and 2019. Thus, after a century of transmission, the COVID-19 has animal-to-animal connection. It is zoonotic since there is proof of infection transmission from animal to human (Ye et al., 2020).

WHO has additionally verified that COVID-19 is animal-borne. The publication's work on human-to-human transmission (Uchejeso, 2020). It is impossible to separate coronavirus from the Plaque instances that occurred in Corfu in 18th century. Indirectly, in the natural world, it was characterized as a biological and zoonotic threat (Fan et al, 2019).

Relevance of Zoonotic Diseases and Coronavirus

Although research on coronavirus implications as zoonotic agents of bioterrorism has been conducted, the virus has not been designated as a bioterror agent. A zoonotic disease is an illness or infection that spreads from animals or vertebrates to humans. According to Ryan (2008), anthrax is another zoonotic illness that only spreads from animal to human. The genomic sequencing-based phylogenetic study. It's crucial to remember that COVID 19 was shown to be primarily in bats. The source, an intermediary host, is yet unknown, though. The WHO claims that animals are the source of the coronavirus. It spreads from animal to human and then from human to human, according to several documented proofs. Every document attests to the coronavirus's status as a zoonotic infection. It is abundantly evident that the majority of zoonotic illnesses utilized in labs to create biological weapons (Ryan, 2008).

Coronavirus among Humans and Animals

Animal coronavirus was discovered in the late 1930s. A range of COVs isolated from a number of afflicted animals, such as a dog, pig, cow, mouse, and turkey. Seven HCOVs have recently been found during investigation. A variant of HCOV that produces mild to severe symptoms has emerged in humans. The shape that humans have evolved for HCOVs may be the same as this one. Both types have the potential to cause

serious illness in people and may represent remnants of a previous H COV pandemic. The longer the SARS-COV-2 or COVID-19 outbreak lasts and the more individuals get infected, the greater the likelihood that it will adapt to humans. Using isolation, quarantine, or other infection management techniques may not be able to completely stop transmission in animals or humans if it gets too well adapted (Ye et al., 2020).

These viruses don't need to be present in an animal reservoir for infection to occur. Despite being extremely pathogenic, SARS- and MERS-COV have not adapted well to humans and cannot spread between individuals. In order to prevent the zoonotic reservoir from spreading to susceptible human targets, it is imperative that it be maintained or expanded (Ye et al. 2020).

The Biological Threat of Coronavirus

In light of COVID-19, international cooperation is required to stop the development of zoonotic viruses and other microbes into bioweapons. When biological elements or agents – like bacteria, fungus, viruses, or germs – are intentionally released to cause harm, disease, or even death, it's known as bioterrorism. US intelligence has issued a warning, stating that to stop the transmission of diseases or pandemics that could contain bio-particles, the safety hazards associated with such laboratories need to be addressed. This stance is essential in view of the numerous deaths caused by artificial plaques in the past, especially in relation to COVID-19.

Steps Taken to Control Bioterrorism/ Bio warfare

Due to the creation of numerous countries' bio warfare programs, certain measures were adopted to regulate bioterrorism and bio warfare. Even though several nations have publicly taken action to combat bioterrorism, many of them have kept up their efforts, which is why there are still incidents of bioterrorism throughout the world. Although control is achievable if all nations work together strictly to control it, they are not taking this responsibility seriously.

Table 4
Actions to Prevent Bioterrorism

| Year | Actions to Prevent Bioterrorism |
|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1925 | The "Geneva Protocol" was signed by all governments to combat bioterrorism because of the rapid usage of bacterial and toxic warfare tactics. (140 parties and 38 signatures) |
| 1972 | The "Biological Weapons Convention" (BWC), also known as the "Convention on the Prohibition of the Development, Production, and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on their Destruction," was signed; its current signatories number 182. |
| 2001 | After the US signed the Patriot Act, federal and national law enforcement officials received it along with expanded authority to combat terrorism. |

(Oliveira et al., 2020).

Pandemics can be sparked by biological weapons, and COVID-19 has already resulted in a serious circumstance that qualifies as a pandemic. The first incidence of SARS-COV 2 was discovered in Wuhan, Hubei Province; it then spread to other Chinese cities, and at this point the pandemic virus has nearly entirely taken over the world (Zhou et al., 2020, p. 8). Biological weapons are known to be unsustainable, and the source of SARS-CoV-2 is currently unknown (Kamra, Chalana, Tiwari, & Singh, 2020).

Despite the fact that coronaviruses have been around for thousands of years in human populations, some, like SARS, MERS, and SARS-CoV-2, have a more significant effect on population dynamics. The big nations have charged one another with purposely or inadvertently propagating this virus globally. The covid-19 pandemic could not have been triggered by SARS-CoV-2 since the coronaviruses investigated in this sub award differed genetically from SARS. There were 6,224,767 cases and 24,557 deaths recorded from China as of August 25, 2022. In the US, there were 1,031,062 documented deaths and 92,615,784 reported cases.

Who knew that, when COVID-19 was being examined in labs around the world, a vaccination against it would be necessary before the pandemic? It's also possible that this virus was studied to create a bioweapon. "The intentional release of viruses, bacteria, or other germs" is how the Centers for Disease Control and Prevention (CDC) defines bioterrorism (Mansour et al., 2022).

Conclusion

The main point of the debate above is that bioterrorism is not a myth; rather, it is a fact that has been refuted by every nation that has attempted to combat it, but has since been demonstrated in a number of ways. The current study examined all the viruses, bacteria, and poisons that have been utilized historically to develop biological warfare weapons and use them against the opposition. Additionally, corona viruses have a history and have progressively spread to various parts of the world. One may analyze and conclude that those were the only testing points. Every corona virus strain is included on the WHO's list of three varieties that were utilized to create biological weapons. If this isn't the case, then why were measures made in 1925 to combat bioterrorism in the form of the "Geneva Convention"? In 1972, the United Nations ratified the Patriot Act in 2001, as well as the "Convention on the Prohibition of the Development, Production, and Stockpiling of Bacteriological (Biological) and Toxin Weapons, and on their Destruction." By the end of 2019, Wuhan, China was the starting point of the coronavirus's global expansion. The lockdown was still in place over nearly the whole planet. Although the fatality rate was displayed, it was substantially higher than the 3% to 4% mortality rate. Numerous myths were still being debated, but the study dispels them all and indicates that bioterrorism is a reality rather than a fantasy.

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