A PUBLIC PERCEPTION ON BIOTERRORISM IN INDIA WITH REFERENCE TO COVID 19

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ABSTRACT

The international release of biological agents such as viruses,bacteria or their toxins to spread disease or damage to the human population or food crops or any other form especially to threaten the government. This type of issue prevails in today's scenario.Human history is focusing on a very strange time fighting an invisible enemy, COVID 19 . This paper focuses on the current issue COVID 19, the worldwide spread of deadly viruses and their effects in india. So far India has no documented case of bioterrorism, for this reason we are struggling to face a formidable challenge to our public health system and society.

KEYWORDS

Biological agent, COVID 19, Viruses, Disease, Human population.

INTRODUCTION

Mankind has observed so many types of pandemic throughout history. Where some of the incidents are more dangerous than others to the human population. Bioterrorism is a powerful weapon to destroy the entire world. Bioterrorism is a type of terrorism involving the intentional release or dissemination of biological agents may be in a naturally occurring or a human-modified form. Today we are observing a deadly virus COVID 19. This virus is initially

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observed in Wuhan province of China. Now it is spreading throughout the world. As of today 23rd April 2020, the total confirmed cases are 26,28,527 and recovered is 7,84,986. The total death among the world due to this COVID 19 is 1,83,424.In the total COVID 19 patients died, very interestingly the highest number belongs to the United States i.e. 47,750 deaths. The death toll is followed by Italy(1,433), Spain(21,717),and,France(21,340). [https://news.google.com/covid19/map?hl=en-IN&gl=IN&ceid=IN:en]

In India so far no bioterrorism has taken place, so we need to know and learn about this form of terror. The historical perspective reveals that the use of biological weapons has been reported as early as the sixth century B.C. when contamination of the water system with the fungus ergot (rye ergot) by the Assyrians had been reported. The hurling of the dead bodies of plague victims over the walls of the town of Kaffa by the Tartar army in 1346 and therefore the spreading of smallpox via contaminated blankets by British to the Native American population loyal to the French in 1767 are the foremost frequently cited episodes of poisoning .

Within the recent past years, mycotoxins (fungal toxins) were reported to have been utilized in Afghanistan within the sort of what's popularly referred to as ‘yellow rain’. the expansion of spiritual cults and extremist political groups also increases the threat of bioterrorism today. The foremost significant biological warfare within the US (US) was the intentional contamination of restaurant salad bars with Salmonella by a spiritual cult in Oregon in 1984 . In September 2001, the American public was exposed to anthrax spores as a bioweapon delivered through the US postal system. The centre for this disease control and prevention (CDC) had identified 22 confirmed or suspected cases of anthrax during this attack. These included eleven patients with inhalational anthrax, of whom five died and eleven patients with malignant pustule (seven confirmed), all of whom survived.

The most important step within the event of a bioterrorist attack is the identification of the event. This will be achieved by generating awareness among the public, having a high degree of suspicion and having proper telecasts about the issue to help quick detection. Bioterrorist attacks might be covert or announced and caused by virtually any pathogenic microorganism. Bioterrorist agents of major concern are categorized as A, B and C supported the priority of the

agents to pose a risk to the national security and therefore the ease with which they will be disseminated. The five phases of activities in handling a bioterrorist attack are preparedness phase, early warning phase, notification phase, response phase and recovery phase.

A bioterrorism attack during a public place may be a public health emergency. The role of public health epidemiologist is critical determining the scope and magnitude of the attack and also in effective implementation of interventions. Thus, the main aim of this study is to understand the status of the current scenario of COVID 19 among the public and their perception on bioterrorism.

OBJECTIVE

The main objective of this paper is to review the historical perspectives, potential exposures because of various microbes and their metabolites, which can induce significant risk upon health care because of bioterrorism and to spotlight what must be done to stop and reduce morbidity and mortality arising from bioterrorist actions

REVIEW OF LITERATURE

The review of literature available on the subject seeks to research various issues associated with the proposed study during a detailed manner. Most of the literature available on the subject owes its origin in America though substantial literature from other parts of the world including India. The books and articles that are surveyed are often broadly divided into international and national levels. At the international level,there is more literature which reflects the matter from an Indian perspective.

Suba Chandran "Bio-Terrorism and Bio-Defence" (New Delhi:Manohar Publishers 2005):

This book addresses the problems embedded within the phenomenon of bio-terrorism and therefore the problems of bio-defence to counter this threatbook contains essays handling various international and national efforts to combat the bio-weapons identification of varied hostile nation states and non state actorswhich might pose threat to the safety of India potential threat which bio-weapons pose living species and environment steps which are required to be taken to deal with the matter. One section during this book is dedicated to investigations into SARS.(Kittelsen 2007)

“Bio-weapons- the genie within the Bottle” (Lancer 2004): This book attemptsto analyze various issues associated with the threat of bio-terrorism in systematic manner. Before stepping into the small view of the book, the author examines the historical context of biology. It addresses the necessity of realistic threat and risk assessment of bio-terrorism andtries to develop and test an India centric model of the threat. The book emphasizes the need for proactive bio-defense techniques and also looks at various internationalinstruments of disarmament that are developed to tackle this threat and theirlimitations within the current geo-political context Special feature of this book may be a few casestudies of actual and probable cases of bio-terrorism and scenario building ofhypothetical situations which could encounter in future this book peeps intothe future of bio-weapons.(Weekly 1989)

Joshua Lederberg “Biological Weapons- Limiting the threat” (MIT Press 1997): This book gives a broad overview on the problem of Biological Weapons. Various issues like the historical perspective of Biological weapons and various biological agents which have potential to be used as Bioweapons. Clinical recognition and management of patients exposed to BW agents etc are dealt during this book. Three case studies of biological agents affecting citizenry due to human error are discussed during this book This includes the community outbreak ofSalmonellosis caused by intentional contamination of restaurant salad bars in Dallas an epidemic of Shigella dysentery among laboratory workers due to intentional food contamination in Texas and anthrax outbreak in Sverdlovsk Soviet Union in (1979) which was caused by accidental release of anthrax spores from a military microbiology facility. This book also deals with steps which may be taken at community and state level within the event of a bioweapon attack and wish to strengthen bioweapon Defense control regime etc at the international level.(Connell 2000)

“Defending America: Asymmetric and Terrorist Attacks with Biological Weapons” (Center for Strategic and International Studies2001): Because of this title, the book suggests which may be a a part of the “Defending America” series covers the bioweapons threat both within the context of adversary use by a state as well as a sub-national terrorist group Much of the book is dedicated to charts and statistics detailing the precise characteristics of biological agents- infective doses communicability persistency and other such attributes. the author briefly notes of bio weapons of two countries - Russia and Iraq consistent with the author the variety of

biological warfare methods is almost inexhaustible numerous high-value targets are in danger then many vulnerabilities exist that bio-defense will remain problematic future are highly susceptible but also in danger is agriculture The author also agrees that the technical barriers to non-state acquisition and use of BW are steadily decreasing as biotechnology and scientific expertise proliferates. (Bennett 2006)

Laurie Gerrett "The Nightmare of Bio-terrorism" Foreign Affairs (VolJan/Feb 200176-89): This book provides a quick and general overview of the prospective bio-terrorism threat but doesn't offer insight into the potential severity orrange of bio-terrorist challenges the most thrust of Garrett's article is on the response from vaccine stockpiles to epidemiological surveillance to government antiterrorism programms with a conclusion that more must be done to avoid a "train crashThis article doesn't address either the objectives or motivations of groups or the agentsthey would likely seek with reference to bio-terrorism including their desired effects orlikely tactics. (Garrett 2001)

Bruce Hoffman "Change and Continuity in Terrorism" Studies in Conflict andTerrorism (Vol417-428): Hoffman argues that the expectedgraduation of terrorists from guns and bombs to CBRN weapons has not occurred and is an unlikely threat. He challenges the notion that the Aum Shinrikyo case represented awatershed event with reference to CBRN terrorism stating that instead of showing the convenience with which a terrorist organization could acquire CBRN weapons the case showed "theimmense technological difficulties faced by any non-state entity in attempting toweaponize and effectively disseminate chemical and biological weapons" He alsocriticizes planning for CBRN terrorism for that specialize in worst-case scenarios insteadof less serious incidents which will be of more utility to terrorists last Hoffman argues that while there's a threat of CBRN terrorism it's an unlikely one andwill not shake the foundations of the state as some observers suggest.(Hoffman 2001)

Nuclear Terrorism Recognizing the Linkages" Studies in Conflict and Terrorism (Vol JanMar 199859-86): Betts' article is primarily a discussion of the change in both threatand perception of weapons of mass destruction since the top of the conflict the roles such weapons play in international conflict are changing" Betts argues that whereas nuclear weapons were

previously the only greatest and most feared threat today that place is being supplanted by biological weapons. While the article is nonspecific with reference to particular sub-national motivations.(Beres 1998)

CASE STUDY

The research focuses on the government's response in dealing with biological emergencies like plague in Beed and Surat, and dengue in New Delhi and also focuses on the successes, failures and lessons learnt in these two case studies through interviews with scientists, doctors and various officials who were engaged in public response to these biological outbreaks. The study also focuses on the preparedness of India to meet any biological attacks, hence would have a special emphasis on various research and development organizations in India and interview with officials dealing with threats arising from bio-terrorism.

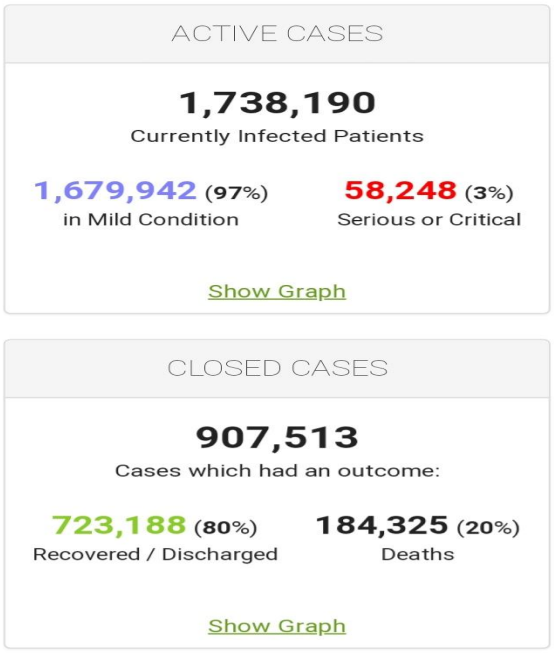
HISTORICAL PERSPECTIVE

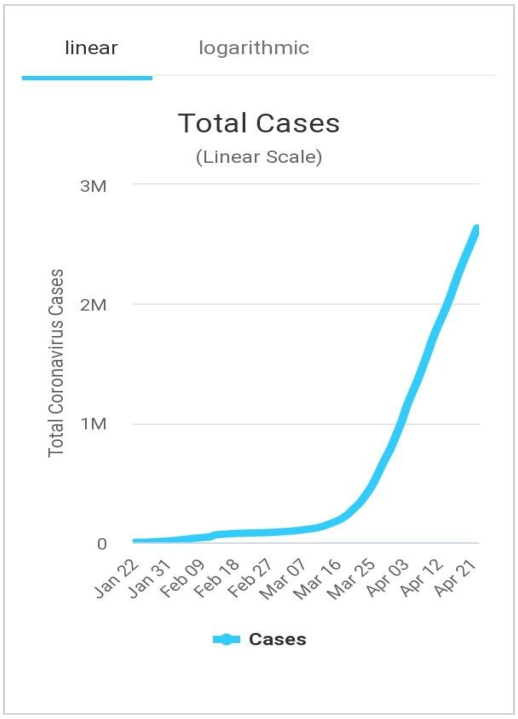
	1500–1200 BC During epidemics, the Hittites of Anatolia send infected animals and people into enemy realms in order to cause outbreaks.
	1200 BC Poison-tipped arrows are used during the Trojan War (described by Homer in 800 BC).
	600 BC Solon of Athens puts hellebore roots in the drinking water of Kirrha.
	1200–500 BC The Byzantines master the use of "Greek Fire" and direct a naphtha mixture through long siphons at enemy navies. It is described as "the ultimate weapon of its time."
	500 BC Sun Tzu writes the *Art of War* where he discusses strategies for using smoke and fire against enemies.
	420 BC An Athenian stronghold is overtaken by Spartan forces with the use of irritative fumes created by the burning of sulfur, coals, and tars during the Peloponnesian War.
	200 BC Hannibal hurls clay pots filled with poisonous snakes at the ships of King Eumenes of Pergamum.

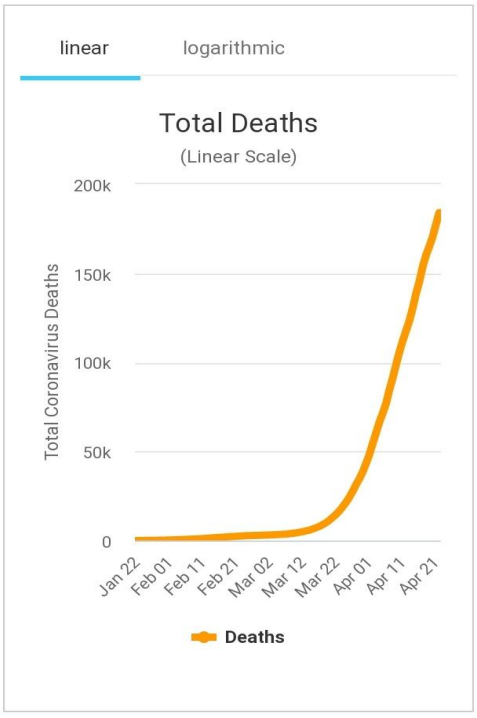
	65 BC Mithridates use poisoned honey to incapacitate Pompey's army who indulgently eat the combs. These combs are probably contaminated with botulinum.
	90 AD Claims abound that insurgents in and around Rome are spreading plague via contaminated pins that they use to prick others.
	1346 A Tartar attack on the city of Kaffa in which the warriors catapult the corpses of plague victims into the walled city successfully causes an epidemic.
	1495 The Spanish contaminate wine with the blood of lepers and gives it to the French.
	1650 The Polish military general, Siemienowicz, reportedly puts saliva from rabid dogs into artillery shells and fires them at his enemies.
	1763 Sir Jeffrey Amherst, the Commander-in-Chief of the British, orders smallpox contaminated blankets to be distributed to Native American tribes supporting the British during the French and Indian Wars.
	1895 Wilhelm Conrad Roentgen discovers X-rays.
	In 1899 Pierre and Marie Curie discovered radiation.
	1899 The Hague agreement was reached internationally to prohibit the use of projectiles filled with chemical weapons.
	1905 Albert Einstein, who is working full-time as a patent clerk in Bern, Germany, conceives and derives what is perhaps the most recognizable equation in history: $E = MC^2$.
	1915 In Ypres, Belgium, the German army uses chlorine gas to attack British and Canadian troops.
	1916 The Germans develop phosgene.
	1917 The Germans developed mustard gas.

	1925 The League of Nations develops “Geneva Protocol for the Prohibition of the Use of Asphyxiating, Poisonous or Other Gases, and Bacteriological Methods of Warfare” in response to the horrors of chemical weapons seen in WWI.
	1932–1944 The Japanese-maintained Unit 731 performs experimentation with biological weapons on POWs including: anthrax, botulism, brucellosis, cholera, dysentery, gas gangrene, meningococcal infection, and plague.
	1935–1936 Italy uses mustard gas in its invasion of Ethiopia. In 2019 China spread a deadly virus called COVID 19 among the world.

RELEVANT DATA ON THE ISSUE OF COVID 19







DISCUSSION

The above graph shows the active and death rates due to the deadly viruses COVID 19. This graph is a worldwide spread of COVID 19.

SUGGESTIONS AND RECOMMENDATION

Expand investigations into the pathogenesis of infectious agents. Review the state of information on the mechanisms of pathogenesis of all bioterrorist agents and of host responses to them, and initiate an action to conduct laboratory research using the newest biology tools. This research will enhance understanding of the points at which these threats are most vulnerable to useful intervention and can help identify new targets for developing diagnostics, drugs, and vaccines.
Increase research and development on therapeutics and vaccines. Support basic and clinical research to get molecular targets in bacteria and viruses, develop broad-spectrum antivirals and antibiotics, and devise treatments that enhance or stimulate protective host responses (both innate and acquired). Similarly, still expand and deploy the potential to use genomics to rapidly identify engineered mutations or altered virulence factors, create a generic platform to develop a vaccine against recombinant pathogens, and use streamlined testing and regulatory processes to assure adequate efficacy and safety while expediting delivery.

CONCLUSION

The final chapter summarizes the main findings of this research, in terms of evaluation of threat to India, known methods of active and passive defence against the biological attack, India's capability in terms of technology and infrastructure to defend itself from the biological warfare , existing institutional and legal mechanism associated with India's biological defence, analysis of India's past performance in terms of two incidents of biological emergencies and what still must be done to correct the deficiencies within the biological defence of India.

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