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Peer Reviewed, Referred & Indexed Journal

ISSN (Online) 2320-771X

ISSN (Print) 2347-5404

I.F. 5.761 (wef. 2016)

ICV: (2015) 80.70 & S.V. 7.66



# International Journal of Research in Humanities and Social Sciences (IJRHS)

Vol. 8, Sp. Issue 1, July: 2020



## Published By

Rudra Education Trust (Regd.)

143 Gokuldham Society, Modhera Road, Village: Dediyaasan

TQ. & Dist. Mehsana. Gujarat (India)

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Moradabad, Uttar Pradesh

National Level E-Seminar  
on  
**THE EVOLUTION OF PATHOGENS**  
APRIL 17 - MAY 6  
2020

Humanity has always thought itself to be standing at the top of the Food Chain - as an apex predator. Superior and Intelligent than most if not all.

We were Wrong, Always has been.

Viruses, since the dawn of life on this planet, has been on the top of the chain. They have always been the harbinger of Life and the messenger of Death.

In our contemporary era, we are now faced with a challenge, forced to ask a very peculiar yet a very vital Question.

Are the Viruses Evolving?

From SARS to MERS, From Ebola to Zika, From Nipah to Corona, viruses are gripping large number of population under their menace and the statistics are clear - They are not going to Stop. So another question emerges

Are we heading towards an Extinction Event?

#### Themes :

1. Anthropogenic Factors behind Viral Manifestations.
2. Environmental Factors leading to Emerging diseases.
3. Impact of Technology in protecting as well as exploiting Environment.
4. Political issues associated with degradation of Environment.
5. The Economics of Environment
6. Policy Paralysis in Healthcare sector
7. Any other topic relevant to environment, virology, political science and economics related to environmental scenarios.

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5. Research Scholars
6. Students

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2. Paper Lay Out Must be A 4 Format 1.5 Spacing
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**thesyndrome2020@gmail.com**

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**Gokul Das Hindu Girls College  
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## Message From Organizing Secretary

Humanity has always thought itself to be standing at the top of the Food Chain - as an apex predator. Superior and Intelligent than most if not all.

We were Wrong, Always has been.

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From SARS to MERS, From Ebola to Zika, From Nipa to Corona, viruses are gripping a large number of populations under their menace and the statistics are clear - They are not going to Stop. So another question emerges

Are we heading towards an Extinction Event?

This webinar was one small step among many to further understand how climatic factors, how global environment and how anthropogenic actions are becoming a catalyst in the evolution of pathogens that may bring not only a pandemic but an extinction even to our doorstep.

I am sure that the audience and participants all have learnt something as much as they contributed in this humble endeavour.

Wishing everyone Success and Good Health

Dr. Shashi Singh  
Associate Professor and Head  
Department of Education  
And  
Former Director  
Center for Gandhian Studies  
Gokul Das Hindu Girls College  
Moradabad (UP) - 244001



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दिनांक 15.01.2020

## Message

It is a matter of great pleasure that for the first time in the history of the college a national level e-seminar has been organized by Dr. Shashi Singh Asso. Professor & Head Dept. of Education Gokul Das Hindu Girls College Moradabad. The webinar has been organized at a time, when the entire Education System is at the threshold of a new world order shedding old practices and embracing new technology.

The topic of the webinar is very relevant and a number of scholars and researchers from different parts of the country are presenting their papers. We are fortunate to be connected to academicians and experts from all over the country.

I take this opportunity to thank the experts and the keynote speakers for their valuable insight and suggestions regarding this syndrome. I am sure this webinar will go a long way in understanding the evolution of the pathogens causing this disease and finding ways and means of alleviating the sufferings of people at large.

I congratulate Dr. Shashi Singh for her efforts in the publication of research papers presented in the webinar.

  
Dr. Anjana Das  
Principal

Gokul Das Hindu Girls College  
Moradabad

**ISSN: (Print) 2347-5404**  
**ISSN: (Online) 2320-771X**



# **International Journal of Research in Humanities and Social Sciences (IJRHS)**

**I.C.V. (2015):80.70, Standardized Value: 7.66**

**I.F. (wef. 2016: 5.761)**

**Vol. 8, Sp. Issue 1, July: 2020**

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Rudra Education Trust (Regd.), 143 Gokuldharm Society,  
Modhera Road, Village: Dediyan  
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**Dated: October 29, 2013**

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I am very thankful to all the Authors and Researcher Scholars on behalf of our RET Academy for International Journals of Multidisciplinary Research (RAIJMR) for publishing with us in our, **Refereed, Peer Reviewed, Indexed & Online & Print** this issue, of **International Journal of Research in Humanities and Social Sciences (IJRHS) ISSN: (P) 2347-5404. & (O)2320-771X**

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I am much thankful to all the Dignitaries, Professors, Chief editors, Associate Editors, The Board Members (India & International), Faculty Members, Political Leaders, Social Workers, Supporters, Motivators, Authors, Web developers, Subscriber, Best Complimenters and my Family Members for giving me their fruitful support to release this research work on Wide Area Network via IJRMP, IJRE (on line & print), IJRMEET, IJRSML and **IJRHS** (on line & print).

Thanks.

Special Editor:

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Department of Education and Former Director

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2. The author's shall be informed about the selection/rejection of the article/paper by e-mail only. However, the Journal shall publish the article/papers of the authors completing the formalities in due time mentioned as per our norms. The rejected papers shall not be returned.
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## GREEN SYNTHESIS OF METAL OXIDE NANOPARTICLES AND THEIR APPLICATIONS AGAINST PATHOGENS

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**Abstract:** *Green synthesis of metal oxide nanoparticles is an eco-friendly, cheap, fast and renewable approach. Nanoparticles have high surface to volume ratio so that they can tightly associate to the surface of the pathogen cells to disrupt the membrane which would cause to the leakage of intracellular components and that kills the pathogenic cells. The ZnO nanoparticles act as antibacterial agents onto the food surface where bacteria reside halts the growth and thus prevents food from spoilage.*

**Keywords:** Green synthesis, Nanoparticles, Pathogens, Bacteria, Food.

### 1. Introduction

Nanotechnology is a branch of science which deals with the study of structure of materials at the scale of nanometers ranging from 1-100 nm. In other words, it is the study of manipulation of matter at the atomic and molecular scale. Nanotechnology encompasses the understanding of the fundamental physics, chemistry, biology and technology at nanometer scale objects. The materials whose atomic or molecular structure is in the nanometer range are called nanomaterials. The inorganic metal oxide nanoparticles have attracted considerable attention in physical, chemical, biological, medical, optical, mechanical and engineering sciences where novel techniques of their synthesis are being developed to probe and manipulate single atom and molecules [1]. Due to high surface to volume ratio of metal and metal oxide nanoparticles they possess antimicrobial, magnetic, electronic and catalytic activity. Generally the properties of nanoparticles depend on their size, shape, composition, morphology and crystalline phase.

Nanomaterials are highly reactive because of their high surface area per unit mass. Because nanoparticles are so tiny, their movement is largely governed by Brownian motion as compared to gravity effect. Nanoparticles are able to overcome physiological barriers and readily interact with intracellular compartments without any additional surgery.

Research on ZnO-NPs as antibacterial agent provides an interdisciplinary platform to link physics, biology, chemistry, and medical science, hence it has the wide spread of their applications. Several researchers have examined the antibacterial activity of ZnO-NPs to determine bacterial growth through the cultural turbidity and the viable cells percentage by the colony counts test. Nair et al. [2] considered that the determination of starting number of bacterial cells is very important in the antibacterial activity evaluation. Duncan [3] reported about recent applications of antimicrobial NPs on food to achieve high barrier packaging materials and nano-sensors using NPs to trace foodborne pathogens. One of the important applications of ZnO-NPs in food industry is as an antibacterial agent in food packaging and towards foodborne pathogens.

## 2. Bacteria as a Pathogen

Bacteria are generally characterized by their cell membrane, cell wall and cytoplasm. The cell wall lies outside the cell membrane and is composed mostly of a homogeneous peptidoglycan layer (Consisting of amino acids and sugars). The cell wall maintains the osmotic pressure of the cytoplasm as well the characteristic cell shape.

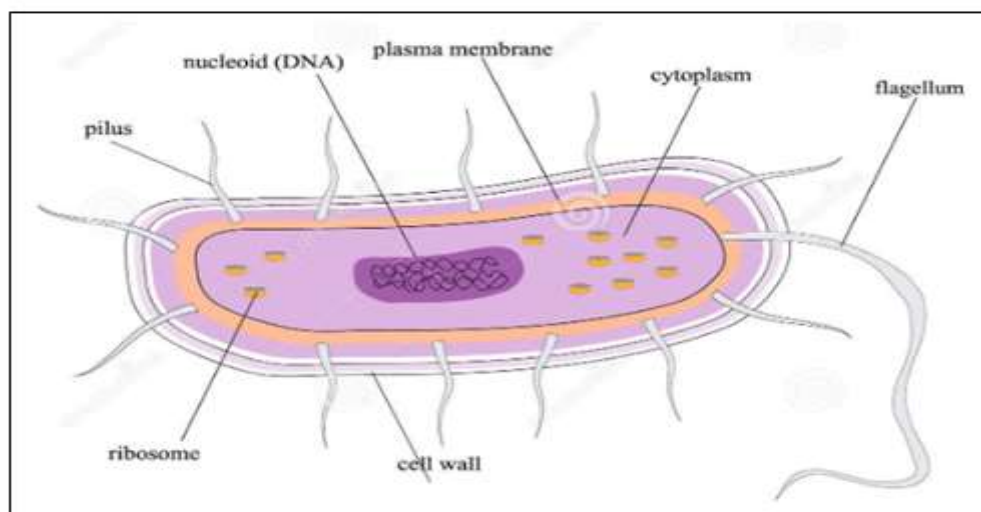


Figure 1: General structure of Bacteria



Gram-positive bacteria have one cytoplasmic membrane having multilayer of peptidoglycan polymer and a thicker cell wall of thickness 20–80 nm. While gram-negative bacteria wall is composed of two cell membranes, an outer membrane and a plasma membrane with a thin layer of peptidoglycan with a thickness of 7–8 nm [4]. NPs size order of such range can readily pass through the peptidoglycan and hence are highly susceptible to damage the cell. The cytoplasm is a jelly like fluid in a cell and involves in all the cellular components except the nucleus. The functions of this organelle include growth, metabolism and replication [5]. The cytoplasm contains proteins, carbohydrates, nucleic acids, salts, ions, and water (around 80 %). The composition of cytoplasm contributes in the electrical conductivity of the cellular structure. The overall charge of bacterial cell walls is negative.

### 3. Materials and Methodology

The healthy leaves of Aloe Vera are collected from Jaspur, Udham Singh Nagar, Uttarakhand, India. The collected leaves are properly washed for removing dust particles. Thereafter, Leaves are shade dried at room temperature for about 7 days in normal atmosphere. Dried leaves are cut into fine pieces, grinded to get the finest powder.



Figure 2: Aloe Vera leaves

10 gm. of the dried leaves are mixed with 100 mL of ethanol and extracted under reflux condition at 75<sup>0</sup> C. After one hour, the ethanolic leaf extract is obtained by filtering the mixture through Whatman No. 1 filter paper. For the synthesis of zinc oxide nanoparticles, the Erlenmeyer flask containing 0.5 M of zinc nitrate in ethanolic leaf extract is reacted under stirring at 50<sup>0</sup> C. After four hours of continuous stirring, the formed zinc oxide nanoparticles are acquired by centrifugation at 5000 r.p.m. for 15 minutes. Then the centrifuged particles are washed with ethanol and again subjected to centrifugation at 3000 r.p.m. for 10 minutes. Separated zinc oxide nanoparticles are dried and grinded to calcinate at 500<sup>0</sup> C in muffle furnace for about 5 hours [6, 7]. The stocks of ZnO-NPs suspensions are also usually prepared and serially diluted to different concentrations and then characterized using techniques like X-ray diffraction (XRD), transmission electron microscope (TEM), energy dispersive X-ray spectroscopy (EDX), electron

spectroscopy imaging (ESI), etc. to correlate the antibacterial response with ZnO properties. Ultraviolet illumination, NPs size, surface charge, ZnO defects, ZnO morphology, Surface morphology, Annealing and NPs concentration are the factors that affect the antibacterial activities.

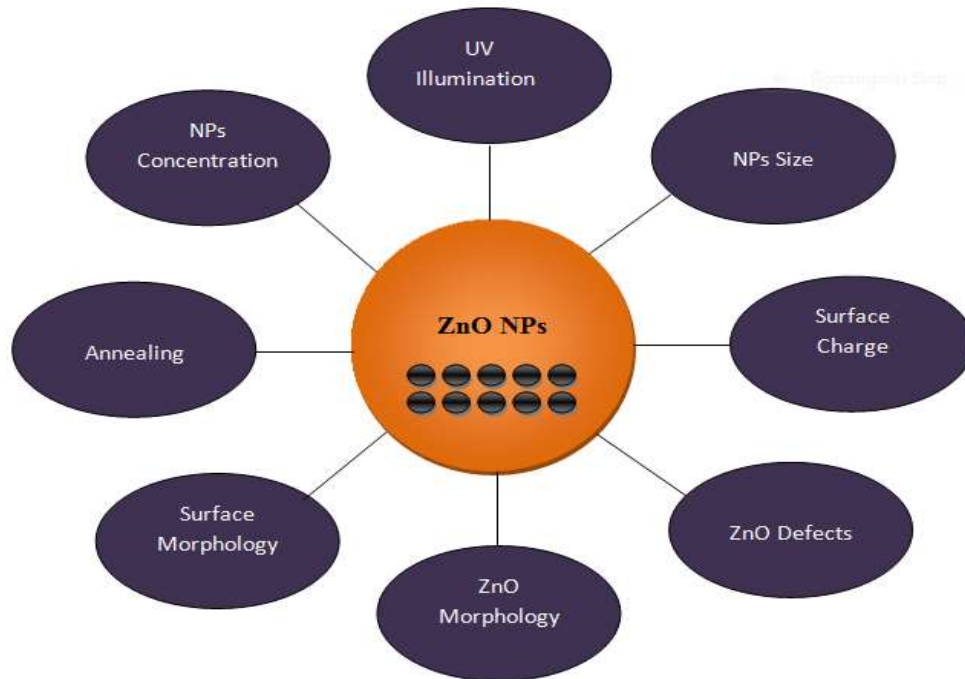


Figure 3: Antibacterial activity affecting factors

Range of inhibition depends on the concentration of nanoparticles and the initial bacterial concentration. Due to the smaller size of the nanoparticles they can easily pass through the membrane and can destruct the cell. The important feature of the nanoparticles is large surface area so that they can tightly bind to the surface of the bacterial cells to disrupt the membrane which would lead to the leakage of intracellular components and that kills the bacterial cells. Nanotoxicity may be due to the electrostatic interaction of nanoparticles with bacterial cell membrane. Generation of reactive oxygen species (ROS) like hydroxyl ions, peroxides, super oxides and hydrogen peroxide may be the main reason for nanotoxicity of zinc oxide nanoparticles. The lethal agent hydrogen peroxide which is actually produced from hydroxyl ions and peroxide free radical could damage the cell by complete destruction of membrane of bacterial cells [8].

#### 4. Application to Food Pathogens

Nanomaterials are great concerned in food technology due to their high reactivity, bioactivity and creative surface possessions. In advance food technology, the NPs are added to food surfaces to inhibit bacterial growth. NPs are an important part of the packaging materials for antibacterial activity and nano-sensing. The food nanotechnology develops novel food packaging materials with antimicrobial properties and with novel nano-sensors for tracing and monitoring the food [9]. Once the ZnO-NPs are added in a polymeric matrix, the interaction of food with the packaging possessing functional part occurs which helps in its preservation. The liberation of the NPs acts as an antibacterial agent onto the food surface where bacteria reside halts the growth and thus the food is protected from spoilage. This is also called antimicrobial packaging because direct interaction between the product and the NPs takes place leading to the killing or inhibition of bacterial growth on food surfaces [10].

#### 5. Conclusion

The green synthesized metallic oxide NPs are eco-friendly, cheap, fast and having renewable approach. The green synthesis of metallic NPs is ecological and safe technique because it is performed at low temperature. Good antibacterial results are obtained by improving the factors like ultraviolet illumination, ZnO nanoparticle size, concentration, morphology and surface modification. ZnO-NPs act as smart material towards multidrug-resistant microorganisms and an intelligent substitute approach to antibiotics. We should be careful for the toxicological effect of ZnO-NPs to determine the consequences of using these NPs in food safety. This review may be helpful to enhance further research in novel methodological characterization of metallic oxide NPs and their applications against pathogens.

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# Environmental Factors Leading To Emerging Diseases

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## **ABSTRACT**

*This paper deliberates the environmental factors like political, economic, social and technological are the main cause of emerging disease. Pathogens may be more and less spread to emergence in apart and viruses are most common example of the emerging pathogens. A number of environmental factors influence the spread of communicable diseases that are prone to cause epidemics.*

*The most important of these are :-*

- *Water Supply*
- *Sanitation Facilities*
- *Food*
- *Climate*
- *World Population*
- *Urbanization*

*There are over seven billion people worldwide and this increase has also increased the poverty levels leading to malnutrition. The more people, the easier it is for these diseases to transmit. The poor migrate the slums or outskirts of the cities where there is little infrastructure, decreased sanitation and health services.*

*Global warming has also caused an increase in many disease. Diseases control and monitoring is no longer to be considered a science of medicine and epidemiology alone, but also must include the social, environmental and economical values appreciated by people and societies.*

**Keywords-** Environmental factors, Emerging disease

## **INTRODUCTION**

The human population increasing day by day and requiring so many thinking to survival like food, space, luxury life (car, big houses, more money) etc. After that the game of problem start that is emerging some problem like economical, health, survival, environmental problems (CFCs production, increasing temperature and emerging some pathogens like corona, which we are hearing nowadays and we are seeing its consequences day by day). Many factors are contributing to cause and effect of disease including weather change, globalization and urbanization and most of the factors caused by humans.

### **Environmental Factors**

- All the factors that influence or affect the functioning of an organization or business can be termed as environmental factors.
- The scanning, monitoring and forecasting of the environmental factors play a major role in the decision making of an organization or business.

The ability of environmental factors to promote a phenotype or disease state not only in the individual exposed but also in subsequent progeny for successive generations is termed transgenerational inheritance. The majority of environmental factors such as nutrition or toxicants such as endocrine disrupts do not promote genetic mutations or alteration in DNA sequence. However, these factors do have the capacity to alter the epigenome. Epimutations the germline that become permanently programmed can allow transmission of epigenetic transgeneration phenotypes. This review provides an overview of the epigenetics and biology of how environmental factors can promote transgenerational phenotypes and disease.

[April 2010, Michael k. skinner, Mohan Manikkam, Carlos Guerrero-Bosanga]

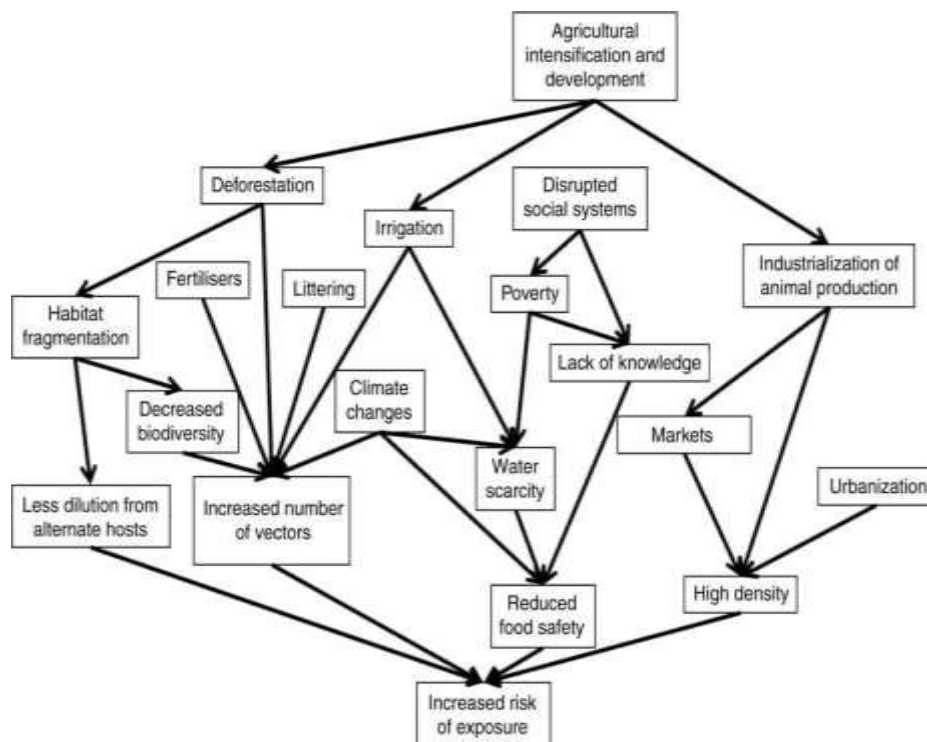
### **EMERGING DISEASES**

Definitions of EID vary, including a disease which incidence in human has been increasing, a disease which has tendency to spread geographically, cause an increased incidence, or

infect a new species or new population or a disease spreading with any host population. Pathogens may also be considered emerging, for example – antimicrobial resistant bacteria. These definitions can be similarly applied to wildlife and plant diseases in both terrestrial and marine ecosystems. There can also be an apparent emergence of newly discovered or previously underdiagnosed diseases.

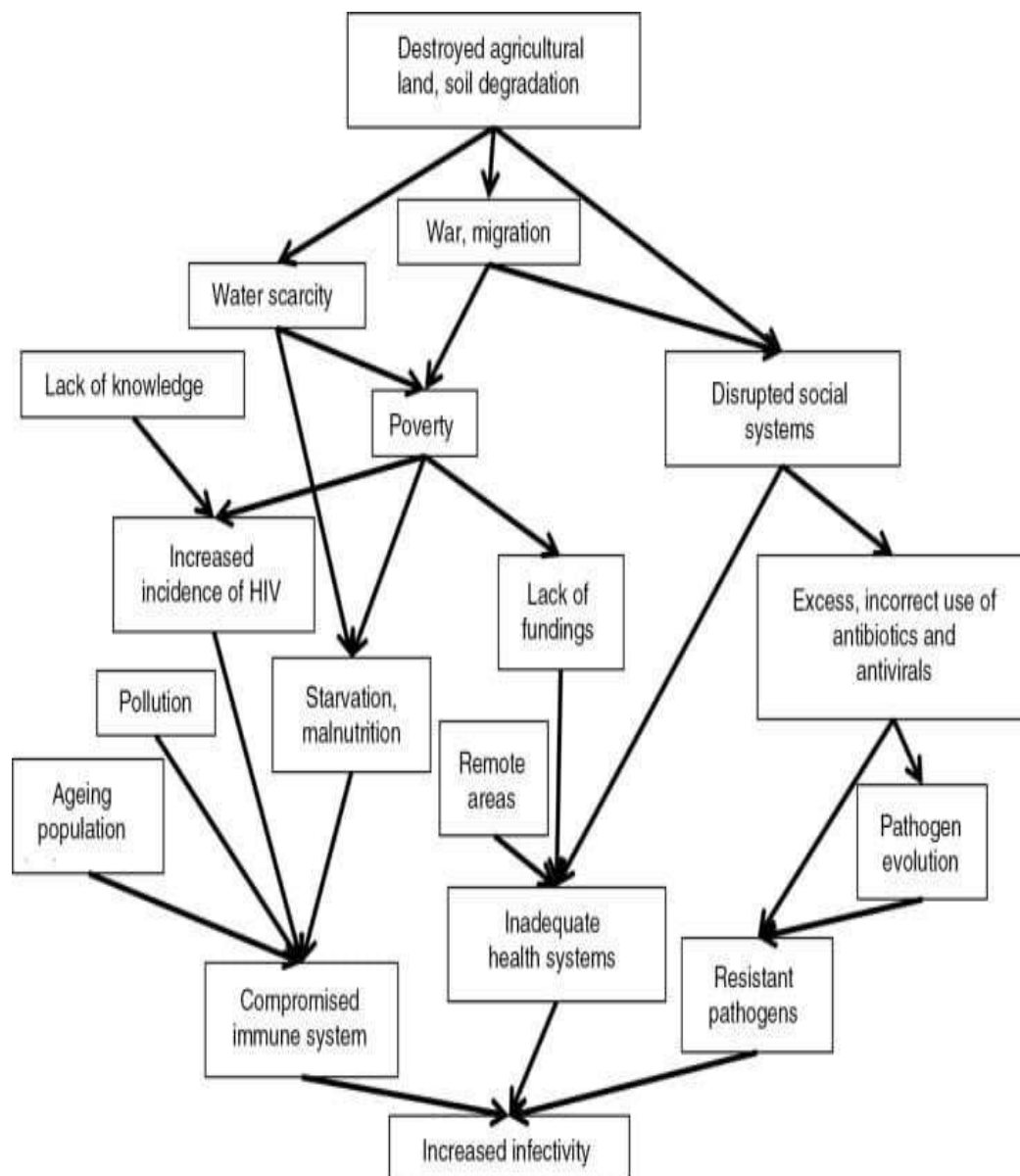
### A. Factor increasing the risk of exposure

A major factor in the risk of exposure to a pathogen already in place is the pattern of interaction between individuals, which depends on population density and behavior. Increasing urbanization, as well as intensified animal keeping increases exposure. For vector-borne pathogens, the risk of exposure is dependent on the abundance of the vector as well as the likelihood that these will feed on the appropriate host. Because of the variety of vector habitats and adaptability of vector species. It is difficult to exhaustively list all factors that may contribute to increases. Pathogens causing infections through food and water are likely to be influenced by social factors and may by climate changes. A framework showing factors to contributing exposure is shown :-



## B. FACTORS INCREASING INFECTIOUSNESS

How infectious an individual is following an infection and for how long time is dependent on factors in the infected individual, on the pathogen and the possibility in veterinary and medical care to cure the infection. A framework showing factors contributing to increased infectivity is shown in the figure below:-



Source – Johanna F. Lindahl, DVM Ph.D and Delia Grace, DVM PHD (2015)





## Contagion: Fighting the Invisible

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Throughout human history infectious diseases have been responsible for wiping out huge swathes of human populations - more than war, famine, or any other modality traceable to anthropogenic factors. Our prehistoric ancestors had to battle with large predators in the wild in order to survive. In modern times, our battles are fought in sterile medical laboratories, under microscopes, and against predators that measure in microns but are nevertheless so deadly that they are capable of wiping out entire human populations with frightening speed. These microbes multiply so fast and damage the body at such a basic, cellular level that they have proved to wreak more havoc than any conventional deadly predator.

Microbes are of course nothing new to Nature. They are older than all life on earth. There is evidence that 3.45-billion-year-old Australian rocks once contained microorganisms, the earliest direct evidence of life on Earth.<sup>1</sup> Microbes are also the most populous species on the earth. The number of viruses on Earth is estimated to be around 10<sup>31</sup>, which corresponds to roughly ten billion times the number of stars in the universe. <sup>2</sup> They are around us, in fact within us, to the extent that the bacteria in our bodies actually outnumber the number of human cells, specifically; there are 10 microbes to every human cell. They perform important functions in the body, boost our immune system, protect us from auto immune diseases, help us digest our food, and in the process, they affect not only our physical health but also our mental health.

Some microbes are certainly our friends, but others have proven to be deadly enemies. Though most bacteria inhabiting the human body share a symbiotic relationship with us, sometimes virulent pathogens find their way into our system and multiply rapidly, causing infection, disease, and sometimes even death. Infectious diseases have killed well over half of all humans who have ever lived on earth.<sup>3</sup>

So what is it that makes some microbes so deadly? When does a virus or bacteria evolve into a pathogen? In biology, a pathogen is agent that can produce disease. Typically, the term is used to describe an infectious microorganism, and the multitudes of viruses and bacteria inhabiting the earth are not classified as pathogens until they inhabit a host and start to manifest symptoms of disease. So, a pathogen is defined as “an organism causing disease to its host, with the severity of the disease symptoms referred to as virulence. Pathogens are taxonomically widely diverse and comprise viruses and bacteria as well as unicellular and multicellular eukaryotes.”<sup>4</sup>

Among the trillions of microbes that inhabit the earth, only about 1,400 are known human pathogens.<sup>5</sup> Most microbes are harmless or neutral with respect to humans and some are in fact highly beneficial. Among the pathogenic variety some infect humans only accidentally - chiefly through contamination (for instance *E. coli*). They come under the category of facultative pathogens, for which the host is non-essential to the life cycle. At the other end of the spectrum are obligate pathogens, which require a living host to complete their life cycle. They remain in an attenuated state till they find a living host and then multiply rapidly. These types of pathogens are mostly viruses but some bacteria also fall under this category (for instance the tuberculosis bacterium).

Thus, it is the chiefly the obligate microbes that cause virulence – a serious, often deadly manifestation of disease. Obligate pathogens often require multiple hosts to complete their life cycles – a primary host (that is most often a vertebrate) and a secondary/intermediate host (generally an arthropod or a mollusc). Examples of such pathogens are the zika virus and the malarial parasite. One example of large scale decimation of human population by an obligate pathogen is the well-known plague bacterium (*Yersinia pestis*) whose life cycle involves alternating infections of rodents and fleas but which can infect any mammalian host. The bubonic plague that ravaged Europe in the 14th century is a well-known instance of an epidemic caused by plague - infected fleas.

Worldwide, 16 million people die from infectious diseases every year.<sup>6</sup> In fact, infectious diseases have caused so much havoc during the course of human history that they have been responsible for large scale changes in human demography. They have killed well over half of all humans have ever lived on earth. They have led to the rise and fall of civilizations, economic collapse of ancient societies, mass migrations (around one million Irish people died and another million migrated to the US to escape the famine caused by *Phytophthora infestans*) destroying potato harvests between 1845 and 1852,<sup>7</sup> and even decimation of entire ethnic groups - for instance the native indigenous population of the Americas was particularly vulnerable to the measles and small pox that the Spanish invaders from Europe brought along with them, having had no previous exposure to these diseases and consequently not having developed any immunity towards them.

The question now arises – how do pathogens cause disease? Pathogens can cause a wide range of symptoms – ranging from merely mild inconvenience to certain death. Research has concluded that pathogens create toxins during their replication process, and it is these toxins that then damage the cells and tissues of the host. Bacterial toxins are among the deadliest poisons known to man and include famous examples such as tetanus, anthrax or the botulinum toxin, known as Botox in its commercial application.<sup>8</sup> Often the immune response in response to a pathogen is so strong (a cytokine storm) that it is this that kills rather than the virus itself. An example is “the 1918–1919 influenza epidemic, where the toll was highest amongst the young and healthy possibly because they mounted the strongest immune response and as such died from a ‘cytokine storm’ in the lungs leaving patients literally drowning in their own body fluids.”<sup>9</sup>

Even microbes that affect species other than humans are potential pathogens for humans, because all pathogens undergo mutations, with the result that disease that exists only in a particular species can after a few mutations become capable of infecting another. For instance “avian influenza is only around five mutations away from being able to transmit in mammals.”<sup>10</sup>

In order to be well equipped to fight these pathogens, we need to understand where do pathogens come from, and what are the factors that enable them to take over of a human host. Science is fairly certain that most pathogens afflicting human hosts jump from some wild or domesticated animal. Therefore, “The traditional view has been that many human pathogens

emerged during the Neolithic revolution,”<sup>11</sup> when man first started domesticating animals and human population started to become denser due to a progressively agrarian lifestyle.

Domesticated animals, which include pets, have the highest number of shared viruses with humans.<sup>12</sup> Viruses inhabiting these animals can jump ship through direct contact with body fluids like blood, urine, mucus, faeces etc. The thing is that in the case of zoonotic pathogens (those that normally exist in animals but that can infect humans), the species which initially hosted the virus is relevantly immune to it, because “viruses and their initial hosts have evolved together, and so the species has had time to build up resistance. Sometimes a pathogen adapts in a manner that it becomes deadly in one species while remaining benign in another. A new host species, on the other hand, might not have evolved the ability to tackle the virus. For example, when we come into contact with bats and their viruses, we may develop rabies or Ebola virus disease, while the bats themselves are less affected.”<sup>13</sup> On the other hand, the new host species (humans) has not had much time to adapt to the new pathogen so the manifestation of virulence is generally severe and in fact often fatal. That is probably the reason that viruses from wildlife hosts have been responsible for several high-impact diseases such as SARS, Ebola fever, the Zika Virus, and Influenza. The importance of viral host switching is underscored by the recent avian epizootics of high-pathogenicity strains of H5N1 influenza A, in which hundreds of “spillover” human cases and deaths have been documented.<sup>14</sup>

In view of all this information, the most imperative challenge that we face today is to understand and limit the crossover of pathogens to human hosts. Science tells that contact between humans and wildlife can result in viruses jumping from an animal host to a human one, as “contact between donor and recipient hosts is a precondition for virus transfer and is therefore affected by the geographical, ecological, and behavioural separation of the donor and recipient hosts.”<sup>15</sup> Not surprisingly, it’s likely that bats were the original source of three recently emerged corona viruses: SARS-CoV (2003), MERS-CoV (2012) and SARS-CoV-2, the cause of the 2019-20 corona virus outbreak.<sup>16</sup> In the case of Covid-19, because it has been established that the outbreak began at the Wuhan wet market and it was there that Patient Zero was reported, there is particular reason to believe that the virus, which is found in bats (but does not cause virulence in the bats), was able to infect human hosts due to the close handling of bats.

The most pertinent question now is - how can we reduce the risk of transmission of zoonotic pathogens? A very simple solution to the problem is of course that we limit contact with live animals, especially wild animals. But this is easier in theory than in practice. Human greed, which has accelerated the hunting and trading of wild life, the degradation of wild habitats due to increased human encroachment and activity and increased urbanisation have all contributed to an increased proximity to the wild. Even benevolent human activities – like monitoring and caring for endangered species in order to bring about their population recovery- bring humans into close proximity to wildlife. It is therefore not farfetched to connect infectious disease to environmental change. Christine Kreuder Johnson says, “Spillover of viruses from animals is a direct result of our actions involving wildlife and their habitat. The consequence is they’re sharing their viruses with us. These actions simultaneously threaten species survival and increase the risk of spillover. In an unfortunate convergence of many factors, this brings about the kind of mess we’re in now.”<sup>17</sup>

There is no doubt that with the advancements in modern science and our increased knowledge of what causes disease and pathology, as a society we now have a much better comprehension of how infection spreads and we are consequently much better equipped from a medical perspective to control such infections. Some diseases that killed millions of people - like smallpox - have now been eradicated. Consequently, in present times the leading cause of mortality is not infectious disease but what are classified as lifestyle diseases - cancer, diabetes, hypertension, heart disease, etc. Nevertheless, every couple of years or so a new virus emerges, which causes widespread devastation- at least until a vaccine can be found - because between the time from the emergence of a new pathogen till the time that science is able to neutralize it, modern humans remain as helpless as their ancestors were.

A new parameter that has arisen with regard to the containment of infectious diseases is that as the borders of the earth have shrunk owing to the ease of air travel over the past few decades, limiting virulent epidemics to a local population has become more of a challenge than ever before. Disease is now capable of being transmitted not just locally but across seas and continents. That is why instead of epidemics we now have ‘pandemics’, which recognize neither national or international borders nor any cast, creed, or ethnicity. At no other time in human history has this fact been more relevant than it is today, in the light of the covid-19 epidemic and the way in which has taken over the world, country after country, continent after

continent. Everyday new figures emerge - at the time of writing this paper the numbers stand at 3,594,326 people infected worldwide and a staggering 249,213 deaths.<sup>18</sup>

One microscopic entity has brought the human race to its knees, and as a race we will have to adapt if we wish to survive. As the corona virus continues to shut down our world as we know it, there will inevitably be certain irreversible changes in our lifestyles, and what constitutes the new 'normal' may be so different from our lives before Covid - 19 that many of our modalities will change forever. Our very thought process will change forever. There is bound to be a certain amount of paranoia, heartbreak, loss of faith, depression, and hopelessness, because this kind of event is unprecedented in human history. It will undoubtedly cause unavoidable collateral damage and will have a clear before and after. As science battles for answers, hundreds are dying every day. Developing herd immunity may not be the solution to this pandemic because its mortality rate is so high that millions more will have to die before herd immunity can be achieved. Therefore, while researchers all over the globe are racing to find a vaccine to contain the virus, our lives have become reduced to just the basics, and all superfluties have fallen by the wayside, as we batten down our hatches and prepare to face our worst fear – our mortality, and the realisation of how fragile life truly is.

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आज सम्पूर्ण विष्व कोरोना विषाणुमहामारी की मार से कराह रहा है। इस विषाणु से 01 मई 2020 तक 2 लाख, 28 हजार लोगों की जान जा चुकी है तो वहीं 32 लाख, 20 हजार लोग इससे ग्रसित हैं। लगभग पूरे विश्व में 'ताला बन्दी' के वाबजूद संक्रमण का सिलसिला रुकने का नाम नहीं ले रहा है। विभिन्न देशों की सरकारों ने लगभग सभी औद्योगिक गतिविधियों को बन्द करके कठोरतम कार्यवाही को अन्जाम दिया है। जिससे अनेक देशों की अर्थव्यवस्थाओं के रसातल में जाने के पूर्वाभासी आँकड़े नजर आ रहे हैं। वाबजूद इसके इस महामारी से निपटने के सभी उपाय अभी तक न्यूनतम परिणाम ही दिला सके हैं। निश्चय ही इस भयाभय समस्या ने मानव जाति के सम्मुख उसके अस्तित्व पर प्रश्न चिह्नंकित कर दिया है।

यद्यपि विश्व भर के वैज्ञानिक अभी यह निर्णय लेने में असमर्थ हैं कि कोरोना विषाणु का स्रोत क्या है? क्या यह प्राकृतिक है अथवा कृत्रिम। तथापि विविध मत-मतान्तर के वाबजूद इतना तो कहा जा सकता है कि यह महामारी कहीं-न-कहीं मानवीय गतिविधियों के अतिक्रमण के फलस्वरूप होने वाले पर्यावरणीय असंतुलन अथवा अविरल अन्वेषणों का नतीजा है। अविरल अनुसंधान, औद्योगिक कृषि, औद्योगिक उत्पादन, जनसंख्या वृद्धि, वृक्षों का कटान, बढ़ती असंयमित मांसाहारी प्रवृत्ति, शहरी लोगों का पशु-प्रेम आदि ऐसे कारण हैं जिसके परिणामस्वरूप पर्यावरण में असंतुलन उत्पन्न हुआ है। कोरोना वायरस संक्रमण के फैलाव के सम्बन्ध में कुछ वैज्ञानिक मानव और जीव-जन्तु सहचर सम्बन्ध को स्वीकारते हैं। इतना ही नहीं 'विश्व स्वास्थ्य संगठन' की एक रिपोर्ट भी ऐसी ही धारणा को पुष्ट करती है।

वर्ष 2018 में अन्तर्राष्ट्रीय स्वास्थ्य संस्था 'विश्व स्वास्थ्य संगठन' (डब्ल्यू.एच.ओ.) ने 10 संक्रामक रोगों की एक सूची बनायी थी। इस सूची में जीका, इबोला, सार्स आदि विषाणुओं के अतिरिक्त अज्ञात 'एक्स' विषाणु भी शामिल था। इस रिपोर्ट के सन्दर्भ में कहा गया था कि 'इस सूची मेंसे कोई एक विषाणु वैश्विक महामारी का खतरा बन सकता है।' <sup>1</sup> किन्तु उस समय उक्त सूची और उसमें प्रस्तुत रिपोर्ट को गम्भीरता से नहीं लिया गया और न ही उसके कारकों को गम्भीरता से जाँचा-परखा गया। डब्ल्यू.एच.ओ. की ओर से सूची बनाने वाले सदस्यों में से एक पीटर दासज्क ने 'न्यूयार्क टाइम्स' में लिखा था कि "उनकी टीम ने अनुमान लगाया था कि डिजीज एक्स जानवरों से उत्पन्न होने वाली एक वायरल डिजीज होगी और ऐसी जगह पर उभरेगी, जहाँ आर्थिक विकास ने लोगों और वन्यजीवों को एक साथ जोड़ा है।" <sup>2</sup>



वस्तुतः कोरोना वायरस के संक्रमण का स्रोत बिंदु क्या है? इसके सन्दर्भ में प्रामाणिक रूप से अभी कुछ भी कहना अपरिपक्वता होगी और यह मानव तथा वन्यजीवों के साहचर्य से विस्तारित हुआ है, इस सन्दर्भ में भी स्पष्टता से नहीं कहा जा सकता क्योंकि 'आज हमारे वैज्ञानिकों के पास जूनोटिक(पशुओं से मनुष्यों में संचारित रोग) रोगों के संक्रमण को फैलाने वाले करोड़ों विषाणुओं में से मात्र 260 विषाणुओं की सूचना है जो जूनोटिक वायरस की कुल संख्या का 0.1 फीसदी है।'<sup>3</sup>

किन्तु इस विश्लेषण के पश्चात् यह प्रश्न स्वाभाविक है कि जब हम मंगल ग्रह और चन्द्रमा पर जीवन की संभावनाओं को तलाश रहे हैं तो ऐसी दशा में एक अदृष्ट सूक्ष्म जीव पृथ्वी पर ही हमारे जीवन की संभावनाओं को क्षीण कर रहा है या करने का प्रयास कर रहा है। मानव स्वास्थ्य की इन विषम परिस्थितियों में पर्यावरणीय विद्वजन आज इस भीषण महामारी का कारण पारिस्थितिक तंत्र के असंतुलन व पर्यावरणीय क्षरण को ही मानकर चल रहे हैं। यद्यपि ऐसा मानना जल्दबाजी होगी फिर भी इतना तो दावे के साथ कहा जा सकता है कि वासरस के प्रकाट्य के पीछे वैज्ञानिक प्रयोग और असंतुलित मानवीय क्रिया-व्यापार ही उत्तरदायी हैं। वास्तव में वैज्ञानिकता के अंध मोह में हम पारिस्थितिक तंत्र और पर्यावरणीय स्वास्थ्य को नजर अंदाज करते रहे हैं। जिसका भीषण परिणाम आज समस्त विश्व के सम्मुख मुँह फैलाये खड़ा है। जिसने लगभग सभी देशों की स्वास्थ्य सुविधाओं को बौना साबित कर दिया है।

सर्वप्रथम तो ऐसी समस्याओं से निपटने के लिए हमें प्रकृति को आजादी देनी होगी। इसके लिए हमें हमारे पर्यावरण और जीव-जन्तुओं की रक्षा हेतु 'विश्व पशु संगठन' (ओ.आई.ई.) द्वारा प्रस्तावित 'वन हेल्थ पॉलिसी' को अपनी नीतियों का अभिन्न अंग बनाना होगा। 'वन हेल्थ पॉलिसी' की अवधारणा के अन्तर्गत माना गया है कि मानव स्वास्थ्य और पशुओं व पर्यावरण के स्वास्थ्य एक-दूसरे से गहनता से जुड़े हैं। अतः हमारा कर्तव्य है कि मानव कल्याण और प्रकृति की अक्षुण्णता के लिए इस नीति को धारण करें और इसका अक्षरशः पालन करें। इसमें किसी भी तरह का असंतुलन और अव्यवस्था पैदा न होने दें। इन प्रयासों के परिणामस्वरूप हम विश्व में प्रकृति, मानव और जीव के मध्य संतुलन बना सकेंगे। पारिस्थितिकीय संतुलन के बिना जीवन से जुड़ी परिस्थितियाँ जटिल हुई हैं और वे हमारे सामने प्रस्तुत हैं। अतः मानव को ऐसी समस्याओं से निपटने के लिए प्रभावी कदम उठाने ही होंगे।

आज पारितंत्र तथा पर्यावरण के क्षरण का प्रभाव सर्वत्र देखने को मिलता है। वनों का ह्रास निरन्तर गतिशील है। औद्योगिक कृषि को बढ़ावा देने के लिए, विकास के लिए, निवास के लिए वनों को काटना मामूली बात हो गयी है। जिससे जंगली पशुओं के लिए रहने का स्थान क्षीण होता जा रहा है। दूसरी ओर मानव की भोग प्रवृत्ति अनाप-शनाप हुई है। जिसने प्रकृति के संतुलन में खलल उत्पन्न किया है। जिसका परिणाम मानव समाज जब तक भोगता रहता है। जीका वायरस, इबोला वायरस, निपाह वायरस, सार्स आदि कुछ ऐसे ही प्रकृति के शान्त प्रहार है जिसके बाद भी मनुष्य चेता नहीं है। इन विषाणुओं के संक्रमण के फलस्वरूप अनगिनत मनुष्य अकाल ही काल के शिकार हुए हैं। इन संक्रमणों के फैलाव और मनुष्यों की इनसे असमय मृत्यु के सम्बन्ध में ओ.आई.ई. अपनी रिपोर्ट में कहती है कि मानव समाज में संक्रमण रोगों का 60 फीसदी भाग जूनोटिक रोगों के कारण होता है। जिसमें मानव भोजन, पानी या पर्यावरण के माध्यम से संक्रमित होते हैं। इसके अलावा उभरते मानव संक्रामक रोगों में 75 प्रतिशत रोगों की उत्पत्ति का कारण पशु समाज है। प्रतिवर्ष पाँच नए मानव रोगों में से तीन जानवरों से उत्पन्न होते हैं। आज मानव विकास की अन्धी दौड़ में सम्मिलित होकर जंगलों को समाप्त करता जा रहा है जिसका परिणाम यह हुआ है कि मानव और जीव-जन्तुओं में निकटता आई है, साथ ही इस कारण मानव तथा पशुओं में संघर्ष की स्थिति को देखा जा सकता है। इसके अतिरिक्त अनेक अज्ञात संक्रमणों से ग्रसित पशु जब मानव समाज के सम्पर्क में आते

हैं तो मानव को भी संक्रमण की चपेट में ले लेते हैं। जिसका मानव स्वास्थ्य पर प्रतिकूल प्रभाव पड़ता है। इन्हीं कारणों सेमानवों में संक्रमित रोगों की संख्या में वृद्धि देखी जाती रही है। इस सन्दर्भ में भारत सरकार के मत्स्य, पशुपालन और डेयरी विभाग के पूर्व सचिव तरुण श्रीधर लिखते हैं कि "दुनिया के अन्य देशों की तरह भारत में भी जानवरों और मनुष्यों के बीच असुविधाजनक निकटता बढ़ी है। हमारे देश में मानव और पशु आबादी लगभग बराबर है। 2011 की जनगणना के अनुसार भारत में 121 करोड़ लोग हैं, जबकि 125.5 करोड़ पशुधन और कुक्कुट हैं। सरकारी क्षेत्र में विभिन्न स्तरों पर 1.90 लाख स्वास्थ्य संस्थानों का एक बड़ा नेटवर्क है। यह स्वास्थ्य प्रशासन की रीढ़ का निर्माण करता है। इसे बड़ी संख्या में निजी स्वास्थ्य सुविधाओं का साथ भी मिलता है। बड़े-बड़े अस्पताल हैं। दूसरी ओर केवल 65,000 पशु चिकित्सा संस्थान करोड़ों पशुओं की स्वास्थ्य आवश्यकताओं को पूरा करते हैं। इसमें 20,000 मोबाइल औषधालय और प्राथमिक चिकित्सा केंद्र शामिल हैं, जिनमें न्यूनतम सुविधाएँ हैं।"<sup>4</sup>

इस तरह तरुण श्रीधर महोदय विषय को दूसरी ओर मोड़ देते हैं, वह है जीव-जन्तुओं के स्वास्थ्य की अनदेखी और उनके लिए सुविधाओं का अभाव अथवा यों कहें कि पारिस्थितिक तंत्र की उपेक्षा। निस्संदेह पारितंत्र के अन्तर्गत पर्यावरण और जीव-जन्तु समाहित हो जाते हैं। उसी पर्यावरण और जीव स्वास्थ्य को लेकर हमारी तथा हमारी सरकारों की लचर प्रवृत्ति संक्रामक रोगों की वृद्धि में सहायक होती है। प्रत्येक नागरिक के साथ-साथ देशों के नीति नियंताओं को भी पर्यावरण और जीव स्वास्थ्य के लिए कदम बढ़ाना चाहिए। किन्तु ऐसा नहीं हो पा रहा है। हाल ही में वित्तीय बजट 2020-21 आया है जिसमें न सिर्फ भारत अपितु सम्पन्न देश अमेरिका ने अपने बजट में पर्यावरण संरक्षण हेतु अत्यल्प राशि आवंटित की है जो इस बात की साक्षी है कि हम अभी भी इस समस्या के प्रति जागरुक नहीं हैं।

देशके नीति-नियंताओं से अपेक्षित है कि जिस तरह अन्य व्यवस्थाओं और मानव कल्याण के लिए राजकोष से धन आवंटित होता है वैसा ही पर्यावरण की सुरक्षा में भी होना चाहिए। प्रयास तो यह होने चाहिए कि पर्यावरण की सुरक्षा हमारी प्राथमिकताओं में शामिल होनी चाहिए। किन्तु ऐसा नहीं है। यदि हम केंद्रीय बजट 2020-2021 पर दृष्टिपात करें तो हमें ज्ञात होता है कि मानव स्वास्थ्य सुविधाओं के लिए 67,112 करोड़ रुपयों का आवंटन किया गया है। जिसमें भारत के प्रत्येक जिले में आयुष्मान भारत के अस्पताल खोलने का निर्णय लिया गया है। वर्ष 2024 तक लक्ष्य रखा गया है कि प्रत्येक जिले में जन आरोग्य औषधि केंद्र की स्थापना की जाए जिसमें 2 हजार दवाइयाँ और 3 हजार सर्जिकल्स उपलब्ध होंगे। वहीं यदि पर्यावरण के संरक्षण की बात की जाए तो भारत सरकार के केंद्रीय बजट में मात्र 4400 करोड़ रुपये आवंटित किए गए हैं। जिसमें भी 7,71,821 वर्ग किमी पर आच्छादित वनों को संवर्धित और संरक्षित करने का जिम्मा है। इतना ही नहीं इसी राशि में 10 लाख से अधिक आबादी वाले शहरों की वायु गुणवत्ता में सुधार भी करना है। अब इस सन्दर्भ में ओ.आई.ई की रिपोर्ट को आधार बनाया जा सकता है। जिसमें कहा गया है कि मानव में लगभग 75 फीसदी रोगों के कारक पर्यावरण अथवा जूनोटिक रोग हैं। तो क्या स्वास्थ्य क्षेत्र में लगाया हुआ 67,112 करोड़ सिर्फ इसी लिए है कि पहलेमानव संक्रमित हो और हम अपनी बेहतर और सस्ती सुविधाओं से जान-माल की हानि को बचा सकें? यह सही है कि हमें अपनी स्वास्थ्य सुविधाएँ सुदृढ़ करनी चाहिए। लेकिन उसके साथ ही हमें पर्यावरण का भी ख्याल रखना होगा क्योंकि स्वस्थ मानव समाज के लिए स्वस्थ पर्यावरण भी महत्वपूर्ण है। नीति नियंताओं की पर्यावरण विषय की इसी उपेक्षिता के सन्दर्भ में 'अमर उजाला' के सम्पादक जयसिंह रावत लिखते हैं कि "अगर देश के सारे वन क्षेत्र के संरक्षण एवं संवर्धन के साथ ही प्रदूषित शहरों में स्वच्छ हवा सुनिश्चित करने के लिए सरकार के पास इतनी ही राशि है तो यह ऊंट के मुँह में जीरे के बराबर ही है। लगता है कि भारत सरकार ने अमेजन एवं

आस्ट्रेलिया के जंगलों में लगी आग से हुए वन्य संसार के महाविनाश से भी कोई सबक नहीं लिया। भारत में कमोवेश स्थिति भिन्न नहीं है।<sup>5</sup> इसी सन्दर्भ में ट्रम्प सरकार की पर्यावरण तथा लोकतांत्रिक सजगता पर भी दृष्टिपात कर लेते हैं। अमेरिका वित्तीय बजट में पर्यावरण के नाम पर मात्र 6.7 अरब डॉलर आवंटित किए गए हैं। गौरतलब है कि यह राशि पिछले वित्त वर्ष 2019–20 की अपेक्षा 26 प्रतिशत कम है।

उल्लेखनीय है कि 1917–1918 में जब स्पैनिश फ्लू का फैला था, तब भी आज की तरह भौतिक दूरी और स्कूल बंद करने जैसे आस्कमिक विकल्पों को अपनाया गया था। यह उपाय उस समय भी निःप्रभावी थे और आज भी महामारी को रोकने में निष्प्रभावी ही लग रहे हैं। इसमें साक्ष्य भारत का 'लॉक डाउन' मॉडल है क्योंकि जब भारत में लॉकडाउन लगा था तब मामलों की संख्या 400 के आसपास थी। लगभग 40 दिन के 'लॉक डाउन'के बाद 01 मई को संक्रमितों का आँकड़ा 35,365 के पार पहुँच गया है। निश्चित ही यह महामारी के प्रभाव को रोकने का आस्कमिक विकल्प हो सकता है किन्तु समस्या का समाधान नहीं है। इस विषय पर भारत सहित विश्व के सभी देशों को ध्यानाकृष्ट करने की आवश्यकता है।

वस्तुतः पर्यावरण संरक्षण को लेकर हमारी चेतना अभी भी लगता है जाग्रत नहीं हुई है। जब सम्पूर्ण विश्व एक भयंकर महामारी से जूझ रहा है और इस महामारी से उबरने के लिए 'ताला बन्दी', भौतिक दूरी, वस्तुओं, शहरों तथा हाथों को सैनिटाइज कर सजगता का परिचय प्रस्तुत कर रहा है तब क्यों पर्यावरणीय मुद्दों पर सजगता नहीं दिखाता? मानव जगत् का यही पर्यावरणीय उपेक्षित व्यवहार इस बात का साक्षी बना है कि जो मानव पूरी धरा का अधिपति बन बैठा था, आज घर बैठने को विवश है, तो दूसरी ओर प्रकृति आज मुस्कुरा रही है। देश के विभिन्न हिस्सों में सड़कों पर विचरित पशु आज राहत की सांस ले रहे हैं और स्वच्छन्द होकर विचरण कर रहे हैं। प्रकृति स्वयं को संवार रही है। अतः मानव को चाहिए कि इन परिस्थितियों से सबक ले और भविष्य में अपने हौसले को संयमित कर इस धरा के सभी जीव-जन्तुओं को भी विचरण का अधिकार दे। अन्यथा जिस प्रकार प्रकृति ने डायनासोर को इतिहास के पन्नों में समेट दिया है उसी तरह मानव को भी इतिहास के पन्नों में समेट सकती है।

अतः वर्तमान से हमें शिक्षा लेनी होगी कि ऐसे समय का सामना हमें दुबारा न करना पड़े इसलिए पर्यावरणीय प्रभाव और उसको प्रभावित करने वाले कारकों को समझना होगा। दूसरी ओर हमें पशु स्वास्थ्य संगठन के सुझाव को ध्यान में रखकर पशु चिकित्सालय बेहतर सुविधाओं से युक्त करने होंगे जिससे जूनोटिक रोगों की नौबत न आए। राष्ट्रीय बजटों में पर्यावरण संरक्षण हेतु राशि में वृद्धि करने के साथ-साथ 'वन हेल्थ पॉलिसी' को अपनी प्राथमिकताओं में शामिल कर उन पर अमल करना होगा।

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प्रदीप कुमार

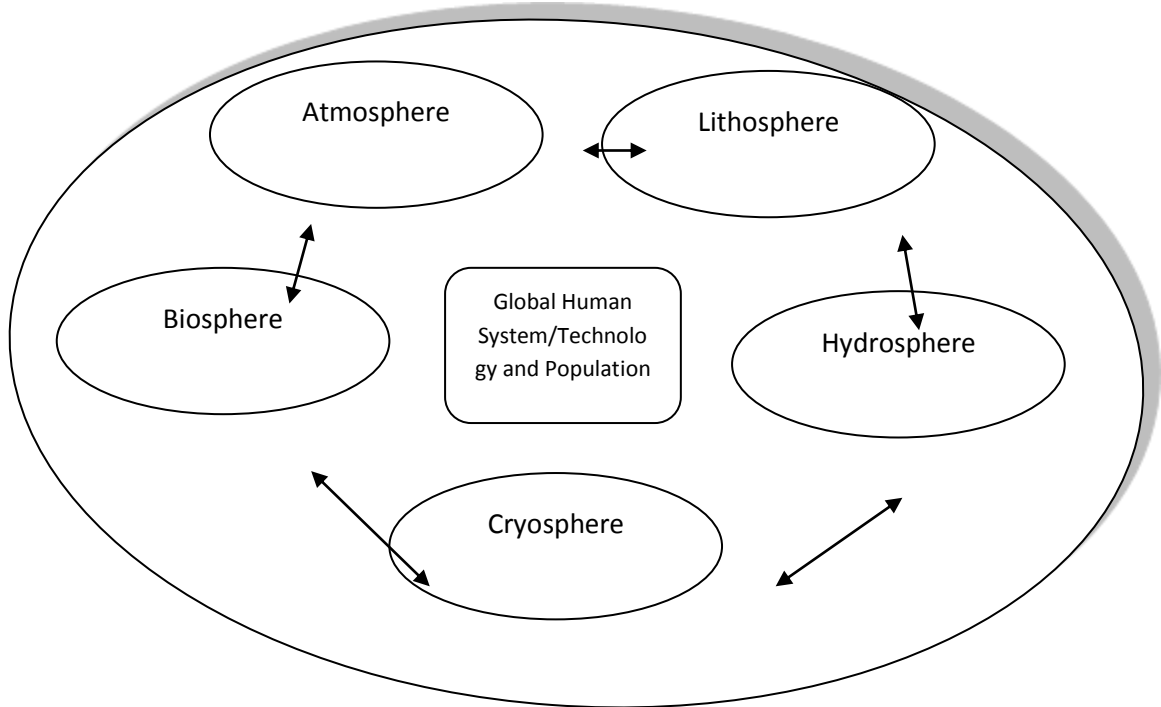
नियर बिरला स्कूल चिलियानौला  
रानीखेत, अल्मोड़ा (उत्तराखण्ड)

यह लेख विरोधाभासी विचारधारा पर एक नजर डालता है कि जहाँ पर्यावरण पर प्रौद्योगिकी का प्रभाव अत्याधिक नकारात्मक रहा है वहीं पर्यावरण की प्रौद्योगिकी की अवधारणा हमारे ग्रह को हुए नुकसान से बचा सकती है।

“प्रौद्योगिकी” शब्द व्यावहारिक उद्देश्यों के लिए वैज्ञानिक ज्ञान के अनुप्रयोग और परिणाम के रूप में विकसित मशीनरी और उपकरणों को संदर्भित करता है प्रौद्योगिकी व्यावहारिक और औद्योगिक कलाओं और प्रयुक्त विज्ञानों से संबंधित अध्ययन या विज्ञान का समूह है कई लोग तकनीकी और अभियांत्रिकी शब्द का एक दूसरे के लिए प्रयुक्त करते हैं जो लोग प्रौद्योगिकी को व्यवसाय रूप में अपनाते हैं उन्हें अभियंता कहा जाता है आदिकाल से मानव तकनीकी का प्रयोग करता आ रहा है आधुनिक सभ्यता के विकास में तकनीका का बहुत बड़ा योगदान रहा है जो समाज या राष्ट्र तकनीकी के रूप में सक्षम है वे सामरिक रूप से भी सबल होते हैं और देर-सबेर आर्थिक रूप से भी सबल बन जाते हैं। वर्तमान में हम तेजी से बदलाव के दौर में जी रहे हैं जहां तकनीकी विकास हमारे जीने के तरीके में क्रांति ला रहे हैं। वहीं जलवायु परिवर्तन और संसाधन की कमी के रूप में हमें तबाही की गहराई में आगे ले जा रहे हैं

i ; kbj .k vkš çks| kfxdh- पर्यावरण सभी व्यक्तियों और जीवित चीजों की चिंता करता है। औद्योगिक क्रांति के अपार शक्ति वाली नई तकनीकों को अपनाया गया है। इन तकनीकों ने हमारी दुनिया को मुख्य दो तरीकों से नुकसान पहुंचाया है। प्रदूषण और प्राकृतिक संसाधनों की कमी। पर्यावरण प्रौद्योगिकी हरी प्रौद्योगिकी या स्वच्छ प्रौद्योगिकी प्राकृतिक पर्यावरण और संसाधनों की निगरानी, मॉडल और संरक्षण और मानव भागीदारों के नकारात्मक प्रभावों को रोकने के लिए पर्यावरण विज्ञान हरी रसायन शास्त्र, पर्यावरण निगरानी और इलेक्ट्रॉनिक उपकरणों का एक या अधिक उपयोग है। यह शब्द टिकाऊ ऊर्जा उत्पादन प्रौद्योगिकियों जैसे फोटोवोल्टिक, पवन टरबाइन, बायोरेक्टर आदि का वर्णन करने के लिए भी प्रयोग किया जाता है। सतत् विकास पर्यावरण प्रौद्योगिकियों का केंद्र है। पर्यावरण प्रौद्योगिकियों का शब्द इलेक्ट्रॉनिक उपकरणों की एक कक्षा का वर्णन करने के लिए भी प्रयोग किया जाता है। जो संसाधनों के सतत् प्रबंधन को बढ़ावा दे सकता है। पर्यावरण प्रौद्योगिकी या इलेक्ट्रॉनिक प्रौद्योगिकी के रूप में भी जानी जाता है। पर्यावरण विज्ञान का एक अनुप्रयोग है। जिसके लिए उपकरण विकसित करना ही पर्यावरणीय उपचार पर्यावरण की सामान्य सुरक्षा के लिए प्रदूषण या दूषित पदार्थों को हटाने का है। यह विभिन्न रासायनिक जैविक और अनुसंधान (खोज) तरीको से पूरा किया जाता है।

प्रौद्योगिकी से पर्यावरण पर सकारात्मक और नकारात्मक दोनों प्रभाव पड़ते हैं वायु प्रदूषण, जल प्रदूषण और ध्वनि प्रदूषण आधुनिक तकनीक का उपयोग करने के कारण बढ़ गए हैं। प्रौद्योगिकी के कारण नए रोग फैलते जा रहे हैं। तकनीकी क्रांति के कारण प्राकृतिक संसाधन दुर्लभ होते जा रहे हैं।



वायु प्रदूषण तब होता है जब कार्बनडाई-ऑक्साइड (CO<sub>2</sub>), कार्बन मोनोऑक्साइड, सल्फर डाइऑक्साइड, नाइट्रिक ऑक्साइड और मिथेन जैसी हानिकारक गैसों अत्यधिक मात्रा में पृथ्वी के वातावरण में बढ़ जाती हैं मुख्य ये सभी स्रोत प्रौद्योगिकियों से संबंधित हैं जो औद्योगिक क्रांति के बाद यह ज्यादा हो गए हैं जैसे कि जीवाश्म ईंधन, कारखाने, बिजली स्टेशन बड़े पैमाने पर कृषि और वाहनों का चलाना इत्यादि। वायु प्रदूषण के परिणामों में मनुष्यों और जानवरों तथा ग्लोबल वार्मिंग के लिए नकारात्मक स्वास्थ्य प्रभाव शामिल हैं। जिससे पृथ्वी के वायुमंडल में वायु का जाल थर्मल ऊर्जा में ग्रीनहाउस गैसों की बढ़ती मात्रा और वैश्विक तापमान बढ़ने का कारण बनता है। दूसरी ओर जल प्रदूषण झीलों, नदियों, महासागरों और भूजल जैसे जल निकायों का प्रदूषण है। जो आमतौर पर मानव गतिविधियों के कारण होता है। सबसे व्यापक जल प्रदूषण में से कुछ घरेलू अपशिष्ट और कीटनाशक हैं।

संसाधन की कमी पर्यावरण पर प्रौद्योगिकी का एक और नकारात्मक प्रभाव है यह एक संसाधन की खपत को संदर्भित करता है। जिससे इसे फिर से भरा जा सके। प्राकृतिक संसाधन उन लोगों से मिलकर बनते हैं जो बिना इंसानों के अस्तित्व में हैं और वे अक्षय या गैर-नवीनीकरण हो सकते हैं। कई प्रकार के संसाधनों में कमी होती है। जिसमें सबसे गंभीर हैं एम्बीफर की कमी। वनों की कटाई, जीवाश्म ईंधन, और खनिजों के खनन, संसाधनों का दूषित होना। मिट्टी का कटाव और संसाधनों का अधिकार ये मुख्य रूप से कृषि, खनन, पानी के उपयोग और

जीवाश्म ईंधन की खपत के परिणामस्वरूप उत्पन्न होते हैं। जो सभी प्रौद्योगिकी में प्रगति द्वारा सक्षम किए जाते हैं।

पर्यावरण पर प्रौद्योगिकी के नकारात्मक प्रभाव के बावजूद हाल ही में जलवायु परिवर्तन के लिए वैश्विक चिंता में वृद्धि के कारण नई पर्यावरण प्रौद्योगिकी का विकास हुआ है। जिसका लक्ष्य कुछ सबसे बड़ी पर्यावरणीय चिंताओं का हल करने में मदद करना है जिससे हम एक बदलाव के माध्यम से समाज के रूप में अधिक टिकाऊ की ओर ले जा सकते हैं।

अक्षय ऊर्जा जिसे स्वच्छ ऊर्जा के रूप में भी जाना जाता है वह ऊर्जा है जो नवीनीकरण संसाधनों से एकत्र की जाती है जो प्राकृतिक रूप से सूर्य के प्रकाश, हवा बारिश, ज्वार, लहरों और भू-तापीय गर्मी जैसी होती है। आधुनिक पर्यावरणीय प्रौद्योगिकी ने हमें इस प्राकृतिक रूप से होने वाली ऊर्जा को पकड़ने और सौर पैनलों पवन और पानी टर्बाइन जैसे उपकरणों के माध्यम से बिजली या उपयोगी गर्मी में परिवर्तित करने में सक्षम बनाया है जो पर्यावरण पर प्रौद्योगिकी के सकारात्मक प्रभाव को दर्शाता है। 2015 में कोयला से आगे निकलने के बाद बिजली का हमारा दूसरा सबसे बड़ा जनरेटर बनने के लिए नवीनीकरण स्रोत वर्तमान में ब्रिटेन की 20% से अधिक बिजली का उत्पादन करते हैं। और यूरोपीय संघ के लक्ष्य का मतलब है कि यह 2020 तक 30% तक बढ़ने की संभावना है जबकि कई नवीकरणीय ऊर्जा परियोजनाएं इससे भी बड़ी हैं।

आधुनिक तकनीके ऐसे उपकरणों का उपयोग करता है जैसे कि इंटरनेट ऑफ थिंग्स का प्रयोग आजकल काफी किया जा रहा है। इसकी मदद से हम दूर रहकर सेंसर की मदद से किसी भी जानकारी को अपने तक पहुंचा सकते हैं तथा उस जानकारी का बेहतर प्रयोग पर्यावरण के लिए व खुद की बचत के लिए किया जा सकता है। इंटरनेट ऑफ थिंग्स (IOT) इंटरनेट से जुड़ी वस्तुओं का एक नेटवर्क है जो एंबेडेड सेंसर प्रौद्योगिकियों का उपयोग करके डाटा एकत्र और विनिमय करने में सक्षम है। यह डाटा वास्तविक समय की जानकारी के आधार पर नेटवर्क में उपकरणों को स्वायत्त रूप से निर्णय लेने की अनुमति देता है। उदाहरण के लिए बुद्धिमान प्रकाश व्यवस्था केवल उन क्षेत्रों को रोशन करती है जिनके लिए इसकी आवश्यकता होती है और एक स्मार्ट थर्मोस्टेट दिन में निश्चित समय के दौरान घरों के तापमान को निश्चित रखता है। इसीलिए अपव्यय को कम करता है। यह पर्यावरण प्रौद्योगिकी इमारतों और शहरों में वाई-फाई, ब्लूटूथ और स्मार्ट सेंसर की उपलब्धता में वृद्धि के परिणामस्वरूप इंटरनेट से बढ़ती कनेक्टिविटी द्वारा क्षमता की गई है। विशेषज्ञ भविष्यवाणी कर रहे हैं कि भविष्य में शहर ऐसे स्थान होंगे। जहां पर कार, फोन, एयर कंडीशनर प्रकाश और बहुत कुछ परस्पर जुड़े हुए हैं जो ऊर्जा कुशल स्मार्ट शहरों की अवधारणा को सामने ला रहे हैं। इंटरनेट की तकनीक आगे पर्यावरण पर प्रौद्योगिकी के सकारात्मक प्रभाव को प्रदर्शित करती है। इस तथ्य के कारण कि सोशल मीडिया वैश्विक मुद्दे के बारे में जागरूकता बढ़ा सकता है। और दुनिया भर में आभासी प्रयोगशालाएं बनाई जा सकती हैं। विभिन्न क्षेत्रों के विशेषज्ञ बेहतर समाधान के साथ आने के लिए अपने अनुसंधान, अनुभव और विचारों को दूरस्थ रूप से साझा कर सकते हैं। इसकी अलावा, मात्रा को कम किया जा सकता है। क्योंकि मित्रों और परिवारों के बीच बैठकों/संचारों को वस्तुतः किया जा सकता है। जो परिवहन उत्सर्जन प्रदूषण को कम कर सकता है।

इलेक्ट्रिक वाहन की पर्यावरण प्रौद्योगिक एक या अधिक इलेक्ट्रिक मोटर्स द्वारा संचालित होती है। जो रिचार्जबल बैटरी में संग्रहित ऊर्जा का उपयोग करती है। 2008 के बाद से वायु प्रदूषण और वायुमंडल में ग्रीनहाउस गैसों जैसे पर्यावरण संबंधी चिंताओं को कम करने की इच्छा के कारण इलेक्ट्रिक वाहनों के निर्माण में तेजी हुई है।

इलेक्ट्रिक वाहन पर्यावरण पर प्रौद्योगिकी के सकारात्मक प्रभाव को प्रदर्शित करते हैं क्योंकि वे कार्बन उत्सर्जन का उत्पादन नहीं करते हैं। जो ग्रीनहाउस प्रभाव की ओर एक प्रमुख योगदान देता है और ग्लोबल वार्मिंग की ओर ले जाते हैं। इसके अलावा वे वायु प्रदूषण में योगदान नहीं करते हैं। जिनका अर्थ है कि वे बीमार हैं और मानव स्वास्थ्य, जानवरों, पौधों और पानी के लिए भी कम हानिकारक है। हाल ही में पर्यावरण पर प्रौद्योगिकी के आधार पर सरकार ने इलेक्ट्रिक वाहनों के परिचय को जानने और अपनाने को बढ़ावा देने के लिए प्लग-इन वाहनों पर टैक्स, क्रेडिट और सब्सिडी को प्रोत्साहित किया है।

**D.A.C (Direct air catcher)-** वातावरण से कार्बन को हटाने वाली पर्यावरणीय तकनीक थोड़ी अधिक महत्वकांक्षी तकनीक के साथ निष्कर्ष निकालने के लिए कार्बन डाइऑक्साइड को वायुमंडल से सीधे खींचने का विचार वर्षों से जलवायु परिवर्तन शमन अनुसंधान को प्रसारित कर रहा है। हालांकि यह केवल हाल ही में लागू किया गया है और अभी भी विकास के प्रारंभिक चरण में है।

पर्यावरण प्रौद्योगिकी को डायरेक्ट एयर कैचर के रूप में जाना जाता है और यह प्रक्रिया वायु से सीधे कार्बन डाइऑक्साइड को कैचर करने और सीक्वेंस स्टेशन या उपयोग के लिए CO<sub>2</sub> की एक केंद्रित धारा उत्पन्न करने की प्रक्रिया है। फिर कई बड़े-बड़े पंखों द्वारा फिल्टर के माध्यम से हवा को धक्का दिया जाता है। जहां CO<sub>2</sub> को हटा दिया जाता है। यह माना जाता है कि इस तकनीक का उपयोग वितरित स्रोतों से उत्सर्जन को प्रबंधित करने के लिए किया जा सकता है। जैसे कारों से निकालने वाला धुआ। पूर्ण पैमाने पर डी0ए0सी0 ऑपरेशन (250,000) ढाई लाख औसत कारों के वार्षिक उत्सर्जन में कार्बन डाइऑक्साइड के बराबर मात्रा को अवशोषित करने में सक्षम हैं।

जैसा कि प्रौद्योगिकी का सांस्कृतिक और समाज पर प्रभाव है। पर्यावरण पर प्रौद्योगिकी का प्रभाव सकारात्मक या नकारात्मक हो सकता है। औद्योगिक क्रांति और मानव की आबादी के तेजी से विकास के बाद से प्रौद्योगिकी का पर्यावरण पर व्यापक प्रभाव पड़ने की संभावना बढ़ गई है। नतीजान प्रौद्योगिकी और इंजीनियरिंग साक्षरता का एक अनिवार्य पहलू प्राकृतिक पर्यावरण पर प्रौद्योगिकी के प्रभावों और लोगों द्वारा प्राकृतिक आवासों को संरक्षित करने वायु और जल प्रदूषण को कम करने और बनाए रखने के लिए किए गए कई महत्वपूर्ण प्रयासों के बारे में कुछ सिद्धांतों की समझ है जो स्वास्थ्यप्रद वातावरण है।

प्रौद्योगिकी का उपयोग पर्यावरण को सकारात्मक या नकारात्मक रूप से प्रभावित कर सकता है।

- प्रौद्योगिकी का उपयोग पर्यावरण को सकारात्मक या नकारात्मक रूप से प्रभावित कर सकता है।
- कुछ तकनीकी निर्णय पर्यावरण और आर्थिक चिंताओं को एक दूसरे के साथ प्रतिस्पर्धा में रखते हैं। जबकि अन्य का अर्थव्यवस्था और पर्यावरण दोनों पर सकारात्मक प्रभाव पड़ता है।

- पुनः उपयोग, पुनर्चक्रण और कम संसाधनों का उपयोग करके पर्यावरणीय प्रभावों को कम किया जा सकता है।
- महासागरों, ताजे पानी और हवा जैसे संसाधनों जो सभी द्वारा साझा किए जाते हैं। उन्हें सावधानीपूर्वक योजना और तकनीक प्रणालियों के विनियमन द्वारा संरक्षित करने की आवश्यकता होती है।
- कुछ प्रौद्योगिकियों अन्य प्रौद्योगिकियों के नकारात्मक प्रभावों को कम कर सकती हैं।
- सतत समाधान वे हैं। जो भविष्य की पीढ़ियों को अपनी जरूरतों को पूरा करने की क्षमता से समझौता किए बिना वर्तमान की जरूरतों को पूरा करते हैं।

औद्योगिक क्रांति ने वित्तीय समृद्धि में असाधारण लाभ प्राप्त किया। 1870 और 1910 के बीच संयुक्त राज्य अमेरिका में प्रति व्यक्ति आय का लगभग 40% बढ़ी और विनिर्माण उत्पादन का मूल्य सात गुना बढ़ गया। फिर भी तेजी से औद्योगिकरण ने इसके मद्देनजर प्रदूषण को नियंत्रण में लाने के लिए पहले ठोस प्रयास किए जाने से पहले लगभग तीन पीढ़ियों का समय लगा। लेकिन एक बार शुरू होने के बाद प्रगति वास्तविक रही।

प्रौद्योगिकी दूसरे शब्दों में एक दो-धारी तलवार है। जो पर्यावरणीय गुणवत्ता को नुकसान पहुंचाने और भरने में सक्षम है। इस प्रकार हम चार प्रमुख क्षेत्रों में प्रौद्योगिकी और पर्यावरण को देखते हैं। ऊर्जा, जलवायु, जल की गुणवत्ता और अपशिष्ट सफाई प्रत्येक मामले में हम प्रौद्योगिकी के पर्यावरणीय निहितार्थों की दोहरी प्रकृति का वर्णन करते हैं। हम इंटरनेट और पर्यावरण की गुणवत्ता के बीच उभरते संबंधों को भी छूते हैं। एक बार फिर से दोनों तरीकों में कटौती होती है। हम तब ध्यान देते हैं कि कैसे प्रौद्योगिकी फैशन नीतियों में मदद कर रही है। जो उत्पादकों और उपभोक्ताओं को प्रौद्योगिकी की पर्यावरणीय लागतों को पहचानने और आंतरिक करने की अनुमति देती है। और इस प्रकार पर्यावरण को साफ करने के लिए नवाचार को बढ़ावा देती है। पिछले कुछ दशकों में मानव जाति के लिए पर्यावरणीय गिरावट एक सामान्य चिंता बन गई है वर्तमान में पर्यावरणीय समस्याओं की विशिष्ट प्रकृति यह है कि वे प्राकृतिक घटनाओं की तुलना में मानवजनित द्वारा अधिक होती हैं।

आज के समाज में अधिक लोग घंटों काम कर रहे हैं। इन लंबे घंटों और प्रौद्योगिकी के बढ़ते उपयोग के परिणामस्वरूप अधिक ऊर्जा की खपत हो रही है। यह पर्यावरण पर पड़ने वाला प्रभाव नकारात्मक और सकारात्मक दोनों तरीकों से पर्याप्त है। आधुनिक तकनीक ने दुनिया के लिए उद्योगों में और रोजमर्रा के जीवन में जो लाभ कमाए हैं। उन्हें समझना कठिन है। अधिक से अधिक तकनीकों की सफलताओं के साथ कई सकारात्मक परिस्थितिक प्रभाव भी हुए हैं। हालांकि इस बात से इंकार करना भी मुश्किल है कि इसके काफी नकारात्मक प्रभाव भी हैं। कार्यों में कमी की योजना के समर्थन में यह सुनिश्चित करते हैं कि घंटों में कमी का पर्यावरण और दैनिक आधार पर उपयोग किए जाने वाले कच्चे माल पर ही सकारात्मक प्रभाव पड़ेगा। इस सिद्धांत का मुकाबला करने के लिए तर्क देते हैं। कि घंटों में कमी से पर्यावरण को नुकसान नहीं होगा। हर साल प्रौद्योगिकी कम ऊर्जा उत्पादकों के उत्पादन में प्रगति कर रही है जो पर्यावरण के नुकसान कम करेगा





## **ENVIRONMENTAL AND SOCIAL DRIVERS OF INFECTIOUS DISEASES: IT'S IMPACT ON HUMAN HEALTH**

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### **INTRODUCTION**

Human activities are generating an ever accelerating wave of change in the natural environment, while new technologies and globalization continue to alter economic and social patterns across the planet. Globalization and environmental change, social and demographic factors, and health system capacities are all significant drivers of infectious diseases.<sup>1</sup> International travel and trade can facilitate the dispersal of vectors and pathogens to new areas that are increasingly climatically and environmentally suitable. Environmental factors, such as agriculture, irrigation, and deforestation, are other important determinants of emerging infectious diseases. Urbanization and urban sprawl have encroached upon agricultural and semi natural areas in Europe, and the trend is expected to continue in many places. One consequence of habitat destruction is the displacement of wildlife, sometimes into urban or abandoned environments, which can in turn affect human exposures to infectious pathogens. In light of this, it is imperative that the best scientific minds examine the potential of these momentous changes to exacerbate the spread of infectious diseases, so that the world's health systems are ready to respond. The world's poorest billion people tend to live in ecologically and socially risky environments, which are also where the prevalence of infectious disease is highest. Worldwide, nearly 900 million people do not have access to an

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<sup>1</sup>Suk JE, Semenza JC (2011) Future infectious disease threats to Europe. Am J Public Health 101: 2068–2079

improved water source, while an estimated 2.5 billion people – half of all people in developing countries – lack access to adequate sanitation. Experience shows that the poor are more vulnerable than anyone when natural disasters strike. They are least able to advocate for sustainable ecological initiatives and will suffer most as the deleterious effects of environmental and climate change increase. And yet the world's poorest billion are responsible for just 3% of the global carbon footprint. The impetus to act is at once moral, scientific and practical. For development to be sustainable, inclusive and effective in lifting people out of poverty, we need to find ways to address these inequities – particularly the links between environmental conditions and the infectious diseases that destroy so many lives and communities.<sup>2</sup>

Research can play a key role by informing the global community on the specific effects of social and other environmental drivers on infectious diseases and human health – helping us to anticipate what will happen in the decades to come. Such research may point to strategies for overcoming or at least mitigating the effects of the infectious diseases arising as a result of environmental change. Research to improve our understanding of environmental and social drivers of infectious diseases can lead to improved vector control measures and disease prevention. **Present paper is a modest attempt to explore environmental and social drivers of infectious diseases and its impact on human health.**

**CORE ENVIRONMENTAL AND SOCIAL DRIVERS OF INFECTIOUS DISEASES:** The environment plays a powerful role in the transmission of infectious diseases, including vector-borne diseases such as malaria, dengue, and other infectious diseases. It is therefore of huge significance to public health strategies around the world. Two particularly important aspects are socio-ecological systems and climate change. Growing evidence suggests that climate change will have substantial impact on already vulnerable populations. For instance, changes such as increased rainfall can affect African dry lands and so increase the burden of water-related vector-borne diseases in areas already susceptible to poverty.

Some core environmental and social drivers such as climate change, deforestation, urbanization, agriculture, hunger, conflict, migration and globalization have complex links to infectious

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<sup>2</sup>Anthony J McMichael ,UlissesConfalonieri: Environment, climate change, social factors and the implications for controlling infectious diseases of poverty46 Environment, climate change, social factors and the implications for controlling infectious diseases of poverty Chapter 2 Global Report for Research on Infectious Diseases of Poverty,2012

diseases and need to be addressed within an integrative ecological framework, based on the concept of “One World, One Health” that is historically associated with the complex interrelationship between human health, animal health and the environment. Some important environmental and social drivers of infectious diseases are discussed as follows:

**1- Deforestation:** Deforestation is a well-known driver of climate change — reducing green spaces in the world and often replacing it with towns or land for agriculture to accommodate or feed an ever-growing population. Over the past two decades, a growing body of scientific evidence suggests that deforestation, by triggering a complex cascade of events, creates the conditions for a range of deadly pathogens such as Nipah and Lassa viruses, and the parasites that cause malaria and Lyme disease to spread to people. Rates of zoonotic diseases those spread by animals have shown a correlation with those living in areas close to fragmented forests. Lyme disease, spread by ticks, has shown to increase in areas associated with fragmented forests and deforestation in the

Ebola is another example of this. The disease is currently raging in the war-torn Democratic Republic of the Congo. It has been found that human activities in regions previously covered by forests favors the presence of some bat species believed to be reservoirs of the Ebola virus. This has resulted in higher numbers of cases in areas where deforestation is rife.

**In India, across the Western Ghats, deforestation is giving rise to higher rates of Kyasanur forest disease (KFD). KFD is caused by the Kyasanur forest disease virus (KFDV), which is spread to humans by tick bites or through contact with an infected animal, such as a monkey — hence the commonly used name “monkey fever”. The disease is endemic in south Asia and made headlines in Karnataka last year following a KFD outbreak. At the time, lapses in protocol on the part of the state health department concerning vaccination were flagged.<sup>3</sup>**

As widespread burning continues today in tropical forests in the Amazon, and some parts of Africa and Southeast Asia, experts have expressed concern about the health of people living at the frontiers of deforestation. They’re also afraid that the next serious pandemic could emerge from

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<sup>3</sup>NICHOLAS PARRY <https://www.healthissuesindia.com/2020/02/22/could-deforestation-leave-india-exposed-to-disease/FEBRUARY 22, 2020>

our world's forests. Andy MacDonald, a disease ecologist at the Earth Research Institute of the University of California, Santa Barbara also believes that deforestation could be strong driver of infectious diseases. As he says "It's pretty well established that deforestation can be a strong driver of infectious disease transmission," he further adds "It's a numbers game: The more we degrade and clear forest habitats, the more likely it is that we're going to find ourselves in these situations where epidemics of infectious diseases occur."<sup>4</sup>

Therefore, it could be said that Deforestation and other forms of landscape transformation have increased the risk of infectious diseases in several other ways. Deforestation can also alter the distribution and population size of vectorial sub-species, many of which have differing capacities to transmit pathogens.<sup>5</sup>

2- **Urbanization** –The effect of urbanization on health trends, morbidity, and mortality are numerous. In more developed countries and industrialized centers, for example, violent crimes, drug abuse, and motor vehicle accidents are more common health problems than in rural areas. Environmental pollutants in industrialized centers across the spectrum of more and less developed nations have a deleterious impact on health. Infectious diseases, by definition, persist and thrive depending on how and how easily they are transmitted, as well as how easily they evolve over time in response to medical intervention. Infectious diseases are propagated via different forms of exposure, including exposure of an uninfected individual to the infected droplets, feces, or bodily fluids of another individual or exposure of an uninfected host to the blood or saliva of an infected vector. In the case of skin flora that can lead to serious infections, the exposure may be touch alone. With greater contact between infected and uninfected individuals, the opportunity for infections to spread increases. Urbanization necessarily provides more opportunity for contact and exposure and therefore has great implications for the transmission and the evolution of infectious diseases around the world. Among the most intuitive manifestations of the interrelatedness of population density and infectious diseases are epidemics and pandemics. Throughout recorded history, epidemics have changed the world and influenced the trajectory of nations as well as science, medicine, and health. From plague to smallpox to more recent outbreaks of influenza and

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<sup>4</sup> RT Staff ,Deforestation Leads To Increase In Infectious Diseases,Environmental News, Infectious Diseases, Other Infections| Dec 2, 2019

<sup>5</sup>Vasconcelos PF et al. Inadequate management of natural ecosystem in the Brazilian Amazon region results in the emergence and reemergence of arboviruses. *Cadernos de Saúde Pública*, 2001, 17 (Suppl):155–164.

SARS, population trends influence and are influenced by infectious disease. A significant proportion of the increase in urban population is due to the migration of people from rural areas to urban areas. Thus urbanization can allow for the importation of diseases that were formerly confined to rural areas to urban centers where there may be increased opportunity to spread. This can also allow for increased opportunity to spread if, due to lack of prior exposure, migrants to a given area are more susceptible to a disease that is endemic to that area. In addition, as globalization continues and travel increases among the major cities both nationally and internationally, diseases can be propagated between and among urban centers. This can lead to farther-reaching—even worldwide—outbreaks of disease. Historically, travel by boat or train has enabled the transmission of endemic diseases to novel populations, causing outbreaks of diseases such as measles and smallpox and contributing to the decimation of native peoples. More recently, however, air travel has expedited the movement of airborne pathogens.<sup>6</sup> Virus can now travel across the world within 24 hours, rather than within days. This statistic becomes even more powerful when considered together with the fact that more than one billion individuals worldwide travel by airplane each year. Thus, it can be said that Urbanization affects the spread of infectious diseases in both developed and developing countries, in wealthy enclaves as well as informal settlements. However, as the World Health Organization has described, disease threats disproportionately affect the urban poor and socioeconomic gradients are evident across many diseases.<sup>7</sup>

**3-Agriculture:** As with deforestation and urbanization, however, agricultural activities can also harm both health and the environment. Agriculture accounts for about 20% of global greenhouse gas emissions, especially through land clearing, livestock rearing and rice cultivation – thereby contributing to climate change and its deleterious effects on human health. Intensive agricultural techniques can unexpectedly trigger infectious diseases. For instance, large-scale crop farming has led to a rise in the incidence of malaria (as a result of both irrigation and changes in forests and forest species) and of Japanese encephalitis (also associated with irrigation). Large-scale palm oil (*Elaeis guineensis*) plantations in Colombia and Venezuela have provided excellent habitats for Chagas vectors although, as yet, the effect on human health has not been evaluated.

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<sup>6</sup>Fenner F (1971) Infectious disease and social change: part 2. *Med J Aust* 1:1099–1102

<sup>7</sup>Raquel Reyes, Ahn Katherine, Thurber Thomas F. Burke: *Urbanization and Infectious Diseases: General Principles, Historical Perspectives, and Contemporary Challenges*, First Online: 03 August 2012

On the other hand, the increased wealth earned from cash crops can, if well managed, reduce infectious diseases.<sup>8</sup>

#### **4. Migration and Globalization – Disease Worldwide Traveler**

In a globalized world, migration offers both the possibility of improved socioeconomic opportunities and also the spread of infectious diseases to non-endemic areas, facilitated by increased travel by air, rail, road and even ship. Growing trade volumes also facilitate the spread of disease. A case of “airport malaria” – whereby mosquitoes infected in a malaria-endemic country are inadvertently transported to a non-endemic region – occurred recently in France when a food parcel imported from Cameroon contained mosquitoes that bit and infected the recipient.<sup>9</sup>

On a larger scale, human migration has spread **Chagas**disease (with its prominent chronic component) from Latin America to countries outside the region. This places an additional pressure on health systems, including those with little experience of such diseases<sup>10</sup>. The mass gathering of peoples from different parts of the world for religious, sporting and cultural events also presents challenges to the control and global spread of infectious diseases. Lowering the spread of these diseases and other environmental and public health hazards requires coordination and planning from all government sectors of the host country, often years in advance. This includes development of quarantine facilities, vaccine requirements and screening procedures at entry, as well as the upgrade of health services to deal with additional demand – initiatives which are essential for effective health system functioning and response to infectious disease.

#### **APPROACHES FOR FUTURE STRATEGY AND RESEARCH**

In the area of infectious disease, it is increasingly acknowledged that an ecological understanding of disease transmission is essential for proactive public health preparedness. The monitoring of environmental and social drivers of infectious disease during periods of global environmental change, will assist in predicting changing patterns of infectious disease burden. It is imperative that future researchers should integrate the following concepts into their programmes

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<sup>8</sup>Guhl F, Pinto N, Aguilera G. Sylvatic triatominae: a new challenge in vector control transmission. *Memorias do Instituto Oswaldo Cruz*, Rio de Janeiro, 2009, 104(Suppl. I):71–75.

<sup>9</sup>ProMed.mail. Malaria – France: imported infected mosquitoes. ProMed. mail, 14 November 2010 (<http://www.promedmail.org/direct.php?id=20101114.4134>, accessed 18 February 2012).

<sup>10</sup>Igreja RP. Chagas disease 100 years after its discovery. *Lancet*, 2009, 373(9672):1340.

and strategies so that their work could have a real hope of controlling infectious diseases in the longterm.

1- For Better understanding of microbial world, there should be an invest in researches which explore the natural barriers, environmental and social drivers and facilitators of emergence ,spread and persistence of infectious diseases in order to better control them.

2- Expand and better utilizing data, resources and new technologies to map disease prevalence and on identify areas for intervention and control.

3. Stronger collaboration between government ministries and agencies is needed to fund interdisciplinary approaches to research on human animal health.

To sum up,ultimately we must learn how to think more widely and in a more socially and ecologically sophisticated manner about how we undertake human activities: how we produce our food; undertake travel and trade; encroach upon and manage the natural environment; construct our cities; and interact with each other and other forms of li



## रोगजनक (Virus) एवं प्रभावी (Vaccine) के विकास और उपयोग

डॉ. सीमा अग्रवाल

एसोसिएट प्रो. एवं प्रभारी, हिन्दी विभाग

गोकुलदास हिन्दू गर्ल्स कॉलेज,

मुरादाबाद (उत्तर प्रदेश)

रोगजनक उन्हें कहा जाता है, जिनके कारण कई तरह की बीमारियों का जन्म होता है। इसके अंतर्गत विषाणु, जीवाणु, कवक, परजीवी आदि आते हैं। ये पेड़-पौधे या किसी भी जीव-जन्तु को बीमार कर सकते हैं। मनुष्य में जीवों के कारण होने वाली बीमारियों को रोगजनक रोगों के रूप में जाना जाता है। इन रोगजनकों के कारण खसरा, चेचक, इंप्लुएंजा, गलसुआ, इबोला, रूबेला, सार्स, मर्स, स्वाइन फ्लू, और कोविड-19 जैसे घातकरोग हो सकते हैं। इस प्रकार रोगाणु या रोगजनक विषाक्तसूक्ष्म जीव होते हैं जो संक्रमण के जरिये हमारे शरीर में प्रविष्ट होकर हमें रोगी बना देते हैं। ये रोगजनक आमतौर पर रोगवाहकों की सहायता से एक व्यक्ति या स्थान से दूसरे व्यक्ति या स्थान पर फैलते हैं।

गौरतलब है कि 1940 से लेकर अब तक इंसानों में 142 वायरस आ चुके हैं। कुछ का इलाज तो हमने ढूँढ निकाला किंतु कुछ अभी भी बहुत घातक और जानलेवा हैं। वायरस के जरिए इंसानों में फैलने वाले अधिकांश रोगों के लिए चूहे, बंदर और चमगादड़ जैसे जीव जिम्मेदार हैं। पिछले तीन दशकों से चमगादड़ मानव की जान के दुष्मन बने हुए हैं। सार्स हो या निपाह, इबोला हो या मारबर्ग सभी ने बड़े पैमाने पर मानवजाति को नुकसान पहुँचाया है।

स्पष्ट है कि संक्रमण से फैलने वाले रोग या ये महामारियाँ मानवजाति के लिए कोई नयी बात नहीं है, किंतु इतने बड़े पैमाने पर एक वायरस का कहर अवश्य ही हम सबके जीवन काल में अभूतपूर्व घटना है। इस युग के वर्तमानदौर को यदि कोरोना काल कहा जाए तो कोई अत्युक्ति न होगी। कोरोना वायरस से फैली इस जानलेवा कोविड-19 नामक बीमारी को पर्यावरणविद् प्रकृति की ऐसी चेतावनी के रूप में देख रहे हैं जो मानव को उसके दुष्कृत्यों और उससे होने वाले महाविनाश के प्रति आगाह कर रही है। सच तो यह है कि मनुष्य द्वारा प्रकृति पर डाले जा रहे दबावों का नतीजा ही भयावह विध्वंस के रूप में हमारे सामने आ रहा



है। विश्वभर के प्रमुख वैज्ञानिक और पर्यावरणवेत्ता धरती और उसके संसाधनों की तबाही को मानव द्वारा अपने ही पैरों में कुल्हाड़ी मारने जैसा मान रहे हैं, और यह षट-प्रतिषट सच भी है। सच तो यह भी है कि वनों और वन्य जीव-जंतुओं के प्रतिमनुष्य की निरंतर बढ़ती हुई यह दखलअंदाजी यदि कम न हुई तो आने वाले समय में हमें कोरोना से भी अधिक घातक महामारी झेलने को विवश होना होगा। प्रकृति अभी माँ के समान अपने बिगड़े बच्चे की तरह हमें अपनी हल्की डॉट-फटकार से सुमार्ग पर लाने का प्रयास कर रही है लेकिन यदि हम अब भी अपने आप को नहीं सुधारते तो वह दिन दूर नहीं जब माँ प्रकृति का रौद्र रूप पृथ्वी से मानव के अस्तित्व को ही मिटा देगा। दिन ब दिन मौसम परिवर्तन के टूटते रिकार्ड, अकस्मात् ही जंगलों में लगती भयावह आग, नित-निततुच्छ विषैले जीवों का मानव के स्वास्थ्य पर जानलेवा हमला, सुनामी जैसी भयंकर आपदाएँ, ऐसी तमाम घटनाओं से प्रकृति हमें चेताने का भरपूर प्रयास कर रही है किंतु हम अपने सिर पर मंडराते महाविनाश से आँखें मूँदे प्रकृति पर अपनी सत्ता स्थापित करने के मद में चूर निरंतर अवनति के गर्त की ओर बढ़ते ही जा रहे हैं।

हमें नहीं भूलना चाहिए कि प्रकृति पृथ्वी की जननी ही नहीं अपितु पूरा ब्रह्मांड ही प्रकृति के इषारों पर चलता है। मनुष्य और प्रकृति का संबंध युगों-युगों से या यों कहें, आदिम काल से या मनुष्य के आविर्भाव काल से है। मनुष्य इस पृथ्वी पर जीवित है, इसलिए कि वह सतत प्रकृति के संरक्षण में है। प्रकृति और पुरुष दोनों ही एक दूसरे के पूरक हैं। प्रकृति सदैव ही माँ की तरह हमारा भरण-पोषण करती रही है। उसका अपमान या तिरस्कार करके हम कभी आगे नहीं बढ़ सकते। वह अनादि काल से हमारे हर सुख-दुख में हमारी सहभागिनी रही है। अथर्ववेद में मनुष्य प्रकृति से प्रतिज्ञा भी करता है कि 'हे धरतीमाता, मैं जो कुछ भी तुमसे ग्रहण करूँगा, उतना ही तुम्हें लौटाऊँगा। तुम्हारी जीवनी-षक्ति, सहन-षक्ति पर कभी आघात नहीं करूँगा।' जब तक मनुष्य प्रकृति के साथ किए गये इस वादे को निभाता रहा तब तक प्रकृति के साथ-साथ वह भी सुख-चैन से जीता रहा किंतु कालांतर में ज्यों-ज्यों अति महत्वाकाँक्षा और स्वार्थ के वशीभूत होकर उसने प्रकृति की अवहेलना और अतिक्रमण शुरू किया, त्यों-त्यों प्रकृति ने भी कुपित होकर अपना विध्वंसक और विघटनकारी रूप दिखाना शुरू कर दिया।

मौजूदा वैश्विक महामारी को देखते हुए हमें भली-भाँति जान लेना चाहिए कि प्रकृति का तिरस्कार करके हमकभी भी विकास के मार्ग पर अग्रसर नहीं हो सकते। यदि हम उसका संतुलन बिगाड़ेंगे तो वह भी हमें आपदाओं और महामारियों रूपी घातक और विध्वंसक हथियारों के प्रयोग से हमारी प्रगति के सारे मार्ग अवरुद्ध कर हमें बहुत पीछे धकेल देगी। वर्तमान में समूचे विश्व पर मंडराता सामाजिक, राजनैतिक व आर्थिक संकट इस बात का जीता-जागता उदाहरण है।

आज कोरोनावायरस से उत्पन्न कोविड-19जैसी जानलेवा घातक महामारी ने यह सिद्ध कर दिया है कि प्रकृति के समक्ष स्वयं को इस दृश्यमान जगत में सर्वश्रेष्ठ समझने वाला इंसान कितना बौना है। हम जानते हैं कि विदेश से आयातित इन वायरस या रोगजनकों के कारण, जो घरेलू और जंगलीजानवरों से इंसान में आते हैं, हर साल दुनियाभर में करोड़ों लोग बीमार पड़ते हैं और लाखों लोग काल के गाल में समाजाते हैं। आँकड़े बताते हैं कि 1940 से लेकर आज तक 142 वायरस इंसान को अपनी चपेट में ले चुके हैं। बहुतों के तोड़ हमारे वैज्ञानिकों और चिकित्सकों ने खोज निकाले लेकिन बहुत से अब भी हमारे स्वास्थ्य के लिए बहुत घातक हैं। चाहे वो एच आई वी, सार्स, मर्स या इबोला हो या फिर ये नॉवेल कोरोना। चूहे, बंदर और चमगादड़ से उत्पन्न लगभग 75 प्रतिशत वायरस इंसानों में रोग फैलाने के लिए जिम्मेदार हैं। इनका कारण सिर्फ एक है—इंसानों द्वारा जानवरों की प्राकृतिक जीवन-शैली में हस्तक्षेप किया जाना। चमगादड़ तो लगभग पिछले तीन दशकों से रोगजनकों के वाहक बने हुए हैं। सार्स हो या निपाह, इबोला हो या मारबर्ग, सभी ने बड़े पैमाने पर इंसान की जान ली। इसका एक प्रमुख कारण जो हमारी समझ में आता है वह है—इंसानों की जंगली जानवरों से निरंतर बढ़ती निकटता, जो सचमुच मानव जाति के अस्तित्व के लिए खतरा बनती जा रही है। वायरस जन्य ये बीमारियाँ निस्संदेह वन्य जीव-जंतुओं के प्राकृतिक निवास और रहन-सहन में इंसानी हस्तक्षेप का परिणाम है।

सच तो यह है कि आज प्रकृति का सर्वांग-संपूर्णसंतुलन जो युगों-युगों से इस पृथ्वी पर जीव-जंतुओं को आधार और प्रश्रय दे रहा है, अत्याधुनिक दुनिया का कायाकल्प करने वाले विज्ञान एवं प्रौद्योगिकी के हाथोंस्वयं खतरे में पड़ गया है। हम यह भूल गये हैं कि हमारा यह दृश्यमान जगत, हमारा पर्यावरण और स्वयं प्रकृति, एक जीवित, अन्वोन्याश्रित व्यवस्था का अंश हैं। सही नजर से देखाजाए तो 'सृष्टि में कहीं कोई विभाजन अथवा द्वैत की स्थिति नहीं है। समूचा जीवन एक जीवंत, सचेतन इकाई है, जिसे सृष्टिकर्ता ने अपने हाथों से बनाया और अपने जीवनदायक स्वास से अनुप्राणित किया है।'

वैश्विक महामारी से आकांत वर्तमान भयावह परिदृश्य का आकलन करते हुए हमारे राष्ट्रपति महामहिम रामनाथ कोविंद संकट की इस घड़ी में देश से प्रकृति का संदेश समझने की अपील करते हैं। वे जन-जन को सचेत करते हुए करते हैं कि 'आज के इस कठिनदौर से गुजरते हुए हमें इस चुनौती को एक अवसर में बदलना चाहिए और यह विचार करना चाहिए कि इस संकट के जरिए प्रकृति हमें क्या संदेश देना चाहती है। प्रकृति से हमें अनेक प्रकार के संकेत मिल रहे हैं।' 'मनुष्य ही एकमात्र ऐसी प्रजाति है जिसने अन्य सभी प्रजातियों पर आधिपत्य जमाकर पूरी धरती का नियंत्रण अपने हाथों में ले लिया है। उसके कदम चाँद तक पहुँच गए हैं लेकिन बिडंबना देखिए कि इतनी शक्तिशाली मानव जाति अभी एक वायरस के सामने लाचार है। हमें इस तथ्य को ध्यान में रखनाहोगा कि आखिरहममनुष्यभीजीवधारी मात्र हैं और अपने

जीवन के लिए अन्य जीवों पर निर्भर हैं। प्रकृति को नियंत्रित करने और अपने लाभ के लिए सभी प्राकृतिक संसाधनों का दोहन करने की तैयारियाँ छोटे से विषाणु के एक ही प्रहार से तहस-नहस हो सकती हैं।'

हमें यह भली-भाँति जानलेना चाहिए कि हम प्रकृति से हैं, प्रकृति हमसे नहीं। मनुष्य और प्रकृति का संबंध युगों पुराना है। दोनों ही एक दूसरे के पूरक हैं। खेद का विषय है कि अपनी महत्वाकाँक्षाओं और अतिस्वार्थ के वशीभूत हो हमने प्रकृति को अपने भोग-विलास का साधन मान लिया है और अपने ऐशो आराम के उपकरण जुटाने के लिए प्रकृति का हरसंभव शोषण और अतिक्रमण किया है। पृथ्वी तंत्र और प्रकृति के संतुलन से तालमेल मिलाकर न चलना ही हमारी सबसे बड़ी भूल सिद्ध हुई है। कोरोना महामारी के चलते इंसान के घर में कैद होते ही प्रकृति का दिनोंदिन निखरता रूप प्रकृति के प्रति इंसान की ज्यादातियों का चिट्ठा खोलने के लिए पर्याप्त है। आसमान अब कुछ ही दिनों में साफ और चमकीला नजर आने लगा है। वर्षों से नदियों का जलस्वच्छ करने हेतु गंगा प्रदूषण मुक्ति तथा अन्य अभियान चलाए जाने पर भी जो नदियाँ प्रदूषण मुक्त न हो सकीं, चंद दिनों के लॉकडाउन में मानवीय गतिविधियों के ठप्प होते ही आइने की माफिक चमकने लगीं। इस प्रकार हम देख रहे हैं कि प्रकृति मानव के भरोसे न रहकर अपना इलाज करने में स्वतः ही पूर्ण सक्षम है।

समग्रतः कहने का आशय यह है कि यदि मनुष्य प्रकृति का अतिक्रमण करते हुए जैविकीय विविधता से ऐसे ही मनमानी और खिलवाड़ करता रहा तो वह दिन दूर नहीं जब उसे इससे भी और अधिक घातक बीमारियों और आपदाओं का दंश झेलना पड़े। स्वयं को प्रकृति की मार से बचाने और पृथ्वी पर अपने अस्तित्वको बनाए रखने के लिए आवश्यक है कि मनुष्य प्रकृति में उचित संतुलन बनाए रखे और यह समझ ले कि पृथ्वी पर छोटे-बड़े हर जीव का अपना विशिष्ट महत्व है। हमजब-जब प्रकृति के किसी अंग से खिलवाड़ करते हैं, तब-तब प्रकृति अपनी ताकतदिखाती है और अपने एक ही प्रहार से सबकुछ अपने नियंत्रण में ले लेती है। अतः प्रकृति से संतुलन बनाए रखने के लिए हमें प्राकृतिक चक्र, प्रदूषण, शुद्धिकरण और संरक्षण— इन चारतत्वों पर विशेषकार्य करना होगा, तभी हम पृथ्वी पर अपने जीवन को बचाए रख सकते हैं वरना आगे हमें और कितनी प्रकृति की मार झेलनी होगी, यह सोचकर ही रोंगटे खड़े हो जाते हैं।

अस्तु



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**Environmental Factor leading to emerging diseases**

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H-O-D

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भारतीय संस्कृति में प्राकृतिक सुषमा के प्रति जितना आदर और आकर्षण है वह किसी से छुपा नहीं है। मनुष्य प्रकृत का पुत्र माना जाता है प्राकृत समय और परिस्थितियों के अनुसार मां की ममता के समान सुरक्षा प्रदान करती है किंतु उलझने पर पिता के समान क्रोध भी देती है। आदिकाल में पर्यावरण का मानव जीवन से घनिष्ठ संबंध रहा है किंतु इन संबंधों को मनुष्य ने ही बिगाड़ा है।

विश्व का बदलता वातावरण, प्रदूषण का भयावह रूप, आतंकवाद का परिवर्तित होता स्वरूप, एवं कोविड-19 (कोरोना वायरस) जैसी बीमारियों का विस्तार अन्य ऐसे ज्वलंत मुद्दे हैं जोकि व्यक्ति विशेष से प्रारंभ होकर संपूर्ण संसार की समस्या बन गई है अब तक पृथ्वी पर जीवन प्रजातियों की जो विनाशक क्षतियां हुई हैं वे प्राकृतिक कारणों से हुई थीं और डायनासोर प्रजाति का विलोप इसकी अहम घटना है। प्रजातियों का जीवन चक्र कोई सरल या साधारण बात नहीं है एक नई प्रजाति के विकास में लाखों वर्ष लग जाते हैं किंतु इनका विलोप पर्यावरण विनाश जैसी परिस्थितियों के कारण केवल एक सदी में हो जाता है वर्तमान समय में जो बीमारियां विश्व भर में उभर रही हैं, क्या उसके लिए पर्यावरण प्रदूषण भी जिम्मेदार है ?

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कल्पना कीजिये तपन झुलस और शुष्कता भरे ऐसे जीवन की जिसमें वृक्षों की हरियाली दूर दूर तक दिखाई न दे और थके राहगीर जहाँ इनकी शीतल छाया के लिए तरसते हों। कल्पना कीजिए ऐसे बचपन की जो पक्षियों के कलरव गान से सुरु हो प्राकृतिक संगीत सुबह से अम्भिज्ञ हों। विकास के नाम पर प्राकृतिक के

साथ इंसान की दखलअंदाजी से न केवल शहर बल्कि कस्बे और गांव के निवासी भी वृक्षों की शीतल छाया, हरियाली की सुकून दायी शीतलता के लिए तरसेंगे।

पर्यावरण प्रदूषण की समस्या आज के विश्व की एक विराट समस्या है न केवल भारत जैसे विकासशील राष्ट्र वरन समस्त विकसित राष्ट्र भी पर्यावरण प्रदूषण के लिए प्रभाओं से त्रस्त है। पर्यावरण प्रदूषण वास्तव में विकास तथा जनसंख्या वृद्धि का सह प्रभाव (side Effect) है। विकास की अंधाधुंध दौड़ में प्राकृतिक साधनों की अत्यधिक दोहन के फल स्वरूप परिस्थिती यक संतुलन (Ecological Balance) बिगड़ गया है जीव जंतु एवं वनस्पतियों की अनेक प्रजातियां विलुप्त हो चुकी है जबकि कुछ प्रजातियों का अस्तित्व खतरे में है घ प्रकाश शोर वं प्रदुषण के कारण जीव जंतुओं की दिनचर्या पर कुप्रभाव पड़ा है। पर्यावरण सामाजिक तथा प्राकृतिक दो प्रकार का होता है सामाजिक परिवर्तन से तात्पर्य मानवो के बीच परस्पर संबंधों से है जबकि प्राकृतिक पर्यावरण का आशय प्राकृतिक वस्तुओ से हैं। पर्यावरण के विभिन्न तत्वों के मध्य एक संतुलन का होना आवश्यक है। यदि मनुष्य प्राकृत के नियमानुसार अनुसार प्राकृतिक संसाधनों का उपयोग करता है तभी पर्यावरण और मानव जाति स्वस्थ रह सकती है किंतु कदाचित ऐसा नहीं हो रहा है?

आज पर्यावरण तथा जीवधारियों के बीच के संबंध को समझना आवश्यक है जनसंख्या विस्फोट तथा विकास की योजनाओं के फलस्वरूप प्राकृतिक संसाधनों का अंधाधुंध अविवेकपूर्ण दोहन से पर्यावरण की समस्याएं दिन प्रतिदिन बढ़ती जा रही है घ प्रकृत की स्वनियामक (मसि-त्महनसंजपवद) क्षमता क्षीण होती जा रही है घ जिससे मानव की गुणवत्ता का ह्रास हुआ है घ हमें यह नहीं भूलना चाहिए कि जीवमंडल में अद्भुत संतुलन है जिसका विभिन्न छोटे बड़े राष्टो की सीमाओं से कोई सम्बन्ध नहीं है इसका निवारण विश्वव्यापी स्तर पर होना आवश्यक हैं।

विषय वस्तु का वर्णन :-

वास्तव में अगर देखा जाए तो लेख का शीर्षक "उभरती हुई बीमारियों के लिए पर्यावरणीय कारक" के संदर्भ में मेरा मानना यह है कि उभरती हुई बीमारियों के लिए हम खुद जिम्मेवार हैं। हम अपने सुख और दुख के कारण हम खुद हैं हमने प्रकृति के नियमों को तोड़ा है तो उसका तो परिणाम भी हमें ही भुगतना पड़ेगा। आज आकाश से लेकर पाताल तक विस्फोट किये जा रहे हैं समझ में नहीं आ रहा है कि आखिर मानव चाहता क्या है ? मेरा अपना विचार है कि विज्ञान की अति प्रगति का अंतिम साथ विनाश होता है घ आज हमने अपने स्वार्थ के लिए पर्यावरण को इतना प्रदूषित कर दिया है कि उस प्रदूषण से संपूर्ण मानव जाति का अस्तित्व ही खतरे में पड़ गया है घर से लेकर बाहर तक कहीं भी हमें प्रदूषण से मुक्ति नहीं है ये

पर्यावरण प्रदूषण हमें कई बीमारियों का शिकार बनाता है प्रदूषण से होने वाली हानियों बीमारियों का विवरण निम्नलिखित है।

(अ). जल प्रदूषण :-

कहा गया है कि जल है, तो कल है। जल ही जीवन है, जल प्रदूषण का अभिप्राय जल निकायो जैसे झीलों नदियों समुंदरों और भू-जल के प्रदूषित होने से है। जल प्रदूषण इन जल निकायों के पादपो और जिवों को प्रभावित ओर करता है और यह प्रभाव न सिर्फ जीवों और पादपो के लिए अपितु संपूर्ण जैविक तंत्र के लिए विनाशकारी होता है। डायरिया, कब्ज, अपच, पीलिया लीवर में संक्रमण मलेरिया टाइफाइड पथरी जापानी बुखार आदि अनेक बीमारियों को जन्म देती है। फैक्ट्रियों कारखानों से निकलने वाला कचरा, नदियों में बहा दिया जाता है। गंदे नालो से निकलने वाला पानी नदियों में मिलकर उसे प्रदूषित बना देता है यही प्रदूषित जल नई तरह की बीमारियों को जन्म देता है और ए विमारियां जान लेवा होती है।

(ब). वायु प्रदूषण:-

आजकल हवा में प्रदूषण की मात्रा हर जगह विद्यमान है यह वातावरण एक जटिल गतिशील प्राकृतिक वायु तंत्र है, जो पृथ्वी पर जीवन के लिए आवश्यक है वायु में बहुत से ऐसे तत्व होते हैं जो सभी जीव धारियों का स्वस्थ खराब कर सकते हैं। यह प्राकृतिक क्रियाओं तथा मानव तथा मानव गतिविधियों दोनों से उत्पन्न होते हैं। वायु में प्राकृतिक रूप से नहीं पाए जाने वाले तत्व या अधिक सांद्रता के साथ या सामान्य से अलग तत्व को प्रदूषक कहा जाता है। प्रदूषक प्राथमिक तथा द्वितीयक के रूप में वर्गीकृत होते हैं प्राथमिक प्रदूषण प्रदूषक वे तत्व हैं जो सीधे एक प्रक्रिया से उत्सर्जित हुए हैं जैसे ज्वालामुखी विस्फोट से राख, मोटर गाड़ी से कार्बन मोनोऑक्साइड गैस, कारखानों से निकलने वाली सल्फर ऑक्साइड गैस। द्वितीयक प्रदूषक सीधे उत्सर्जित नहीं होते हैं बल्कि जब प्राथमिक प्रदूषण आपस में क्रिया-प्रतिक्रिया करते हैं तब वय वायु में बनते हैं कुछ प्रदूषक प्राथमिक एवं द्वितीयक दोनों हो सकते हैं। वायु प्रदूषण इंसान के शरीर में जल्दी असर करता है, क्यों कि यह सांस के साथ हवा के रूप में शरीर में पहुंचता है। जिससे दमा, खांसी, आंखों की रोशनी कमजोर होना, सिरदर्द, फेफड़ों में संक्रमण आदि बीमारियों का सामना करना पड़ सकता है। एक व्यक्ति भोजन के बिना तीन सप्ताह पानी पिए बिना तीन दिन तक जीवित रह सकता है लेकिन हवा के बिना तीन मिनट तक भी जीवित नहीं रह सकता है। प्रदुसित हवा में सांस लेने से न सिर्फ सांस संबंधी बीमारियां होती है बल्कि यह मृत्यु को बुलावा भी देती है वायु में प्रदूषक तत्वों की संख्या अधिक बढ़ने से सांस लेने में परेशानी के अलावा आंखों में जलन और खुजली तथा अस्थमा जैसी अनेक बीमारियां पैदा हो जाती है आज लोग टेंशन डिप्रेशन डायबिटीज हार्ट अटैक जैसी बीमारियों के चपेट में है जिसका जन्मदाता

वायु प्रदूषण है घवायु प्रदूषण से बच्चों के दिमाग पर बुरा प्रभाव पड़ता है यह कई तरह के मानसिक बीमारियों को जन्म देता है।

ध्वनि प्रदूषण:-

ध्वनि प्रदूषण वायु प्रदूषण का ही एक महत्वपूर्ण हिस्सा है ध्वनि प्रदूषण मनुष्य में चिड़चिड़ाहट और गुस्सा उत्पन्न करता है साथ ही साथ धमनियों में रक्त प्रवाह को प्रभावित कर हिर्दय संचालन की गति को तीव्र कर देता है लगातार का शोर खून में कोलेस्ट्रॉल की मात्रा बढ़ा देता है जो रक्त नालियों को सिक्कोड देता है जिससे हृदय रोग की संभवनाए बढ़ जाती है स्वास्थ्य विशेषज्ञों का मानना है कि बढ़ता शोर स्नायुविक बीमारी नर्वसब्रेकडाउन ब्लड प्रेशर आदि को जन्म देता है घ ध्वनि प्रदूषण से याददास्त एवं एकाग्रता में कमी ,चिड़चिड़ापन ,अवसाद, और कैंसर जैसी जानलेवा बीमारियों के चपेट में आ सकते हैं घ शोर के कारण ध्वनि एवं वायु प्रदूषण का स्तर बढ़ने से लोग मानसिक तनाव तथा श्वसन तंत्र के संक्रमण से ग्रसित हो रहे हैं घ तेज धवनी तरंग सीधा हृदय गति को हृदय गति को प्रभावित करती है इससे हृदय की गति कम हो जाती है और हार्ट अटैक की संभावना कई गुना बढ़ जाती है।

वर्तमान समय में विश्वव्यापी महामारी कोरोना वायरस(कोविड-19) को भी दुनिया के कुछ पर्यावरण विद जलवायु परिवर्तन के कारण उत्पन्न हुए संकट के तौर पर देख रहे हैं पर्यावरण विदों के अनुसार बीते दशक का लेखा-जोखा देखें तो सार्स ,मर्स ,जी का स्वैनफ्लू ,वडफ्लू और अव कोविड -19 (कोरोना वायरस ) ने हमला किया है ये वे वायरस है जो जानवरों से इंसान में आये घ कोरोना इस कड़ी में अंतिम है, यह कहना मुश्किल होगा। हमें भविष्य के लिए तैयार रहना चाहिए हमारे पास सिर्फ यही एक रास्ता है कि इन्हें फैलने से रोके, और इनका इलाज खोजें तमाम तरह के शोध बताते हैं कि इंटेंसिव मीट, प्रोडक्शन, एंटीबायोटिक, रेजिस्टेंस, और ग्लोबल वार्मिंग इन तीनों के कारण दुनिया में नए-नए वायरस और वैक्टेरिया(इंबजमतपं) आएंगे जो पशुओं से इंसान में आएंगे लेकिन कोरोना वायरस के बारे में अभी तक कोई ऐसा शोध नहीं आया है जिससे यह पूर्णता साबित हो की इस वायरस में जलवायु की कोई भूमिका है घ यदपि वैज्ञानिक पहले भी चेतावनी देते रहे हैं की जलवायु परिवर्तन की वजह से नई बीमारियों के पैदा होने, और उनके इंसानों ने फैलने के तरीकों में अंतर आ सकता है जैसे कोरोना को ही ले लीजिए अपना स्वरूप बदल लेता है। आज इस विश्वव्यापी महामारी (कोरोना वायरस) के संकट के कारण विश्व के अधिकतर देशों में लागू किए गए लॉक डाउन से प्रदूषण में कमी आई है यहां तक कि हमारे धरती के ऊपर ओजोन परत में बना छेद भी भरने लगा हैं। पर्यावरण की यह समस्या वस्तुतः आधुनिक विकास के कारण उत्पन्न हुई है इसे एक विडम्बना ही कहा जाएगा की विज्ञान एवं तकनीकी विकास का आधुनिक युग पर्यावरण के लिए विनाश कारी परिणाम प्रस्तुत करने वाला युग बन गया है। एक ऐसा युग जिसमे होने

वाले विभिन्न भौतिक रसायनिक तथा जैविक परिवर्तनों ने जलवायु तथा धरातल के नैसर्गिक गुणों का हरण कर लिया है वायु जल तथा मृदा में आई नैसर्गिक गुणवत्ता की कमी के कारण न केवल मानव जाति वरन समस्त जीव धारियों के लिए हानिकारक स्थिति उत्पन्न होने लगी है।

पर्यावरण प्रदूषण का हमारी प्रतिरोधक क्षमता पर बहुत अधिक असर पड़ता है। वैज्ञानिकों का मानना है कि पर्यावरण के तापमान में बढ़ोतरी के साथ ही डेंगू, मलेरिया, चिकनगुनिया, जैसी बीमारियों को फैलने फूलने के लिए ज्यादा उपयुक्त समय मिल रहा है। मौसम चक्र में परिवर्तन से इनको फैलाने वाले मच्छरों को प्रजनन के लिए ज्यादा समय और उपयुक्त माहौल मिल रहा है, इंसानों का शरीर तमाम तरह की बीमारियों का खुद मुकाबला करने के लिए बना है बैक्टीरिया और वायरस मारने के लिए हमारा शरीर ही एंटीबॉडी पैदा करता है, पथोजेस को मारने के लिए हमारा शरीर खुद को तेजी से गर्म कर लेता है लेकिन पर्यावरण में आने वाले बदलाव हमारे शरीर की प्रतिरोधक क्षमता कम कर रहे हैं जिससे हमारा शरीर बीमारियों से लड़ने में असमर्थ होता जा रहा है जिसका कारण पर्यावरण प्रदूषण ही है।

उपसंहार:-

पर्यावरणीय संकट मौजूदा दौर बहुत ही कड़वी सच्चाई है जो विश्व में उभरती हुई नई नई बीमारियों का कारण हैद्य जनसंख्या में तीव्र बढ़ोतरी तथा तीव्र औद्योगिक विकास के फलस्वरूप वर्तमान सदी में प्रदूषण एक विकराल समस्या के रूप में मानव जाति के अस्तित्व के लिए एक खतरा बन गया हैद्य विश्व स्वास्थ्य संगठन का कहना है की मौसम चक्र में बदलाव के चलते बैक्टीरिया और वायरस को फलने फूलने की जगह मिल रही हैद्य पहले जलवायु संकट इतना नहीं था इसलिए मौसम चक्र निर्धारित था।

प्राकृतिक संसाधनों का समुचित मात्रा में दोहन करने तथा अवशिष्ट पदार्थ को समुचित रूप में प्रकृत को लौटाने पर प्राकृत का संतुलन बना रहता है द्यपरंतु प्राकृतिक संसाधनों का अविवेक पूर्ण व असावधानी से किए गए अंधाधुंध उपयोगों ने वातावरण को प्रदूषित कर दियाद्य इसके अतिरिक्त कूड़े-कचरे के रूप में मानव जाति के द्वारा फेंके गए अवशिष्ट पदार्थों को प्राकृत आत्मसात करने में कठिनाई का अनुभव कर रही हैं। ये अवशिष्ट पदार्थ प्रकृत की परिस्थिकीय प्रणाली (Ecological system)में चक्रीय गति से आगे बढ़ कर पुनः उपयोगी नहीं बना पा रही हैं। अवशिष्ट पदार्थ को बढ़ती हुई इस स्थिति के कारण पर्यावरण संरक्षण की समस्या और भी भयंकर होती जा रही है द्यजंगलों के तीव्र कटान उद्योग धंधों, एवं वाहनों से निकलने वाले धुएं कल कारखानों से होने वाले शोर ने जलवायु भूमि एवं आकाश को प्रदूषित कर दिया है जो बहुत ही गंभीर बीमारियों का कारण है द्य नाभिकीय उपकरणों से निकलने वाले रेडियो धर्मी विकिरण भी अपने आप में एक समस्या है। परिस्थिकीय संतुलन के छिन्न दृभिन्न हो जाने के कारण मानव जाति के अस्तित्व



को खतरा उत्पन्न हो गया है और विज्ञान –तकनीकी का पूरा परिवर्तन के लिए एक विनाशकारी जो बन गया है।

निष्कर्ष एवं सुझाव:-

पर्यावरण तथा उसके संरक्षण का संबंध सभी से है आज प्राकृतिक संतुलन में हो रहे व्यवधान के फलस्वरूप मानव जीवन एक दौरा पर आकर खड़ा हो गया है आज पर्यावरण की समस्या एक ज्वलंत एवं विश्वव्यापी समस्या बन गई है इस समस्या का निराकरण करने के लिए गंभीर प्रयास की आवश्यकता है पर्यावरण की रक्षा और उसमें सुधार के लिए आवश्यक माहौल तैयार करने के लिए क्या हमने कोई कदम उठाया ?आज पर्यावरण की गंभीर चिंता में डूबे हुए हैं लेकिन क्या पर्यावरण की रक्षा करने का हमने किंचित मात्र प्रयास किया?

हमें यह नहीं भूलना चाहिए कि जीवमंडल में एक अद्भुत संतुलन है, जिसका विभिन्न छोटे दृढ़ राष्ट्रों की सीमाओं से कोई सम्बन्ध नहीं है इस कारण पर्यावरण प्रदूषण एक एक अन्तराष्ट्रीय समस्या हो गयी है, इसका निवारण विश्व व्यापी स्तर पर मानव जीवन के अस्तित्व को बचाने के लिए आवश्यक ही नहीं बल्कि एक पुनीत कर्तव्य भी है दृढ़ हम इस विषय पर जागरूक नहीं हुए तो वह दिन दूर नहीं जब हमें और भयंकर विश्वव्यापी महामारी बीमारियों का सामना करना पड़ेगा जिससे संपूर्ण मानव जाति पर अस्तित्व बचाने का संकट आ सकता है।

सुझाव:-

पर्यावरण से बचाव के लिए सरकार को कुछ नीतियां बनानी चाहिए और उन नीतियों का शक्ति से क्रियान्वयन भी होना चाहिए किंतु केवल सरकार के प्रयास से पर्यावरण की सुरक्षा और उससे होने वाली बीमारियों से बचाव नहीं हो सकता, जब तक इसके लिए जन आंदोलन नहीं होगा जैसे वर्तमान में कोरोना वायरस से बचाव के लिए जन जनता किस तरह से लॉक डाउन और समाजिक दूरियों का पालन कर रही है इसे ही जन जागरूकता और जन आंदोलन कहते हैं दृढ़ इसी तरह जनता क्यों एक साथ मिलकर अपने स्तर से पर्यावरण की सुरक्षा का काम करना चाहिए जैसे अपने आसपास के वातावरण को साफ सफाई रखें, गीला कचरा, सूखा कचरा, अलग अलग डस्टबिन में डालें, फल सब्जियों या ऐसी चीजें जो रीसायकल हो सके, उन्हें हरे कूड़ेदान में डालें, प्लास्टिक पॉलिथिन जैसी चीजें नीले रंग के कूड़ेदान में डालें, अपने वाहनों की समय पर प्रदूषण संबंधित जांच करवाएं गाड़ी या घर या अन्य चीजों की सफाई के लिए खतरनाक केमिकल आधारित उत्पादों की जगह इको फ्रेंडली उत्पाद का इस्तेमाल करें, पेड़ लगवाए और उन्हें बचाए सबसे आवश्यक यह है की प्रकृत के नियमों से कम से कम छेड़छाड़ करें जिससे विश्व व्यापी स्तर

पर फैल रही महामारीओं से बचा जा सकेद्य प्रकृत का संरक्षण हम सबका पावन करना कर्तव्य है हमें प्राकृत का उतना ही दोहन करना चाहिए जिससे उसका संतुलन ना बिगड़े यदि मानव अभी भी नहीं चेता तो हमारा विनाश निश्चित है।

| nHkZ | ph

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## **Can We Control Evolution Of Pathogens**

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We Know that a Pathogens is a biological infections agent. That causes disease or illness to its host. In hostile terms we normally think of pathogens as invaders that attack our bodies but not normally a pathogen ora parasite try to live and procreate like any other organism. Thus pathogens, the organism that can cause disease. This can include bacteria, viruses, fungi and parasites. We constantly have to come up to combat any pathogen's infections as they rapidly evolve to become resistant. Human seem to be in a race with viruses, bacteria, fungi and parasites to create new drugs to combat infections before they evolve to overcome them. Antibiotic resistance is becoming a worrying problem. Thus arms race between human and pathogens sounds frightening – how can we keep up with their rate of evolution to avoid our drugs? Will we one day run out of ideas and be unable to treat infections at all?

Though the bacteria are faster than us, but we are smarter. What if we were able to alter the way pathogens evolved to make them less harmful? If we somehow make it easier for a given type of pathogen to survive in a healthy human, rather than a sick one, we might drive the evolution of the pathogen to make it less virulent.

Now, first we should know about the relation between pathogens and hosts-

Pathogens can be divided into two main categories, namely facultative and obligate pathogens, reflecting how intimately their life cycle is tied to their host. Facultative pathogens are organisms for which the host is only one of the niches they can exploit to reproduce. Facultative pathogens are primarily environmental bacteria and fungi that can occasionally cause infection. They include many of the most problematic hospital-acquired bacteria involved in the antimicrobial resistance pandemic. A distinction is sometimes made between facultative and

accidental pathogens. Typical examples of ‘accidental’ pathogens include *Neisseria meningitidis* or *Escherichia coli*. Obligate pathogens require a host to fulfill their life cycle. All viruses are obligate pathogens as they are dependent on the cellular machinery of their host for their reproduction. Obligate pathogens are found among bacteria, including the agents of tuberculosis and syphilis. Some obligate pathogens require multiple different hosts to fulfill their life cycle.

Similarly some pathogens are limited to infecting a single host species, whereas others can infect a multitude of host species. Host ranges can feel highly idiosyncratic if not outright puzzling. For example, leprosy in humans is caused by two related intracellular bacteria *Mycobacterium Leprae* and *Mycobacterium Lepromatosis*, which are essentially restricted in the wild to humans.

Scant ironically for a pathogen that is possibly the biggest killer in human history, bubonic plague is a complete evolutionary disaster. The human host is at a very high risk of dying, the flea cannot reproduce on a meal of human blood and the bacterium is stuck in an evolutionary dead-end as it cannot transmit to another host. We find no obvious predictor for the host range of different pathogens.

We know relatively little about the underlying genetic changes required for a pathogen to infect a new host, though it is interesting to know that only a few mutations can be required for a host jump. For example, avian influenza is only around five mutations away from being able to transmit in mammals.

How we will know how pathogens cause disease. There is no doubt that pathogens cause illness to their hosts through a variety of ways. The most evident means is through direct damage of tissues or cells during replication, generally through the production of toxins that allows the pathogen to reach new tissues or exit the cells inside which it replicated. Bacterial toxins are among the deadliest poisons known and include famous examples such as tetanus, anthrax or botulinum toxin, known as Botox in its commercial application.

Some pathogens avail from the hosts’ immune reaction to spread within an infected host or increase their transmission to uninfected hosts. Influenza transmits mainly through aerosols created through the sneezing and coughing it causes.

Now we cast a glance upon virulent traits of pathogens. For pathogens, it is necessary to be inside a host to do this. Once it has replicated as much as it can in one host, it must somehow jump to another host so that it can continue replicating. The different ways in which a pathogen can be transmitted from person to person, are-

Close proximity to people- can spread through air or physical contact- e.g. HIV, rhinovirus, and influenza.

Hitching a ride on an intermediate organism – e.g. Plasmodium (the parasite that causes malaria) in mosquitoes.

Travelling through contaminated water- e.g. Cholera.

We see that in the first category, it is not in the pathogen's interest to be too virulent. If they kill the host, it will not spread to another human.

For example, if you have a cold, you are not so ill that you have to stay at home- instead, you go to School/Work and cough on everyone you meet-passing the Bacteria/Virus to them. Pathogens in this category are therefore very unlikely to evolve to become lethal as this would be strongly selected against.

On contrary, pathogens that rely on an intermediate organism to ensure their transmission do not have to worry about keeping the host mobile. Instead, they incapacitate us to ensure better access for the intermediate organisms often mosquitoes to bite us. For example, malaria makes us feel so unwell that we have to lie in bed all day-this makes us the prime target for other mosquitoes. The parasite that causes malaria, Plasmodium, is then ingested by the mosquito as it drinks our blood. That mosquito will then infect everyone else that it bites. In this category, there is an evolutionary advantage to bring us to the edge of death.

Pathogens that don't need to rely on any organism to assure their transmission can be even more virulent. There is no need at all for the host to be mobile and therefore the only selection pressure is to replicate as many times as possible to increase the probability of future infection. Pathogens often rely on contaminated food or water supplies. Vibrio cholera bacteria cause terrible diarrhea and spread through contaminated water supplies.

When soiled bed linens- clothes are washed in rivers or lakes, the bacteria in the diarrhea can be released into a drinking water supply. There is actually an advantage for cholera to evolve to be more virulent as causing more diarrhea results in more copies of the bacteria leaving the body and therefore increases more and more infecting someone else.

Now question arise- Are co- evolved pathogens less virulent? We see that pathogens greatly vary in the severity of their symptoms from a mild inconvenience to assured death. It is assumed that the deadliest pathogens represent recent host jumps where the pathogens virulence is maladapted to the new host, and that co- evolution between host and pathogen will lead to more benign symptoms over time.

However, this is only true in the case of strict vertical transmission (such as from mother, to child), where survival and transmission of host and pathogen are intimately linked.

In the matter of horizontal transmission, the situation is rather more complex and there is no apparent way to predict the evolution of future virulence, as it will depend on a variety of factors, including the population structure of the host and the correlation between virulence and transmission. A textbook example for reduction in virulence is the introduction of myxomatosis (A fatal viral disease of rabbits) into the European rabbit population in Australia and France in 1950 and 1952, respectively. Upon introduction, the virus initially killed about 99% of infected rabbits but over a few years mortality went to 90%, following the emergence of weakened virus strains and genetic resistance in the rabbit population. While the virulence went down. Relatively few human pathogens are known solely as human pathogens. The remainder also occurs in other contexts: as commensals; or free- living in the wider environment; or as infections of hosts other than humans.

Overall, probably no more than 50 to 100 species are specialist human pathogens. These range from major killers such as Plasmodium Falciparum, mumps virus, Treponema pallidum, smallpox and HIV-1 to those causing more minor problems such as the human adenoviruses and rhinoviruses.

Hundreds of species which can cause human disease occur naturally as “commensals” found on the skin, on mucosal surfaces, or in the gut. They are normally benign but are sometimes pathogenic, for example if introduced into the blood system via a wound or in association with AIDS or other immunosuppressive conditions. Examples include the streptococci and candida spp.

Several pandemics have been documented. The 1918 pandemic was by far the worst. Later, the pandemic Hong Kong flu of 1968 appeared but was relatively mild compared with 1918 and even 1957. There have been some other events along the way: the reappearance in 1977

of HINI, and the famous swine flu scare in 1976. In pandemic influenza viruses, the novel or new genes tend to come from avian influenza viruses that then reassert, often with mammalian influenza genes. Now let me move on briefly to that second step in emergence- establishment and dissemination. Luckily for us, this is much harder for a newly- minted pathogen. So many infections that can get into human beings from time may not have a good way of transmitting or propagating themselves. Of course, environmental changes can be important here as well. Consider SARS, for example. By the way, ironically, Hong Kong decided to embark on a new promotional campaign just before SARS started. The slogan “Hong Kong will take your breath away”. Maybe they are better prognosticators than we are when it comes to the flu and other respiratory diseases. They certainly have had much more direct experience.

The consequences of SARS on global travel were enormous. The spread of SARS was a remarkable event. By the end of this, there were about 8,000 cases, most of them in the original area, but a few in other widely scattered places, with over 700 deaths, or about a 10 percent case fatality rate. Not a trivial disease.

Thus we see that is a key aspect of the biology of many pathogens, driving processes ranging from immune escape to changes in virulence. Because evolution is inherently subject to feedbacks, and because pathogen evolution plays out at scales ranging from within- host to between-host and beyond, evolutionary questions provide special challenges to the modeling community.

Here, we outline five challenges in modeling the evolution of pathogens and their hosts. These are-

- 1- Defining and measuring fitness for pathogens across scales.
- 2- Developing models to capture the impact of co- infection on the evolutionary process.
- 3- Modeling how pathogen characteristics shape the evolution of host immune diversity.
- 4- Understanding maintenance of pathogen diversity.
- 5- Developing better models for the impact of genetic systems on pathogen evolution.

Many of the challenges in modeling pathogen evolution that are introduced here revolve around questions of quantifying fitness.

However, the effects of evolution on pathogen dynamics are vast and potential modeling challenges reflect this.

Now in last, understanding the evolutionary pressures in each of these categories helps us to understand ways in which we might manipulate the evolution of the pathogens to become less virulent. In the example of malaria, there is a selective pressure for a virulence that ensures the host is incapacitated to make them more accessible for other mosquitoes.

If the water systems are cleared up so that don't get contaminated, cholera bacteria would have to become less virulent so the person could transfer it around by other means.

So, can we use our understanding of science to change the evolution of all pathogens away from virulence? If we shut down the modes of transmission that don't require human participation, suddenly all the evolutionary pressure is directed at allowing the human to get up and about to find a new host.

There is, however, an exception to this rule. Pathogens that can survive for a long time outside of a host are less concerned with evolutionary pressures regarding transmission and we are therefore unlikely to be able to change their transmission.

The implications of this are huge. Instead of challenging the bacteria to become stronger and more dangerous, we can challenge them to get along with us. Controlling the transmission of pathogens is not a new concept- we all know we should cover our mouths when we cough.

However, this approach is not aiming to prevent the spread of the diseases, but rather to make those diseases much less harmful.

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4- Five Challenges in Evolution and Infectious Diseases-Epidemics-  
<https://doi.org/10.1016/i.epidem.2014.12.003>

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## A Study of Health Care and Pandemics with Special Reference to COVID-19

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### Abstract

*This paper seeks to study about history of pandemics and through light on COVID-19. A new coronavirus was reported in the city of China, Wuhan in December 2019. The paper through light on most dangerous pandemic happened in the world and what humanity had to suffer because of those pandemics. With the outbreak of coronavirus it was reported that Health care services of many countries are not able to serve for the people. Developing countries need to pay more attention on Health care and should provide basis equipments to our frontline workers. The paper discusses basic precautions to take to stop spread of coronavirus.*

**Keywords:** Frontline, SARS-CoV-2, Outbreak, Prevention

### Introduction

On the last day of 2019, China reported unexplained pneumonia bunches to the World Health Organization (WHO). The disease, called COVID-19, immediately spread past the outskirts of China so that, in under more than two months, transforming it into a pandemic was announced by the World Health Organization on March 11, 2020. First instance of corona virus infection was told as cold in 1960. As indicated by the Canadian examination in 2001, around 500 patients were recognized as Flu like side symptoms. 17-18 instances of them were affirmed as tainted with corona infection strain by polymerase chain response. Corona was treated as basic non lethal infection till 2002. In 2003, different reports came out with the verifications of spreading the corona to numerous nations, for example, United States America, Hong Kong, Singapore, Thailand, Vietnam and in Taiwan. A few instance of serious intense respiratory

condition brought about by corona virus and their mortality in excess of 1000 patient was accounted for in 2003. This was the dark year for microbiologist. At the point when microbiologist was begun center to comprehend these issues (Kumar et al., 2020).

It is called Covid-19, a shortened version of "Corona virus Disease of 2019." This new virus spreads extraordinarily rapidly among humans because of its uniqueness no one on earth has an immunity to Covid-19, and no one had Covid-19 until 2019. Though initially seen as an outbreak in China, the virus spread worldwide in the span of months. With the coronavirus pandemic, people around the world have become more conscious during a pandemic of best practices, from proper hand-washing to social distancing. Countries across the world declared mandatory stay at home measures, closing schools, businesses, and public places. Dozens of companies and several more independent researchers continued to work on experiments, drugs and vaccines. The human race's search for survival of the pandemic has become the world's primary concern. At the time of this writing it is difficult to estimate the outcome of the Covid-19 pandemic. Yet we should benefit from history's pandemics to assess our best trainings. These are our instructors-Spanish flu, pandemic of AIDS, and more.

### **HIV/AIDS Pandemic**

HIV / AIDS, first identified in the Democratic Republic of Congo in 1976, have genuinely proved to be a global pandemic, killing more than 36 million people since 1981. There are currently between 31 and 35 million people living with HIV, the vast majority of who are in Sub-Saharan Africa, where about 21 million people are infected by 5 per cent of the population. As understanding has increased, new therapies have been created to make HIV much more manageable and many of those infected continue to lead successful lives. Between 2005 and 2012, global annual HIV / AIDS deaths went down from 2.2 million to 1.6 million. (*History of HIV and AIDS Overview*, n.d.)

### **FLU Pandemic (1968)**

A level 2 flu pandemic often referred to as "Hong Kong Flu," the 1968 flu pandemic was caused by the Influenza a strain H3N2, a genetic offshoot of the subtype H2N2. It took just seventeen days earlier than outbreaks of the virus were identified in Singapore and Vietnam from the first recorded case in Hong Kong on July 13, 1968, and within three months it had spread to

the Philippines, India, Australia, Europe and the United States. Even as the 1968 pandemic had a relatively low mortality rate (0.5 percent) it resulted in the deaths of more than a million people, including 500,000 Hong Kong residents, about 15 percent of its population at the time. (Kilbourne, 2020)

### **ASIAN flu (1956-1958)**

Asian flu was an H2N2 subtype Influenza A pandemic outbreak starting in China in 1956 and continuing until 1958. Asian flu transmitted from Guizhou Chinese area to Singapore, Hong Kong, and the United States in its two-year period. Calculations for Asian Flu's death toll differ depending on source, but the WHO puts the final count at nearly 2 million deaths, 69,800 of those alone in the USA. (1957-1958 Pandemic H2N2 Virus, n.d.; Kilbourne, 2020)

### **FLU Pandemic (1918)**

A disturbingly lethal influenza epidemic ripped through the globe between 1918 and 1920, infected over a third of the world's population and took the lives of twenty to fifty million people. The mortality rate was calculated 10% to 20% of the 500 million community infected in the 1918 pandemic, with up to 25 million deaths in the first 25 weeks alone. The casualties were what distinguished the flu pandemic of 1918 from other influenza outbreaks; where influenza had once historically only killed teenagers and elderly or already compromised patients, it had started to hit hardy and entirely healthy young adults, while still leaving children and others with weaker immune systems alive. (Spanish Flu, 2020)

### **Sixth Cholera Pandemic (1910-1911)**

The Sixth Cholera Pandemic, as its five past incarnations, emerged in India in which it killed more than eight lacs, before spreading to the Middle East, North Africa, Eastern Europe and Russia. The Sixth Cholera Pandemic was also the cause of the most recent American Cholera epidemic (1910–1911). Learning from the past, American health officials rapidly worked to separate the sick and in the end there were just 11 casualties in the US. By 1923, cases of cholera had been significantly reduced but in India it was still a problem. (Cholera's Seven Pandemics, 2020)

### **FLU Pandemic (1889-1890)**

Originally called "Asian Flu" or "Russian Flu," this strain was believed to be an outbreak of the H2N2 virus subtype Influenza A virus, but recent studies have now revealed the source of the H3N8 virus subtype Influenza A. The first cases were recorded at three different and remote locations in May 1889, Bukhara in Central Asia (Turkestan), Athabasca in northwestern Canada and Greenland. Population growth of the 19th century, particularly in urban centers, only helped the spread of flu, and the epidemic had spread throughout the globe shortly. It was the 1st true pandemic in the bacteriology era, and a great deal was learned from it. (Kempinska & Wozniak, 2013)

### **Third Cholera Pandemic (1852-1860)**

Usually considered the most lethal of the seven cholera pandemics, the third most important cholera epidemic in the 19th century lasted between 1852 and 1860. The Third Cholera Pandemic, similar as the first and second pandemics, started in India, spreading from the Ganga River Delta till rip through Asia, Europe, North America and Africa and claiming the lives of more than a million people. When operating in a deprived area of London, British physician John Snow monitored cholera cases and finally helped to recognize tainted water as a means of transmission for the disease. Unluckily, the similar year as his discovery (1854) went down as the pandemic's deadliest year, of which 23,000 people died of Britain. (*Cholera's Seven Pandemics*, 2020)

### **The Black Death (1346-1353)**

From 1346 to 1353 a Plague epidemic devastated Europe, Africa and Asia, with an approximate death toll ranging from 75 to 200 million people. The Disease most likely crossed continents, believed to have arisen in Asia, from the fleas living on the rats that so often resided on merchant ships. Ports, at the time large population centers, were the ideal breeding ground for rats and fleas, and hence flourished the poisonous bacterium, crippling three continents in its wake. (Wade, 2010)

### **Plague of Justinian (541-542)**

Expected to have killed about half of Europe's population, Justinian's Plague was an epidemic of the bubonic plague that ravaged the Byzantine Empire and port cities of the Mediterranean, killing up to 25 million people in its year long reign of terror. Generally believed

to be the first known outbreak of the Bubonic Plague, the Justinian Plague left its mark on the world, killing up to a fifth of the Eastern Mediterranean population and crippling the city of Constantinople, where at its height it killed an estimated 5,000 inhabitants a day and ultimately causing the deaths of 40% of the city's population. (“WHO Report on Global Surveillance of Epidemic-Prone Infectious Disease,” n.d.)

### **Antonine Plague (165 AD)**

The Antonine Plague, also known as the Galen Plague, was a historical epidemic that infected Asia Minor, Egypt, Greece, and Italy and is believed to have been perhaps Smallpox or Measles, but the real cause is still uncertain. Soldier returning from Mesopotamia during 165AD took this infectious plague back to Rome; accidentally, they had transmitted an epidemic which would ultimately kill over 5 million people and decimate the Roman army. (Smith, 1997; Verity Murphy, 2005)

### **Health Care and COVID-19**

The ongoing COVID-19 pandemic has contributed to a situation of fear around the world. The major problem is stopping corona virus from spreading to other areas. Latest studies have constructed the transfer of COVID-19 from person to person, resulting in the immediate interactions of patients and health care staff being affected. People who migrate from the infected areas are possible sources of transmission of disease. This resulted in bans on foreign and domestic travel and/or trade in impacted areas and the quarantine for returning passengers from various countries. Specific countries conducted lock-downs in states, territories, and cities to ensure social isolation between ordinary citizens. WHO promotes public health awareness as a prevention technique in terms of encouraging personal hygiene such as washing hands, using sanitizers, maintaining cough marking and preventing busy sites (religious places, malls, etc.). However, decisions on lock-down and transport restriction are very complicated due to financial considerations and the supply chain of vital commodities and food products to be managed. Delayed decision-making by some states on these acts led to rapid spread of COVID-19 with enhanced morbidity and mortality.

The decision on full lock-down and social distancing may be very difficult in developing countries because of socioeconomic and other factors. Nation readiness and response to the

pandemic is essential for outbreak detection, medical workup, health care, infection prevention and control. There's no available vaccine or treatment for this. The majority of cases is of mild to moderate severity and survives well. However, with the hypoxemic respiratory failure, seriously ill patients need intensive care and artificial ventilation. Mortality is very high in these cases, also in the world's best centers. The supply of the requisite equipment for critically ill COVID-19 patients is a global concern and there is also a lack of ventilators and other devices from the USA. The lack of high-dependency beds, completely functioning intensive care facilities, and ventilators is a big problem for governments in developed countries like India.

Another big problem in treating critically ill COVID-19 patients in developed countries is the shortage of qualified staff for operating ventilators. The big challenge is being faced for the COVID-19 pandemic, is to ensure the safety of healthcare staff on the frontline. Such frontline health care staff is struggling "unarmed" against COVID-19. Health-care personnel should be professionally equipped with a sufficient amount of personal protective equipment including N95 respirator and surgical masks, gloves, face covers, goggles, gowns and hand sanitizers. A proper primary care scheme for the screening of COVID-19 patients should be developed at every health care facility. To the overburden and fatigue of the health sector, the number of skilled frontline healthcare staff should be increased.

### **Transmission of COVID-19**

The corona virus is contracted by humans because of spillover events, that is, increased human-animal interaction. The virus spreads by direct contact (within around 3–6 feet), that is, by respiratory droplets released by an infected person in the air while coughing or sneezing. The virus may also spread by touching virus-contaminated surfaces or objects and then touching one's mouth, nose or eyes. Individuals with symptoms are able to spread the virus particularly between near contacts. (*Coronavirus Disease 2019*, 2020)

### **Symptoms of COVID-19**

The time of incubation following exposure to an infected individual ranges between 2 days and 14 days. Symptoms include fever, cough, breathing problems, pneumonia and extreme acute respiratory syndrome. The disease may appear in some people as aches and pains, nasal congestion, runny nose, sore throat or diarrhea. An affected person may not show any of these

signs, either. The infection will be mild in most cases and will require no special care. In serious cases, especially in the elderly and those with comorbid conditions, the infection can lead to impaired function of the kidney and liver, leading to organ failure and death. (“Q&A on Coronaviruses,” 2020)

### **Testing and Treatment**

Real-time reverse transcriptase (RT)-PCR diagnostic panel-based test kits are available for testing upper and lower respiratory tract specimens obtained from persons suspected of SARS-CoV-2 infection. People with COVID-19 are treated with medication such as fluids, supplementary oxygen to help relieve symptoms, and intensive care is needed in extreme cases. Health professionals should know names, addresses, and phone numbers of approved government and private sector labs and hospitals to refer suspicious diagnostic and management cases. Presently there is no antiviral treatment recommended for COVID-19. Scientists of all over the world are trying to find out a vaccine for the corona virus but not able to find the cure. “Following are the accepted specimens for coronavirus testing:

- A nasopharyngeal (NP) specimen collected by a healthcare professional; or
- An oropharyngeal (OP) specimen collected by a healthcare professional; or
- A nasal mid-turbinate swab collected by a healthcare professional or by a supervised onsite self-collection (using a flocked tapered swab); or
- An anterior nares (nasal swab) specimen collected by a healthcare professional or by onsite or home self-collection (using a flocked or spun polyester swab); or
- Nasopharyngeal wash/aspirate or nasal wash/aspirate (NW) specimen collected by a healthcare professional.” (*Interim Guidelines for Collecting, Handling, and Testing Clinical Specimens from Persons for Coronavirus Disease 2019(COVID-19)*, 2020)

### **Prevention**

There are currently no vaccines available to prevent COVID-19. Thus, the only way to fight back against COVID-19 is to prevent exposure to persons accused of COVID-19 or reported to it.



- Hand hygiene: Hands must be washed regularly for at least 20 seconds with soap and water, particularly after going to the bathroom, before eating, also when hands are not clearly filthy and after blowing your nose, coughing or sneezing. Using an alcohol-based hand sanitizer containing at least 60 percent alcohol if soap and water are not available.
- Respiratory hygiene: Mouth and nose should be covered with a cloth when coughing or sneezing, otherwise the cloth should be thrown into a closed bin and hand hygiene should proceed. It's always suggested that you cough into the elbow bend.
- A gap of at least one meter (three feet) for people and those with coughing, sneezing and fever should be established. Crowded areas should be discouraged, as should mass meetings.
- Daily fever monitoring should be implemented, and workers with minor respiratory problems should be advised to remain at home. Any occurrence of fever, cough, and breathing trouble should be reported to the health facility immediately, particularly if the employee has traveled to any of the countries recording COVID-19 cases or had near contact with a confirmed / suspected case of COVID-19 within 28 days.
- One should wear a face mask. For health professionals and people who care about a suspicious or confirmed case in nearby surroundings (at home or in a health care facility) it is important to use face mask. When a mask is used, using a medical mask to ensure it suits properly, so there are no holes in the mask and the nose. When mask is damp. Mask should be discarded in a closed bin and hand hygiene observed. Individuals should stop rubbing their ears, lips, and eyes while they have the mask on.
- Public sanitation should be ensured, in particular in specific environments served by workers such as toilets and canteens. It is important to routinely clean and disinfect items and surfaces often handled, using daily disinfectants. For cross ventilation windows and doors should leave open.(*Coronavirus Disease 2019, 2020*)

## Quarantine

Quarantine distinguishes an individual or group of individuals who have been exposed to COVID-19 but have not yet developed a disease (symptoms) from those who have not been exposed to it, in order to avoid the transmission of the virus by the human. The length of

quarantine is based on the COVID-19 incubation time which is 14 days from the last exposure date. Quarantine centers are being made in India also to prevent spread of the coronavirus. Food, health facility, basic needs is being provided to those who are quarantined by the government itself. (“Q&A on Coronaviruses,” 2020)

Self-quarantine involves removing yourself from everyone else because you were introduced to someone with COVID-19 even though you have no symptoms. You are screening yourself for symptoms while self-quarantine. The self-quarantine target is to avoid transmission. Although people who are sick with COVID-19 can automatically infect people with self-quarantine, certain infections can be avoided from occurring. (“Q&A on Coronaviruses,” 2020)

### **Self Isolation**

Self-isolation is an significant precaution taken by individuals with COVID-19 symptoms to prevent infecting those within the group, particularly members of the family. Self-isolation is when a person with fever, cough or other COVID-19 symptoms stays at home and is not going to college, school or public areas. This should be done on a voluntary basis or with the advice of his / her health care provider. If you live in an environment with malaria or dengue fever, though, it's important you don't neglect fever symptoms. Looking for medical support, If necessary, remain at least one meter away from other people while you visit the health facility and do not touch surfaces with your hands. Support a kid also to stick to this advice.

### **Difference between Quarantine and Isolation**

Quarantine means reducing movements or dividing persons that are not themselves infected but may have been exposed to COVID-19. The aim is to keep the illness from spreading at the moment people actually show symptoms. Isolation means separating people who are ill with COVID-19 symptoms and can be infectious to prevent the disease from spreading. To distance physically means to be physically separate. WHO suggests maintaining a distance of at least one meter (3 feet) from others. It is a general precaution everybody can consider, even though they are well off with no known COVID-19 risk.

### **Survival of COVID-19**

The most important thing to learn about surfaces with coronavirus is that they can be quickly washed with common household disinfectants that kill the virus. Studies have shown the COVID-19 virus can live on plastic and stainless steel for up to 72 hours, on copper for less than 4 hours and on cardboard for less than 24 hours. As, either clean your hands with an alcohol-based sanitizer, or wash them with water and soap. Do not touch your eyes, your mouth or your nose. (WHO, 2020)

## Conclusion

This is a crucial moment to create a regional command and control structure for all policy agencies to fight COVID-19 and related outbreaks. A significant improvement in the existing government expenditure is critical if regional health related concerns are to be met. Government must prioritize health and rationalize the number of beds in hospitals and intensive care units per 1000 people according to international requirements. In order to deliver and provide high-quality critical care to patients, advanced instruction in the area of intensive care and other related specialties must be given to physicians, nurses and paramedics. Community awareness on different topics relating to public safety and personal hygiene through online and social media as well as at school level can be effective in avoiding these outbreaks. Everyone should follow World Health Organization's guidelines released time to time.

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## **ANTHROPOGENIC FACTORS BEHIND VIRAL INVESTIGATION**

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**Anthropogenic factors means** environmental pollution and pollutants originating in human activities. Some human activities that cause damage (either directly or indirectly) to the environment on a global scale include human reproduction, over consumption, over exploitation, pollution and deforestation can be termed as anthropogenic factors. This word specifically designates an effect or object resulting from human activity. **Examples** include earthquakes, volcanic eruptions, drought, landslides, floods, subsidence, tropical storms and wildfires. **The effects of one process or phenomena (either natural or anthropogenic) another process or phenomena (either natural or anthropogenic)**

**Anthropogenic sources comprises of** emissions from combustion, smelting, refining of ore, welding, diesel vehicles, aeroplanes and cooking etc. Engineered NPs are also the result of anthropogenic sources. Anthropogenic processes are those produced by Man's activities in exploiting and modifying the environment caused by such anthropogenic processes.

**Anthropogenic inputs** (e.g., point and non-point sources of nutrients, inorganic chemicals, microorganisms etc.) may alter the quality and quantity of organic carbon and affect the biogeochemical; cycling of carbon and other nutrients by aquatic ecosystems.

**Scientist believes that the changes we are seeing are caused by human activities such as burning fossil fuels, deforestation and agricultural activities. Green house gases that are released through these activities are carbon di oxide, methane, nitrous oxide, and chlorofluorocarbons.**

**Anthropogenic chemicals** are widely used in agriculture, industry, medicine, and military operations. Examples include pesticides such as atrazine pentachlorophenol (PCP), dichloropropene, and DDT, explosives such as trinitrotoluene, solvents such as try

chloroethylene and dielectric fluids such as PCBs.

**Anthropogenic factors- Social, political and economic-** are often major determinants of environmental health. In addition to environmental stressors themselves, social, political, and economic constructs can mitigate or intensify eco system and human health outcomes.

**Anthropogenic biomes**, also known as anthromes or human biomes, describe the terrestrial biosphere in its contemporary, human altered form using global ecosystem units defined by global patterns of sustained direct human interaction with **ecosystems**.

**Humans impact** the physical environment in many ways: over population, pollution, burning fossil fuels, and deforestation. Changes like these have triggered climate change, soil erosion, poor air quality, and undrinkable water. We interfere in the ecosystem by commercialisation of agriculture, plastic production, emission of carbon di oxide, drainage streams/rivers and destruction of critical fresh water aquifer recharge areas. Overhunting and over exploitation, genetic modification, over population etc. major reasons for over population are poverty, poor contraceptive use, child labour, reduced fertility rates, fertility treatment, immigration, lack of water, lower life expectancy etc.

Now due to excessive interference by humans into ecosystem the balance of nature is starting to become misbalance itself. Due to excessive burden on an economy and for the sake of survival of fittest the battle of life turned to a brutal game where we humans the best creation of God have started to exploit natural resources vigorously. Under the shrine of same cause we are doing excessive production by promoting consumerism instead of sustainable development. Each person wants to become rich and in this race if they need to use/choose even wrong means they don't hesitate. This greed has started to show its adverse effects.

**This world is enough for everyone's need but not to satisfy greed of even one.**

All these anthropogenic factors effect social, economic, political, legal, cultural, demographic, technological, natural factor in different all manners. At present whole world is suffering from a problem called covid 19 it is also an example of excessive interference of human being in an environment in different all manners.

**Lets discuss how human impact on wildlife to blame for spread of viruses**

Increased contact with animals likely cause of outbreaks such as **Covid-19**, say experts, as

conservationists call for global ban on wildlife markets

Hunting, farming and the global move of people to cities has led to massive declines in biodiversity and increased the risk of dangerous viruses like Covid-19 spilling over from animals to humans, a major study has concluded.

In a paper that suggests the underlying cause of the present pandemic is likely to be increased human contact with wildlife, scientists from Australia and the US traced which animals were most likely to share pathogens with humans.

**Taking 142 viruses known to have been transmitted from animals to humans over many years, they matched them to the IUCN's red list of threatened species**

Domesticated animals like cattle, sheep, dogs and goats shared the highest number of viruses with humans, with eight times more animal-borne viruses than wild mammal species.

Wild animals that have adapted well to human-dominated environments also share more viruses with people. Rodents, bats and primates – which often live among people and close to houses and farms – together were implicated as hosts for nearly 75% of all viruses. Bats alone have been linked to diseases like **Sars, Nipah, Marburg and Ebola.**

The study, published in the journal Proceedings of the Royal Society B, found that the spill over risk was highest from threatened and endangered wild animals whose populations had declined largely due to hunting, the wildlife trade and loss of habitat.

Human encroachment into bio diverse areas increases the risk of spill over of novel infectious diseases by enabling new contacts between humans and wildlife ... We found that species in the primate and bat orders were significantly more likely to harbour zoonotic viruses compared to all other orders,” it said

**“spill over of viruses from animals are a direct result of our actions involving wildlife and their habitat,” said lead author Christine Kreuder Johnson, director of the Epicentre for Disease Dynamics at the One Health Institute, a programme of the UC Davis School of Veterinary Medicine.**

“The consequence is they’re sharing their viruses with us. These actions simultaneously threaten species survival and increase the risk of spill over. In an unfortunate convergence of many factors, this brings about the kind of mess we’re in now,” she said.

“We need to be really attentive to how we interact with wildlife and the activities that bring

humans and wildlife together. We obviously don't want pandemics of this scale. We need to find ways to co-exist safely with wildlife, as they have no shortages of viruses to give us," said Johnson.

Separately, **more than 200 of the world's wildlife groups have written to the World Health Organization (WHO) calling on it to recommend to countries a highly precautionary approach to the multi-billion dollar wildlife trade, and a permanent ban on all live wildlife markets and the use of wildlife in traditional medicine.**

**The Covid-19 pandemic**, says the letter, is believed to have originated at wildlife markets in China, and to have been transmitted to humans as a result of the close proximity between wildlife and people.

The groups, which include the International Fund for Animal Welfare, the Zoological Society of London and Peta, say a ban on wildlife markets globally will help prevent the spread of disease, and address "one of the major drivers of species extinction".

"This decisive action, well within the WHO's mandate, would be an impactful first step in adopting a highly precautionary approach to wildlife trade that poses a risk to human health," says the letter.

The organisations argue that zoonotic diseases are responsible for over 2 billion cases of human illness and over 2 million human deaths each year, including from **Ebola, Mers, HIV, bovine tuberculosis, rabies, and leptospirosis.**

The letter follows acting **UN biodiversity chief Elizabeth Maruma Mrema's call** in the Guardian this week for a global ban on wildlife markets.

Unlike the conservation groups, Mrema, the acting executive secretary of the **UN Convention on Biological Diversity**, emphasised that millions of people, particularly in Africa, depend on wild animals for food and that alternatives to wet markets are needed.

In a growing sign that global organisations are embarrassed by the emergence of zoonotic diseases in traded animals, Cites, the body which regulates the international trade of animals, refused to be drawn into the growing debate about the origins of Covid-19.

In a terse statement it said: "Matters regarding zoonotic diseases are outside of Cites's mandate and the Secretariat does not have the competence to make comments on the recent news on the possible links between human consumption of wild animals and Covid-19.

**Benefiting from our viruses-** Viral infections at a young age may help our immune system



develop properly, providing protection against later infections and preventing immune overreactions that lead to allergies. Viral infections of the respiratory and gastrointestinal tracts of healthy infants are now known to be common and often asymptomatic, likely thanks to protection by maternal antibodies delivered across the placenta and via breast milk. Such attenuated infections might provide a form of natural vaccination against later infections with related, more-pathogenic viruses. Just as the proper development of the human gut and immune system in infants is dependent on the presence of a bacterial gut microbiome, a recent study found that early enteric viral infection could have a similar beneficial effect in mice. Specifically, mouse norovirus, a commensal relative of a common human pathogen, restored intestinal morphology and immunological function that was perturbed in germ-free or antibiotic-treated newborn mice.

**Viruses in our DNA-** In addition to the viruses that can infect us, humans (and all other vertebrates) have traces of past viral infections integrated into our very own genomes. About 8 percent of the human genome consists of retroviral DNA sequences that have inserted themselves into the human germ line, where some of their functions have been adopted to serve essential functions for their host's survival and development.

**Some of our resident viruses may be beneficial-** Microbiology, researchers have focused on pathogens that make us and our domesticated animals and plants sick. Because the onset of symptoms was the only way to know if specific viruses were present years ago, the well-studied viruses are those that cause disease. But many viruses chronically infect humans without inducing disease, except perhaps in the very young, the very old, or the immune suppressed.

In recent years, **great leaps in genomic sciences have allowed researchers to detect viruses living in and on the human body**—collectively called the human virome. Recent genomic explorations of human samples have revealed dozens of previously unrecognized viruses resident

in our gut, lung, skin, and blood. Some of these newly identified viruses may underlie mysterious, unexplained diseases, but it is also possible that some of these viruses are harmless in most people, most of the time. Knowing how these newly discovered viruses affect humans will allow us to determine whether they are to be prevented, treated, ignored, or even encouraged.

**A spectrum of viruses** Researchers can now identify viruses' present using metagenomic analyses. This is achieved by comparing the genetic information from next-generation

sequencing of clinical samples to the genomes of all known viruses. These include viruses that infect all branches of life, from humans to plants and bacteria. When a sample contains a previously identified virus, its genetic sequences can show upward of 80 percent similarity to viral sequences in public databases such as the National Center for Biotechnology Information and the European Nucleotide Archive. Such similarities are easily identified computationally. **Great leaps in genomic sciences have allowed researchers to detect viruses living in and on the human body—collectively called the human virome.**

**Conclusion** - we have tried to find out many facts, figures, finding and concepts which are being derived by many scholars. We have tried to cover many outlooks of different books, sites, newspapers etc. but all the findings have driven me towards one main conclusion only that yes we are disturbing nature by acting as anthropogenic factor. Viruses are beneficial as well as harmful also. We need to live with all biotic and a biotic factors altogether. We need to find a way of sustainable development where we can live with all the factors with mutual benefits. Viruses are into existence due to excessive human activities which are in practice due to endless desires of mankind. Viruses are beneficial and harmful also willingly or unwillingly we need to live along with them. We need to understand the way in which we can live with them so the balance in ecosystem can be maintain. Science is playing its role very efficiently but are we doing justice to this world in real sense. In the greed of finding unknown facts we are on the way of destruction where we are continuously disturbing the free flow of nature. This hit and trial method may lead to unforeseen circumstances. Those circumstances may be positive but more chances are for adverse negative effects like covid-19. We need to think over it.

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**A FUTURE APPROACH FOR CREATING SUSTAINABLE SOLUTIONS TO  
ENVIRONMENTAL CONDITIONS AND INFECTIOUS DISEASES**

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**INTRODUCTION**

The environment may be taken to encompass all external factors and conditions that affect people's lives. From a health perspective, the definition may be wide and include social factors, but often it is taken to have a more restricted meaning of the chemical, biological and physical agents that impinge on health. Traditionally, the focus of public health work has been concerned with local health hazards – pollution of the air, water, land etc – but in recent years there has been growing concern with a number of global hazards such as stratospheric ozone depletion and climate change. The types of environmental influence that populations suffer (and give rise to) are broadly related to their socio-economic development. They are also inequitably distributed. Recent estimates of the global burdens of disease from environmental factors shows that the greatest burdens relate to unsafe drinking water, poor sanitation & hygiene, and to pollution of the indoor and outdoor air. Burdens relating to climate change, which currently are modest, are expected to increase substantially over time.

**The present paper tries to find out environmental factors influencing the spread of infectious diseases and discusses future approaches to deal with the problems.**

**ENVIRONMENTAL FACTORS INFLUENCING THE SPREAD OF COMMUNICABLE  
DISEASES**

A number of environmental factors influence the spread of communicable diseases that are prone to cause epidemics. The most important of these are:

- Water Supply
- Sanitation Facilities
- Climate.

A lack of safe water, inadequate excreta disposal facilities, poor hygiene, poor living conditions and unsafe food can all cause diarrhoeal diseases. These diseases are a major cause of suffering and death in an emergency situation.

Climate can affect disease transmission in a variety of ways. The distribution and population size of disease vectors can be heavily affected by local climate. Flooding after heavy rains can result in sewage overflow and widespread water contamination. In addition, there is some evidence to suggest that pathogens can be spread from one region to another along air streams or by wind (WHO 2005). The description of above cited environmental factors is discussed as follows.

**Water Supply and Infectious Diseases** - During the past 30 or 40 years, we have observed many and diverse examples where infectious disease reduction efforts have failed to meet expectations, with diseases reemerging to preintervention levels or worse. Dengue fever, for example, was eliminated from the Americas for many years only to reemerge with a more virulent form of the disease, including dengue hemorrhagic fever. Schistosomiasis and malaria both have shown that they can quickly reemerge after intervention efforts are loosened. Waterborne zoonotic agents such as *Escherichia coli*, *Campylobacter jejuni*, and *Cryptosporidium parvum* have emerged in recent years (Cotruvo et al. 2004). Many other water-associated human pathogens, including *Vibrio cholerae*, hepatitis viruses, cyclospora, microsporidia, *Yersinia enterocolitica*, and environmental bacteria (e.g., *Legionella pneumophila*), have been associated with waterborne illnesses over the past few decades (Sharma et al. 2003). Thus, sustainability has become an important criterion for gauging the success of disease reduction efforts. Generally water-related infectious diseases are grouped into two categories. **Waterborne infectious diseases**, such as diarrhea, are linked to poor sanitation, inadequate hygiene, ingestion of and contact with unsafe water, and lack of access to adequate amounts of safe water. Water-associated vector-borne diseases, such as malaria and dengue fever, require water to propagate insect vectors (e.g., mosquitoes, black flies) that transmit pathogenic microbes when taking a blood meal from a human (WHO 2008). Another kind of water-associated disease, schistosomiasis, is caused by a

worm or blood fluke whose life cycle involves particular aquatic snails and human contact with infected water. Habitat requirements of such insect and snail vectors are species-specific and can include large and small water bodies and channels (e.g., lakes, lagoons, rivers, ditches, culverts, sewers), poorly drained soils, and containers (e.g., pots, tires, leaves, tree stumps) .Many water-related infectious diseases have been referred to as the “neglected diseases of neglected populations,” because they receive little attention and disproportionately affect poor people in developing nations (Ehrenberg and Ault 2005).

**2-Sanitation-** It is considered a primary barrier to **infection** by excluding pathogens from the environment though rotavirus, the largest global contributor to diarrheal **disease in** young children (Kotyo. et al., 2013) is not prevented by improved **sanitation**. Poor sanitation may be associated with a number of infectious and nutritional outcomes, and these outcomes also cause a heavy burden of disease globally. Diarrhea accounts for the largest share, causing an estimated 1.4 million deaths annually) or 19% of all under-five deaths in low-income settings. Over one billion people are at risk of soil-transmitted helminth (STH) infections, which leads to nearly five million disability adjusted life years (DALYs).In addition to the direct effects of sanitation on human health, sanitation-related sequel aggravate poverty and economic development (Guerrant et al., 2013).

Diarrheal pathogens include viruses, bacteria, and protozoans, and are primarily transmitted via human feces, though some also have animal hosts (Wagner and Lanoix, 1958). Sanitation is considered a primary barrier to infection by excluding pathogens from the environment (Wagner and Lanoix, 1958), though rotavirus, the largest global contributor to diarrheal disease in young children is not prevented by improved sanitation. Nearly all cases of soil-transmitted helminthiases, schistosomiasis, and trachoma are environmentally mediated (Prüss-Ustün et al., 2016), and consistent use of sanitation and hygienic behaviors is likely to play a role in preventing transmission.

**3- Climate Change\_:** Climate change is causing widespread drought and desertification in much of the world, threatening the availability of water for consumption, food production, personal hygiene, and medical care, including for infectious disease.We do know that infections that are transmitted through water, through food, or by vectors such as mosquitoes and ticks, are highly sensitive to weather and climate conditions. The warmer, wetter and more variable conditions

brought by climate change are therefore making it easier to transmit diseases such as malaria, dengue fever, chikungunya, yellow fever, Zika virus, West Nile virus and Lyme disease in many parts of the world. The Lancet Countdown, a scientific collaboration between 35 institutions, found that the climate suitability for disease transmission has already increased for diseases including dengue, malaria and cholera. A changing climate is aggravating the negative health impacts of malaria by broadening the range of the *Anopheles* mosquito, the vector that spreads it. It also lengthens the season in which mosquitos reproduce and transmit the disease, thereby increasing the number of people at risk. A similar escalation takes place for diseases such as dengue fever, chikungunya, yellow fever and Zika, which are spread by *Aedes* mosquitos.

Lyme disease, which is spread by ticks, is also increasing its range and seasonality in many parts of North America and Europe, while waterborne cholera and cryptosporidiosis are increasing with more frequent droughts and flooding.

### **LOOKING FORWARD: A FUTURE APPROACH FOR CREATING SUSTAINABLE SOLUTIONS**

A research framework appropriate for creating sustainable solutions to control infectious diseases must move beyond existing approaches. Following are some suggestions.

- “There’s an urgent need for investment in strategies to reduce environmental risks in our cities, homes and workplaces. “Such investments can significantly reduce the rising worldwide burden of cardiovascular and respiratory diseases, injuries and cancers, and lead to immediate savings in healthcare costs. said Dr Maria Neira, WHO Director, Department of Public Health, Environmental and Social Determinants of Health.
- Interdisciplinary approaches and teaming that account for the complexity, scale, and dynamics of water-related infectious disease problems.
- Ongoing surveillance and monitoring that include not only the traditional public health indicators (such as mortality and morbidity), but also indicators from other relevant disciplines.
- Research agendas that use an extended time horizon on the order of decades—long enough to provide continuity and meaningful progress for data collection, policy

development, implementation, and analysis, but short enough to allow system evolution and information updating.

- A systems approach that provides an overall framework to facilitate analysis, understand interactions/feedbacks, and promote collaboration among researchers with diverse backgrounds.
- Increasing access to safe water and adequate sanitation and promoting hand washing would further reduce water related diseases.
- Inclusion of general public by awareness campaigns with impressive slogans leave a best impact on public.
- The UN 2030 Agenda commitment of balancing “the three dimensions of sustainable development: the economic, social, and environmental.” will require a deeper, mechanistic understanding of the complex drivers of disease emergence .
- Implementation of social protection policies so the poor have access to basic sanitation services and establish clean water as a human right.
- Formulation of policies and plans that contribute to decreasing vulnerabilities is must.
- Public transportation systems in place of individually-owned motor vehicles can result in less sedentary lifestyles, decreased environmental contamination, decreased accident rates, decreased rates of respiratory illnesses, and increased equity.
- The “green economy” can also play an important role in improving and benefit health.
- Implementation of policies, regulations, and programs to increase sanitation and minimize environmental pollution.
- State has to take the responsibility to regulate, respect, protect and guarantee the realization of rights of clean water ,clean environment and pure air for their people.

“A healthy environment underpins a healthy population,” says Dr Margaret Chan, WHO Director-General. “If countries do not take actions to make environments where people live and work healthy, millions will continue to become ill and die too young.”



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कॉलेज मुरादाबाद उत्तर प्रदेश

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समाज के प्रारम्भ से ही मानव और प्रकृति के बीच एकात्मकता का सम्बन्ध रहा है। मानव पूर्ण रूप से प्रकृति पर निर्भर था, और अपनी आवश्यकताओं की पूर्ति प्रकृति से ही करता था। उस समय प्रकृति, मानव की सहचर थी, और मानव प्रकृति का सहचर था। समय बदलता गया मानव ने अपने परिवार की आवश्यकताओं की पूर्ति करना अपनी जिम्मेदारी समझा। तत्पश्चात् समाज में एक दूसरे की उपेक्षा करना प्रारम्भ कर दिया। परिणाम यह हुआ कि दुष्मनी, स्वार्थ, वैमनस्य, तथा प्रलोभन ने मानव को घेर लिया। वह आत्मरक्षा के लिए दूसरों को नुकसान पहुँचाने लगा। धीरे-धीरे मनुष्य यही प्रवृत्ति पर्यावरण के साथ अपना लेना लगा। जैसे-जैसे मानव सभ्यता का विकास होता गया, उसने पर्यावरण का क्षरण करने में कोई कसर बाकी नहीं रखी। उसी समय से मानव का पतन प्रारम्भ हो गया। जो निरन्तर जारी है।

पर्यावरण का अध्ययन गहराई से किया जाये तो यह समझ में आता है, कि संसार में प्रत्येक चीज नष्ट है समयानुसार उसको नष्ट होना है। अगर उसके साथ मानवीय छेड़छाड़ किया जाता है, तो वह समय से पहले भी नष्ट हो जाती है। अगर मनुष्य पर्यावरण के साथ छेड़छाड़ या उसका दोहन नहीं करता है तो इसका मतलब यह नहीं कि वह पर्यावरण को नुकसान नहीं पहुँचा रहा है। अगर वह पर्यावरण को सुरक्षित व स्वच्छ करने में अपना सहयोग नहीं करता है तो वह अप्रत्यक्ष रूप से पर्यावरण को नुकसान पहुँचाता है। अगर पर्यावरण में जीवों का वास न हो तो समयानुसार प्रकृति ( पर्यावरण ) नष्ट हो जाएगी। इसलिए पर्यावरण का क्षरण न करने के साथ-साथ उसका संरक्षण करना भी हमारी नैतिक जिम्मेदारी बनती है। पर्यावरण क्षरण का मतलब भी पर्यावरण की उस स्थिति से है जो उसके मूल रूप को ही बदल देता है, अर्थात् पर्यावरण क्षरण में मुख्य रूप से दो कारक शामिल हैं- नैसर्गिक और जैविक। अभी तक पूर्ण रूप से प्राकृतिक पर्यावरण कहीं नहीं है, क्योंकि पर्यावरण में मानव ने कुछ न कुछ योगदान अवश्य दिया है; पूर्ण रूप से जैविक पर्यावरण भी कहीं नहीं मिलते, उसमें भी प्रकृति ने कुछ न कुछ योगदान अवश्य दिया है। पर्यावरण

परिवर्तनीय एवं अस्थिर होते हैं इसमें कुछ बदलाव प्राकृतिक प्रभाव से होते हैं , कुछ मानव क्रियाकलाप के कारण होते हैं। पर्यावरण के क्षरण होने में किसी एक जीव को जिम्मेदार नहीं ठहरा सकते हैं, बल्कि हम सभी इसके लिए जिम्मेदार हैं। \*Ykfl l cdu\* का कथन है कि “ प्रकृति पर उसके आदेशों का पालन djds gh fot; iklr dh tk l drh gA” प्रत्येक जीव प्रत्यक्ष या अप्रत्यक्ष रूप से पर्यावरण के क्षरण में योगदान करता है।

पर्यावरण प्रदूषण को लेकर 1972 ई0 में स्टॉकहोम में संयुक्त राष्ट्र की उच्च स्तरीय बैठक हुई थी। विष्व के अधिकतर देशों से आये प्रतिनिधियों ने अपने महत्वपूर्ण विचार व सुझाव प्रकट किये इसी बैठक में 'पर्यावरण क्षरण' की गम्भीर समस्या व पर्यावरण के संकट से पैदा होने वाली आपदा पर नियंत्रण करने हेतु कुछ महत्वपूर्ण बिन्दुओं पर सहमति बनी थी। लेकिन दुर्भाग्यवश वह बिन्दु अपने-अपने देशों में राजनीति के शिकार होकर राजनीति में ही सिमट कर रह गये। आस्ट्रेलिया एक ऐसा राष्ट्र है जहाँ हर बार पर्यावरण के नाम पर ही चुनाव लड़े जाते हैं। सत्ता में आने के बाद सत्ताधारी पार्टी अपने कार्यकाल में पर्यावरण का तो जिक्र ही नहीं करती हैं। यह तो एक उदाहरण मात्र है, न जाने कितने ऐसे देश है जो पर्यावरण के नाम पर चुनाव लड़ते हैं और जीत जाते है। भारत की बात की जाय तो पर्यावरण मुद्दे को अपने चुनावी घोषणा पत्र में इतनी प्रमुखता से नहीं उभारा जाता है, लेकिन पर्यावरण की बात अपने-अपने घोषणा पत्र में सभी राजनीतिक पार्टियां अवश्य करती हैं। सत्ता में आने के बाद पार्टियां पर्यावरण के नाम पर मात्र बिजली, पानी, शौचालय तक ही सिमट कर रह जाती हैं। इसका भी कारण है, भारत की जनता की मांग भी यही रहती है । इससे अलग हटकर हम भारतवासी कभी पर्यावरण बचाव के कुछ सोंचते भी नहीं है और न ही कोई जन-आंदोलन करते हैं। इसके बावजूद भी हमें न हवा शुद्ध मिल रही है, और न पानी ही शुद्ध मिल रहा है। आये दिन पानी में कीड़े निकलने की खबरें अखबार में आती रहती हैं। पर्यावरण के क्षरण के निष्कर्ष पर पहुँचने से पहले यही समझ में आता है कि पर्यावरण क्षरण की जड़ बढ़ती हुई जनसंख्या है। जनसंख्या विस्फोट होगा, तो न पानी शुद्ध मिलेगा और न वायु, बल्कि पर्यावरण का क्षरण भी तेजी से होगा। विष्व के अन्य देशों से तुलना की जाए तो हमारे देश भारत में अशुद्ध वायु से मरने वालों की संख्या सबसे अधिक है।

Tkyok; q i f j o r u भी हमारे देश के लिए सबसे बड़ा खतरा बन कर उभरा है। हाल ही के समय सन् 2019-20 की बात करें, तो असमय और बेमौसम बारिश ने भारतीय किसानों की फसल को चौपट कर दिया है। किसानों के सामने भुखमरी की समस्या पैदा हो चुकी है। न जाने कितने किसानों ने फसल बर्बाद होने के कारण आत्म-हत्या कर ली और न जाने कितने भूखों मर गये। इससे मात्र फसल को ही नुकसान नहीं हुआ है बल्कि प्रत्येक जीव पर इस बारिश का प्रतिकूल प्रभाव पड़ेगा। तथा वातावरण में तरह-तरह के [जीवाणु/विषाणु](#) उत्पन्न होंगे । यही वैक्टीरिया सर्दी, जुकाम, बुखार, खांसी एवं संक्रमण की वजह बनते हैं। जनवरी 2020 की बात की जाए तो इस समय 'कोरेना वायरस' के संक्रमण के कारण भारत देश ही नहीं

बल्कि पूरा विश्व भयंकर महामारी से जूझ रहा है। मरने वालों की संख्या असंख्य हो गयी है। इसका कारण जलवायु परिवर्तन भी हो सकता है। जलवायु को परिवर्तित करने में अप्रत्यक्ष रूप से मनुष्य की चकाचौंध भरी जिन्दगी का भी हाथ है। जबकि विश्व के प्रत्येक देश की नैतिक जिम्मेदारी बनती है कि वह पर्यावरण के बचाव के सम्बन्ध में बराबर की भागीदारी करें।

आज जो देश कोविड-19 जैसी भयंकर महामारी से सबसे अधिक ग्रसित हैं, या यों कहें कि जिन देशों ( अमेरिका, चीन, इटली आदि ) में संक्रमित या मरने वालों की संख्या सबसे अधिक है। यह वही देश हैं जो अन्तराष्ट्रीय स्तर पर पर्यावरण से सम्बन्धित होने वाली मीटिंग में मात्र औपचारिका के तौर पर हिस्सा लेते हैं और मीटिंग में लिए गये निर्णय-बिन्दु छूमन्तर हो जाते हैं। आज वह देश उसी का नतीजा भोग रहे हैं। धन्य है भारत जिसने समय रहते अपने देश में 'लॉक-डॉन' घोषित कर दिया। बरना वायरस से अनभिग भारतीयों को बचाना मुश्किल हो जाता। यह कोई पहला कदम नहीं था, वैसे भी भारत में राजनीतिक पार्टियों द्वारा समय-समय पर ठोस/उचित निर्णय लिए जाते रहे हैं। 'दृष्टि पब्लिकेशन' द्वारा प्रकाशित पत्रिका मई 2019 के अंक में बताया गया है कि " *fcMu tyo; q i f j o r u l s f u i V u s d s f y, v k i k r d k y* घोषित करने वाला पहला देश बन गया है। साथ ही बताया है कि इस मुद्दे पर लंदन में ग्यारह दिनों तक विरोध प्रदर्शन को देखते हुए विपक्ष ने इमरजेंसी लागू करने का प्रस्ताव रखा, जिसे मान *f y; k x; k A* \*\* ब्रिटेन के इस कदम के बाद यह उम्मीद की जा रही है कि भारत सहित अन्य देश भी जलवायु खतरा को भांपते हुए कोई गम्भीर कदम उठाएंगे ।

वर्ष 2018 में, केन्द्रीय प्रदूषण नियन्त्रण बोर्ड ने कुल 351 प्रदूषित नदी खण्डों की पहचान की थी। तथा तीन साल पहले 302 खण्डों की वृद्धि हुई है। गंगा नदी की बात की जाए तो देश की लगभग 40 प्रतिशत आबादी गंगा पर निर्भर है। भारत सरकार ने गंगा नदी के प्रदूषण को समाप्त करने तथा गंगा को स्वच्छ बनाने के लिए 'नमामि गंगे' नामक अभियान चलाया। केन्द्रीय सरकार ने वर्ष 2019-20 तक गंगा की सफाई के लिए 20,000 हजार करोड़ रूपी खर्च करने का बजट तैयार किया है। लेकिन केवल गंगा को स्वच्छ करने से पर्यावरण क्षरण का निपटारा नहीं होने वाला। पर्यावरण क्षरण के कई अन्य कारण भी हैं।

Climate की समस्या भी एक गम्भीर समस्या है तेजी से बढ़ते शहरीकरण तथा औद्योगीकरण ने जल प्राप्ति के साधनों को प्रभावित किया है। वनों के कटान अधिकाधिक मात्रा में होने के कारण भू-जल का स्तर काफी गिर गया है। पृथ्वी पर जीवन बचाने के लिए पानी बचाना अति आवश्यक है। सन् 1972 ई0 में केन्द्रीय भू-जल बोर्ड के गठन से ही भू-जल की निगरानी एवं प्रबन्धन की ओर सरकारी पहल की शुरुआत की गयी थी। हालाँकि भारतीय संविधान की सातवीं अनुसूची की सूची दो की प्रविष्टि 17 के अनुसार जलापूर्ति का विषय राज्य का विषय है। और वन मंत्रालय ने पर्यावरण संरक्षण अधिनियम 1986 के भाग 29 के अन्तर्गत केन्द्रीय जल प्राधिकरण बोर्ड को गठन किया। इससे संबन्धित दिशा-निर्देशों का उलंघन करने

वाली किसी भी सस्था को बंद करने का अधिकार होगा। इस अधिनियम के तहत केन्द्र-सरकार पर्यावरण प्रदूषण को नियंत्रित करने के लिए भी नियम बना सकती है।

\*g'fj r&x'g\* प्रभाव के कारण पृथ्वी के आस-पास तापमान बहुत बढ़ गया है ; जो कि जीवों के लिए एक बहुत बड़ा खतरा साबित होगा। हरित गृह प्रभाव की संकल्पना जोसेफ फोरियर के द्वारा की जा चुकी है। ऐसा माना जाता है कि हरित-गृह में कार्बन-डाई-ऑक्साइड गैस सबसे प्रमुख व खतरनाक गैस है। जो आमतौर पर जीवाश्म से उत्पन्न होती है। भारत सहित 194 देशों ने वैश्विक कार्बन उत्सर्जन में कटौती के राष्ट्रीय संकल्पों के लिए आम सहमति वाला प्रारूप तैयार कर लिया है। हरित गृह प्रभाव एक प्राकृतिक घटना है, जो लाखों वर्षों से पृथ्वी पर होती आयी है। यह भू-मण्डलीय तापन का 95 प्रतिशत से भी अधिक उत्पादन करते हैं। औसतन वैश्विक तापमान प्राकृतिक हरित-गृह के प्रभाव से 15 डिग्री सेन्टीग्रेट तक बनाये रखते हैं। सर्व विदित है कि 'fl x'ki j'g\* एक ऐसा देश है जिसने ग्रीन हाउस गैस के उत्सर्जन में कमी करने के लिए वर्ष 2019 में 'dkcl VDI \* लगाने की घोषण की थी।

**अम्ल वर्षा** प्राकृतिक रूप से अम्लीय होती है। इसके होने की प्रक्रिया भी प्राकृतिक है। पृथ्वी के वायुमण्डल में सल्फर डाईऑक्साइड और नाइट्रोजन ऑक्साइड जल के साथ क्रिया करके नाइट्रिक अम्ल और गंधक का तेजाब बनाते हैं। इस प्रक्रिया से जल में रहने वाले या पृथ्वी के अन्दर रहने वाले जीवों की मृत्यु हो जाती है। जुलाई 1982 में संयुक्त राष्ट्र संघ के साथ स्टॉकहोम में 33 देशों का एक सम्मेलन हुआ, जिसमें कनाडा में बढ़ते अम्लीय वर्षा के खतरों की तरफ विष्व का ध्यान आकर्षित किया गया। दुर्भाग्य की बात यह थी कि उसी समय एक सप्ताह तक अम्लीय वर्षा भी होती रही थी। 33 देशों के प्रतिनिधि अम्लीय वर्षा पर विचार-विमर्श करते रहे।

निष्कर्षतः हम कह सकते हैं कि पर्यावरण क्षरण आज विष्व के लिए बहुत बड़ा खतरा बन गया है। अगर इस क्षरण को समय रहते न रोका गया, तथा राजनीतिक पार्टियों ने महत्वपूर्ण कदम नहीं उठाए, तो आगे आने वाले समय में यह विकराल रूप धारण कर लेगा, और फिर उस पर काबू पाना मुमकिन ही नहीं नामुमकिन हो जाएगा। पर्यावरण क्षरण के राजनीतिक मुद्दों पर, गहराई से विचार करने के पश्चात् इस नतीजे पर पहुंचा जा सकता है, कि राजनीतिक पार्टियों ने अपनी पार्टी के वोट-बैंक का हित रखते हुए पर्यावरण क्षरण सम्बन्धी बहुत ही अहम फैसले लिए हैं। अन्य देशों की तुलना में पर्यावरण क्षरण को रोकने के लिए, जितने सफल कदम भारत ने उठाए हैं ; अगर अन्य देशों ने भी ऐसे कदम उठाए होते तो पर्यावरण क्षरण को काफी हद तक कम किया जा सकता था। और आज हम शुद्ध वातावरण में सांस ले रहे होते।

सन्दर्भ सूची :-

- 1- पर्यावरण अध्ययन – रतन जोषी.
- 2-पर्यावरण अध्ययन – विद्या प्रकाशन नई दिल्ली.

- 3-दृष्टि पत्रिका – दृष्टि पब्लिकेशन.
- 4- वेब पेज- ज्योग्राफी एण्ड यू डॉट कॉम.
- 5- वेब पेज- विकास पीडिया डॉट कॉम



## **Covid-19 :Effects on Indian economic Health**

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Covid-19 disease is caused by the pathogens generally called Corona. Pathogens, that includes bacteria, fungi, protozoa, worms, viruses, and even infectious proteins called prions, have mechanisms for entering their host and for evading immediate destruction by the host immune system. Corona viruses are a large family of viruses which may cause illness in animals or humans. In humans, several coronaviruses are known to cause respiratory infections ranging from the common cold to more severe diseases such as Middle East Respiratory Syndrome (MERS) and Severe Acute Respiratory Syndrome (SARS). The most recently discovered coronavirus causes coronavirus disease COVID-19. As vaccine is yet to be found, lockdowns remain the only way to slow its spread. However, the lockdowns are also pushing major economies to the brink. Indian economy which was passing through a rough passage in the last two years, is badly affected by this disease. The COVID-19 pandemic is the crucial global health crisis of our time and the greatest global humanitarian challenge the world has faced since World War II. The virus has spread extensively, and the number of cases is rising daily as governments work to slow its spread. India has moved quickly, implementing a proactive, nationwide three faced 57-days lockdowns, with the goal of pulling down the curve and using the time to plan and resource responses adequately.

The year 2019 was a difficult year for the global economy with world output growth estimated to grow at its slowest pace of 2.9 per cent since the global financial crisis of 2009, declining from a subdued 3.6 per cent in 2018 and 3.8 per cent in 2017. Amidst a weak environment for global manufacturing, trade and demand, the Indian economy slowed down with GDP growth moderating to 4.8 per cent in H1 of 2019-20, lower than 6.2 per cent in H2 of 2018-



19. A sharp decline in real fixed investment induced by a sluggish growth of real consumption has weighed down GDP growth from H2 of 2018-19 to H1 of 2019-20. The World Economic Outlook (WEO) of October 2019 has estimated India's economy to become the fifth largest in the world, as measured using GDP at current US\$ prices, moving past United Kingdom and France. The size of the Indian economy is estimated at US\$ 2.9 trillion in 2019. In July 2019, the Union Budget 2019- 20 had articulated the vision of the Hon'ble Prime Minister to make India a US\$ 5 trillion economy by 2024-25. The march towards this milestone has, however, been challenged by less than expected growth of India's GDP in financial year 2019. The outbreak of the pandemic completely changed the economic scenario of world over and so Indian.

Indian economy is presently a developing economy having dominance of primary sector of agriculture. Though the importance of agricultural and allied activities in the Indian economy has declined during the planning period. The share of agriculture and allied activities in the gross domestic product (GDP) at factor cost was 53.1% in 1950-51 and declined to 16.1%(estimated) in 2018-19. Share of agriculture and allied sectors in the total GDP of the country has declined from mainly on account of relatively higher growth performance of tertiary sectors. The tertiary sector is not a homogenous category, it includes trade, transport, communications, finance, insurance, real estate, business, community and social services. The share of this sector in the gross domestic product has increased from 30.3% in 1950-51 to 59.5%(estimated) in 2018-19. This is a natural outcome of the development process that leads to faster growth of non-agricultural sectors. The contribution of industrial activities to GVA has also declined from 2009-14 to 2014-19. Manufacturing sector, which contributes more than 50 per cent of industrial GVA, has driven the decline while the share of construction sector has also moderated. Services sector has moved ahead faster, distancing itself further from agriculture and industry. Financial, real estate and professional services has driven the increase in the contribution of service sector followed by public administration. Even globally, the services sector has supported global growth partly offsetting the decline in manufacturing activity.

Global financial markets remained resilient in December 2019 and for the most part of January 2020 as softening US-China trade relations and improved prospects of an orderly Brexit buoyed investor's sentiment. Equity markets rallied across AEs and EMEs, turning bearish towards end-January with the outbreak of the coronavirus as markets blocked up for the likely adverse impact on growth prospects, particularly in China. Moving on to the domestic economy,

the first advance estimates (FAE) released by the National Statistical Office (NSO) on January 7, 2020 placed India's real gross domestic product (GDP) growth for 2019-20 at 5.0 per cent. In its January 31 release, the NSO revised real GDP growth for 2018-19 to 6.1 per cent from 6.8 per cent given in the provisional estimates of May 2019. Though our country's primary sector was showing the sign of recovery and the recovery was fast. Rabi sowing has been higher by 9.5 per cent up to January 31, 2020 compared with a year ago. The north east monsoon rainfall was above normal. Storage in major reservoirs – the main source of irrigation during the rabi season – was 70 per cent of the full reservoir level (as on January 30, 2020) as compared with 45 per cent a year ago. Based on the first advance estimates, horticulture production is estimated to have risen 0.8 per cent to a record level in 2019-20. Production of vegetables is estimated to have increased by 2.6 per cent in 2019-20 due to higher production of onions, potatoes and tomatoes. Industrial activity, measured by the index of industrial production (IIP), improved in November after contracting in the previous three months. The output of core industries returned to positive territory in December after four months of contraction, buoyed by five out of eight of its constituents – coal; refinery products; fertilisers; steel; and cement. Several high frequency indicators of services have turned upwards after the December 19, pointing to a modest revival in momentum, although the outlook was still muted.

But, the outbreak of Corona pandemic and the lock-down has adversely affect the Indian economy. Broad bands of business from mobile device manufacturers to consumer electronics, from airlines to restaurants, and from automobiles to soft drinks and hotels have together lost more than a staggering 1.65 trillion in revenues in April 2020 only because their sales and production hit zero or near zero as a result of the lockdown, raising serious concerns about their future for FY21. Indian Energy Association (IEA) estimates the fall in India is far higher than other countries that have imposed a lockdown. This does not bode well for a country which witnessed 2.5% fall in power demand between September 2019 and Mar 2020. In India, the share of new renewable energy generation has also decline. The output of India's eight core sectors contracted by a record 6.5 per cent in March, after 7.1 per cent growth in the previous month, as many factories shut down and production came to a virtual halt amid the corona virus lockdown. The latest broad-based decline meant that core sector output in 2019-20 dropped to just 0.6 per cent, down from the 4.4 per cent growth seen in the previous year. The core sector contraction in March 2020

represents the worst performance in the current series. With the lockdown in place throughout April 2020, which is expected to have severely curtailed production in many core sectors, the contraction in core output worsened to alarming levels. Foreign direct investment into India dipped by 1.4 percent to \$10.67 billion (76,800crore) during October-December period of 2019-20, according to the Department for Promotion of Industry and Internal Trade. The Clothing Manufacturers Association of India (CMAI), said only 8% of its members have funds to pay salary next month since 90% of all apparel retail is still at physical stores. Retail industry employs 46 million people, out of which 90% are in blue collar segment. The industry loses 1 million jobs due to the pandemic. Retailers said that the pain will be elongated if consumption and retail don't go hand-in-hand now. The automobile, textile and engineering industries, among others, depend primarily on outstation employees for working their plants. During these unprecedented times, pharmaceutical companies are responding to the rapid challenges arising from disruption in supply chains and the need to change business processes. If the current COVID-19 pandemic lasts for a medium/long span of time, it may impact the supply of active material and ingredients (mainly from China), as well as the import and export of pharmaceuticals. India's manufacturers rely heavily on imports of their APIs from China. There is also the potential for negative impacts of both a medium- and longer-term nature on R&D and manufacturing activities, as well as delay on projects/programmes not related to the core supply chain/data management operations. Interstate transport challenges is also a major issue. There is a lot of medicine stock that comes from Goa, Baddi and Sikkim. Due to the lockdown, it has become difficult to reach the retailers. The distributors are also facing transportation issues for supplying medicines in other states.

Reserve Bank of India Governor Shaktikanta Das quoted the International Monetary Fund's projection of 1.9 per cent GDP growth for India. Prior to the Covid-induced lockdown, the RBI had in February projected 6 per cent growth. Lower GDP projections have a bearing on the viability of infrastructure projects. Weaker-than-expected economic activity because of the lockdown and approaching global recession is likely to hit the Indian economy hard with UBS expecting real GDP to contract 0.4 per cent in FY21. The global research and brokerage house have been trimming its expectations gradually and had earlier forecast a growth of 2.5 per cent. As a base case, UBS expects the mobility restrictions to remain in place until mid- May, and activity to get largely back to normal by end-June. Moody's Investors Service slashed India's 2020 gross domestic product (GDP) estimate to a meager 0.2 per cent from the 2.5 per cent it had

forecast barely a month ago. It is expected that Fitch will also change India's outlook to 'negative' due to deteriorating debt dynamics and its assessment that India has a poor fiscal track record.

While lockdowns imposed across the world in the wake of Covid-19 will be lifted eventually, social distancing, both voluntary and selective, is likely to stay for longer. This already has had, and will continue to have a significant adverse impact on services transactions that require proximity between buyers and sellers. Trade in services is likely to take longer to recover, with knock-on effects on other sectors of economic activity, and the world could see more regulatory restrictions on services trade on health grounds. The International Monetary Fund (IMF) and the World Trade Organization (WTO) have predicted massive losses in economic growth and international trade. The WTO expects a 13-32 per cent decline in trade, but these predictions are likely to be underestimates as they are only based on merchandise trade. Services trade was shown to be more resilient to the 2008 global financial crisis than merchandise trade, given its low sensitivity to demand shocks and less dependence on supply finance. While Covid-19 has resulted in an immediate supply shock followed by a demand shock, what will matter more this time is the social distancing and contagion-related fears, which will have a bearing on services transactions that cannot be substituted or replaced by services traded over the internet.

Some services sectors are going to get more severely affected and are likely to take longer to recover. These include education, tourism and restaurant services (which accounted for over 70 per cent of services exports) as well as air passenger transport; transport and distribution services, which are related to merchandise trade (and accounted for about a fifth of the global services exports), and construction and other business services that require the movement of professionals across. In contrast, the effects of the pandemic on insurance, financial, telecoms and computer-related services are likely to be more limited as most of these services can still be delivered in work-from-home scenarios. For instance, more than three-fourths of India's IT services exports are now delivered online as opposed to onsite; IT services account for close to 40 per cent of India's total services exports and along with management consultancy services, are one of the few sectors where the country exhibits a revealed comparative advantage. Covid-19-induced delays in reigniting some of these sectors will also affect other areas of economic activity where

these services serve as significant inputs. For instance, distribution and financial and transport services are major inputs across manufacturing sectors and total services value-added in manufacturing exports range from 30 to 33 per cent. Two-thirds of businesses expect revenues to fall more than 40 percent in the April-June quarter of FY21, while only 15 per cent of firms expect to see revenue growth in the current financial year.

Only 30.78 million jobs were generated through the Mahatma Gandhi National Rural Employment Guarantee Act (MNREGA) in April 2020, lowest in the seven years for which data is available. A total of 273.97 million person-day jobs was generated in April of the previous financial year against 30.78 million till April 29 this year. This means an 88.75 per cent year to year cut. However, because of the lockdown, jobs were given only from April 15 this year. Ideally, one should halve the jobs in April last year for comparison on a pro-rata basis. That would see jobs in April this year falling by 77.53 per cent.

There could be solvency risk within the Indian financial system, as almost 25 percent of MSME and small- and medium-size-enterprise (SME) loans could slip into default, compared with 6 percent in the corporate sector (although the rate could be much higher in aviation, textiles, power, and construction) and 3 percent in the retail segment (mainly in personal loans for self-employed workers and small businesses). Liquidity risk would also need urgent attention as payments begin freezing in the corporate and SME supply chains. Attention will need to be given to the liquidity needs of banks and nonbanks with stretched liquidity-coverage ratios to ensure depositor confidence. For large corporations, banks could be allowed to restructure the debt on their balance sheets, and procedural requirements for raising capital could be made less onerous. The Indian government could consider infusing capital through a temporary Troubled Asset Relief (TARP)-type program (such as through preferred equity) in a few distressed sectors (such as travel, logistics, auto, textiles, construction, and power), with appropriate conditions to safeguard workers and MSMEs in their value chains. Banks and nonbanks may also require similar measures to help strengthen their capital, along with measures to step up their liquidity and the liquidity in corporate-bond and government-securities markets.

The Confederation of Indian Industry is expecting that the GDP is likely to range between a decline of 0.9 per cent and growth of 1.5 per cent. The moot point is that Covid-19 is disrupting

the Indian economy like never before. The government of India and the Reserve Bank of India (RBI) have responded to this challenge but the expectations were high. At the fiscal end, the government had announced a stimulus package of 1.7 trillion or approximately 0.8 per cent of GDP on 26<sup>th</sup> March 2020. This seems inadequate. The economists is expecting a stimulus package of not less than 10% of the GDP. On the monetary side, the RBI has come out twice to reduce the rates and to provide liquidity in the market to boost the economy. First, it announced TLTRO of 3.7 trillion, 1.8 per cent of GDP, on 27<sup>th</sup> March 2020. Second, TLTRO 2.0 for an initial amount of 50,000 crore of liquidity was announced on 17<sup>th</sup> April 2020 mainly for the non-banking financial companies. This again is insufficient. The extensive 57-day lockdown will result in an 8 per cent loss of working days. Some economists are expecting normalcy to return to the economy not earlier than 18 months. One thing is clear. We cannot continue with the present lockdown indefinitely. We shall have to think of a more refined lockdown where we are able to keep the infected under isolation, quarantine those who may have come in contact with them, create containment zones for the hotspots, test on as large a scale as possible and open up the rest of the country with adequate precautions. The government has provided Rs. 31,235 crores to more than 330 million poor till April 22. But the policy priority of the government should be to provide more financial support to the poor and the migrants in particular. They must be our first priority as they have been the worst sufferers in recent days. Their plight will go down in our history as a particularly sleazy chapter of thoughtless action on the part of the government. The farmers are suffering too and have already incurred huge losses. Today, the country needs additional funds to look after the poor and the needy and to bring the economy back on track. India can work to strengthen this fight against the pandemic according to the formula suggested by the World Bank, which consists of three pillars—(i) protect the poorest, (ii) support and save jobs and (iii) implement emergency health operations. The middle class must be taken care of too. At the lower end of the spectrum, they are compelled to suffer in silence. They are suffering but are reluctant to ask for help. Data reveals that the number of job losses will rise and there will be salary cuts. A comprehensive relief package must necessarily consist of many other parts. House hold demand could then be boosted beyond the support provided to needy households that the Indian government has already announced. Consideration could be given to an income-support program in which the government both pays for a share of the payroll for the 60 million informal

contractual and permanent workers linked to companies and provides direct income support for the 135 million informal workers who are not on any form of company payroll.

Agriculture may be the sole bright spot in the overall miserable economic outlook for the country due to the Covid-19 lockdown. It has been predicted that this sector may push up the country's gross domestic product (GDP) for 2020-21 by 0.5 to 1 percentage points based on the projection of a 'normal' monsoon that addresses 60-70 per cent of the sector's worries. Adequate water level in reservoirs and a huge jump in acreage of summer-sown crops are other factors that have given hope for future crops. It is expected that growth in agriculture and allied activities will not be much lower than the 3.7 percent expected in real terms for 2019-20. The first economic activity allowed by the government after the lockdown was imposed was agriculture and related sectors and the farmers have also responded favorably. This is why almost 90 per cent of the rabi crop has been harvested and a significant quantity procured. The forecast of 'normal' monsoon has also given hope that sowing for kharif crops, which is due in the next few weeks, will be good. The country will be on track to achieve the targeted 298.3 million tonnes (mt) of food grain production in 2020-21. The government will also need to come up with a plan to save businesses, particularly in sectors such as hospitality, tourism and hotel industry which would remain under pressure for a prolonged period. Aside from businesses, government would be forced to drastically cut expenditure, which otherwise will not only disturb their efforts to contain the virus but also obstruct economic recovery. The government seems to have required to take more sweeping steps to contain the virus than other countries have done, but also require steps for economic stability.



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डॉ. आनंद ज्ञानेश्वर शिंदे  
सहाय्यक प्राध्यापक,  
लक्ष्मीबाई भाऊराव पाटील महिला महाविद्यालय, सोलापूर.  
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सध्या कोरोना व्हायरसने सर्व जगभर अक्षरशः थैमान घातले आहे. कोरोना व्हायरस हा वेगवेगळ्या व्हायरसचा एक समूह आहे, ज्यामध्ये अनेक व्हायरसचे प्रकार येतात. जगातील सर्वच देश या व्हायरसमुळे चिंतीत आहेत. कितीतरी लोक या व्हायरसमुळे आजारी आहेत. लहान मुले, स्त्रिया, पुरुष, वृद्ध सर्वचजण या व्हायरसमुळे चिंताग्रस्त झालेले आहेत. कोरोना व्हायरस अतिशय झपाट्याने वाढण्याचे सर्वात मुख्य कारण म्हणजे हा संसर्गजन्य रोग आहे. चीनसोडून बाकी देशांमध्ये सुद्धा हा व्हायरस आता पसरत आहे. अमेरिका, इटली, स्पेन, जर्मनी, ब्रिटन, फ्रान्स, जपान, भारत, कंबोडिया, कॅनडा आणि जगातील जवळपास १६७ देशांमध्ये हा व्हायरस पसरत आहे. त्यामुळे या कोरोना व्हायरसच्या संदर्भात महाराष्ट्रातील सर्वसामान्य नागरिकांमध्ये किती जाणीव जागरूकता आहे, या आजाराकडे पाहण्याचा नागरिकांचा दृष्टीकोन कसा आहे आणि या कोरोना व्हायरसच्या संदर्भात सरकारी सूचनांचे पालन नागरिकांद्वारे किती प्रमाणात केले जाते याचा अभ्यास करणे संशोधकाला अत्यंत गरजेचे आणि महत्वाचे वाटले त्यामुळे संशोधकाने प्रस्तुत संशोधन समस्येची निवड केली आहे.

महाराष्ट्रातील नागरिकांमध्ये कोरोना व्हायरस संदर्भात असणारी जाणीवजागृती, दृष्टीकोन आणि अंमलबजावणीचा अभ्यास करण्यासाठी संशोधकाने सर्वेक्षण या संशोधन पद्धतीची निवड केली आहे. सदर संशोधनामध्ये महाराष्ट्रातील एकूण ३०: जिल्ह्यांची निवड हेतुपुरस्सर पद्धतीने केली आहे. तसेच निवडलेल्या जिल्ह्यातील एकूण १०३ प्रतीसादाकांची निवड साध्या सुगम यादृच्छिक पद्धतीने केली आहे. संशोधनाच्या संदर्भातील माहिती मिळविण्यासाठी पदनिश्चयन श्रेणीचा वापर केला आहे. मिळालेल्या माहितीचे विश्लेषण योग्य त्या संख्याशास्त्रीय साधनांच्या साह्याने करून संशोधनाचे निष्कर्ष काढण्यात आले आहेत. प्रस्तुत संशोधनात महाराष्ट्रातील बहुतांश नागरिकांमध्ये कोरोना व्हायरस संदर्भात जाणीवजागृती असल्याचे आढळून आले. तसेच कोरोना व्हायरसविषयी सकारात्मक दृष्टीकोन असल्याचे आढळते आणि राज्य सरकारच्यावतीने दिलेल्या सर्व सूचनांचे पालन केले जाते असे दिसून येते.



महत्वाच्या संज्ञा (झमलू वतके)रु कोरोना व्हायरस, जाणीव जागृती, दृष्टीकोन, अंमलबजावणी, संक्रमण इ.

## çLrkouk ¶Introduction¶:

गेल्या अनेक शतकांपासून जगात अनेक आजारांनी आणि रोगांनी थैमान घातलेले आढळून येते. उदा. प्लेग, कॉलरा, मलेरिया, डेंगू, स्वाईन फ्लू, बर्ड फ्लू इत्यादी. या रोगांमुळे जगात अनेक लोकांचे मोठ्या प्रमाणावर मृत्यूदेखील झालेले आहेत. मात्र सध्या कोरोना व्हायरसचे नाव ऐकल्यावर अंगावर काटा आल्याशिवाय राहात नाही? कारण सध्या चीन आणि आता युरोप, अमेरिका आणि भारतातही या व्हायरसने काय हाहाकार माजवला आहे हे आपण जाणतोच. जगातील सर्वच देश या व्हायरसमुळे चिंतीत आहेत. कितीतरी लोक या व्हायरसमुळे आजारी आहेत. लहान मुले, स्त्रिया, पुरुष, वृद्ध सर्वचजण या व्हायरसमुळे चिंताग्रस्त झालेले आहेत. आज चीनच नाही तर संपूर्ण जगावर या व्हायरसचा धोका संभवतो आहे. चीनमधल्या 'वूहान' शहरापासून ज्या विषाणूचे संक्रमण संपूर्ण जगात होत आहे, आज संपूर्ण जगामध्ये भीतीचे वातावरण दिसून येत आहे.

कोरोना व्हायरस हा वेगवेगळ्या व्हायरसचा एक समूह आहे, ज्यामध्ये अनेक व्हायरसचे प्रकार येतात. जसे एम.ई.आर.एस.दृ सी.ओ.व्ही., एस.ए.आर.एस.– सी.ओ.व्ही. यांना एकत्रितपणे कोरोना व्हायरस असे म्हंटले जाते. यामध्ये सामान्य आजारांपासून ते अतिसंवेदनशील आजारांपर्यंत कोणाचेही लक्षणे दिसू शकतात. कोरोना व्हायरस हे झुनोटिक असतात म्हणजेच यांचे संक्रमण प्राणी आणि माणूस या दोघांमध्येही होऊ शकते. अनेक कोरोना व्हायरस प्राण्यांमध्ये संक्रमित होत असतात परंतु मानवांमध्ये यांचे संक्रमण होतेच असे नाही. परंतु काही असेपण कोरोना व्हायरस आहेत ज्यांचे प्राण्यांमधून माणसात संक्रमण झालेले आहे जसे एम.ई.आर.एस.दृ सी.ओ.व्ही. हा उंटांमधून माणसामध्ये संक्रमित झालेला आहे.

'नोव्हल कोरोना व्हायरस' हा आताच शोध लागलेला नवीन कोरोना व्हायरस आहे जो चीनमध्ये पसरला आहे. 'नोव्हल' म्हणजे नवीन, म्हणून याला 'नोव्हल कोरोना व्हायरस' असे म्हंटले जाते. तसेच याला 'वुहान व्हायरस' असेपण म्हंटले जाते. कारण चीनमधल्या 'वूहान' शहरापासून या विषाणूचे संक्रमण संपूर्ण जगात झाले आहे. 'कोरोना व्हायरस' हे नाव याला या व्हायरसच्या आकारामुळे दिले गेले आहे. या विषाणूच्या आजूबाजूला मुकुटासारखी रचना आहे आणि मुकुटाला लॅटिन भाषेमध्ये 'कोरोना' म्हंटले जाते म्हणून या व्हायरसचे नाव 'कोरोना व्हायरस' असे पडले आहे. तसेच याला 'बेटाव्-19' असेही म्हणतात.

कोरोना व्हायरस अतिशय झपाट्याने वाढण्याचे सर्वात मुख्य कारण म्हणजे हा संसर्गजन्य रोग आहे. असा रोग झालेल्या एखाद्या व्यक्तीच्या नकळत संपर्कात येऊन देखील या रोगाचे लक्षणे तुमच्यामध्ये दिसू शकतात. हा रोग माणसांमध्ये कसा संसर्गित झाला याची काही जास्त माहिती अजून शास्त्रज्ञांना माहित नसून यावर संशोधन चालू आहे. परंतु मांजरी, गुरे, वटवाघूळ, उंट यांच्या संपर्कात आल्यामुळे किंवा यांचे मांस

खाल्यामुळे या रोगाची लागण झाली असावी असे प्राथमिक अंदाज आहेत. कोरोना विषाणू दोन प्रकारे पसरतो एक म्हणजे एखादा रुग्ण खोकल्यावर हवेत तुषार उडतात. हे तुषार रुग्णाकडून हवेत पसरतात. या तुषारातील कणांमध्ये विषाणू असतात आणि आजूबाजूच्या व्यक्तींनी श्वास घेतल्यावर त्यातून त्याचा संसर्ग होतो. दुसरा प्रकार म्हणजे रुग्णाच्या वस्तूंना आपल्या हातांचा स्पर्श झाल्यावर ते विषाणू हातांना चीकटतात. त्यानंतर जर हात चेहर्याला किंवा नाकाला लावले तर ते आपल्या श्वसनमार्गातून जाऊन संसर्ग होतो.

याची काही स्पष्ट लक्षणे नसल्यामुळे आणि जी लक्षणे आहेत ती इतर आजारांसारखी असल्यामुळे हे रोगी लवकर ओळखणे कठीण आहे. सर्वच रोगी हे गंभीर असतात असे नाही. काही जणांची लक्षणे हे सौम्य देखील असू शकतात. चीनमधील 'हुबेई' इथे सर्वात प्रथम या रोगाने संक्रमित झालेला रुग्ण आढळला आहे. सामान्यतरु सर्दी, घसा तीव्रपणे दुखणे, खोकला, ताप, श्वास घेण्यास त्रास होणे, डोके दुखी, उलट्या व जुलाब इ. आहेत. ५ ते १४ दिवसांमध्ये या संसर्गाची लक्षणे दिसू शकतात. या आजाराचा जास्त धोका गरोदर माता, उच्च रक्तदाब, मधुमेह, मूत्रपिंडाचे विकार, कर्क रोग, दमा, जूना व सतत बळावणारा खोकला, कर्क रोगाचे उपचार चालू असणारे रुग्ण यांना आहे.

हा एक संसर्गजन्य रोग आहे त्यामुळे सार्वजनिक ठिकाणी वावरताना आपल्याला विशेष काळजी घेतली पाहिजे. अशा परिस्थितीमध्ये नाकाला मास्क सतत ठेवणे अतिशय उत्तम. बाहेरून आल्यावर हात आणि पाय धुणे स्वच्छ करणे. तसेच हात पाय सतत पाण्याने २० सेकंड पर्यंत स्वच्छ धुवावे. हे आजार खोकला, शिंक यातून होणार्या विषाणू संक्रमणामुळे पसरतो त्यामुळे कुणाशीपण बोलताना शक्यतो १ मीटरचे अंतर राखावे. हात मिळवणे टाळावे. डोळे, नाक किंवा तोंडाला हात स्वच्छ न करता स्पर्श करू नये कारण यामधून संक्रमण होऊ शकते. जर आपण आताच चीन किंवा आसपासच्या परिसरात प्रवास केला असेल तर आपली तपासणी करून घ्यावी. तसेच सर्दी खोकला किंवा तत्सम काही आजार, श्वसनाचे काही त्रास जाणवत असेल तर वैद्यकीय सल्ला घ्यावा. ज्या वस्तू तुच्यासह अजून लोक वापरतात त्यांना विशेष स्वच्छ करावे जसे कॉम्प्युटर, सार्वजनिक वाहन इ.

कुठल्याही प्रकारच्या कोरोना व्हायरसवरती कोणतीही प्रतिबंधात्मक उपाय आजपर्यंत उपलब्ध झालेला नाही आणि कोणताही ठोस उपचार त्यावर नाही. या प्रकारच्या संसर्गाने ग्रस्त असणार्या रोग्यांना जेवढी वैद्यकीय मदत करता येईल तेवढी केली जाते. सुश्रुषा केली जाते पण यावर उपचार उपलब्ध नाहीत. संसर्गापासून स्वतःचे रक्षण करणे हाच यापासून बचाव करण्याचा एकमेव मार्ग आहे. आजपर्यंत अनेक कोरोना व्हायरसचा अटॅक झालेला आहे, खासकरून चीनच्या परिसरात या कोरोना व्हायरसचा प्रभाव आढळून आलेला आहे.

चिनी सरकारने वुहानसह १६ शहरे बंद केली आहेत. या शहरांमध्ये कुणीही सहजरित्या जाऊ शकत नाही. वैद्यकीय क्षेत्रातील अनेक डॉक्टर्स, नर्सस आणि इतर लोकांनी वुहान शहराकडे मदतीसाठी आणि वैद्यकीय उपचार पुरवण्यासाठी स्वयंसेवक म्हणून धाव घेतली आहे. हे सर्व लोक स्वतःच्या जीवाची पर्वा न

करता हे काम करत आहेत. कदाचित हे डॉक्टर्स नर्सस या व्हायरसचा उपचार करताना कधीच परत येऊ शकणार नाहीत. या लोकांचे नातेवाईक भावनिक होऊन निरोप देतानाचे फोटो वायरल होत आहेत. वुहान शहरात एकूण १ कोटी लोक राहतात त्यापैकी जवळपास ५० लाख लोकांनी स्थलांतर केलेले आहे. त्यातील काही जणांना जरी या रोगाचे संक्रमण झाले असेल तर संपूर्ण जगाला या व्हायरसचा धोका आहे. चीनमध्ये आतापर्यंत एकूण ३३३३ पेक्षा अधिक लोकांनी या व्हायरसमुळे आपले प्राण गमावले आहेत आणि ८२००० पेक्षा अधिक लोकांना या व्हायरसचे संक्रमण झालेले आहे. जर या व्हायरसचा उपचार आणि लस लवकरात लवकर शोधली गेली नाही तर हा आजपर्यंतचा सर्वात खतरनाक कोरोना व्हायरस सिद्ध होऊ शकतो. म्हणून संशोधकाला या समस्येवर संशोधन करणे गरजेचे वाटले आणि संशोधकाने प्रस्तुत संशोधन समस्या हाती घेतली.

। ढ kks/kukph xj t vkf.k egRo ¼**Need & Importance of the research**½:

चीनसोडून बाकी देशांमध्ये सुद्धा हा व्हायरस आता पसरत आहे. अमेरिका, इटली, स्पेन, जर्मनी, ब्रिटन, फ्रान्स, जपान, भारत, कंबोडिया, कॅनडा आणि जगातील जवळपास १६७ देशांमध्ये हा व्हायरस पसरत आहे. अनेक देशांनी चीनमध्ये राहणाऱ्या त्यांच्या नागरिकांना परत बोलावले आहे. भारताने देखील चीनमध्ये राहणाऱ्या भारतीयांना परत आणले आहे. अनेक देशांनी चीनसोबत होणारे परिवहन, विमान उड्डाणे रद्द केली आहेत. या व्हायरसचा चिनी अर्थसंस्थेबरोबरच सर्व जगाच्या अर्थव्यवस्थेवर मोठा परिणाम झालेला आहे. अनेक देश आर्थिक महामंदीच्या छायेमध्ये गेले आहेत. या आजारामधून पूर्णपणे बाहेर पडणे आणि नंतर आपल्या देशाची अर्थव्यवस्थेची घडी नीट बसविणे हे जगातील सर्वच देशांपुढे सर्वात मोठे आव्हान निर्माण झाले आहे.

अनेक देशांमध्ये जवळपास फेब्रुवारी-मार्च महिन्यापासून ते एप्रिल-मे महिन्यापर्यंत देश बंद करण्याची वेळ आली आहे. लोकांना आपल्या घरामध्येच बंद करून घेण्याची वेळ आली आहे. अशा परिस्थितीत अनेक लोक वेगवेगळ्या प्रांतांमध्ये आपल्या घरापासून दूर अडकून पडलेले आहेत. त्यांना काम मिळेना आणि दोन वेळच्या जेवणाची देखील अडचण निर्माण झाली आहे. यावेळी महाराष्ट्रासारख्या राज्यामध्ये जवळपास १५ लाख परप्रांतीय आणि गोरगरीब लोकांच्या राहण्याची आणि जेवणाची सोय राज्य सरकारच्या माध्यमातून विविध शिबिरांमध्ये केली जात आहे. शेतकरी, उद्योगधंदे, व्यापार, छोटे दुकानदार, मोलमजुर आणि ज्यांचे हातावर पोट आहे अशा सर्वच लोकांचे हाल या आजारामुळे होत आहेत.

जगातील जे पुढारलेले आणि विकसित देश होते त्या देशांचे देखील कंबरडे या कोरोना व्हायरसच्या आजारामुळे मोडलेले दिसत आहे. जगातील महासत्ता म्हणून ज्या देशाची ख्याती आहे त्या अमेरिकेत एकूण ०७ लाखापेक्षा जास्त लोक या कोरोना व्हायरसने संक्रमित झाले आहेत. तर या कोरोना व्हायरसच्या संक्रमणामुळे एकट्या अमेरिकेत २४ हजारपेक्षा अधिक लोक मृत्युमुखी पडले आहेत. संपूर्ण जगाचा विचार केला तर जगात एकूण २२ लाखापेक्षा अधिक रुग्णांची नोंद झालेली आहे आणि एक लाखापेक्षा अधिक लोक

मृत्युमुखी पडले आहेत. अशाप्रकारे संपूर्ण जगामध्ये हाहाकार माजविणार्या या कोरोना व्हायरसच्या संदर्भात महाराष्ट्रातील सर्वसामान्य नागरिकांमध्ये किती जाणीव जागरूकता आहे, या आजाराकडे पाहण्याचा नागरिकांचा दृष्टीकोन कसा आहे आणि या कोरोना व्हायरसच्या संदर्भात सरकारी सूचनांचे पालन नागरिकांद्वारे किती प्रमाणात केले जाते याचा अभ्यास करणे संशोधकाला अत्यंत गरजेचे आणि महत्वाचे वाटले त्यामुळे संशोधकाने प्रस्तुत संशोधन समस्येची निवड केली आहे.

### १.१.१ Problem of research

‘महाराष्ट्रातील नागरिकांमध्ये कोरोना व्हायरस संदर्भात असणारी जाणीवजागृती, दृष्टीकोन आणि अंमलबजावणीचा अभ्यास’

□ समस्येमधील तांत्रिक शब्दांच्या कार्यात्मक व्याख्या (व्यमंतजपवदंस कमपिदपजपवदे वी ज्मबीदपबंसू वतक)रू

१. महाराष्ट्रातील नागरिक: भारत देशातील महाराष्ट्रातील भौगोलिक आणि राजकीय सीमारेषांच्या आतील प्रदेशामध्ये राहत असलेले नागरिक म्हणजे महाराष्ट्रातील नागरिक होय.
२. कोरोना व्हायरस: वेगवेगळ्या व्हायरसच्या विषाणूंचा समूह असलेला आणि मुकुटासारखी गोलाकार रचना असलेला अतिसंवेदनशील व संसर्गजन्य रोग म्हणजे कोरोना व्हायरस होय.
३. जाणीवजागृती: महाराष्ट्रातील नागरिकांमध्ये कोरोना व्हायरस संदर्भात एकमेकांच्या सुरक्षेबद्दल असणारी माहिती म्हणजे जाणीवजागृती होय.
४. दृष्टीकोन : महाराष्ट्रातील नागरिकांना कोरोना व्हायरसबद्दल काय वाटते म्हणजे कोरोना व्हायरसबद्दलचा दृष्टीकोन होय.
५. अंमलबजावणी : महाराष्ट्रातील नागरिकांनी केंद्र आणि राज्य सरकारच्या कोरोना व्हायरस संदर्भातील सूचनांचे केलेले पालन म्हणजे अंमलबजावणी होय.

### १.१.२ Objectives of the research

१. जगभरामध्ये थैमान घालणार्या कोरोना व्हायरस या आजाराचा अभ्यास करणे.
२. महाराष्ट्रातील नागरिकांमध्ये कोरोना व्हायरस संदर्भात असणार्या जाणीवजागृतीचा अभ्यास करणे.
३. महाराष्ट्रातील नागरिकांमध्ये कोरोना व्हायरस संदर्भात असणार्या दृष्टीकोनाचा अभ्यास करणे.
४. महाराष्ट्रातील नागरिकांद्वारे कोरोना व्हायरस संदर्भात होणार्या सरकारी सूचनांच्या अंमलबजावणीचा अभ्यास करणे.



नागरिकांमध्ये कोरोना व्हायरस संदर्भात असणारी जाणीवजागृती, दृष्टीकोन आणि अंमलबजावणीचा अभ्यास करावयाचा असल्याने संशोधकाने प्रस्तुत संशोधनासाठी सर्वेक्षण या पद्धतीचा वापर केला आहे.

### १.३.१ **Sampling of the research**

प्रस्तुत संशोधनासाठी संशोधकाने महाराष्ट्रातील एकूण ३६ जिल्ह्यांपैकी ३०: जिल्ह्याची म्हणजेच ११ जिल्ह्याची (उदा. सोलापूर, सातारा, सांगली, कोल्हापूर, पुणे, मुंबई नाशिक, लातूर, बीड, उस्मानाबाद, हिंगोली इ.) निवड हेतुपुरस्सरपणे केली आहे. या ३०: जिल्ह्यांमधील एकूण १०३ सर्वसामान्य आणि जबाबदार नागरिकांची निवड साध्या सुगम यादृच्छिक पद्धतीने केली आहे.

### १.३.२ **Tools of the research**

संशोधकाने संशोधनाची पद्धती, स्वरूप, व्याप्ती, आणि उद्दिष्टे यांचा विचार करून संशोधनासाठी पदनिश्चयन श्रेणी (Rating Scale) या साधनाची निवड केली आहे. संशोधनाच्या स्वरूपानुसार आणि उद्दिष्टानुसार माहिती जमा करण्यासाठी संशोधकाने एक पदनिश्चयन श्रेणी (Rating Scale) विकसित केली. नागरिकांसाठी तयार करण्यात आलेल्या या पदनिश्चयन श्रेणीत एकूण २५ प्रश्न असून त्यांच्या साहाय्याने महाराष्ट्रातील नागरिकांमध्ये कोरोना व्हायरस संदर्भात असणारी जाणीवजागृती, दृष्टीकोन आणि अंमलबजावणीचा अभ्यास केलेला आहे.

### १.३.३ **Analysis of the data**

प्रस्तुत संशोधनामध्ये महाराष्ट्रातील नागरिकांमध्ये कोरोना व्हायरस संदर्भात असणारी जाणीवजागृती, दृष्टीकोन आणि अंमलबजावणीचा अभ्यास करण्यासाठी तयार करण्यात आलेल्या पदनिश्चयन श्रेणीच्या साहाय्याने माहितीचे संकन करण्यात आले. मिळालेल्या माहितीचे विश्लेषण करण्यासाठी शेकडेवारी, मध्यमान आणि आलेख या साधनांचा वापर करण्यात आला.

### १.३.४ **Procedure of the research**

संशोधकाने प्रस्तुत संशोधनामध्ये महाराष्ट्रातील नागरिकांमध्ये कोरोना व्हायरस संदर्भात असणारी जाणीवजागृती, दृष्टीकोन आणि अंमलबजावणीचा अभ्यासासंदर्भात माहिती गोळा करण्यासाठी ळववहसम थ्वतउे च्या साहाय्याने एक वदसपदम बहुपर्यायी पदनिश्चयन श्रेणी (तंजपदह "बंसम) विकसित केली. या वदसपदम पदनिश्चयन श्रेणीत एकूण पाच पर्याय देण्यात आलेले होते. हे पर्याय म्हणजे पूर्णपणे सहमत, सहमत, तटस्थ, पूर्णपणे असहमत आणि असहमत असे होते. नागरिकांचा वेळ वाचावा आणि दिलेल्या प्रश्नासंदर्भात अचूक उत्तरे मिळावीत यासाठी दिलेल्या पाच पर्यायांपैकी योग्य पर्यायाला केवळ बसपबा करावयास सांगितले होते.

संगणकाच्या साहाय्याने तयार करण्यात आलेल्या या वदसपदम पदनिश्चयन श्रेणीची एक स्पदा तयार केली. या स्पदा सोबत संशोधकाने सदर वदसपदम पदनिश्चयन श्रेणी भरून देण्यासंदर्भात सूचना आणि

विनंती केली होती. सदर वदसपदम पदनिश्चयन श्रेणीची Link Whatsapp आणि मउंपस च्या साह्याने महाराष्ट्रातील विविध जिल्ह्यांमधील जवळपास १००० नागरिकांना पाठवली. त्यानंतर महाराष्ट्रातील एकूण ३० जिल्ह्यांमधील (उदा. सोलापूर, सातारा, सांगली, कोल्हापूर, पुणे, मुंबई नाशिक, लातूर, बीड, उस्मानाबाद, हिंगोली इ.) एकूण १०३ नागरिकांनी प्रस्तुत संशोधनाची माहिती वदसपदम भरून परत पाठवली. मिळालेल्या माहितीचे विश्लेषण योग्य त्या संख्याशास्त्रीय साधनाच्या साह्याने करून संशोधनाचे निष्कर्ष काढण्यात आले.

□ संशोधनाचे निष्कर्ष (Findings of the research)

- उद्दिष्ट क्रमांक २ चे निष्कर्ष:

उद्दिष्ट: महाराष्ट्रातील नागरिकांमध्ये कोरोना व्हायरस संदर्भात असणार्या जाणीवजागृतीचा अभ्यास करणे.

१. Corona Virus Disease 2019 (ब्रूटप्ल-19) चे उगमस्थान असणारा देश माहित आहे याविषयी पूर्णपणे सहमत असणारे ८८.३०: लोक आहेत तर सहमत असणारे ११.७०: लोक आहेत.

२. COVID -19 या आजराची महत्वाची लक्षणे माहिती आहेत (उदा. ताप, सर्दी, कोरडा खोखला, अशक्तपणा, श्वास घेण्यात अडचणी इ.) याविषयी पूर्णपणे सहमत असणारे ६२.२०: लोक आहेत तर सहमत असणारे ०७.८०: लोक आहेत.

३. COVID -19 या आजाराचा फैलाव आजार झालेल्या व्यक्ती आजार न झालेल्या व्यक्तीच्या सामाजिक संपर्कात आल्याने श्वसनावाटे संक्रमित होतो हे माहित आहे याविषयी पूर्णपणे सहमत असणारे ८०.६० : लोक आहेत तर सहमत असणारे १७.५०: लोक आहेत.

४. COVID -19 या आजारासंदर्भात काय काळजी घ्यावयाची आहे हे माहित आहे आणि मी हे इतरांनाही सांगू शकतो याविषयी पूर्णपणे सहमत असणारे ८४.५० : लोक आहेत तर सहमत असणारे १४.५०: लोक आहेत.

५. COVID -19 या आजारापासून दूर राहण्यासाठी किंवा वाचण्यासाठी इतर व्यक्तीच्या सामाजिक संपर्कात न येणे आणि आपल्या घरातच राहणे गरजेचे आहे हे माहित आहे याविषयी पूर्णपणे सहमत असणारे ८६.३०: लोक आहेत तर सहमत असणारे ०६.७०: लोक आहेत.

६. COVID -19 या आजाराचा फैलाव रोखण्यासाठी इतर व्यक्तीच्या सामाजिक संपर्कात न येणे आणि हा आजार झालेल्या व्यक्तीचे विलगीकरण करणे गरजेचे आहे हे माहित आहे याविषयी पूर्णपणे सहमत असणारे ६०.३०: लोक आहेत तर सहमत असणारे ०८.७०: लोक आहेत.

७. COVID-19 हा आजार झालेल्या व्यक्तीला तज्ज्ञ डॉक्टरांच्या निरीक्षणाखाली १४ दिवसांच्या विलागीकारणात ठेवले पाहिजे हे माहित आहे याविषयी पूर्णपणे सहमत असणारे ६१.३०: लोक आहेत तर सहमत असणारे ०७.८०: लोक आहेत.

८. भारत सरकारच्यावतीने ब्रूट्फ-19 या वायरसविषयी लोकांमध्ये जाणीवजागृती करण्यासाठी 'चिंचे' च्या बॅच-इवज तयार करण्यात आलेले आहे. तसेच लोकांनी सामाजिक समूह संपर्क माध्यमांद्वारे चुकीची माहिती पसरविणाऱ्या व्यक्तींवर अंकुश ठेवण्यात आलेला आहे हेही माहित आहे याविषयी पूर्णपणे सहमत असणारे ७४.८०: लोक आहेत, सहमत असणारे २१.४०: लोक आहेत तर ०३.६०: लोक तटस्थ आहेत.

९. COVID-19 या आजारापासून दूर राहण्यासाठी किंवा वाचण्यासाठी इतर व्यक्तीच्या सामाजिक संपर्कात न येणे, मास्क लावणे, सॅनीटायझरचा वापर करणे आणि साबणाने हात स्वच्छ धुणे यासारखे उपाय माहित आहेत याविषयी पूर्णपणे सहमत असणारे ६४.२०: लोक आहेत तर सहमत असणारे ०४.६०: लोक आहेत.

१०. Corona Virus चा फैलाव रोखण्यासाठी सर्वसामान्य लोकांनी विनाकारण रस्त्यांवर गर्दी करणे आणि सामाजिक संपर्कात येणे टाळले पाहिजे असे वाटते याविषयी पूर्णपणे सहमत असणारे ६३.२०: लोक आहेत तर सहमत असणारे ०६.८०: लोक आहेत.

११. Corona Virus किंवा ब्रूट्फ-19 या आजारामुळे लहान मुले आणि वृद्ध व्यक्तींचा कमी प्रतिकारशक्तीमुळे लवकर मृत्यू होतो त्यामुळे त्यांची फार काळजी घेतली पाहिजे असे वाटते याविषयी पूर्णपणे सहमत असणारे ८७.४०: लोक आहेत तर सहमत असणारे १२.६०: लोक आहेत.

१२. Corona Virus चा फैलाव रोखण्यासाठी ज्या व्यक्तीचे घरातच विलगीकरण केलेले आहे अशा व्यक्तींनी कमीत कमी १४ दिवस घराबाहेर पडू नये किंवा कोणाच्याही सामाजिक संपर्कात येवू नये असे वाटते याविषयी पूर्णपणे सहमत असणारे ६०.३०: लोक आहेत तर सहमत असणारे ०८.७०: लोक आहेत.

१३. सामाजिक कार्यकर्ते, सरकारी कर्मचारी आणि सर्वसामान्य लोकांनी गरजेच्यावेळी घराबाहेर पडताना सॅनीटायझर सोबत बाळगणे गरजेचे आहे असे वाटते याविषयी पूर्णपणे सहमत असणारे ८१.६०: लोक आहेत तर सहमत असणारे १६.५०: लोक आहेत.

- उद्दिष्ट क्रमांक ३ चे निष्कर्ष:

उद्दिष्ट: महाराष्ट्रातील नागरिकांमध्ये कोरोना व्हायरस संदर्भात असणाऱ्या दृष्टीकोनाचा अभ्यास करणे.

१. Corona Virus 'जैविक अस्त्र' म्हणून वापरण्यासाठी तयार केला आहे असे वाटते याविषयी पूर्णपणे सहमत असणारे ३१.४०: लोक आहेत तर सहमत असणारे २१.६०: लोक आहेत, तटस्थ असणारे ३७.३०: लोक आहेत, असहमत असणारे ०५.६०: लोक आहेत तर पुरपणे असहमत असणारे ०३.६०: लोक आहेत.

२. भारतात Corona Virus चा फैलाव केवळ स्थलांतरीत व्यक्तीमुळेच झाला आहे असे वाटते याविषयी पूर्णपणे सहमत असणारे ७२.५०: लोक आहेत तर सहमत असणारे २२.५०: लोक आहेत तर तटस्थ असणारे ०२.६०: लोक आहेत.



३. 'आजार होण्यापेक्षा काळजी घेतलेली बरी' हा मंत्र ब्रिटिश-19 या आजारपासून दूर राहण्यासाठी गरजेचा आहे याविषयी पूर्णपणे सहमत असणारे ६०.३०: लोक आहेत तर सहमत असणारे ०६.७०: लोक आहेत.

४. COVID-19 बरोबरचे युद्ध आपण जिंकू शकतो असे वाटते याविषयी पूर्णपणे सहमत असणारे ८१.६०: लोक आहेत तर सहमत असणारे १७.५०: लोक आहेत.

५. COVID-19 हा आजार यशस्वीपणे नियंत्रित केला जाऊ शकतो असे वाटते याविषयी पूर्णपणे सहमत असणारे ७०.६०: लोक आहेत, सहमत असणारे २५.२०: लोक आहेत तर तटस्थ असणारे ०३.६०: लोक आहेत.

६. COVID-19 हा पूर्णपणे बरा होणारा आजार आहे याविषयी पूर्णपणे सहमत असणारे ५३.४०: लोक आहेत, सहमत असणारे ३१.१०: लोक आहेत तर तटस्थ असणारे १४.६०: लोक आहेत.

- उद्दिष्ट क्रमांक ४ चे निष्कर्ष:

उद्दिष्ट: महाराष्ट्रातील नागरिकांद्वारे कोरोना व्हायरस संदर्भात होणाऱ्या सरकारी सूचनांच्या अंमलबजावणीचा अभ्यास करणे.

१. बतवदं टपतने चा फैलाव रोखण्यासाठी परदेशातून स्थलांतरीत झालेल्या व्यक्तींची माहिती तात्काळ स्थानिक सरकारी यंत्रणेला किंवा पोलिसांना दिली पाहिजे असे वाटते याविषयी पूर्णपणे सहमत असणारे ८७.४०: लोक आहेत तर सहमत असणारे १२.६०: लोक आहेत.

२. ब्रिटिश-19 बरोबरचे युद्ध जिंकण्यासाठी भारत सरकारने कलम-१४४ अंतर्गत संपूर्ण देशभर २१ दिवसांसाठी (१४ एप्रिल २०२० पर्यंत) संचारबंदी व जमावबंदी आदेश लागू केला आहे हे माहित आहे याविषयी पूर्णपणे सहमत असणारे ६३.२०: लोक आहेत तर सहमत असणारे ०६.८०: लोक आहेत.

३. ब्रिटिश-19 या आजारपासून दूर राहण्यासाठी किंवा वाचण्यासाठी संपूर्ण देश बंद ठेवणे हाच एकमेव उपाय आहे असे वाटते याविषयी पूर्णपणे सहमत असणारे ६८.६०: लोक आहेत तर सहमत असणारे २५.२०: लोक आहेत, तटस्थ असणारे ०३.६०: लोक आहेत तर असहमत असणारे ०१.६०: लोक आहेत.

४. राज्य सरकारने लोकांच्या मूलभूत गरजा भागविण्यासाठी आवश्यक वस्तूंची पूर्ण तयारी केलेली आहे याविषयी पूर्णपणे सहमत असणारे ५२.४०: लोक आहेत तर सहमत असणारे ३३.००: लोक आहेत, तटस्थ असणारे १०.७०: लोक आहेत तर असहमत असणारे ०२.६०: लोक आहेत.

५. बतवदं टपतने चा फैलाव रोखण्यासाठी भारत सरकार आणि राज्य सरकारच्या वतीने योग्य त्या उपाययोजना केल्या जात आहेत याविषयी पूर्णपणे सहमत असणारे ६२.१०: लोक आहेत तर सहमत असणारे ३५.६०: लोक आहेत.

६. बटप्क-19 या आजारापासून दूर राहण्यासाठी किंवा वाचण्यासाठी सर्वांनी सरकारी सूचनांचे काटेकोरपणे पालन करणे गरजेचे आहे असे वाटते याविषयी पूर्णपणे सहमत असणारे ६०.३०: लोक आहेत तर सहमत असणारे ०६.७०: लोक आहेत.

#### १. Recommendations of the research:

१. बटप्क-19 हा आजार खोकला आणि शिंकण्यातून होणार्या विषाणू संक्रमणामुळे पसरतो त्यामुळे इतर व्यक्तींशी बोलताना सामाजिक अंतर शक्यतो १ मीटर चे अंतर राखावे.

२. भारत सरकारच्यावतीने बटप्क-19 या वायरसविषयी लोकांमध्ये जाणीवजागृती करण्यासाठी आणि कोरोना व्हायरसपासून संरक्षण करण्यासाठी 'आरोग्य सेतू' नावाचे मोबाईल ॲप आणि हेल्पलाईन नंबर सेवा चालू केली आहे त्याचा नागरिकांनी वापर करावा. इतर कोणत्याही अफवांवर विश्वास ठेवू नये.

३. बटप्क-19 हा आजार पूर्णपणे बारा होणारा आहे त्यामुळे नागरिकांनी सरकारच्या उपाययोजनांवर विश्वास ठेवावा.

४. बटप्क-19 या आजारापासून दूर राहण्यासाठी संपूर्ण देश बंद ठेवणे हाच एकमेव उपाय आहे त्यामुळे नागरिकांनी घरातच राहावे घराबाहेर पडू नये.

५. राज्य सरकारने लोकांच्या मूलभूत गरजा भागविण्यासाठी आवश्यक वस्तूंची पूर्ण तयारी केलेली आहे यावर नागरिकांनी विश्वास ठेवावा विनाकारण घराबाहेर पडून गर्दी कः नये कारण त्यामुळे कोरोना व्हायरसचे संक्रमण होवू शकते.

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## **IMPACT OF TECHNOLOGY IN PROTECTING AS WELL AS EXPLOITING ENVIRONMENT**

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### **Abstract:**

To start, environmental pollution occurs as a result of technology mismanagement and lack of control measures. Technological improvement in recent years has seen production of more machines, weapons and automobiles. Increased consumption of improved facilities triggers demand which in turn influences supply of required quality of products that are major effectors of industrialization using improved technology. Importance of technology in such cases is attributed to satisfaction of human wants. Though adverse pollution of environment due to increased production in the manufacturing and processing industries, weapons testing and high usage of automobiles such as cars. Air pollution, water and noise pollution are the key components of an environment that has been continually polluted as a result of technology. Emission of large quantity of gases such as CO<sub>2</sub> in the air by large industries causes air pollution which in turn has degraded environment immensely. Again, disposal of waste into the rivers and water systems by industries and other institutions is an environmental hazard through water pollution. Similarly, a lot of noise pollution from weapons testing and usage, industries in their routine production processes and automobiles is causative of environmental dilapidation (Ausubel&Sladovich, 1999).

Farming activities such as burning of bushes, deforestation and usage of chemicals to enhance soil fertility is an environmental exploitive. As well extensive mining of gold, diamond and other minerals is an activity that is contributing towards depletion of resources at an alarming rate.

### **Introduction:**

## **Environmental Impactsof Technology**

Problems of air and water pollution and toxic waste disposal are common in all industrialized countries. In developing nations, millions lack access to sanitation services and safe drinking water, while dust and soot in air are said to contribute to hundreds of thousands of deaths each year. One of the major causes of environmental problems is technology and how humans use it. Technology can be both source and remedy of environmental problems. It also plays a critical role as an instrument for observing and monitoring the environment on global and local scales. Although technology has a crucial role in finding solutions to environmental problems, by itself it cannot fix anything.

### **Technology has Bad effects on Environment**

Industrialization coupled with technological advancement has continued to affect the environment in a negative way. Industrial benefits resulting from technological adaptation in major activities has indirectly contributed towards higher living standards though bad part on technology manifest more. This is evidenced by increasing international discussions and consultations through conferences and meetings. A major theme in such meetings is on environmental violations resulting from technology.

In addition, ecological systems imbalances and disruptions result from technological advancements in the modern world. Collapse of ecological life and extinction of organisms from their natural habitats is a direct probable result of technology. Wildlife extinction from their natural habitat to create more space for farming activities and home for increasing population is an evidence of how technology causes ecological imbalances. Availability of improved technology causes people to device convenient ways of satisfying their basic needs and increased productivity requirement. Human embark of activities such as deforestation, extensive farming activities, environmental pollution which lead to changes in the natural lifecycles that maintain ecosystem.

### **Three ways Technologies are helping us save the Environment**

Technology has helped us simplify our lives. It has made the world a smaller place, assisted in fighting off the deadliest diseases, and solved the most complicated problems for us. The next problem that stands before us is that of the ecological changes we face. Keeping in mind the potential technology has, environmental scientists are now saving the environment with technology.

## Saving Environment with Technology

Developing renewable energy technology	Saving endangered wildlife	Adopting a smarter lifestyle
<ul style="list-style-type: none"> <li>•Efficient energy storage and smart grids</li> <li>•Renewable and rechargeable batteries and fuel cells</li> </ul>	<ul style="list-style-type: none"> <li>•Smart collars for endangered species and reducing human-animal conflicts</li> <li>•Gene sequencing for detecting and researching on deadly animal diseases</li> </ul>	<ul style="list-style-type: none"> <li>•Smart homes that promote energy saving and green-living</li> <li>•Electric cars which are three times more efficient than conventional vehicles</li> </ul>

### 1. Developing renewable energy Technology

One of the most significant ways to contribute to saving the environment is to sustainably generate and use the available energy resources. Due to the non-renewability of fossil fuels like coal, petroleum, and natural gas, researchers are coming up with new ways to generate energy with technology. However, generating energy with technology involves three main aspects: storing, energy grids, and electricity generation. Energy storage includes developing low-cost storage solutions for energy in the form of modern batteries and improved fuel cells. Some examples of technology-efficient energy solutions are fuel cells, lithium-air batteries, hydrogen energy storage, and thermal energy collectors.

Smart grids assist in moving the generated electricity around to ensure that everyone on the network can access it. The technology includes building such grids and working on their maintenance.

### 2. Saving endangered wildlife

‘Modern technology owes ecology an apology,’ environmental scientists have started focusing on remedying the ecological balance caused by human beings. An integral part of the ecosystem, technology now is being widely used in saving wildlife. Some of the measures taken worldwide in protecting are:

- Smart collars embedded with GPS, meters, and sensors to keep track of endangered species like rhinos and elephants

- Remote monitoring of wildlife sounds and noises to detect any predator harm or natural distress
- SIM-based collars for animals near human habitats to reduce animal-human conflicts
- Gene sequencing techniques to save endangered species from incurable diseases like cancer
- Conservation drones to track and monitor wild forest regions for any natural disasters like forest fires that can cause animals to be killed

### 3. Adopting a smarter lifestyle

Forming a significant part of the ecology, man has come up with ways to live a safe and a sustainable lifestyle for helping the environment. Smart homes that advocate green living and lesser waste are gaining popularity nowadays. These houses work on advanced sensors that help in saving energy in daily activities. Usually powered by a renewable energy source, they track the presence of people in the house to make decisions that can help in sustainable living. They also employ natural waste management systems with in-built recycling methods, thus, generating lesser waste.

Smart cars were developed on the same lines that contribute to reducing the conventional automobile pollution and saves energy. Electric cars like the Tesla Model 3 work on rechargeable batteries that are highly efficient in distributing the energy to the car parts. A report says that these energy efficient cars supply about 62% of the engine power to the car wheels while conventional cars used only 17-21% of the total energy, thus making them almost three times as efficient as normal cars running on fuel.

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## ENVIRONMENT PLAYS A LEADING ROLE IN EMERGENCE OF DISEASES: A REVIEW

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**Abstract:** *Infectious disease outbreaks can spread quickly across the world and existing gaps in health facilities further contribute to burdens of morbidity and mortality. The health risks of epidemics and the panic that accompany them lead to various economic risks. In addition to being aggravated by globalization, epidemic potential is elevated by climate change and urbanization. Researches to improve our understanding of environmental drivers of infectious disease and collaborations for monitoring epidemic readiness at the national level is required to cope up with these epidemics and pandemics.*

**Key word:** Infectious diseases, epidemics, environment

### INTRODUCTION

Changes in the global climate along with degradation of land, water and air are capable of putting additional risk to human health. With new technologies and globalization we are altering economic and social patterns across the globe along with our environment.

Most common infectious diseases known today, entered human populations from animal or (less often) soil and water sources. The species barrier was crossed during repeated contact through activities such as land clearing, animal herding and domestication. Urbanization and increases in inter-societal contacts inform of trade, conflict and warfare have definitely facilitated zoonoses and the spread of infectious diseases amongst humans. In a recent analysis of 335 episodes of human infectious disease emergence from 1940 to 2004, researchers noted that 60% were zoonotic and that 72% of these originated in wild animals [13].

Infectious diseases are a significant burden on public health and economic stability of societies all over the world. They have for centuries been among the leading causes of death and disability and presented growing challenges to health security and human progress. The threat posed by infectious diseases is further deepened by the continued emergence of new and old

infectious disease epidemics of global impact. Epidemics of infectious diseases threaten individuals' lives and cause major economic losses for society. Diseases sometimes emerge and re-emerge in unpredictable regions and at unpredictable times [6, 5]. The World Health Organization (WHO) estimates that approximately one-third (e.g., 20 million) of the annual deaths worldwide are attributed to infectious diseases [43]. The morbidity from infectious disease has increased during the past few decades and represents at least 70% of emerging infectious diseases (EID), which are a significant burden on global economic and public health [44,8,14].

Human activities and other environmental changes are affecting the microbial world, resulting in new challenges for controlling infectious diseases. They influence the emergence of new diseases and further the persistence of older, well-established infectious diseases. The impact of human activities on the environment is unparalleled [6]. Every hour of the day, human activities clear another 1500 hectares of forests; release 4 million tons of the main greenhouse gas, carbon dioxide, into the atmosphere [7] leading to a unhealthy environment difficult to sustain life forms.

In this review we are focusing on the environmental factor which leads to upsurge of disease.

#### WHAT IS A DISEASE?

A "disease" is any condition that impairs the normal function of a body organ and/or system and is associated with specific signs and symptoms. A disease can be infectious or non-infectious.

**Infectious diseases** are caused by pathogenic microorganisms, such as bacteria, viruses, parasites or fungi. It can be spread, directly or indirectly, from one person to another. Zoonotic diseases are infectious diseases of animals that can cause disease when transmitted to humans [45]. They derive their importance from the type and extent of damage their causative agents inflict on organs and/or systems when they gain entry into a host. Infectious agents/pathogens enter into host mostly through mouth, eyes, nose, and the skin.

Naturally the host's elaborate its defence mechanism, immune system, fights infectious agents and eliminates them. Infectious disease results or emerges in instances when the immune system fails to eliminate pathogenic infectious agents. Thus, all infectious diseases emerge at some point in time in a given population and in a given environment.



**Non-infectious diseases** are not [transmissible](#) directly from one person to another, but just affect the one who is infected. Some examples of these diseases are Diabetes, Allergies, Cardiovascular Diseases, and Cancer and Genetic diseases. These diseases are not caused by pathogens. Instead, they are likely to have causes such as lifestyle factors, environmental toxins, or gene mutations.

## **THE EMERGING INFECTIOUS DISEASE**

Infectious diseases (IDs) put a highly significant burden to human survival and development. They constitute a significant proportion of all human diseases known. At least 25% of about 60 million deaths that occur worldwide each year are estimated to be due to infectious diseases [42, 15]. Influenza is one of major infectious disease the world has witnessed. Spanish Influenza epidemic in 1918-1919 killed as many as 40 million people worldwide. The 1918-1919 influenza pandemic killed even more people than the World War I (the Great War); it killed more people in one year than in four years of the Black Death Bubonic Plague, occurred in 1347–1351 and more people than thirty-five years of the HIV/AIDS pandemic, which caused an estimated 35 million deaths at the end of 2015 [18, 38, 41]. It has been referred to as the most devastating epidemic in world history and a global disaster [37]. Other devastating infectious diseases include haemorrhagic fevers and the 2014 Ebola disease outbreak, which recorded a total 28,638 cases with 11,316 deaths in ten countries worldwide [25, 35, 20].

## **MAJOR CAUSES OF INFECTIOUS DISEASE EMERGENCE**

The complex interactions between **infectious agents, hosts, and the environment** are key factors leading to development of disease. Emergence and reemergence of infectious diseases occur over time. Prior to causing an epidemic, infectious disease agents go through various stages of adaptation to access or acquire pathogenic characteristics in a new host [4]. Specific processes such as gene mutation, genetic recombination, or reassortment as well as factors that compel microbial agents to change reservoir hosts constitute opportunities for infectious agents to evolve, adapt to new hosts in new ecological niches and spread easily [2, 32].

### **Environment**

The environment plays a dominant role in the transmission of infectious diseases, including vector-borne diseases such as malaria and dengue. A number of environmental factors influence the spread of communicable diseases that are prone to cause epidemics. The most

important of these are water supply, sanitation facilities, food and climate [45]. Environmental factors determine if a host will become exposed to pathogen, and subsequent interactions will determine the *exposure* outcome in form of infection. A pathogen must contact a host and survive within it to cause a disease. To survive, it needs – a suitable environment, virulence and source of nutrients within the host.

Two particularly important aspects are socio-ecological systems and climate change. Factors that affect the environment and lead to climate change include depletion of forests, expansion and modernization of agricultural practices, and natural disasters such as floods. These potentially lead to changes in microbial ecological niches and fuel microbial adaptation to human host [33, 39]. Sociodemographic factors such as increase in population density, falling living standards, decline of infrastructure, human travel, conflicts and social instability, and killing of wild animals for meat all lead to increase in host-microbe contact, which facilitate infections in humans [31,40,12, 16].

Research to improve our understanding of environmental drivers of infectious disease can lead to improved vector control measures and disease prevention. Research also needs to explore how policies of health, environment and development can best be aligned—since many vector control and disease prevention measures require action by sectors such as water, agriculture and sanitation – areas outside of the traditional domain of health services [44].

## **Host**

Host susceptibility to infection and disease, depends on the host immune response. Susceptibility refers to the ability of an exposed individual (or group of individuals) to resist infection or limit disease as a result of their biological makeup. Factors influencing susceptibility include both innate, genetic factors and acquired factors such as the specific immunity that develops following exposure or vaccination. Susceptibility is also affected by extremes of age, stress, pregnancy, nutritional status, and underlying diseases. Mechanical and chemical surface barriers such as the skin, the flushing action of tears, and the trapping action of mucus are the first host obstacles to infection. For example, wound infection and secondary sepsis are serious complications of severe burns which remove the skin barrier to microbial entry. Lysozyme, secreted in saliva, tears, milk, sweat, and mucus, and gastric acid have bactericidal properties.

The *innate* and *adaptive immune responses* are critical components of the host response to infectious agents. Immune memory is the basis for the use of *vaccines* that are given in an attempt to stimulate an individual's adaptive immune system to generate pathogen-specific immune memory.

### **Infectious agents**

In order to cause disease, pathogens must be able to enter the host body, adhere to specific host cells, invade and colonize host tissues, and inflict damage on those tissues. Entrance to the host typically occurs through natural orifices such as the mouth, eyes and nose or through wounds that breach the skin barrier to pathogens. Although some pathogens can grow at the initial entry site but most invade areas of the body where they are not typically found. They do this by attaching to specific host cells. Some pathogens then multiply between host cells or within body fluids, while others such as viruses and some bacterial species enter the host cells and grow there. There are five major types of infectious agents: bacteria, viruses, fungi, protozoa, and helminths.

Besides host and environmental factors, changes or mutation in the genome of a pathogen, which occurs as a result of exposure to chemicals and antimicrobial agents (e.g., antibiotic), may lead to emergence of drug resistant to pathogen variants that could cause new disease [2]. Thus, human, pathogens and environmental factors constitute major causes of infectious disease emergence and the virulence or pathogenic potential depends on a complex combination of these factors [24]. However, generally, emerging infectious diseases caused by viral pathogens are responsible for the greatest proportion of the EID threat, having caused about two-thirds of the infectious disease burden and usually characterized by very high epidemics. Examples are Filoviruses, Ebola, and Marburg [10, 14].

### **FACTORS THAT INCREASE RISKS OF INFECTIOUS DISEASE**

- 1. Deforestation:** Deforestation and other forms of landscape transformation have increased the risk of infectious diseases. Pathways include more frequent direct and indirect human contact with rodents, primates, bats and birds, thereby increasing the risk of old and new zoonoses. Deforestation can also alter the distribution, population size and biodiversity of vector species, many of which have differing capacities to transmit pathogens. Thus changes in vectorial biodiversity will definitely alter human and animal epidemiology. For example hanta viruses, schistosomiasis, West Nile fever and Chagas disease.

- 2. Food shortage and malnutrition:** Shortage of food, malnutrition and poor hygiene work together to compromise immunity and amplify disease vulnerability.
- 3. Globalization and Migration:** In a globalized world, disease is a worldwide traveler. Migration not only offers the possibility of improved socioeconomic opportunities but also the spread of infectious diseases to non-endemic areas. Growing trade volumes also facilitate the spread of disease.

The mass gathering of peoples from different parts of the world for religious, sporting and cultural events also put up challenges to the control and global spread of infectious diseases. For example: Hajj, the annual pilgrimage to Mecca in Saudi Arabia, attracts 1.6 million foreign visitors from 160 countries every year [1], making it one of the largest temporary mass migrations today.

- 4. Climate change:** The effects of climate change are complex, and it is difficult to identify the outcomes. To know the outcomes, studies on changes in the epidemiological characteristics of infectious diseases, the occurrence of zoonotic diseases, the density of vectors, the patterns of human and non-human migration, food shortages, the quality and availability of water sources, and other relevant factors [19, 3] are to be prioritised. We also need to establish epidemiological evidence on the occurrence of infectious diseases in order to increase the accuracy of models for predicting the occurrence of EIDs and establishing an early warning system [3, 28, and 7].
- 5. Microbial adaptation:** Microbes, like all other living things, are constantly evolving. The emergence of antibiotic-resistant bacteria as a result of the ubiquity of antimicrobials in the environment is an evolutionary lesson on microbial adaptation, as well as a demonstration of the power of natural selection. Many viruses show a high mutation rate and can rapidly evolve to yield new variants [13]. A classic example is influenza [22]. Regular annual epidemics are caused by antigenic drift in a previously circulating influenza strain. Pathogens can also acquire new antibiotic resistance genes from other, often nonpathogenic, species in the environment [11], selected or perhaps even driven by the selection pressure of antibiotics.

**Deficiencies in public health infrastructure and public health measures:** Ideal public health and sanitation measures can serve well to minimize dissemination and human exposure to many pathogens spread by traditional routes such as water or preventable by

immunization or vector control. But if there are breakdowns in preventive measures the pathogens that still remain, albeit in reduced numbers, in reservoir hosts or in the environment, or in small pockets of infection are able to take advantage of the opportunity to reemerge. Therefore public health should be given first priority if we want a healthy nation.

### **APPROACHES FOR FUTURE RESEARCH**

The effect of human activity in the world today, and particularly on environmental effects, presents us with an array of research challenges. Microbes are highly diverse and their pathogenic adaptations facilitate their spread and persistence in humans. There are areas where we still know very little e.g. factors influencing the passage of pathogens from animal to human species; characteristics of the pathogen that make for “emergence” and for easy and rapid disease transmission; how drivers such as deforestation, urbanization, agricultural practices and migration influence these ecological relationships. Therefore we need to superstructure the present researches into more integrated interdisciplinary and systems-based research which can yield solution to rise in disease incidences and their severity. Stronger collaboration between government ministries and agencies is needed to fund interdisciplinary approaches to research on human-animal health.

For preventing the public health hazards through the spread of infectious diseases, coordination and planning from all government sectors of the country is a must. Initiatives which are essential for effective health system functioning should be taken in advance. This includes development of quarantine facilities, vaccine requirements and screening procedures at entry, as well as the up gradation of health services to arrange for the medicines and medical facilities when the demand rise. The hunting, consumption and farming of exotic animals, including bats, civet cats, primates and raccoon dogs, which has intensified the likelihood of new infections emerging and spreading effectively via migration and globalization, should also be stopped. SARS emerged in humans in Guangdong province, southern China, in late 2002. Once SARS reached Hong Kong, a global travel and trade hub, the virus spread rapidly to North America, Europe and the rest of Asia, causing nearly 8000 cases worldwide in 2003 [17]. And similar is the present pandemic of Covid-19, a new disease which is spreading like wildfire. It started in late 2019 in Wuhan, China and has engulfed **212 countries and territories** around the world with 3.7 million cases around the globe and 258,354 deaths[43].

## CONCLUSION

Knowledge of the factors underlying disease emergence can help us to focus resources on the key situations and areas worldwide [29, 30] and develop more effective prevention strategies. If we are to protect ourselves against emerging diseases, the essential first step is effective global disease surveillance to give early warning of emerging infections [29, 21, 9, 43].

An understanding is needed on why microorganisms cross species to cause diseases from animals to humans, determining the factors that drive the spread of infections, and developing joint responses to outbreaks among different professional, government and international groups [19].

Monitoring changes in environmental conditions can guide the anticipation and forecasting of upsurges in infectious disease [27]. Identifying long-term trends will build the evidence base for strategic public health action, while identifying short-term events linked to environmental conditions can help improve and accelerate early warning and response capabilities. The European Centre for Disease Prevention and Control (ECDC) has recognised the strategic importance of such capabilities and has developed an information infrastructure and coined the European Environment and Epidemiology (E3) Network which is aimed at monitoring environmental conditions related to infectious disease threats [23]. This data system can supply crucial information and analyses for forecasting, and thereby assisting in predicting changing patterns of infectious disease. The Network can significantly enhance preparedness and accelerate the public health response to emerging infectious diseases, thereby helping contain human and economic costs, particularly in resource-strapped regions. Similar efforts are needed by all the countries around the globe to prepare themselves for the unpredicted changes that climate change is offering so that diseases if start in one region can be contained and prevented from spreading to other countries and regions.

Aggressive research is necessary to find the important characteristics of pathogens necessary for diagnostics, therapeutics, and vaccine development and possibly enable detection of those pathogens with the potential to cause epidemic.

Constant awareness and development of effective strategies for controlling infectious diseases and disease emergence is important to avoid future epidemics fatal to human population.

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## Global Warming

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### Introduction

What is Global warming?

In simple words, it refers to the steady temperature rise on our planet. According to the National Oceanic and Atmospheric Administration (NOAA) between 1880 and 1980, the global annual temperature increased at a rate of 0.13 degrees Fahrenheit (0.07 degrees Celsius) per decade, on average. Since 1981, the rate of increase has speed up, to 0.32 degrees F (0.18 degrees C) per decade. This has led to an overall 3.6 degrees F (2 degrees C) increase in global average temperature. In 2019, the average global temperature over land and ocean was 1.75 degrees F (0.95 degrees C) which made 2019 the second hottest year on record, trailing only 2016.

Now the Question arises who is responsible for this?

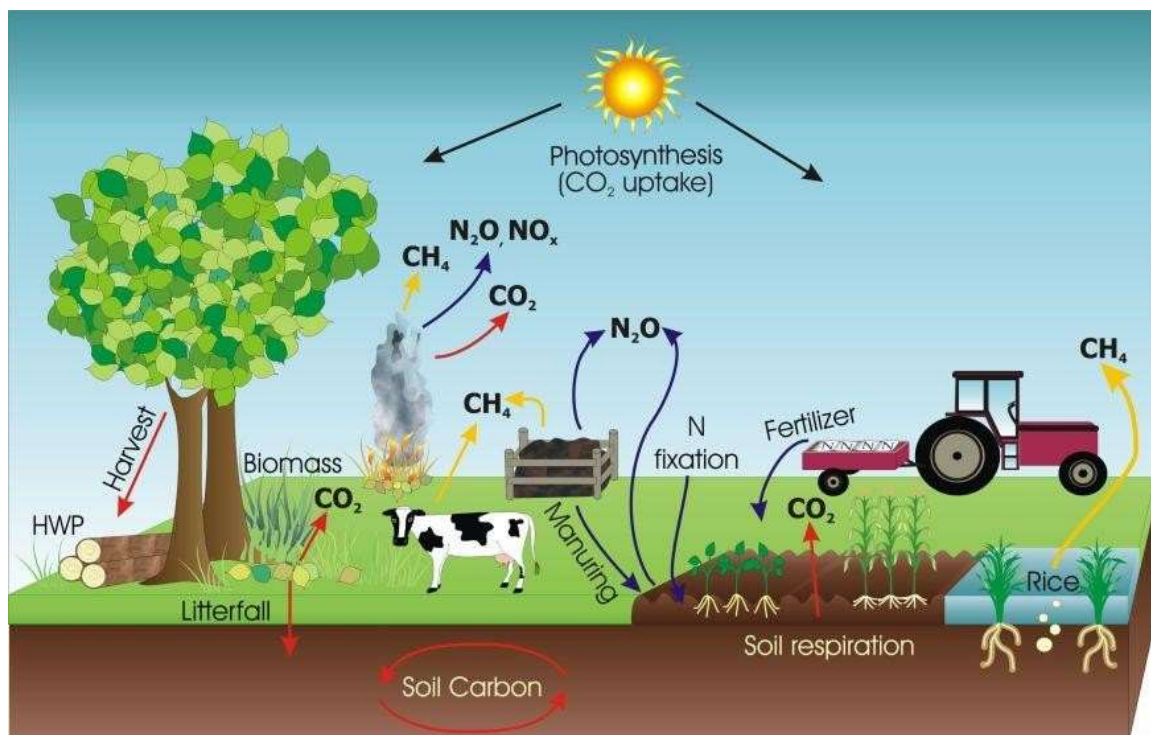
None other than we humans. The burning of fossil fuels by us has released greenhouse gases into the atmosphere, which trap warmth from the sun and drive up surface and air temperatures. Now greenhouse gases include Carbon dioxide, Methane, Nitrous oxide, Water vapour, Ozon



1 Where the greenhouse gases come from?

Main promoter of gases is burning of fossil fuels like coal and oil which releases water vapour, carbon dioxide, methane, ozone and nitrous oxide. The most common greenhouse gas is Carbon dioxide. In the beginning of the industrial revolution , CO<sub>2</sub> presence in the atmosphere amounted to about 280ppm ( which means that there are 280 molecules of CO<sub>2</sub> in the air per every million air molecules. As of 2018 the average CO<sub>2</sub> in the atmosphere was 407.4 ppm , according to the National Centers for Environmental Information.

In 2016, CO<sub>2</sub> accounted for 81.6% of all U.S. greenhouse gas emissions, according to an analysis from the Environmental Protection Agency(EPA). According to the 2018 EPA report, U.S. fossil fuel combustion, including electricity generation, released just over 5.8 billion tons of CO<sub>2</sub> into the atmosphere in 2016. Other processes such as non-energy use of fuels, iron and steel production, cement production and waste incineration- boost the total CO<sub>2</sub> release in the U.S. to 7 billion tons.



Deforestation is also a large contributor to excess CO<sub>2</sub> in the atmosphere. According to research published by duke university it is the second largest human made source. After trees die, they release the carbon which they have stored during photosynthesis. According to the 2010 Global Forest Resources Assessment, deforestation releases nearly a billion tons of carbon into the atmosphere per year.

Methane is the second most common greenhouse gas, but it is the most efficient at trapping heat. The EPA reports that methane is 25 times more efficient at trapping heat than CO<sub>2</sub>. Methane can come from many natural resources, but humans cause a large portion of methane emissions through mining, the use of natural gas, the mass raising of livestock and use of landfills. Cattle constitute the

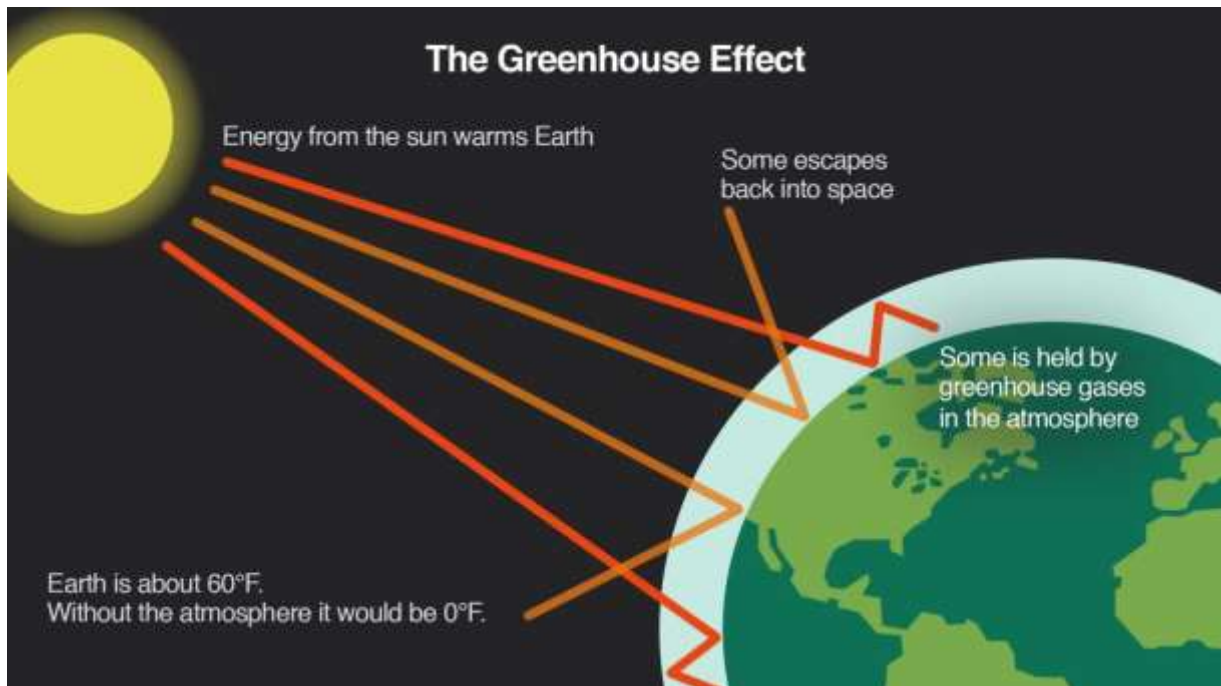
2 largest single source of methane in the U.S. according to the EPA, with the animals producing nearly 26% of total methane emissions.

### **Greenhouse Effect**

Greenhouse effect basically refers to the warming up of earth's lower atmosphere and its surface. When electromagnetic radiations of shorter wavelength from the sun enters the earth's atmosphere, about a one- third of its reflected back to space and the rest is absorbed by the earth's atmosphere and its surface. Then earth emits energy at longer wavelengths. In other words we can say earth here is acting as a black body and radiating energy at longer wavelengths to the outer space. As the sun is very hot it gives off its energy mainly in short wave radiation and the earth is nowhere near as hot as the sun, when the earth radiates the heat back up into the atmosphere, it is in the form of long wave radiation which is much more easily absorbed than the short wave radiation by the earth's atmosphere. Hence the surface temperature of the earth increases.

From where the word "Greenhouse Effect" came into existence

In cold countries a greenhouse or glasshouse rather stays warm even when the outside temperature is low. In those greenhouses sunlight comes in through the transparent glass and strike the ground but the reflected heat cannot be transmitted out as significant portion is absorbed by the glass, thus tends to warm the interior surfaces of the greenhouse. The natural greenhouse effect in a global scale is similar to the action of a greenhouse and the atmospheric greenhouse gases thus act like a glass panels of a greenhouse.



### 3 Effects of Global Warming?

Global warming doesn't just mean warming, which is why "climate change" has become the favoured term among researchers. Climate change can and will affect the globe in several big ways: by melting ice, by drying out already arid areas, by causing weather extremes and by disrupting the delicate balance of oceans.

#### **Melting Ice**

Most visible effect of climate change so far is the melting of glaciers and sea ice. A 2016 study found that there is a 99% chance that global warming has caused the recent retreat of glaciers. Glacier National Park in Montana had 150 Glaciers in the late 1800s, today only 26 left.



Fall and winter ice in the Arctic hit record lows in both 2015 and 2016, meaning the ice expanse did not cover as much of the open sea as previously observed. According to NASA, the 13 smallest values for maximum winter extent of sea ice in the Arctic were all measured in the last 13 years . According to the National Snow and Ice Data Center, January sea ice extent has declined 3.15% per decade over the past 40 years. Some scientists think if this trend continues then Arctic ocean will see ice free summers within 20-30 years. In the Antarctic, the picture has been a little less clear. The western Antarctic Peninsula is warming faster than anywhere else besides some parts of the arctic, according to the Antarctic and Southern Ocean Coalition. The peninsula is where the Larsen C ice shelf just broke in July 2017. On March 3, 2017, Antarctic sea was measured at an extent of 184000 square kilometres less than previous low, from 1997.

#### 4 Heating up

Global warming will change things between poles, too. Many already dry areas are expected to get even drier as the world warms. The main driver, the researchers found, is the increasing evaporation of water from hotter and hotter soil.

In 2014 research found that many areas will likely see less rainfall as the climate warms. Subtropical regions, including the Mediterranean, the Amazon, Central America and Indonesia, will likely be hardest hit , that study found, while South Africa, Mexico, western Australia and California will also dry out.

#### Extreme weather



Another impact of global warming is extreme weather. Hotter oceans evaporate more moisture, which is the engine that drives the storms like hurricanes and typhoons. Some examples are as follows:-

- Devastating 2014 floods in Jakarta are becoming more likely due to climate change and other human influences
- Meteorological drivers that lead to extreme Himalayan snowstorm of 2014 have increased in likelihood due to climate change.
- UAE was hit by rare snowfall and arctic winds as temperature drop to -5 degrees likely due to climate change.

5 Data of Greenhouse gas emissions of top 10 countries-

- 1) China: 7,216 MT or 16.4%
- 2) US: 6,931MT or 15.7%
- 3) Brazil: 2,856 MT or 6.5%
- 4) Indonesia: 2,046 MT or 4.6%
- 5) Russia: 2,028 MT or 4.6% 6) India: 1,870 MT or 4.2% 7) Japan: 1,387 MT or 3.1%
- 8) Germany: 1,005 MT or 2.3%



- 9) Canada: 808 MT or 1.8%
- 10) Mexico: 697 MT or 1.6%

Now some steps to prevent Global warming

- Recycle more- If you even recycle half of the waste produced at home, you can save up to 2000 pounds of CO<sub>2</sub> every year.
- Drive Less- Air pollution is one of the major factors that lead to an increase in greenhouse gases. If you reduce the driving hours, you will end up saving one pound of CO<sub>2</sub> for every mile.
- Plant trees- Deforestation plays an important role in global warming and climate change. Planting trees is helpful as they absorb carbon dioxide from the atmosphere and regulate the climate. A single tree can absorb one ton of CO<sub>2</sub> in its lifetime.
- Switch to renewable energy- One of the most effective ways to prevent global warming is to start using renewable energy sources.

Economists have suggested two policy tools for reducing global CO<sub>2</sub> emissions. They are:-

- A transferable discharge permit (TDP)- According to this the countries would be allocated CO<sub>2</sub> emission permits equal to their permitted base level emissions which will be determined by any of the four criteria, namely

- 1) Equi-proportionate reduction in emission
- 2) Ability to pay criteria
- 3) Polluter pay principle
- 4) equal per capita consumption

- Carbon Tax- This tax would be levied on the carbon content of the fuels consumed. It has been estimated that a worldwide reduction of 20% in CO<sub>2</sub> emission would require a tax of 45 dollar per ton of carbon. If the CO<sub>2</sub> emission is further reduced to 50% that will

require a tax of 140 dollar per ton of carbon which may be burdensome for developing countries.

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## Government Role and COVID-19 – A Study

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COVID-19 is a newly identified virus of corona virus group. In this group there were approximate twelve type of virus. Corona viruses were identified in the mid of sixties and were known to infect human being as well as many animals like birds and mammals too. In 2002-2003 severe acute respiratory syndrome (SARS – CoV) was indentified which caused outbreaks in human via infected animals in southern China and in 2012 Middle East Respiratory syndrome (MERS-CoV) was identified in Saudi Arabia. These two were also very aggressive type and had caused many deaths at that time too. This time a new type of virus of corona group was identified first at Wuhan city of China in Dec. 2019. Studies reveal that it was first transmitted to human from animals. It causes a very infectious respiratory disease. It is caused by severe ACUTE Respiratory Syndrome corona virus 2 (SARS – CoV 2). But its provisional name referred to 2019 novel corona virus or 2019-Cov or COVID-19 due to its identifications as new type of corona virus in December 2019. Its symptoms are likely, pneumonia and severely infect lungs and other organs too. It is an air born highly infectious diseases.

This time it has spread to 210 countries. In our country 32 states including union territory are affected somewhere situation is very serious. In India, Government took initiative to protect their people without thinking about economic losses.

**Mode of Transmission :-** COVID-19 is a respiratory tract infection disease. Following few ways were recognised in transmission of COVID-19 infections.

1. Droplet Transmission:- Respiratory infection can be caused by droplet transmission too while a infected person is sneezing or coughing within 1 meter area.

- This can be transmitted through droplets of different sizes.
  - When microbes present in this droplets are very small in size can be referred as respiratory droplet and are able to infect people.
  - When a person is within 1 meter with someone having infection is on high risk, can be infected via eyes, nose, mouth etc.
  - Sometimes droplets settled down can also infect a person when he touches that surface. This is called indirect mode of transmission.
2. Contract Transmission: - When an infected person come in the contact of healthy person can infect then. This contact may be
- By shaking hands
  - By kissing of hugging
  - By touching infected place and then face, eyes or other parts of face etc.
3. Air Transmission :- Air born transmission is slightly different from droplet transmission when size of microbes within droplet are bigger in size called as particles can remain in the air for long periods and can be transmitted to others over distance more than 1 meter. This may also learned as indirect mode of transmission.

These are possible modes of infection in all possible mode of transmission direct mode of transmission (contact transmission and respiratory transmission) covers most of the infection.

**Prevention or Preventive Measures** :- It is well established fact that ‘Prevention is better than cure’ It is better to protect yourself by adopting appropriate precautions advised by public health agency to prevent the spread of COVID-19

- Frequently wash your hand using soap and water.
- If not possible to wash use alcohol based sanitizer.
- Maintain a distance from persons who is sneezing or coughing.
- Use mask or cover your face with handkerchief, gamchha, dupatta, stole or any homemade face cover.
- Don't touch eyes, mouth, nose or face.
- While coughing or sneezing always cover face by bending elbow or tissue paper or hand kerchief.
- Stay at home if not necessary to go out.

- If having fever, cough or any other problem contact doctors,
- After coming from outside remove footwear outside take bath or change clothes and wash hand face and feet properly.
- Sanitize your gadgets too with sanitizer or any cleaning agent.

**Government efforts:-** In India first case officially identified at Kerela. After that government took more tough stands to save our public. An article published in Amar Ujala news paper ‘Abki baar sirf sarkar’ is very relevant. Government of India has taken many measures to fight against COVID-19 keeping in mind the needs and wellness of people. Some steps taken by central Government with state Government are –

- Strict checking for COVID at airport (when flight were available)
- One day Janta carfew (22 March 2020)
- Decision of lockdown (Phase 1- 25 Mar. 2020 to 14 Apr. 2020, Phase 2- 15 Apr. to 03 May 2020) to contain the spread of COVID-19 outbreak in India.
- To enforce lockdown methods which were adopted by Government
  - a. Except medical shops, grocery shop, hospitals, bank all will remain closed including malls picture hall etc.
  - b. All commercial establishments were closed (only work from home was allowed)
  - c. Educational institutions of all type were closed.
  - d. Worship places of all religions were declared closed.
  - e. All type of public gathering for any purpose (marriage, entertainment, parties, religious activities etc) prohibited.
  - f. All type of transport and travel modes were stopped.
- Releasing adequate funds to improve resources to fight against covid-19 especially in health sector.
- Training of health sector employed to protect themselves before treating patients.
- DBT scheme (Direct Beneficiary Transfer) was launched to provide help to poor, labours, farmer and others.
- Free distribution of Rashan with and even without Rashan card (State Government project)
- Community kitchen was promoted by Government.

Above all that the biggest problem was fear in public. To reduce or minimizing the fear Prime Minister addressed the citizen of India directly and via different social media modes. Central Government and state Government (in his own state) spokes person daily present the report to provide authentic report of country and of their state to prevent myth.

**Conclusion:-** Our Prime Minister Mr. Narendra Modi said that no doubt coming situation is very difficult. Our Government is taking wise decision but success depends on the general public. To avoid direct transmission i.e. contact transmission, social distancing, putting mask is advised and to avoid indirect transmission frequent hand wash, use of sanitizer, use of mask etc are advised. Sometime public do not understand the severity of COVID-19 and break the rule.

COVID-19 is sometimes symptomatic means cough, cold or fever appears in the patients. Identification of these patient is easy but if symptoms are not arising means COVID-19 is asymptomatic it is very difficult to identify the patient. These carriers are more dangerous than symptomatic patients. So only precautions can protect from asymptomatic patients.

Government officials are working day & night against COVID-19 especially medical employees, Police, administration and Safai Karmee. These persons are front line warriors but without support of public we will not succeed. This is a war where everyone is warrior. Success in this war is very important and essential for all for survival only together we can win this war of life.

**Suggestions:-** As a teacher we too have duty towards ourselves, our family, our society, community and our nation first to protect ourselves then our family then society village etc. by adopting safety measures and by convincing other, to follow Government instructions.

Students in their living ara can prepare 2-4 people group to spread awareness against COVID-19

- They can convince others to follow rules.
- NSS/NCC students should be appointed as volunteers to convince people of their area to follow Government instructions.
- These student – volunteers will listen the problems and provide them possible help with the help of appropriate bodies.
- These students and teachers will try to trace the peoples who are on the way to their houses and due to lockdown and are stranded somewhere they should not be left hungry.

- Arrangements should be made for their safe stay and adequate food as desired by Government.
- They should be told almost the facilities provided to them by Government because they may not have smart phones or any other means to know about it

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षोध छात्र

“ हमें जो मिलता है, उससे हमारा जीवन निर्वाह होता है लेकिन हम जो देते हैं, उससे जीवन निर्माण होता है।”

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पर्यावरण पृथ्वी पर उपस्थित सभी जैविक, भौतिक व रासायनिक अवयवों का सम्मिलित रूप है, जो मनुष्य को प्रभावित करता है तथा जिसे मनुष्य प्रभावित करता है। जो सभी जीवों के चारों ओर एक आवरण के रूप उपस्थित है।

“किसी स्थान विशेष में मनुष्य के आस-पास भौतिक बस्तुओं (स्थल, जल, मृदा, वायु) का आवरण, जिसके द्वारा मनुष्य घिरा होता है, को पर्यावरण कहते हैं।”

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पर्यावरण में ही समस्त जीव जन्तुओं का जीवन सम्भव है। यह पर्यावरण अनेक कारकों से मिलकर बना है, जिसका मनुष्यों और जीव जन्तुओं पर प्रभाव पड़ता है। इस प्रकार मानव को प्रभावित करने वाले वाह्य बलों को अथवा परिस्थिति को कारक की संज्ञा दी जाती है। पर्यावरण का प्रत्येक अंग जो परोक्ष अथवा अपरोक्ष रूप से मानव, जीव-जन्तुओं को प्रभावित करता है, कारक कहलाता है। पर्यावरणीय कारक दो प्रकार के होते हैं। अजैविक कारक व जैविक कारक।

वर्तमान समय में पर्यावरणीय कारकों से उभरने वाले रोग पूरी दुनियाँ में स्वास्थ्य के लिए जोखिम का प्रमुख स्रोत बना हुआ है। मानव की विभिन्न गतिविधियों के कारण भूमि, वायु, जल, और उसमें निवास करने वाले जीवों के लिए खतरा उत्पन्न हो गया है। बदलते हुए पर्यावरणीय कारकों के कारण मनुष्य मानव स्वास्थ्य और समाज में गम्भीर खतरा पैदा हो गया है। भारत जैसे विकासशील देश में भोजन, जल, और हवा में



रोगाणु होने के कारण उत्पन्न जैविक प्रदूषण स्वास्थ्य के लिए भारी समस्या बना हुआ है। बिषाक्त रसायन और हानिकारक विकिरणों ने पहले से ही गम्भीर समस्याओं की स्वास्थ्य के लिए कठिन बना रखा है और हम आज भी महामारी फैलाने वाले रोगों, एड्स, कैंसर, हेपेटाइटिस, केविड-19 जैसी खतरनाक बीमारियों से निजात पाने के लिए सघर्षरत हैं। इस सन्दर्भ में भारत में बड़े पैमाने पर चातुर्दिक फैली गरीबी, कुपोषणता, अशिक्षा एवं नजरअंदाजी, आग में घी का काम कर रही है। ये ऋणात्मक शक्तियाँ, जनसंख्या की तीव्र वृद्धि के कारण दिन-प्रतिदिन बढ़ती जा रही है।

अपने पूरे जीवन में एक व्यक्ति पर्यावरणीय से लेकर सामाजिक पर्यावरणीय कारकों की एक पूरी श्रृंखला के निरन्तर प्रभाव में है। एक स्वस्थ शरीर लगातार पर्यावरण को किसी भी परिवर्तन के जबाब में अपनी सभी प्रणालियों के इष्टतम कामकाज को सुनिश्चित करता है। उदाहरण के लिए तापमान में परिवर्तन, वायुमंडलीय दबाव, हवा में ऑक्सीजन सामग्री में बदलाव, आद्रता आदि। पर्यावरण के साथ बातचीत करते समय इष्टतम मानव जीवन को बनाये रखना इस तथ्य से निर्धारित होता है कि उसके शरीर के लिए किसी भी पर्यावरणीय कारक के सम्बन्ध में एक निश्चित

चतुष्पक्षीय सहनशीलता की सीमा है। और सीमा के परे यह कारक अनिवार्य रूप से मानव स्वास्थ्य पर एक निराशाजनक प्रभाव डालते हैं पर्यावरण को आकार देने वाले कारकों में से किसी के सम्पर्क में आने पर निम्नलिखित दुष्प्रभाव देखने का मिलते हैं।

1. पर्यावरणीय कारक मानव जाति के स्वास्थ्य और कुशलता पर प्रतिकूल प्रभाव छोड़ता है।
2. स्वच्छ पेयजल का अभाव, अस्वच्छ दषायें और गाँवों पहरों, कस्बों का प्रदूषित वातावरण बीमारियों के फैलने और खराब स्वास्थ्य के लिए उत्तरदायी है।
3. अनेक जल-जनित रोग जैसे हैजा, संक्रामक हैपेटाइटिस, पेचिस और डायरिया, विल्हार्जिया और मलेरिया अलग-अलग ढंग से फैलते हैं अनुचित ढंग से उपचारित या अनुपचारित सीवेज को नदियों में मिलाने से गम्भीर रूप से जल प्रदूषित हो जाता है और स्वास्थ्य पर इसका प्रतिकूल प्रभाव पड़ता है।
4. कृषि क्षेत्र के प्रमुख वायु प्रदूषक है अमोनिया, मिथेन और कीटनाषक, कुटीर उद्योग और बड़े औद्योगिक क्षेत्र के मुख्य वायु प्रदूषक है। धुआँ, कार्बन डाइ आक्साइड और सल्फर कें आक्साइड।
5. खदानों में विशेषकर कोयले की खानों में श्रमिकों को लम्बे समय तक कोयले की धूल में रहना पड़ता है। जिसके फलस्वरूप काला फेफड़ा रोग हो जाता है इस रोग का कोई उपचार भी नहीं है। केवल सावधानी ही रखनी होती है कि गम्भीर रूप लेने से पहले की कोयले की धूल को वातावरण से निकाल लिया जाये।
6. कभी-कभी शरीर के कुछ अंगों की कोषिकाएँ बिना आवश्यकता के भी विभाजित होने लगती हैं ये कोषिकाएँ कैंसर फैलाती हैं या दुर्दभ्य ट्यूमर का रूप ले लेती हैं अनेक ऐसे पर्यावरणीय कारक हैं

जो कैंसर का कारण होते हैं। उन्हें कार्सिनोजेन्स (कैंसर जन्य) कहा जाता है। उदाहरण के लिए तम्बाकू का धुआ, तम्बाकू चबाना पराबैंगनी और आयोजिजिग विकिरण और कुछ कीटनाशक दवाइयाँ।

7. छींकना, नाक का बहना, परागजनित बुखार पर्यावरण के रहने वाले कुछ तत्वों के कारण होता है जिन्हें एलर्जन कहते हैं। यह आवश्यक नहीं है कि वे अपने आप में हानिकारक हों।
8. पेयजल में उच्च सांद्रित नाइट्रेट की मिलावट से प्रायः दूध पीते शिशुओं को कैंथाइमोग्लोबिनेमिया (ब्लू बेबी रोग) हो जाता है। नाइट्रेट से उत्पन्न नाइट्राइट होमोग्लोबिन से जुड़कर मैथाइमोग्लोबिन बनाती है। जिसके कारण रक्त में आक्सीजन का प्रवाह बाधित हो जाता है।
9. अस्थमा एक ऐसा रोग है जिसके कारण श्वसन प्रणाली में हवा का प्रवाह बाधित होता है। यह एक एलर्जी से सम्बन्धित विकार भी हो सकता है। यह प्राणघातक भी हो सकता है।
10. पर्यावरण में बहुत से हैवी मेटलस जैसे लैड, पारद, आर्सेनिक और कैडमियम भारी मात्रा में उपस्थित रहते हैं जिनसे स्वास्थ्य पर प्रतिकूल प्रभाव पड़ता है। ये कैंसर का कारण भी होते हैं और मृत्यु का भी कारण हो सकते हैं।
11. खादानों में, पत्थर की छोटी खानों में और अनेक अन्य उद्योगों में श्रमिकों की लम्बे समय तक तेज ध्वनि का सामना करना पड़ता है। उच्च स्तर के शोर में लम्बे समय तक रहने से चिड़चिड़ापन, अनिद्रा, उच्चरक्त चाप और स्थाई या आस्थायी बहरेपन की समस्या हो सकती है।

उपरोक्त मानदंडों के अनुसार बढ़ते हानिकारक पर्यावरणीय कारक उद्योग और ऊर्जा के विकास से जुड़ा है पर्यावरणीय कारक वातावरण से उत्पन्न होने वाले नये पदार्थ हैं इससे उत्पन्न होने वाले कारक पदार्थ आमतौर पर भौतिक रासायनिक या जैविक गुणों, पदार्थों की विशेषता नहीं होते हैं। जो नकारात्मक पर्यावरणीय प्रभावों को जन्म देते हैं।

पर्यावरणीय कारकों के बदलावों के खतरे से बचने के लिए पर्यावरणीय परिवर्तनों से बचने का सबसे सुरक्षित तरीका प्रकृति में परिस्थितिकी तंत्र में परिवर्तन और मानव हस्तक्षेप को कमजोर करना चाहिए।

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- घरेलू और औद्योगिक कचरे को कम करना। विशेष रूप से प्लास्टिक से, इसे धीरे-धीरे कागज द्वारा प्रतिस्थापित किया जाना चाहिए।
- सभी प्रकार के कचरे के पूर्ण उपयोग के लिए विशेष पौधों का निर्माण यह लैंडफिल के लिए बस क्षेत्रों पर कब्जा नहीं करने देगा। जलने से प्राप्त ऊर्जा का उपयोग शहरों की जरूरत के लिए किया जा सकता है।

- उपशिष्ट जल उपचार के लिए मानव गतिविधि की विभिन्न शाखाओं को सुनिश्चित करने के लिए प्रतिवर्ष अरबों क्यूबिक मीटर पानी खर्च किया जाता है जिसका उचित समाधान हो।
- ऊर्जा स्रोतों से होने वाले संक्रमण को कम करने के लिए कि कोयला और पेट्रोलियम उत्पादों पर काम कर रहे परमाणु ऊर्जा, इंजन और भट्टियों कर क्रमिक परित्याग प्राकृतिक गैस, पवन और सौर ऊर्जा और पन बिजली यंत्रों का उपयोग स्वच्छ वातावरण सुनिश्चित करता है जैव ईंधन का उपयोग निकास गैसों में हानिकारक पदार्थों की एकाग्रता को काफी कम कर सकता है।
- "सौर हवा" (हीलियम 3) पर काम कर रहे थर्मल पावर प्लांट का निर्माण, यह पदार्थ चन्द्रमा पर है। इसके उत्पादन की उच्च लागत के बावजूद "सौर हवा" से प्राप्त ऊर्जा परमाणु ईंधन में गर्मी हस्तांतरण की तुलना में हजारों गुना अधिक है।
- गैस, बिजली, बैटरी और हाइड्रोजन पर चलने वाले बिजली संयंत्रों को सभी वाहनो का स्थानान्तरण। यह निर्णय वायु उत्सर्जन को कम करने में मदद करेगा।
- शीत संलयन के द्वारा पानी से ऊर्जा पैदा करने का एक अच्छा विकल्प हो सकता है।
- भूमि और जंगलों का संरक्षण और पुनर्स्थापित के लिए वनों की कटाई बाले स्थानों पर नए वन लगाए जायें। जमीन को खाली करने और कटाव से बचाने के उपाय किये जाने चाहिए।

वर्तमान स्थिति में सुधार के लिए पर्यावरणीय कारकों में परिवर्तन सम्बन्धी राष्ट्रीय योजनाओं द्वारा अनुकूलतम कार्य निम्न संस्थाओं द्वारा किये जा रहे हैं।

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4. राष्ट्रीय जल मिशन
5. राष्ट्रीय हिमालयी पारिप्रणाली सतत् परिक्षण मिशन
6. राष्ट्रीय हरित कारत मिशन
7. राष्ट्रीय सतत् कृषि मिशन
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## **THE ECONOMICS OF ENVIRONMENT**

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### **Introduction**

Economists became aware that, for economic growth to be indefinitely sustainable, the economic system needs to take into account the uses of the environment & natural resources are not depleted and so that the environment is not overused as a waste sink. Environmental economists view the environment as a form of natural capital which performs life support, amenity, and other functions that cannot be supplied by man-made capital. This stock of natural capital includes natural resources plus ecological systems, land, biodiversity, and other attributes.

The growth of environmental economics in the 1970s was initially within the neo-classical paradigm. In general, this approach to the environment is concerned with issues of market failure, inappropriate resource allocation, and how to manage public goods. There was little concern for the underlying relationships between the economy and the environment. Concerns about the limits of this approach to environmental economics led some environmental economists to develop what is now referred to as ecological economics.

How does economic growth depend on the environment and natural resources? This article focuses on how resource use has fuelled growth in the past, how that is no longer sustainable, and what could be some of the new drivers of growth in a green growth fuelled circular economy.

How does environmental degradation affect economic growth? What are the key risks to future economic growth from environmental impacts? This article focuses on how impacts from air pollution, climate change damages and water scarcity hamper economic growth. It also provides

insights from recent OECD work on the global macroeconomic costs of policy inaction, coupled with insights from experts on specific sectors and regions.

Environmental economics is a sub-field of economics concerned with environmental issues. It has become a widely studied subject due to growing environmental concerns in the twenty-first century. Environmental Economics “undertakes theoretical or empirical studies of the economic effects of national or local environmental policies around the world. Particular issues include the costs and benefits of alternative environmental policies to deal with air pollution, water quality, toxic substances, solid waste, and global warming.”

Environmental economics is distinguished from ecological economics in that ecological economics emphasizes the economy as a subsystem of the ecosystem with its focus upon preserving natural capital.

One survey of German economists found that ecological and environmental economics are different schools of economic thought, with ecological economists emphasizing “strong” sustainability and rejecting the proposition that natural capital can be substituted by human-made capital.

### **Nature of Environmental Economics**

Environmental economics is considered both as positive and normative science. It also covers both micro and macro aspects of different pollution problems.

Environmental economics is an application of scientific theories and general application of welfare economics. When we study the cause and effect relationship, it covers the positive aspect. For example, the laws of thermodynamics are equally applicable to economic process.

If the problem is related to policy measures, then it is considered as normative aspect. Therefore, environmental economics is a normative science because it prescribes the goals of environmental policy. As pointed out by *B. C. Field*, “Environmental degradation is the result of human behaviour that is unethical or immoral. Thus, for example, the reason people pollute is because they lack the moral and ethical strength to refrain from the type of behaviour that cause environmental degradation. If this is true, then the way to get people to stop polluting is somehow

to increase the general level of environmental morality in the society.” Field calls it as moral approach to environmental issues.

### **Economic Value of Environment (EVE)**

Assessing the economic value of the environment is a major topic within the field. Use and indirect use are tangible benefits accruing from natural resources or ecosystem services (discussed above in the nature section of ecological economics). Non-use values include existence, option, and bequest values. For example, some people may value the existence of a diverse set of species, regardless of the effect of the loss of a species on ecosystem services. The existence of these species may have an option value, as there may be the possibility of using it for some human purpose. For example, certain plants may be researched for drugs. Individuals may value the ability to leave a pristine environment for their children.

Use and indirect use values can often be inferred from revealed behaviour, such as the cost of taking recreational trips or using hedonic methods in which values are estimated based on observed prices. Non-use values are usually estimated using stated preference methods such as contingent valuation or choice modelling. Contingent valuation typically takes the form of surveys in which people are asked how much they would pay to observe and recreate in the environment (willingness to pay) or their willingness to accept (WTA) compensation for the destruction of the environmental good. Hedonic pricing examines the effect the environment has on economic decisions through housing prices, travelling expenses, and payments to visit parks.

### **Greenhouse emissions**

While these developments have inflicted substantial economic and social shocks as global production, consumption and employment levels dropped precipitously, they have also been associated with significant reductions in air pollution and greenhouse gas emissions.

As a result, air quality levels in the world’s major cities improved dramatically in March and April. Air quality improved largely because of a reduction in factory and road traffic emissions of carbon dioxide (CO<sub>2</sub>), nitrogen oxides (NO) and related ozone (O<sub>3</sub>) formation, and particulate matter (PM).

While Earth seems to be healing during the COVID-19 lockdown, the impact on waste remains a concern.

So long as the corona virus crisis keeps economic activities reduced, emissions will remain relatively low. However, it would be short sighted to conclude this is a durable environmental improvement as emissions will most likely rise to previous levels when economic activity picks up as the crisis resolves.

But not all the environmental consequences of the crisis have been positive. Volumes of unrecyclable waste have risen; severe cuts in agricultural and fishery export levels have led to the generation of large quantities of organic waste; maintenance and monitoring of natural ecosystems have been temporarily halted; and tourism activity to natural areas has ceased.

The COVID-19 pandemic has caused industrial activity to shut down and cancelled flights and other journeys, slashing greenhouse gas emissions and air pollution around the world. If there is something positive to take from this terrible crisis, it could be that it's offered a taste of the air we might breathe in a low-carbon future.

China's 40% drop in NO<sub>2</sub> on 2019 levels for January and February in some areas equates to removing a whopping 192,000 cars.

Measurements from the European Space Agency's Sentinel-5P satellite show that during late January and early February 2020, levels of nitrogen dioxide (NO<sub>2</sub>) over cities and industrial areas in Asia and Europe were lower than in the same period in 2019, by as much as 40%.

Two weeks after the nationwide lockdown was announced on March 23 in the UK, NO<sub>2</sub> pollution in some cities fell by as much as 60% compared to the same period in 2019. NASA revealed that NO<sub>2</sub> pollution over New York and other major metropolitan areas in north-eastern USA was 30% lower in March 2020, compared to the monthly average from 2015 to 2019.

Local waste problems have emerged as many municipalities have suspended their recycling activities over fears of virus propagation in recycling centres.



Food retailers have resumed using plastic bags at checkout points citing health concerns over consumers' reuse of paper bags. In addition, due to stay-at-home policies, many consumers have increased their consumption of take-away food delivered with single-use packaging.

Many export-oriented producers produce volumes far too large for output to be absorbed in local markets, and thus organic waste levels have mounted substantially.

Because this waste is left to decay, levels of methane (CH<sub>4</sub>) emissions, a greenhouse gas, from decaying produce are expected to rise sharply in the crisis and immediate post-crisis months.

As exports of agricultural and fisheries products have declined, production levels have plummeted, causing unemployment levels in both sectors to grow substantially.

Many post-harvest processing workers in these sectors are women supporting households, causing extreme hardships, particularly for low-income women in developing countries where social safety nets are not in place.

### **Environmental Challenges**

Many of the environmental challenges caused by the corona virus crisis will gradually resolve on their own, once the crisis comes to an end and previous levels of economic activity resume.

But it is also true that the benefits of air pollution reductions will also be erased. Overall, the crisis may thus have no permanent environmental effects.

However, what we have learned about the environmental benefits and risks of sharp drops in global economic activity will certainly help us to better understand the mechanics of environmental sustainability, societal consumption patterns, and how we can reduce environmental degradation in a future crisis-free world.

### **Actions to be taken for Solution**

Attention must be given to threats on the environment and natural resource bases as a result of the corona virus pandemic and consequential social and economic impacts.

Many rural and coastal populations rely on the sustainable use of the local environment and its natural resources whether they'll be small-holder farmers, **Small and Medium-sized Enterprises** (SMEs) and **Micro, Small and Medium-sized Enterprises** (MSMEs) involved in the production of Bio Trade, forestry and fishery products and ecotourism services.

As the crisis causes disruptions in their linkages to both national and international demand-side markets, rural producers, of whom many are women supporting entire households, are now no longer able to fully maintain their business models and livelihoods.

If the crisis is prolonged, many will be forced to abandon existing sustainable production in order to generate income quickly in domestic markets, potentially resulting in further poverty and over-exploitation of natural resources and ecosystems.

### **Role of UNITED NATIONS CONFERENCE ON TRADE AND DEVELOPMENT (UNCTAD)**

Helping rural and coastal producers to adapt to crisis market conditions and take actions for recovery and improved performance in post-crisis markets is a top priority.

UNCTAD's Sustainable Trade and Environment Programme stands ready to assist stakeholders from governments, producer associations, SMEs, MSMEs, independent producers (including women entrepreneurs) and civil society to elaborate corona virus adaptation and resilience strategies.

Actions taken by producers pursuant to such strategies can help maintain subsistence income levels, while ensuring the sustainable management of agricultural, forestry, marine and biodiversity-rich ecosystems.

Such strategies are expected to be based on enhanced collaboration by affected producers and public support entities in order to adjust to new market realities. To be effective, such assistance needs to be implemented as soon as travel restrictions are eased.

Follow-up activities will later be provided to assist countries to restore their businesses when the crisis comes to an end.

UNCTAD's support includes methodologies for market assessment and trade-related responses as well as means to refreeze direct linkages with sourcing businesses interested in restoring a sustainable flow of natural inputs.

## Conclusion

It can be learnt from the pandemic's effects on the environment that can be managed if there were a global effort to do so. It could be an inspiring from Los Angeles to New Delhi, having extreme levels of air pollution, people are looking the difference of the air and life quality would be like if there were a minimal number of cars and emissions from polluting industries. Although we don't yet have the data available, it is likely that the reduction in air pollution is responsible for the anecdotal observation of reduced numbers of asthma and heart attack episodes coming into the emergency departments.

Another lesson will be how productive many workers can be while working from home when they are given the proper tools. Now-a-days many companies will look into the value of having employees work from home, reducing the need for commuting and also reducing the office space needed to conduct business.

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## **COVID 19 – Socio economic and environmental issues and implications for the society**

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### **Abstract**

*The Covid 19 pandemic has had a major disruptive influence all over the world. The impact of this pandemic has been multifaceted and has affected almost every aspect of the way we live and work. It is difficult to gauge the true impact of this pandemic on the society. This paper makes an attempt to define the impact of the pandemic from three perspectives i.e. Social, economic and environmental. The Covid 19 pandemic has disrupted the very fabric of society by emphasizing “social distancing” and the rise of the electronic means of communications. The utmost impact of this pandemic will be on the economic scenario worldwide with governments all over the world struggling to moderate its impact on the livelihood of the population. It has brought major economic activities to a standstill, which will take a long time to recover. As a result consumer sentiment has nosedived to unprecedented low levels, indicating a gloomy future scenario. On the environmental front however the impact has been largely positive with declining levels of pollution.*

*Keywords: Covid 19, pandemic, consumer confidence, social distancing*

The dusk of 2019 paved the way for a promising new year – 2020, the dawn of a new decade with new resolutions made and fulfilled. The world was gearing up to face a new horizon but at out of nowhere emerged to be a global threat by way of the Covid 19 VIRUS. Its origin, as is said, is in China. But came to light to the world in the last week of December 2019. Whereas in India it

started spreading sometime in February 2020. A deadly communicable disease spread through contact. It took hardly a few weeks for it to become a Pandemic from an Epidemic. Almost the entire world is in the grip of the pandemic. So far there almost every country *around the world has reported widespread confirmed cases of the coronavirus COVID-19 that originated from Wuhan, China, and a death toll exceeding 250,000 deaths and 4 million people being infected worldwide.* The implications of the disruptive spread of COVID-19 are vast but the most important aspects it has taken in its grip are socio economic in nature.

**SOCIAL** – A new term and way of life has surfaced – Social Distancing. To avoid the virus from gripping you, socializing has been put on hold. Contact with people is now at a distance and that too only if it is urgent. This has led to increase in the quality of time spent with the family and has given new avenues to maintaining and sustaining relationships as it has led people to introspect.

There has been a change in the way greetings were practiced worldwide in different cultures. To this India can proudly be the torch bearer to how social distancing led to change in the manner of greetings. ‘Namaste’ with folded hands seems to be the best suited norm under the current situation. Across the globe several heads of developed nations were seen greeting each other with Namaste. No shaking hands thereby avoiding the touch. A novel way to keep the virus at bay. Social distancing is going to develop hygienic habits which will have an impact on a larger perspective and shall make its presence felt for times to come. This social phenomenon has led to emergence of online meetings, online teaching etc by video conferencing. “Zoom”, the most popular app for video conferencing has suddenly become the highest downloaded app in the world, despite some security issues associated with it.

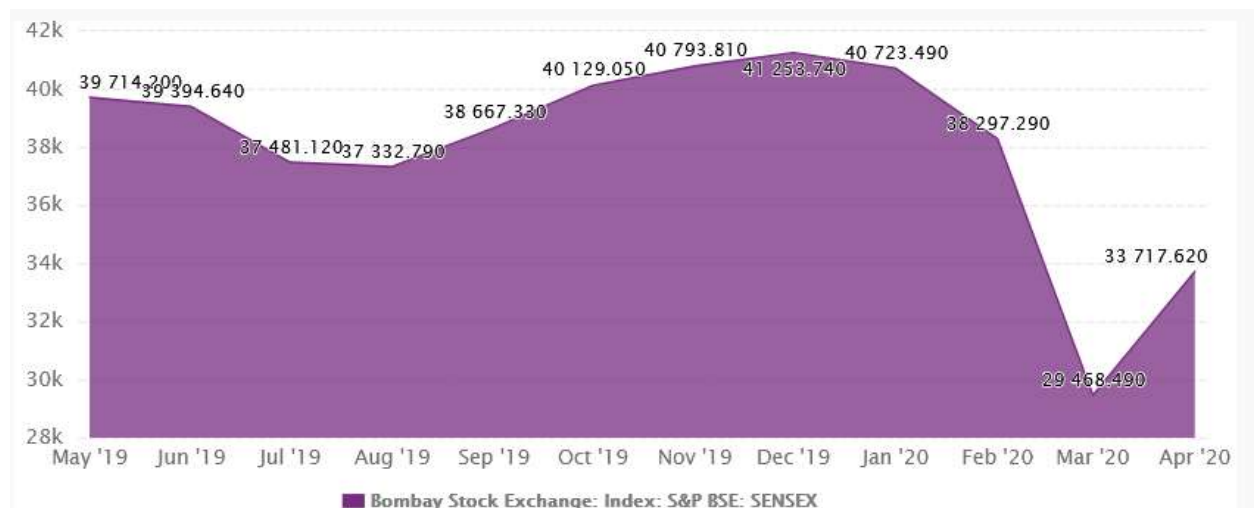
There is another darker side to the social problem. The declining levels of income and employment may make crime rampant, thus disrupting the social fabric.

**ECONOMIC** - The economic impact is far greater than any of the effects put together. It’s a total shutdown world over; the manufacturing facilities, corporate houses, academics, transportation etc. A looming global recession has now become a reality. However people worldwide are debating the extent of this recession and also how long will it take the global economy to recover from the same. The graphs for all former recessions appear to be “V” shaped, i.e. a recovery will occur after the recession. This recession is a little different from normal recessions in the sense that it has affected the demand as well as supply side. Such recessions are difficult to control using the normal monetary and fiscal measures being used by governments. It has disrupted the

entire global supply chain and manufacturing sector, which represents the supply side of the market. The demand has been affected by low consumer sentiments, loss of jobs, and decline in income levels etc. At the same time, the financial markets are also in a state of turmoil. The valuations of various asset classes have taken a major hit. Equity and commodity valuations have fallen drastically. There appears to be no safe asset class for investments. The credit markets will see major funding and financing problems. There are no takers for funds and there are no lenders.

The government is facing a greater problem of managing the economy. Prudent fiscal management will not be possible. The GDP growth rate is expected to be around zero. The budget deficit is expected to soar to record levels while the government tackles the twin problem of declining tax revenues and increasing expenditure on account of managing the pandemic. The poor and the work force will have to be compensated for loss of livelihood, huge amounts will be spent of improving medical facilities.

Financial markets are relevant indicators of recession. Every economic indicator is pointing southwards, whether it is the , stock market indices or Consumer Sentiment indices . The sensex has witnessed a major downturn with new records being set for a single days fall .



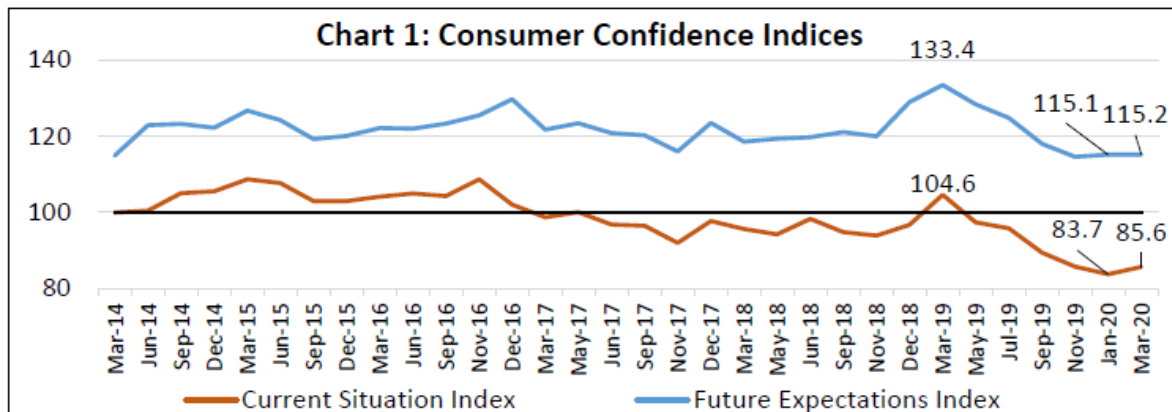
While the sensex had been gradually moving at healthy levels but the Covid 19 pandemic has put a sudden brake on it. The stock market indices depend upon the state of the economy which appears to have come to a standstill as a result of this pandemic. The Sensdex decreased by around 9000 points or 24% since the beginning of 2020. Some of the worst affected sectors of the

economy are petroleum, travel and tourism, real estate, automobiles, consumer durables etc. The global crude price futures have turned negative for the first time. This is on account of the lockdown and restrictions on travelling being imposed by the government all over the world including India. The automobile sector in India registered “zero” sales in the month of April 2020. Major manufacturing units including MSMEs had to shutdown production.

According to Behavioural Economics “Economic processes result from human behavior—that the motives, attitudes, and expectations of human beings influence their behavior”. It also says that “Uncertainty about the future inhibits spending by raising its risk and Consumer attitudes are also likely to be influenced by unexpected events whose economic effects are unpredictable.

Taking into consideration this aspect of Economics, Consumer Sentiments and Consumer Confidence are major constructs affecting the economy. The consumer confidence indicator provides an indication of future developments of households’ consumption and saving, based upon answers regarding their expected financial situation, their sentiment about the general economic situation, unemployment and capability of savings. An indicator above 100 signals a boost in the consumers’ confidence towards the future economic situation, as a consequence of which they are less prone to save, and more inclined to spend money on major purchases in the next 12 months. Values below 100 indicate a pessimistic attitude towards future developments in the economy, possibly resulting in a tendency to save more and consume less. Due to the ongoing geo-political tensions and the fear of a global economic slowdown, the residents are expecting the economic conditions to deteriorate further.

According to the latest results of the consumer confidence survey released by the RBI, consumer confidence levels are low. Consumer confidence, as measured by the current situation index (CSI), in early March 2020 remained broadly close to the all-time low, which was recorded in the previous survey round. Expectations for the year ahead, as gauged by the future expectations index (FEI), were largely unchanged from the last round as indicated in the graph



Source: RBI

According to the same survey sentiments on the general economic situation, employment scenario and household income remained pessimistic.

**ENVIRONMENTAL** – Another area where the impact of COVID 19 has been massive – indirectly and positively. Because of lockdown worldwide the AQI (Air Quality Index) has come down to a nominal level of 40%, which perhaps has been the lowest in the century. In India the air is so clean that hills are now clearly visible from a distance of some 250kms. The water in the Ganges is crystal clear for which the government had initiated a project – *NamamiGangeProgramme*, is an Integrated Conservation Mission, approved as 'Flagship Programme' by the Union Government in June 2014 with budget outlay of Rs. 20,000 Crore to accomplish the twin objectives of effective abatement of pollution, conservation and rejuvenation of National River *Ganga (nmcg.nic.in)*

This is an eye opener for the entire population that we have to preserve our nature and introspect as to what have we been doing all this while. A simple lockdown of 21 days has resulted in clean Ganga for which crores of Rupees were earmarked. Mainly because there has not been industrial effluents into the sear rivers or oceans. Pollution took a standstill because our mechanized lives were put on hold by force. We had been taking the nature and environment for granted and as a result have been risking our health & lives. Although nature has been warning us time and again about the deterioration, that mankind has been upto. There have been several instances of wild fires catching up in different parts of the world – Australian bushfires and Amazon fire. And not to mention the global warming impacting the meltdown of the Arctic Circle. So whether the virus



or the nature's fury mankind has to understand the implications that our casual attitude towards life will have.

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## **Literature: An Invisible Vaccine for Callous Calamities**

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### **Abstract**

*Ab initio, man has downgraded the significance of celestial boon of nature just due to his pleonexia and deep rooted avarice. The exaggerated speed of materialism is decelerated by the disastrous and wrathful reaction of natural phenomena in the form of pandemic or pestilence like Plague, Nipah, Zika, Ebola and currently Corona virus. In such desperate moments and apocalyptic conditions during epidemic, self – preservation and self quarantine are badly needed. The best utilization of this sojourn of lockdown is to accompany the pandemic literature or to pour out the umpteen shaded experiences into words. In fact, literary aura assists to disperse the cloud of despair, to boost the morale, to unite with the supreme power, to comprehend the true essence of our existence and to replenish this vacuity of life. In a nutshell, literature seems to offer cathartic remedy for psychological and moral part of our being and thus not only vaccinates our ‘self’ against debauched and contaminated notions but also sanctifies the inner cosmos.*

**Keywords-** pandemic, literature, catastrophe, catharsis, self-analysis

De facto, whenever we find ourselves vis-à-vis the catastrophic crisis, we feel cathartic in the contact of literary creations, especially during quarantine tenure or lockdown period. Literature appears to liberate us from prevailing anxiety and stress engendered by fatal pandemic like the ongoing Novel COVID 19. In other words, such worldwide trauma compels the literary caliber to pour out the emerging robust aspects even from callous calamities, which may lessen the sense of *Abhinivesh* (fear of death) and clarify the true essence of life to the sufferers and victims. In this way, literary works on malign natural phenomena or pandemic stimulate the people to ruminate about what they are experiencing. In literary terms, the current pandemic Corona can be

comprehended as a nature's way of self-reimbursement against man's exploitation and materialism. It is quite obvious that nature can be as violent and truculent as humanity is. The fictional epidemic seems didactic and leaves a message that when we find ourselves helpless and despondent to face inevitable tragedy, we have to wait patiently and calmly for the betterment and inculcate the 'negative capability' in ourselves in order to vanquish over the adverse circumstances. As Shakespeare utters in 'Othello'-

“When remedies are past, the  
griefs are ended-

By seeing the worst, which late  
on hopes depended.

x            x            x

What cannot be preserved when  
Fortune takes,  
Patience her injury, a mockery  
makes.” (1)

If we analyse minutely, we will find that Albert Camus' novel 'The Plague' proves to be more than a demonic extraneous coercion thrusting its will. The Corona virus arouses a necessity to go through the novel that is quite relevant in the present scenario. It boosts the morale of a person and enables him to overcome the challenges of the crucial circumstances. Camus said, "Each of us has the plague within him; no one on the earth is free from it." (2) De facto, this story revolves around the plague epidemic which takes place in the real town of Oran in Northern Algeria. In long run, this disease causes ultimate suffering that kills without being concerned to age and social status. It also brings exile and separation. With an analytic view Camus emphasis the negative aspect of our existence, that remain always engage in marring and doing harm itself. For example, we know how important nature is for humanity. But in order to quench the materialistic hunger, we pollute it day and night continuously. Consequently, the result is before us in the form

of disastrous pandemic Covid-19. Though Camus opines, "...and to state quite simply what we learn in a time of pestilence: that there are more things to admire in men than to despise."(3)

Another literary piece which may be considerable during this corona confinement is Geraldine Brooks' 'Years of Wonders'. Through this novel, the author endeavours to fumble the apparently lost humanity in the world. During her rumble, Brooks witnessed by chance a sign pointing to 'Plague Village'. She shares her inspiring moments, "And that just intrigued me. It's one of our most primal fears as human beings, the idea of this silent stalking killer."(4) This novel highlights deadly decision of the villagers at the cost of their own lives just to shield others. It is really pathetic and miserable moral choice between life and death at the moment when one is losing one's near and dear, kith and kin with horrible consequences. Mompellion worries that this ruinous disease will wax to other villages and convert into a regional and then a national epidemic. Through his overwhelming and mesmerizing plea, he cajoles the inhabitants of the village to voluntarily quarantine themselves until the plague has run its courses. He indicates that it is just criterion for them in the form of catastrophe. And they will overcome it with restrictions, isolation and lockdown. Though they suffered morbid doom and demise yet they were triumphant in keeping the devastating plague within the village boundaries. Brooks clarifies, "It was a huge cost to the villagers because a lot of those might have survived if they'd fled early in the outbreak. But on the other hand, the act of self-sacrifice meant that the plague did not spread beyond Eyan into the surrounding communities, and so many thousands, perhaps, of lives were saved."(5) Now at this climactic scenario of COVID 19, such literary themes compel us to ponder what our role should be in confronting pandemics. Should we cultivate a suicidal and lethal attempt in spreading this disease by breaking the suggested restrictions or safeguard our own as well as others' existence by isolating and social distancing?

In this series, 'The Dreamers' by Karen Thompson Walker can also be referred to be boosted morally particularly in the time of segregation. In this dystopian plot, the effect of humanity is exhibited more powerful than the fatal upshot of catastrophe. Walker weaves factual aspects of mysterious virus into her story, which results in ghastly, highly contagious 'Sleeping Sickness'. The events take place at college town in California. It becomes hectic and crucial situation for the military to isolate and sanitize the area where a last wedding ceremony is taking place with a bride who is victimized with pale and woozy symptoms of undiagnosed epidemic. Walker writes, "Whoever shares her lipstick that day, whoever borrows her eyeliner, whoever kisses her cheek

that night or dances too close or clinks her flute of champagne, whoever touches her hand to admire the ring, whoever catches the bouquet at the end of that night- all of them, everyone, is exposed. This is how the sickness travels best: through all the same channels as do fondness and friendship and love.”(6) In a freaked aura, everybody struggles to have face masks and as a result, it creates topsy-turvy in supermarkets. This scene resembles the present Corona virus pandemic to a great extent. Shortage of medkits, facemasks, quarantine mode, lockdown, isolation, uncertainty, haphazard and panicked atmosphere- these hover over the mind of people as a consequence of catastrophe. But what the author conveys through such dystopian works is to be emphasized upon. In fact, plague, pandemic and pestilence are not mere themes for the authors rather they pick these burning issues to minimalize the burden of raw experience dipped in panic, horror and despair. They endeavour to obviate the meaninglessness and hollowness and vacuity of life with the tinge of hope and aspirations.

Emily St. John Mandel in her novel ‘Station Eleven’ delineates the gut-wrenching aftermath of Georgian Flu pathetically and movingly. This disease sweeps away the majority of population and leaves the horrible imprints on the minds, which disable the people to muster the courage even to respire after a time of asphyxiation. The main theme of the novel is artistic pursuit by painting or acting. Their slogan ‘Survival is insufficient’, hanging upon their wagon, appears to be smeared in irony of words when charged with the fuller meaning. In fact, every human being is interconnected with one another on humanitarian ground and this sense of tender humanity is badly damaged at the emergence of calamity and tragedy with dynamic pace. Mandel expresses, “There had always been a massive delicate infrastructure of people, all of them working unnoticed around us and when people stop going to work, the entire operation grinds to a halt.”(7) It becomes the moral responsibility of an intellectual, dwelling in literary cosmos, to portray the agony, afflictions and traumatic experience of epidemic in his works. The motivational impulse behind this is only to assimilate the present to the past extirpated by pandemic. This continuity with the past enables us to utilize the present forlorn and dolorous moments into fruitful creativity and robust thinking, spiritual inclination, philanthropic awakening and especially self-purgation.

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## **A study of Environmental Awareness of school students in relation to their type of school and subject stream**

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### **Abstract**

*The present study was aimed to study of environmental awareness of school students in relation to their type of school and subject stream in District-Pratapgarh (UP). A sample of 200 students was taken, in order to make sample comprehensive both male and female students were introduced. The data was collected through standardized test and analyzed by 't' test and it was found that There is significance difference between art students studying in government secondary schools and private secondary schools. Similarly there is significance difference between science students studying in government secondary schools and private secondary schools in Pratapgarh. On the basis of the findings of this study, it could be seen that in total there is an influence of type of school on subject stream in the level of student's environmental awareness.*

**KEYWORD:** Environmental Awareness, Type of School, Subject Stream

### **INTRODUCTION**

National Policy on Education (1986) emphasizing the role of Environmental Education says that, "There is a paramount need to create a consciousness of the environment. It must permeate all ages and all sections of the society, beginning with the child. Environmental consciousness should be inculcated into teaching in schools and colleges".

Environmental Education is a key to the success of any overall environmental strategy, determined to help in the setting up of a Centre of Excellence in Environmental Education, to play the vital role of setting the pace and agenda for Environmental Education in the country (Kartikeya, 1997).

In India, the Supreme Court in their judgments of writ petitions (M.C. Mehta Vs Union of India, 1991; M.C. Mehta Vs Union of India, 2003) has directed for the urgent need for Environmental Education. The Supreme Court bench had issued an order on November 22, 1991 to all states governments, and to State Education Boards, to make environmental education, a compulsory subject (India times, 2003). The Supreme Court issued notice to some of the country's key educational bodies and State Governments for negligence in the implementation process of environment as a compulsory subject. The Supreme Court inter alia, directed the NCERT to take appropriate steps to prescribe a course on environment and to consider the feasibility of making environment a compulsory subject at the school level. In pursuance of this, the NCERT framed the syllabus and incorporated Environment Education as compulsory subject from IX<sup>th</sup> to XII<sup>th</sup> standards. Considering the work load for teaching this compulsory subject of Environment Education, prescribed qualifications for the teacher to teach the Environmental Education in school, two lectures per week for this subject and no need of a separate qualified teacher from the principle subject (i.e; Environmental Science) were adopted.

Today environmental awareness is a very important topic for discussion and lots of conferences and seminars are being held at various levels. The environment and energy related problems cannot be solved unless students are aware of them, because the students are the future citizens of our country. It is an essential need for each individual to develop an awareness of protection and preservation of the environment.

There is an urgent need to create environmental awareness among all human beings so as to conserve, protect and nurture our environmental resources.

### **STATEMENT OF THE PROBLEM**

A study of Environmental Awareness of school students in relation to their type of school and subject stream.

### **OPERATIONAL DEFINITION OF TERMS USED:**



**Environmental Awareness:** The term environment means the surrounding or all the conditions physical, natural, manmade circumstances and influence surrounding and affecting the life of an organism or group of organism.

**Government Schools :** The schools, which are being run by government directly or with aid of government, are called government schools.

**Private Schools :**The schools, which are being run by Individual or trust without any aid of government are called private schools

**Subject Stream :**In the present study 'subject stream' referred to the stream or branch such as, arts or science in which the students were studying for the secondary course.

## RESEARCH QUESTIONS

Do students differ in their environmental awareness with respect to their type of college and subject stream?

## OBJECTIVES OF THE STUDY:

The specific questions covering the different aspects of the study are expressed as the objectives as follows:

1. To study the environmental awareness among the art and science stream students of Govt. Schools and Public Schools.

## NULL HYPOTHESES:

**H<sub>01</sub>** There is no significance difference in mean scores of environmental awareness between the science stream students of government and public schools.

**H<sub>02</sub>** There is no significance difference in mean scores of environmental awareness between the arts students of government and public schools.

**H<sub>03</sub>** There is no significance difference in mean scores of environmental awareness between the arts and science students of government schools.

**H<sub>04</sub>** There is no significance difference in mean scores of environmental awareness between the arts and science students of public schools.

## METHODOLOGY OF THE STUDY

The method used for the study was survey and the type of sampling followed was Stratified Random Sampling. Data were collected from 200 students studying at secondary school level from four secondary schools of District Pratapgarh. Two government and two private secondary schools were taken for carrying out the present investigation.

### **SAMPLE FOR THE PRESENT STUDY**

A sample of 200 students was taken for the present study. These 200 students were taken from the four secondary schools available from within the district limits. Two secondary schools taken were private and the rest two were government secondary schools. The distribution of the overall sample is shown in the table-1

Table-1: Distribution of Sample

S.No.	Name of the School	No. of Students
1	Hanumat Intermediate College, Kalakankar, Pratapgarh	50
2	Pratap Bahadur Intermediate College, Pratapgarh	50
3	Kashi Prashad Intermediate College, Pratapgarh	50
4	Vishwanath Prasad Intermediate College, Pratapgarh	50

### **STATISTICAL TECHNIQUES USED IN THE PRESENT STUDY**

The investigator herself constructed a well standardized tool for measuring the attitude of secondary school students towards environmental awareness. Mean, Standard deviation and 't' test were the statistical techniques used for carrying out the analysis and interpretation of the data collected.

### **DELIMITATION OF THE STUDY**

- Only the students of Government and Public Schools of District-Pratapgarh (UP) were taken for the present study.
- For the present study only 100 students each from Public and Government Schools was taken as sample.

- In the present investigation environmental awareness is measured with the help of environment awareness ability measure developed by Dr. Praveen Kumar Jha. Thus the study has delimited with regards to test used for data collection.

### DATA ANALYSIS AND INTERPRETATION

The investigator used standardized tool constructed by Dr. Praveen Kumar Jha for measuring the attitude of secondary school students towards environmental awareness. Mean, Standard deviation and 't' test were the statistical techniques used for carrying out the analysis and interpretation of the data collected.

(1) Regarding the first hypothesis, it was found after analysis of the data (Table-2) there is significant difference between the mean scores of science stream secondary school students studying in government secondary schools and those studying in private secondary schools on environment awareness

**Table-2: Comparison between science stream students of government and private secondary school with reference to their environment awareness**

S.No.	Name of Group	N	Mean	SD	't' value	Remarks
1	Science Stream students of Govt. Schools	50	38.95	13.75	3.06*	*Significant
2	Science Stream students of Private Schools	50	46.86	8.15		

\*Significant at 0.01 level

From table-2 it could be observed that the calculated 't' value of 3.06 at 0.01 level is more than the table value 2.58. So the null hypothesis, "There is no significance difference in mean scores of environmental awareness between the science stream students of government and public schools" is rejected.

(2) Regarding the second hypothesis, it was found after analysis of the data (Table-3) there is significant difference between the mean scores of arts stream students of secondary school studying in government secondary schools and those studying in private secondary schools on environment awareness

**Table-3: Comparison between arts stream students of government and private secondary school with reference to their environment awareness**

S.No.	Name of Group	N	Mean	SD	't' value	Remarks
1	Arts Stream students of Govt. Schools	50	34.85	11.95	2.99*	*Significant
2	Arts Stream students of Private Schools	50	41.17	8.95		

\*Significant at 0.01 level

From table-3 it could be observed that the calculated 't' value of 2.99 at 0.01 level is more than the table value 2.58. So the null hypothesis, "There is no significance difference in mean scores of environmental awareness between the arts students of government and public schools" is rejected.

(3) Regarding the third hypothesis, it was found after analysis of the data (Table-4) there is no significant difference between the mean scores of Arts students studying in government secondary schools and science students studying in government secondary schools on environment awareness

**Table-4: Comparison between arts and science students studying in government secondary school with reference to their environment awareness**

S.No.	Name of Group	N	Mean	SD	't' value	Remarks
1	Arts students studying in Govt. Schools	50	35.15	14.15	1.80*	*Not Significant
2	Science students studying in Govt Schools	50	39.67	10.65		

\*Not Significant at 0.05 level

From table-4 it could be observed that the calculated 't' value of 1.80 at 0.05 level is less than the table value 1.96. So the null hypothesis, "There is no significance difference in mean scores of

environmental awareness between the arts and science students of government schools” is accepted.

(4) Regarding the third hypothesis, it was found after analysis of the data (Table-4) there is no significant difference between the mean scores of Arts students studying in private secondary schools and science students studying in private secondary schools on environment awareness

**Table-5: Comparison between arts and science students studying in private secondary school with reference to their environment awareness**

S.No.	Name of Group	N	Mean	SD	't' value	Remarks
1	Arts students studying in Private Schools	50	41.55	11.15	1.32*	*Not Significant
2	Science students studying in Private Schools	50	44.12	8.12		

\*Not Significant at 0.05 level

From table-5 it could be observed that the calculated 't' value of 1.32 at 0.05 level is less than the table value 1.96. So the null hypothesis, “There is no significance difference in mean scores of environmental awareness between the arts and science students of private schools” is accepted.

## FINDINGS OF THE STUDY

From the table-2 it could be observed, that there is significance difference in mean scores of the science stream students studying in government secondary schools and those who are studying in public secondary schools on the environmental awareness of Meerut City. Further analysis of the data revealed that (table-3), that there is significance difference in mean scores of the science stream students studying in government secondary schools and those who are studying in public secondary schools on the environmental awareness of the same city. Similarly, from the analysis of the table-4 it could be seen that there is no significant difference on environmental awareness of arts and science students studying in government secondary schools in the same city. Similarly from the analysis of the table-5 it could be seen that there is no significant difference on environmental awareness of arts and science students studying in private secondary schools in the same city.

## CONCLUSIONS OF THE STUDY

On the basis of the findings of this study, it could be seen that in total there is an influence of type of school on subject stream in the level of student's environmental awareness. This finding of the present study corroborated with the previous findings of Shahnawaj (1990) who reported that there is significant difference between the government and private school students in the level of environmental awareness in relation their subject stream. From the above findings, it could be further be revealed that arts and science stream secondary school students of private schools have more environmental awareness than government aided science arts and stream secondary school students. The reason for higher environmental awareness among students of private secondary schools may be the family background and educational qualifications of parents. Parents of students studying in private secondary schools are graduates and are economically well of., such parents are mainly concerned with inculcating environmental awareness to their children as they are aware of the dangers and consequences of environmental degradation at global level. On the other hand, secondary school students studying in government aided secondary schools come from poor families and have less educated or illiterate parents, whose main priority is to fulfill the needs of their family members. They are not aware of environmental issues, so they can't pass on these awareness measures to their children.

Further analysis of the results of the study revealed that there is no significant difference in mean scores of the environmental awareness between the arts and science students of government secondary school. Similarly there is no significant difference in mean scores of the environmental awareness between the arts and science students of private secondary school. Thus a kind of subject stream within the same type of institution does not play any significant role in the environmental awareness of secondary school students.

These findings suggest to us and to the government as well to make necessary efforts to provide proper classrooms, library facilities, environment related books in local language and necessary infrastructure in the form of computers and internet facilities not only for the students who are studying in secondary schools but also for the students who are studying in senior secondary and upper primary schools. These findings also indicate that if the secondary school students of government schools are given enough facilities and financial funds and grants, they

can to become aware of the environment and its related issues and problems and can come at par with their counterparts in private secondary schools.

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## “A STUDY OF ENVIRONMENTAL ETHICS OF SECONDARY SCHOOL TEACHERS IN RELATION OF THEIR EMOTIONAL COMPETENCE”

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### **ABSTRACT:**

The study was aimed at finding out the relationship between environmental ethics and emotional competence of secondary school teachers. The sample of the study consisted of 200 teachers, taken from secondary schools of UP board from Meerut district (UP). The sample comprised of two demographic variables- gender (100 male and 100 female) and locale (119 belongs tourban area and 80were from rural area). Environmental Ethics scale developed by Taj, Haseen (2001) and emotional competencescale developed by Sharma, H. And Bhardwaj, R.C. (2016) were used for measuring the environmental ethics and emotional competence of secondary school teachers respectively. Collected data was analyzed by applying mean, SD, t-test and by Pearson Product Moment Correlation Technique. The results of the studyindicated that there exists a significant difference between environmental ethics of male and female teachers (at .05 significance level) and rural and urban teachers (at .01 significance level). Emotional competence of secondary school teachers was also found to be significantly different at .01 level, whereas emotional competence of rural and urban teachers was not found to be significantly different. The correlation analysis depicts significantly positive relationship between environmental ethics and emotional competence of secondary school teachers.

**Keywords:** Environmental ethics, Emotional competence, Secondary school teachers.

### **1. INTRODUCTION**

Environment etymologically means surroundings. It is the natural world of land, sea, air, plants and animals that exists around us. In layman's language, environment encompasses everything that is around us. The natural environment comprises of various biotic (plants, animal, micro organisms, human) and abiotic components (water, soil, air, temperature and energy, etc.). Continuous reciprocal interaction between the components of environment maintains proper natural balance, which is essential for the existence of life on earth. According to **Mahatma Gandhi- "Earth provides enough to satisfy every man's need but not satisfy every man's greed."** Basic needs of human beings are food, shelter and clothes but man's desires are limitless, which led him to exploit nature's free goods to extent of reducing its natural edacity for self stabilization. Thus he is making a different kind of 'human created environment' for satisfying his desires, for attaining joy and comfort. This impact adversely to the environmental stability and disturb ecological balance. Hence, the selfish activities of the modern and the advanced man have disturbed the natural and harmonious relationship between man and environment.

Environment ethics is the moral relationship of human beings with the environment. It concerns with dos and don'ts of human beings with regards the environment. It deals with ecological rights of all creatures present today as well as those which will follow in future on the earth. Ethical standards are necessary for long term conservation and maintenance of nature and its resources. Environment ethics refer to recognize our relationship with nature and understanding the responsibility to conserve natural resources and protect the earth for future generation. Therefore, it is the need of the day to develop environmental ethics among all human beings to inculcate the responsibility to sustain and maintain the natural ecology. So we need environmentally literate teachers who keep the responsibility to develop environmental ethics among their students by imparting knowledge and providing them natural and practical experiences.

**"We create thoughts, belief through our past experiences, based on information that generates a feeling. Feelings develop our attitude which then comes into action as our behaviour".**

The environment is both a direct and indirect manifestation of the effect of our thoughts, feelings and emotions. A sum total of our individual thoughts make the collective human consciousness. Today, unfortunately our thoughts are filled with greed, lust, anger and pain. These thoughts affect, rejuvenate, empower and activate us as well as our environment. Thoughts are the

resultant of our thinking, feelings and emotional relations with each other. If we are connecting emotionally with any object or person, then our relationship with that object becomes ethical and moral, which encourage us to be good for that object and never hurt them for our personal sake. Sharma, S. (2014), conducted a study to find out the relationship between environmental awareness and emotional intelligence of student teachers and teachers. 200 student teachers (100 male and 100 female) and 100 teachers (50 male and 50 female) were selected from 15 self-financed B.Ed. colleges of Ghaziabad District of CCS University, Meerut (UP), as a sample of the study. The results of the study revealed that environmental awareness of male teachers was found to be moderately, positively and significantly correlated with emotional intelligence while environmental awareness of female teachers was found to be slightly positively but not significantly correlated with emotional intelligence. Nagra, V. (2015) and Kaur, M. (2015), examined environmental education awareness and emotional intelligence of 168 teacher educators. The findings indicated that teacher educators had high environmental education awareness and emotional intelligence. There was found a significant difference between environmental education awareness and teaching experience in relation to subject streams. It was also found that teaching experience affect significantly on emotional intelligence of teacher educators. The relationship between environmental education awareness and emotional intelligence of teacher educators was not found to be significant.

Emotional intelligence and emotional competence are two terms often considered similar but they have different meanings. A person's intelligence is related to his high mental and cognitive capacity, whereas; competence refers to adequate skills, knowledge, experience and capacity. Emotional intelligence has often been defined as cognitive ability, without reference to ethical values or one's ego identity (Goleman, 1995; Mayer and Salovey, 1997) while emotional competence comprises of the management of one's emotions in a way that is in accord with one's moral dispositions (Saarni, 1999) as well as social norms (Huy, 1999).

Emotional Competence refers to the skilfulness or the mastery of abilities to do a task effectively, sufficiency of means for living, easy circumstances or, in **ethical** sense. It is the ability that may cause serious consequences in the dynamics of human behaviour. How an individual handles his emotions, whether competently or incompetently, would be a question of immense importance. So it works as a constructive force in shaping the individual behaviour as well as also helps

individual to sustain satisfactory interpersonal relationships. Emotionally competent persons are self aware, self motivated, self-confident; comfortable with themselves, others and the social universe they live in, they have a capacity for commitment to people and having an **ethical** outlook.

Goleman (1998) suggested a framework of emotional competencies, comprises two basic competencies (personal competencies and social competencies) based on five other competencies as follows:

Emotional Competence Framework				
Personal Competence			Social Competence	
Self Awareness	Self Regulation	Self Motivation	Social Awareness	Social Skills

The above mentioned framework shows that emotionally competent people have competencies of self awareness and social awareness. So they can make aware the society that all the resources of environment are exhaustible and if we will not use these resources properly, we are going to face many troubles in future. Finally, emotionally competent teachers can encourage people to use recyclable materials as well as eco-friendly materials to conserve energy for future generation (*Sahnawaj, 1990*). Hence, emotional competent teachers can make the society aware for environmental issues and conservation of natural resources. By organising different seminar, conferences, workshops and expert lectures, other co-curricular activities etc. they can change the emotions, behaviours, actions of people and can try to develop ethics in society towards environment (*Krishnamurthi, R. and Ganesan, S., 2008*).

### 1.1 OBJECTIVES OF THE STUDY

The study is designed to attain the following objectives:

- 1) To study and compare the environmental ethics of secondary school teachers on the basis of gender and locale.
- 2) To study and compare the emotional competence of secondary school teachers on the basis of gender and locale.

3) To study the relationship between the environmental ethics and emotional competence of secondary school teachers.

## **1.2 RESEARCH QUESTIONS**

- 1) Is there any significant difference between the environmental ethics of secondary school teachers on the basis of gender and locale?
- 2) Is there any significant difference between the emotional competence of secondary school teachers on the basis of gender and locale?
- 3) Is there any significant relationship between the environmental ethics and emotional competence of secondary school teachers?

## **2. METHODOLOGY**

A descriptive survey type study was conducted by the investigator to attain the objectives of the study.

### **2.2 POPULATION**

The secondary school teachers of U P Board in Meerut district will be considered as population of this study.

### **2.3 SAMPLE AND SAMPLING TECHNIQUE FOR DATA COLLECTION**

The investigator selected a sample of 200 secondary school teachers (teaching in Class IX and X) out of which 100 male and 100 female teachers as well as 119 urban and 81 rural teachers were taken from the secondary schools of U.P. board of the district Meerut by Multi Stage Sampling technique.

### **2.4 TOOLS FOR DATA COLLECTION**

The following standardized tools were selected by the investigator to collect data for the present investigation.

- Environmental Ethics scale (EE Scale) developed by Haseen Taj (2001).
- Emotional Competence Scale (EC Scale) developed by H.C.Sharma& R.L. Bhardwaj(2016).

### **2.5 STATISTICAL TECHNIQUES FOR DATA ANALYSIS**

In order to analyse the collected data, Descriptive and the Inferential Statistical Techniques were applied by the investigator such as- Mean, standard deviation of the total sample and relevant sub samples was computed and differences between groups were calculated by applying t tests. Pearson's coefficient of correlation was applied to find the correlation between environmental ethics and emotional competence of the total sample as well as the sub samples.

### 3. RESULT AND INTERPRETATION

Table -1. Test of Significant Difference for Environmental Ethics of secondary school teachers on the basis of gender and locale:

S. N.	Categories	Sub- Group	N	M	S.D.	D	S.ED	't' Value	df	Level Of Significance
	Entire Sample	-----	200	95.48	12.34	-----	-----	-----	----	-----
1.	Gender	Male	100	87.16	14.57	4.05	2.04	1.98	198	.05
		Female	100	91.21	14.39					
2.	Locale	Rural	81	95.82	15.31	6.35	2.33	2.72	198	.01
		Urban	119	89.47	17.38					

Results in Table-1 highlight that the total mean score of sample for environmental ethics falls in high level category (compared from tools used). This suggests that secondary school teachers of Meerut district possess high level of environmental ethics. Table 1 reveals that the computed value of t is 1.98. The critical value of t with 198 degrees of freedom and at 5% level of significance is 1.97. Our computed value of t is 1.98 which is slightly greater than the critical table value 1.97, at 5% level of significance. This suggests that female secondary school teachers have significantly higher environmental ethics than male secondary school teachers. Likewise, Table -1 also shows that the mean scores of environmental ethics of rural and urban secondary school teachers are significant ( $t=2.72$ ) at 0.01 level. This suggests that rural teachers have significantly higher environmental ethics than urban teachers.

Table -2. Test of Significant Difference for Emotional Competence of secondary school teachers on the basis of gender and locale:

		N				CORREAS			SIGNIFICANCE	
						COEFFICIENT (r)			SIGNIFICANCE	
S. N .	Categories	Sub- Group	N	M	S.D.	D	S:ED	't' Value	df	Level Of Significance
	Entire Sample	-----	200	91.57	13.08	-----	-----	-----	----	----
1.	Gender	Male	100	93.62	12.32	5.98	2.07	2.89	198	.01
		Female	100	87.64	16.74					
2.	Locale	Rural	81	77.57	10.26	2.49	1.96	1.27	198	N.S.
		Urban	119	80.06	17.45					

Results in Table-2 also indicated that the total mean score of sample for emotional competence also falls in high level category (compared from tools used). This suggests that secondary school teachers of Meerut district possess high level of emotional competence. Table 2 reveals that the computed value of t for the emotional competence of male and female teachers is 2.89. The critical value of t with 198 degrees of freedom and at 1% level of significance is 2.60. Our computed value of t is 2.89, which is greater than the critical table value at 1% level of significance. This suggests that male secondary school teachers have significantly higher emotional competence than female secondary school teachers. Likewise, Table -1 also shows that the calculated t value for emotional competence of rural and urban teachers is 1.27. The critical value of t with 198 degrees of freedom and at 5% level of significance is 1.97. Our computed value of t is 1.27 which is smaller than the critical table value 1.98 even at 5% level of significance and hence it is not significant. This suggests that the emotional competence of rural and urban teachers is not significantly different even at 5% level.

Table-3. Coefficient of Correlation between Environmental Ethics and Emotional Competence of Secondary School Teachers:

Environmental Ethics	200	+ 0.21	.01
Emotional Competence	200		

The coefficient of correlation (r) between environmental ethics and emotional competence for the total sample (N=200) was found to be significant at 1% level of significance. Therefore, the study suggested that the relationship between environmental ethics and emotional competence of secondary school teachers is significantly positive.

#### 4. CONCLUSIONS

Following inferences were drawn on the basis of findings:

- 1) The environmental ethics of male and female secondary school teachers were found to be different at .05 level of significance. The investigator observed that female teachers possess higher level of environmental ethics than their counterparts.
- 2) A significant difference was observed between rural and urban secondary school teachers at .01 level, regarding environmental ethics. It can be concluded that rural teachers had higher level environmental ethics than urban secondary school teachers.
- 3) The emotional competence of male and female secondary school teachers was found to be significantly different at .01 level regarding. It concluded that male teachers were highly emotional competence in comparison to female teachers.
- 4) While no significant difference was observed between rural and urban secondary school teachers regarding emotional competence. It can be concluded that both rural and urban teachers are emotionally competent. Both of them are having in themselves the deep roots of the five elements of emotional competence as— adequate depth of feeling, adequate expression & control of emotions, ability to function with emotion, ability to cope with problem of emotion and encouragement of positive emotions. Both of them know how to recognize, interpret and express emotions effectively to do a in ethical sense. Moreover, they know that their personal feelings and emotions will affect their self performance as well as other's performance.



5) A significant relationship was observed between the environmental ethics and emotional competence of secondary school teachers. Thus it can be said that change in emotional competence is directly proportional to environmental ethics of secondary school teachers.

## 5. EDUCATIONAL IMPLICATIONS

Teachers play very important role in developing emotional competence and inculcating environmental ethics in their students, as it is the need of the hour in the changing scenario. To prevent the environment from degradation it is imperative that teachers must have ample knowledge as well as ethics about the environmental concepts, related issues and the ways of improving the already degrading environment for future use. The findings of the study imply that there is a significantly positive relationship between emotional competence and environmental ethics of teachers. Therefore more emphasis should be laid on infusing the emotional competence of teachers. To great extent the emotional competence of the teachers can help them in achieving the goal of environmental preservation and conservation. Teachers can shape their student's behaviour and attitude to enhance their environmental ethics as well as emotional competence so that their students, who are the future of nation, can act suitably to prevent the environment for sustainable development.

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## Geographical distribution of growth rate of Covid-19 patients and relative humidity in India

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### **Abstract**

*In India the Covid-19 pandemic begins after 30 January 2020 when the first student returned from China was found Covid-19 positive. The virus was imported through foreign return infected persons from many countries and they transmitted it to their relatives and others in India. As we know the virus grows and transmits exponentially. On 1<sup>st</sup> April the total number of persons identified as infected with Covid-19 in India were 1834 and on 2<sup>nd</sup> May 2020 it increased to 37336.<sup>2</sup> It has increased  $37336/1834 = 20.358$  times in 32 days. In next 32 days or on 1 Jun 2020 it will become  $37336*(20.358)^1 = 7,60,086$ . Up to the date of 30 April 2020 the total number of Covid-19 positive cases, the active cases and the growth rate of patients are greater in Maharashtra, Gujarat, Delhi, Madhya Pradesh, Rajasthan and Uttar Pradesh in comparison to the rest part of India. In this part of India during the first week of April the atmospheric relative humidity was between 20 to 45 percent, and in rest part it was greater than this. Thus the transmission of Covid-19 virus in India was more vigorous in that part where the atmospheric relative humidity was between 20 to 45 percent. It indicates that the airborne droplet spray transmission mode is very effective here. We do not know but this mode of transmission of the virus will become weak or less effective as the relative humidity of the atmosphere will increase in coming rainy season and the growth rate of patients will decrease. But other modes of transmission may remain continued.*

### Introduction

According to Centers for Disease Control and Prevention USA there are following modes of person to person transmission of respiratory viruses;

1. Contact transmission:- The virus is transmitted from infected person to the other person when the non-infected person comes in contact with infected person or other infected object. It is of two types;

(a) Direct physical contact transmission:- The virus is transmitted directly from infected person to other person without any other intermediate object. A non-infected person receives virus by touching an infected individual directly.

(b) Indirect physical contact transmission:- The virus is transmitted from infected person to other person through an intermediate object usually by touching a contaminated surface or fomite

2. Airborne transmission:- The viruses are transported to other person from infected one through air when the infected person coughs, sneezes and breaths. This is of two types;

(a) Droplet spray transmission:- The virus is transmitted from infected person to the other person when the infected person sneezes or coughs and the droplets produced fall on the exposed mucus membranes of the other person. The droplets size is  $>5$  micrometer. This transmission occurs in presence of the infected person.

(b) Aerosol transmission:- The virus transmits through air by sitting and traveling on aerosols or nuclei which are very fine solid or liquid particles everywhere present in air. The size of the droplets produced should be necessarily  $<5$  micrometer. This transmission occurs in presence and even after the departure of the infected person because the droplets or aerosols or nuclei are so small and light weighted that they stay in air for long period of time.

Covid-19 is a type of corona virus which produces corona disease in human and many other animals. Covid-19 is a respiratory virus. In researches related to the transmission of Covid-19 it has been found that it is capable to transmit from all the four modes written above except aerosol transmission. According to World Health Organization the Covid-19 respiratory infections can be transmitted through droplets of different sizes: when the droplet particles are  $>5-10$  micrometer in diameter they are referred to as respiratory droplets and when they are  $<5$  micrometer in diameter they are referred to as droplet nuclei.<sup>1</sup> But it is primarily transmitted from person to person

through respiratory droplets and contacts. The droplet transmission occurs within few meters because droplets rapidly settle down from air. But aerosol transmission occurs through nuclei and it has long range because aerosol or nuclei do not settle down from air easily. In one study the Covid-19 virus has been traced in human stool and in this condition it can spread through house flies. Among all modes of Covid-19 transmission the moisture or humidity may play an important role. As we now atmospheric moisture content or humidity affects the size of droplets and its suspension time in the air. That is why respiratory viruses spread during special humidity and temperature conditions.

India is known for its geographical diversity. There are many physiographic and climatic variations in India. Here are snow covered mountains, great desert, coastal plains and continental interiors. Accordingly temperature and humidity conditions vary from one part to other. In this study we have tried to understand the relation between amount of Covid-19 affected persons and humidity conditions of the atmosphere by the means of distribution maps visually.

Now the Covid-19 corona virus has become a pandemic. First its patients were identified in Wuhan city of China on 31 December 2019 and they were 27 in number. It spread from here to all over the world and its first patient was discovered in India on 30 January 2020 in Kerala. As we know the virus grows and transmits exponentially. On 1<sup>st</sup> April the total number of persons identified as infected with Covid-19 in India were 1834 and on 2<sup>nd</sup> May 2020 it increased to 37336.<sup>2</sup> It has increased  $37336/1834 = 20.358$  times in 32 days. In next 32 days or on 1 Jun 2020 it will become  $37336 \times (20.358)^1 = 7,60,086$ . This is based on tests operated so far, means the person who have been suspected on the basis of their contacts and tested. During this endeavor 17 to 18 hundred infected cases are being discovered daily. This rate is not static it will grow further. A large number of actual infected persons are in field and they are infecting others continuously and exponentially though the lockdown is a good endeavor by the government to check the transmission of the virus. A simple question arises; in what atmospheric humidity conditions the number of infected persons is large or growing fast in India? We are trying to find the answer of the question.

#### Data and Methodology

The data about Covid-19 infected cases are taken from online sources. Their links are given in references.<sup>3</sup> Choropleth distribution maps are prepared. The data related to atmospheric condition

especially daily temperature and daily dew point temperature was also obtained from online source. It is easily available on National Centers for Environmental Information.<sup>4</sup> We have used its daily temperature data of 175 weather stations of India. We calculated the average of 7 days data at each and every station from 1 to 7 April 2020. Likewise a 7 day average at each station was calculated from daily dew point temperature. On the basis of these 7 days average temperature data and 7 days average dew point temperature data actual humidity, saturation humidity or moisture holding capacity of the air and relative humidity at each station was calculated using the Clausius-Clapeyron equation.<sup>5</sup> Thus after calculations we found the 7 days average humidity data. After creating raster images of these data, contours were extracted and distribution maps were prepared in Qgis. We prepared 7 day average relative humidity distribution map of India in Qgis.

Maps are very powerful tools for visually comparison of the distribution of many variables. So we superimposed 7 day average relative humidity distribution map on Covid-19 growth rate map, total Covid-19 cases distribution map, and active Covid-19 cases map to find the climate connection of Covid-19 infection visually.

#### Result and discussion

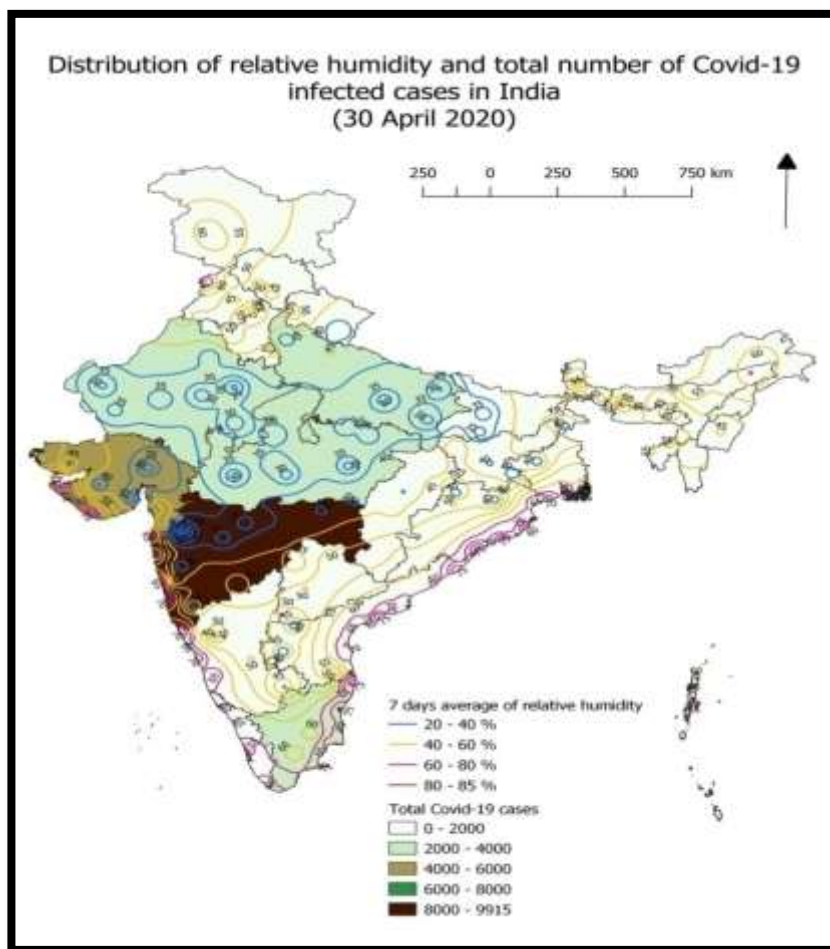
It is a fact that the Covid-19 virus does not evolved in India, it is imported from other infected countries through the infected persons. They spread in various parts acting as infection source. But there movement was almost ended up to 24 March and especially up to the end of March 2020 because the effective lockdown in the country almost stopped the population movement. From beginning of the April the transmission rate of the virus in various parts of the country is depending primarily on availability of population crowd and secondly on the climatic factors of the region. If we assume that the population crowd or cities are found in every part of the country then the climatic factors are responsible for the distribution of various rates of transmission in deferent parts of the country. The different rate of transmission resulted in uneven state wise distribution of Covid-19 positive cases in India.

Map No.1 is showing the state wise distribution of total number of Covid-19 positive cases in India. The quantity or number of cases found in a state is indicated by the colour of the respective state. The lighter colour indicates fewer cases than the darker colour. For example the darkest colour is given to the state Maharashtra it means the state has maximum total number of Covid-19

infected cases up to 30<sup>th</sup> April 2020 in India. Gujarat has lesser cases than Maharashtra but greater than Madhya Pradesh, Rajasthan, Uttar Pradesh, Union Territory Delhi and Tamil Nadu. The rest all other states of India have less number of total Covid-19 cases in comparison to the above states. Thus we see the majority of cases are confined to one part of the country. Likewise the much of the number of active Covid-19 patients are found in the same part of India (Map No.2). Is this part of India different from the rest part in its any type of climatic characteristic? The answer of this question is Yes.

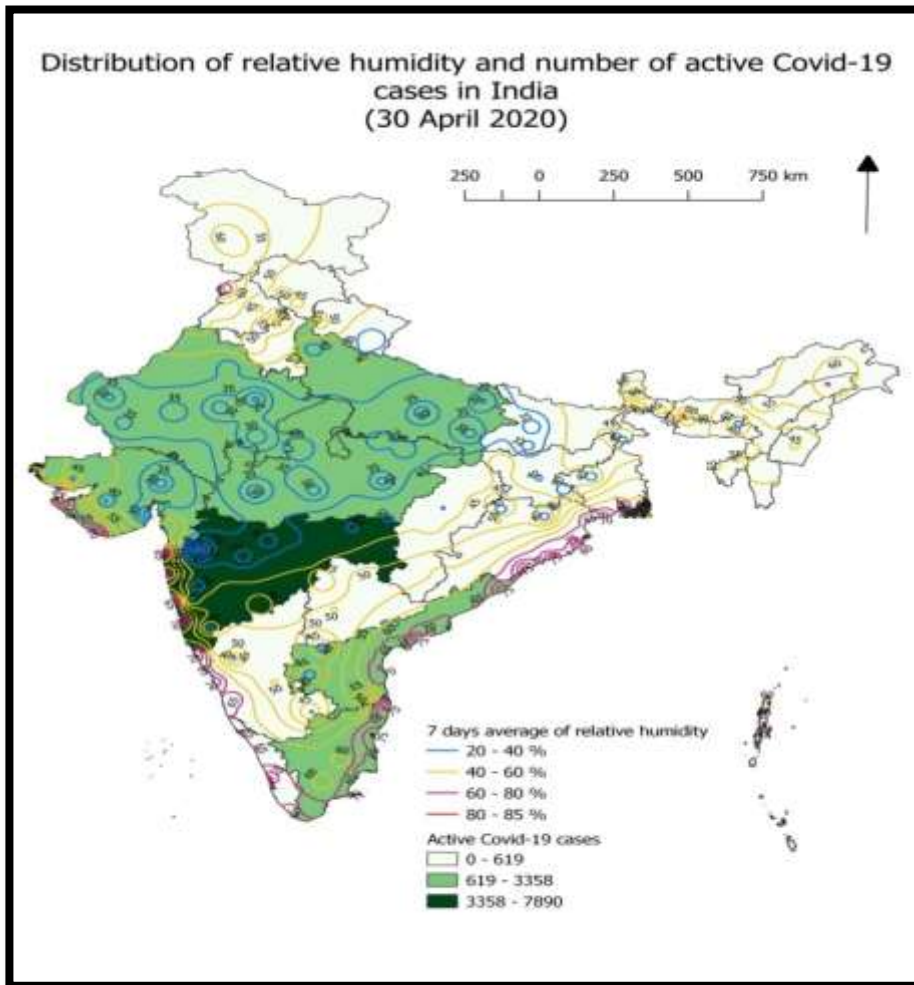
The thick blue, yellow, red and orange curved lines on all the three maps are showing the distribution of 7 days average relative humidity of the first week of April 2020. The areas covered with blue lines have relative humidity between 20 to 40 percent, the areas or places on yellow lines have 40 to 60 percent, on red 60 to 80 percent and on orange 80 to 85 percent.

Map No.1



In Map No.1 a greater portion of the states having larger total number of Covid-19 cases fall under the area covered by blue lines. Only one state Tamil Nadu is out of the blue lines and it has relative humidity higher than those states. If we consider Delhi the line of 45 percent relative humidity is passing from here. Thus we can say that the region of India where the total Covid-19 positive cases are higher has relative humidity between 20-45 percent.

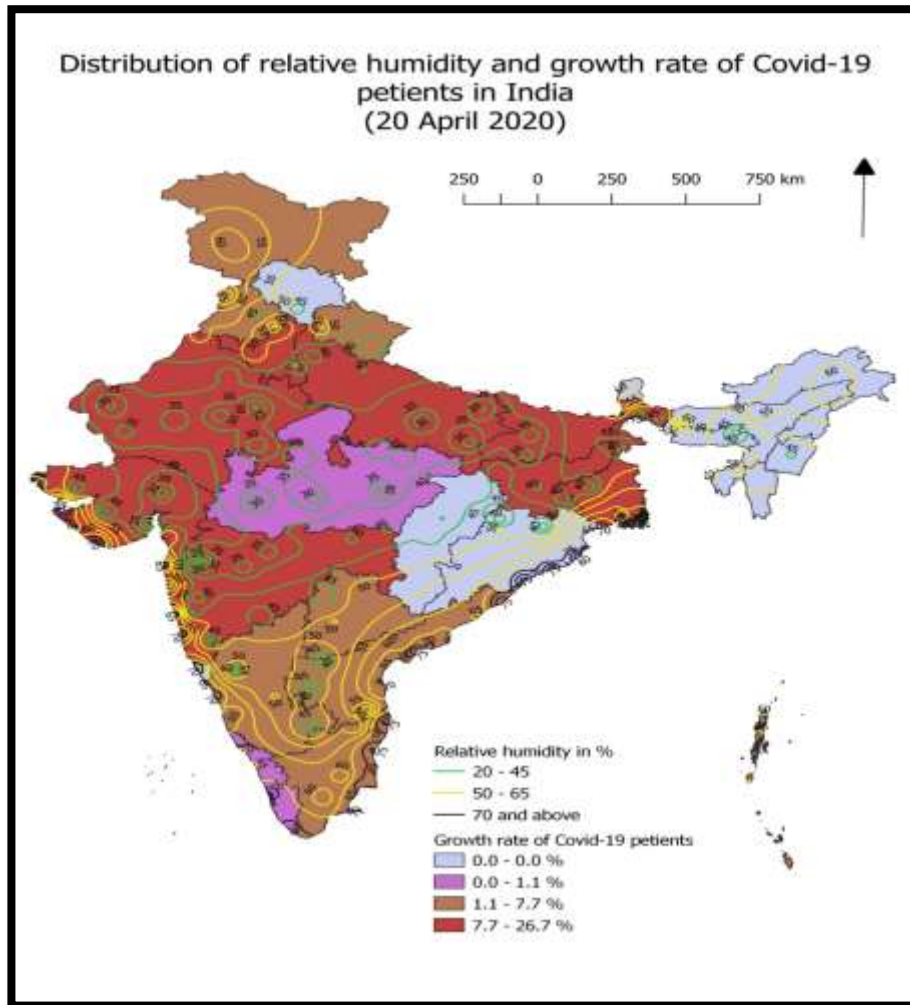
Map No.2



The relative humidity tells us about the dry and wet conditions of the air or atmosphere. Lesser the relative humidity drier the atmosphere and greater the relative humidity more wet the atmosphere. The float or suspension time of the droplets exhausted from person's mouth and nose in air depends on relative humidity. To settle them from the atmosphere it is necessary to increase their wait otherwise they will float for longer time and there will be more chance of collision to someone's eye or more chance to be inhaled by someone.



Map No.3



In higher humidity conditions the droplet's size and weight increases rapidly because the condition is favorable to convert the atmospheric vapour into water on surfaces of droplets. Thus in higher relative humidity condition the exhaled droplets by Covid-19 infected person get settled towards ground rapidly and provide less chance of transmission to other person.

But, Tamil Nadu and Andhra Pradesh show larger number of active Covid-19 patients though the relative humidity in the first week of April was high enough here. The Map No.3 shows the growth rate of Covid-19 patients of 10 days earlier time say 20 April 2020. As we know the relative humidity shown is of the first week of April.

It is very clear from Map No.3 that all the states having growth rate 7.7 to 26.7 percent fall under the relative humidity province of 20 to 45 percent. We find from this map that although the virus Covid-19 spreads through contact modes also but the airborne droplet mode is of prime

importance for its transmission. That is why the growth rate in the rest parts of India where the relative humidity is above 50 percent is less.

A question arises here that what happen when rainy season will start. During rainy season the relative humidity becomes near about 80 to 100 percent or almost near saturation level. We do not know but it seems that the droplet mode of transmission of the virus will become less effective and the growth rate of patients will decrease. But other modes of transmission may remain continued.

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## Chickenpox: A brief review of a viral disease

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### ABSTRACT

*Chickenpox is a viral and communicable disease. Acute varicella-zoster virus infection called chickenpox. This infection mainly occurs in childhood. However, chickenpox is spreading common in adolescents and adults that may be immunosuppressed individuals. The varicella-zoster virus is also called a human herpes virus type -3 (HHV-3). Causing agent of varicella can be airborne that spreads with the help of droplets of infected person to another and direct contact. New born baby not affected from this disease because it has maternal antibodies that protected from the disease. When any person infected from varicella-zoster virus then various symptoms show such as fever, allergy and rashes on the face and trunk and after some days on the whole body. Antiviral therapy is available for the treatment of varicella or Chickenpox. The infection of varicella can be inhibited with isolation and stop the children to school. Antibacterial can be use in the secondary bacterial infection at rashes and scalps. Varicella-zoster immunoglobulin protein used for passive immunization and may attenuate or prevent infection complicationsto the varicella-zoster virus of an immunocompromised or a neonate or pregnant individual. A live attenuated varicella-zoster virus vaccine is available that is used for the prevention of varicella-zoster infection in children and adults. Some developed countries provide active immunization to children and adults.*

**Keywords:** Chickenpox; Varicella; Herpes zoster; Immunization

### INTRODUCTION

Chickenpox is a common viral disease known as varicella and generally produces in the children in temperate countries. It generally produces by infection of the varicella-zoster virus or human

herpes virus type-III (HHV-3). The virus of the disease can be spreads through the air and inhaling droplets from contaminated persons. The infection of this disease communicates with a person to person and direct contact with the rashes. Chickenpox is highly contagious to the persons who have not diseased or have not taken vaccine for this virus. The neonates are naturally protected to this disease due to maternal antibodies. Chickenpox is a serious disease in adult men. The Chickenpox virus can also reactivate and resurfaces from one rash to another surface. Vaccination prevents serious complication risks (Foucher and Pillon, 2019).

Chickenpox mainly starts from chest, face and back. It spreads at the whole body of the patient. The symptoms may display such as fever, headaches and tiredness. The symptoms usually last four days to one week. Other complications may show such as pneumonia, bacterial skin infection and inflammation of the brain (Hamborsky et al., 2015). This disease may more serious in adults than in children. Varicella is an airborne disease that communicates through sneezes and coughs of infected persons. It may also communicate contact with blisters. Chickenpox may be diagnosed based on the presenting symptoms. Sometime in usual cases, it confirmed by polymerase chain reaction (PCR) testing of the scabs or blister fluids. People suffer from chickenpox only once. Although reinfections by the virus occur in humans than do not show any symptoms (Breuer, 2010). Some countries provide routine immunization to the children for this disease (Flatt and Breuer, 2012).

#### CAUSES OF CHICKENPOX

Chickenpox disease produces by a virus. The virus of chickenpox is called Human Herpes Virus Type-3 or also called the Varicella-zoster virus. This virus is a common human herpes virus that spreads with the contact person to person, droplets, sneezing and coughing. This virus is also called zoster virus. This virus is survived at the external environment for 2- 5 hours or some time more than one day. Varicella-zoster virus multiplies in the respiratory system and shows a different variety of symptoms. Chickenpox is the primary infection after it the virus goes into the neurons includes the autonomic ganglia and cranial nerve ganglia. Varicella-zoster virus can reactivate to cause neurologic conditions (Nagel and Gildea, 2007).

#### TAXONOMY OF CAUSING AGENT (Varicella zoster)

**Kingdom:** *Virus*

<b>Phylum:</b>	<i>Vira</i>
<b>Subphylum:</b>	<i>Deoxyvira</i>
<b>Class:</b>	<i>Deoxyhelica</i>
<b>Order:</b>	<i>Herpesvirales</i>
<b>Family:</b>	<i>Herpesviridae</i>
<b>Genus:</b>	<i>Varicellovirus</i>
<b>Species:</b>	<i>Human alphaherpesvirus 3</i>

## EPIDEMIOLOGY

The virus of Chickenpox is a common human herpesvirus that belongs to the family alpha-herpesvirus. In the present time the varicella-zoster virus is highly infectious and worldwide. Chickenpox is the primary infection of this virus. It spreads by direct contact to contact with skin lesions and through droplets in the air (Sawyer et al., 1994). After the primary infection of varicella-zoster virus established in the cranial nerve and dorsal root ganglia. Varicella-zoster virus can reactivate after years that may show later as virus herpes zoster or also called shingles (Gilden et al., 2000).

The United States acquired the disease in childhood to more than ninety percent of adults. Children and young adults have been immunized with live virus vaccine primary varicella produce the vesicular problems, fever, pruritic and rashes that firstly shown on the face and trunk (Marin et al., 2007). Primary infection of Varicella-zoster occurs in all countries of the world. 6,400 people had been dead in 2015 by chickenpox in the world while 7000 deaths in 2013 while 8,900 people had been dead in 1990 (GBD, 2016).

Chickenpox mainly spreads at temperate countries as a primary disease in the children, the most case occurs in the hot weather as spring and winter, mainly increase in children due to school contact. It is a common disease of childhood with prevalence in the 4-5-year-old age group (Wharton, 1996).

## MORPHOLOGY OF VIRUS

Varicella-zoster virus (VZV) related to the herpes simplex viruses. The virions of VZV is spherical and 180-200 nm in diameter. The envelope of VZV is 100 nm. The VZV has single

DNA with a linear and double standard molecule. The capsid of the Virus is surrounded by a special protein called tegument. The tegument is covered by a lipid envelope with glycoprotein. Different types of glycoprotein such as gB, gE,gC, gH, gK, gL andgI, found in the envelope(Loparev et al., 2007).

## SIGNS AND SYMPTOMS OF CHICKENPOX

The main symptoms of Chickenpoxare headache, nausea, loss of appetite and aching muscles. Sometime fever may occur to the patient. The first sign of the Chickenpoxis the spot or rash in the oral cavity of the patient. The rash begins as small red colour dots on the abdomen, back, face, upper arms and legs (Anthony et al., 2018).

In the 2-day invasion phase,in this phase patients show low-grade fever and a short-lived episode of skin rash but not unlike scarlet fever. The patient suffers from a headache in this phase.

The eruptive phase,this phase starts14 days after the first sign has shown. The first sign is a rash or spots in the oral cavity (enanthem or internal rash). Patient show exanthemaafter the first sign. This external rash or spots eruption goes through 3 phases pink or red bumps, it filled with fluid blisters and finally scabs and crust. After this, the external rash or red spots starts on the abdomen, back, upper arm and legs. In this phase, low graded fever may be recorded (Askalan et al., 2001).

Teenagers and adults can develop serious complications some persons such as non-immune pregnant woman and the persons who are immunocompromised or whose immune system are weakened by the immunosuppressant show secondary bacterial infections (specially beta-haemolytic streptococcus). In some patients, neurological complications or pulmonary disorders and toxic shock syndrome may be produced (Brannon, 2019).

## TRANSMISSION OF VARICELLA-ZOSTER VIRUS

Varicella-zoster is a highly contagious virus, transmit from patients to another person with direct contact of skin lesions. This type of transmission is called contact transmission. VZV may transmit by breathing and droplets it type transmission called airborne transmission (Gershon et al., 2018). Varicella-zoster virus highly infected in unvaccinated individuals and it had reported that varicella typically includes more than 300 lesions and scalps (Lopez et al., 2018). Patients who have herpes zoster infection, shown rashes on the back and persons who had uncovered

rashes on the upper arms or limbs were equally the same as spreads varicella-zoster virus (Viner et al., 2012). Herpes zoster virus is less communicable than varicella-zoster virus transmission of varicella virus from patients with herpes zoster does occur and the development of varicella in susceptible persons can lead (Cohen, 2013). The virus of chickenpox transmits through sneezing, cough, droplets of patients in the air, and direct contact to the person patients that have already infection of varicella once in life, secondary infection is very low or not show any symptoms of chickenpox. Neonate not infected from varicella virus because of maternal antibodies present in its body (Josephson and Gombert, 1988).

## DIAGNOSIS

Doctors identify the chickenpox firstly on the base of signs and symptoms such as rashes on the trunk and face. Doctors confirm the diagnosis with the help of blood testing examination and by examination of the fluid that separated from vesicles of rashes. The blood test shows an acute immunologic response. The fluid separated from the vesicles of rashes and its use for culture. Varicella present in the fluid and it grows rapidly in the fluid sample. Vesicular fluid can be tested with a Tzanck smear or by testing for direct fluorescence antibody. Radiography can be used for the prenatal diagnosis of fetal varicella infection. The polymerase chain reaction (DNA) may be used for testing of mother amniotic fluid (Boussault et al., 2007; Pincus et al., 2007).

Varicella-zoster virus may cause neuroretinitis in rare cases. In this case, diagnose the disease based on the presence of zoster like cutaneous lesions or serology. But Varicella-zoster virus-associated neuroretinitis (VZVAN) can be diagnosed with the help of polymerase chain reaction or analysis of the ocular tissue (Biswas et al., 2003; Nicaeus and Wilhelm, 1999).

Different laboratory analyses can be used for chickenpox cases of herpes zoster virus and varicella-zoster virus. Rapid diagnosis methods may be used for the diagnosis of the varicella infection in the human. The direct fluorescent assay can perform on scrapings taken from the base of rashes and skin lesions. Serologic testing may be performed for the identification of varicella-zoster or herpes zoster virus (Coffin and Hodinka, 1995).

## COMPLICATIONS

Pneumonitis may be a risk in the pregnancy, immunocompromised in the pre-existing pulmonary disorder (Nathwani et al., 1998). Varicella-zoster infection at the time of pregnancy is a potential

and serious complication including congenital varicella syndrome, maternal varicella and neonatal varicella (Lamont et al., 2011). Pneumonia maternal varicella is the most complication in the varicella-zoster infection during pregnancy. About 10 to 20 percent of pregnant women infected with varicella-zoster develop pneumonia (Bapat and Koren, 2013).

## TREATMENT

Chickenpox treated based on their symptoms. Firstly, people should require that they stay at home to avoid spreading the infection. Nails of patients should be trimmed and wear gloves for preventing scratching cause secondary infections. Calamine lotion applied to the external skin for the prevention of infection. The patient should clean the topical skin with warm water or anti-infective to avoid secondary bacterial infection (Tebruegge et al., 2006). Acetaminophen or paracetamol may be used to reduce the fever in Chickenpox varicella-zoster immune globulin may be given in the serious complications (Lachiewicz and Srinivas, 2019). A summary is presented in Table 1.

## PREVENTION AND MANAGEMENT

The infection of varicella can be prevented by the isolation of infected patients. Patients should prevent direct contact to contact with rashes, lesions and respiratory droplets in the environment. The varicella virus is highly susceptible to disinfectants such as sodium hypochloride. It is sensitive to detergent, heat and desiccation (Murray et al., 2005). The varicella vaccine has been prepared and recommended in many countries. Some countries administer the varicella vaccine to the children at schooling. A second dose of vaccine is administered to the children after five years the initial immunization (Chaves et al., 2007).

### Antiviral therapy

Antiviral therapy used for the prevention of Chickenpox infection. Oral acyclovir and its prodrugs used for the prevention of varicella infection. Some antiviral administer intravenously to the patients (Wallace et al., 1992). Acyclovir, valganciclovir and ganciclovir are mainly used in varicella infection. This drug inhibits DNA replication in the varicella virus (Balfour et al., 2001). FDA not provides approvals to Valacyclovir and Famciclovir for the treatment of herpes zoster and varicella-zoster but is generally used in clinical practice. The oral bioavailability of acyclovir



is poor but it is safe and well-tolerated. The physician advice that 800 mg acyclovir is requires three to five times daily for seven days to an infected person (Klassen et al., 2002).

### Vaccination

A live attenuated varicella-zoster virus vaccine is available in India and it is marketed in the India brand name Okavax and Virilrix. The Okavax vaccine prepares by Aventis Pasteur company while virilrix prepares by Glaxo Smith kline. The vaccine for varicella developed by Merck, Sharp and Dohme in 1980. GlaxoSmithKline developed Shingrix that is a Varicella-zoster vaccine and it was approved in the United States by Food and Drug Administration in 2017 (Lachiewicz and Srinivas, 2019; SHINGRIX, 2017)

Varilrix (GSK), and Varivax (SPMSD) both vaccine are live attenuated vaccine and these vaccines administered to the non-immune children and adults above the age of 12 years (Davis, 2006). ProQuad<sup>®</sup> is a vaccine that only approved for children between the ages 12 months to 12 years. This vaccine shows a safe and higher effect than other varicella-zoster vaccines. Contraindicated may occur in some patients with this vaccine. Zostavax is a newly licensed herpes zoster vaccine contains fifteen times more units of plaque-forming live-virus than Oka varicella vaccine (Levin, 2008). A herpes zoster vaccine is safe for immunogenic and in adult's immunodeficiency virus (Berkowitz et al., 2015).

**Table 1** Varicella-zoster virus treatment

Diseases	Medication	Dose or frequency	References
Pruritus	Calamine Lotion containing zinc oxide	Topical applied on the skin	(Tebruegge et al., 2006)
Fever	Paracetamol or Acetaminophen for reducing fever	60 mg/kg per day	(Tebruegge et al., 2006)
Itching and allergy	Antihistamine can be administered to relieve itching	Cetirizine 5 mg two times a day Chlorpheniramine 25 mg per day	(Balfour et al., 1983)

Herpes zoster treatment	Antiviral medicines	Acyclovir 800 mg five times daily for adults and 20 mg/kg four times daily to Pediatrics (Till 7 days) Valacyclovir 1 g three times daily for adult and 20 mg/kg three times daily for Pediatrics. Famcyclovir 5000 mg PO three times daily only adults.	(Shepp et al., 1986)
Inpatient treatment Acute varicella	Acyclovir	10 mg/kg every 8 hrs	(Balfour et al., 1983)
Herpes zoster virus	Acyclovir	10 mg/kg every 8 hrs for atleast 7 days	(Shepp et al., 1986)
Secondary Infection	Bacterial Antibacterial medicines	amoxicillin together with clavulanic acid or C3G plus clindamycin IV if the case is serious, to be taken per os.	(Brannon, 2019)

## Conclusion

Appropriate post-exposure management of individuals exposed to varicella should take into consideration the individual's evidence of immunity and host-immune status concerning the ability to receive varicella vaccination safely. Post-exposure prophylaxis with varicella vaccination in eligible immunocompetent hosts is recommended to prevent or mitigate infection, limit disease transmission, and help protect against potential future VZV exposure. Post-exposure prophylaxis with varicella-zoster immunoglobulin is indicated for populations ineligible for vaccination, including immunocompromised children and adults, pregnant women, newborn of mothers with varicella shortly before or after delivery, and premature infants. Besides, vaccination of close

household contacts is recommended minimizing the introduction of VZV into households of immunocompromised persons who cannot be vaccinated. Providers who care for immunocompromised hosts should educate patients on the importance of urgently seeking medical care in the event of VZV exposure, particularly for patients known to have no evidence of immunity. Providers must be able to obtain appropriate tests to assess immune status and have rapid access to vaccination and varicella-zoster immune globulin to avoid potential severe varicella complications.

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## IMPACT OF TECHNOLOGY IN PROTECTING AS WELL AS EXPLOITING ENVIRONMENT

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Technology is a double-edged sword-one capable both of doing and undoing damage to environmental quality. In what follows, we look at technology and the environment in four key areas: energy, climate, water quality, and waste cleanup. In each case, we illustrate the dual nature of technology's environmental implications. We also touch on the emerging relationship between the Internet and environmental quality, one that again seems to cut both ways. We then note how technology is helping to fashion policies that allow producers and consumers to recognize and internalize the environmental costs of technology and thus to spur innovation to clean up the environment.

### **Energy**

All the world's economies continue to face big challenges in using energy-the lifeblood of the industrial age-while maintaining environmental quality. Although U.S. energy efficiency is much greater than ever before, growth in the economy has assured rising energy consumption. While the average fuel efficiency of new passenger cars has more than doubled since 1975, the environmental gains are increasingly offset by the popularity of lower-mileage light-duty trucks and sport utility vehicles, increases in miles traveled per vehicle, and large increases in vehicle ownership. .

Nonetheless, technology-impelled by economic, regulatory, and environmental pressures-has made possible impressive reductions in vehicular emissions of volatile organic compounds and carbon monoxide per mile traveled. Reductions in both by 70-80 percent since 1977 would not have been possible without substantial innovations in, most notably, electronics. Here, the development of sensors that can closely calibrate energy use to demand has meant that both modern engines and industrial motors can be operated much more efficiently. Microcontrollers and digital signal processors also underpin a new generation of auto emissions sensors, which

now consume up to 25 percent less energy. Modern autos have 20-90 of these sensors to control their engines precisely. .

### **Climate**

Discussions of energy use lead naturally to the question of how it may be affecting the earth's climate. In the United States, the energy sector accounts for more than 85 percent of total greenhouse gas emissions, with energy-related carbon dioxide alone responsible for about 80 percent. Most U.S. greenhouse gas emissions result from the use of coal and petroleum in electricity generation and transportation, respectively. But two newer technologies, fuel cells and small, single-cycle gas turbines-induced by economic and environmental considerations as well as by innovation policy-offer substantial environmental advantages over traditional, large, centralized power plants. Local generation by smaller plants can not only reduce transmission losses, but also improve air quality since they can be fueled by hydrogen and natural gas-much cleaner than coal on a per kilowatt hour basis. If fuel cells become widely adopted in transportation, emissions will plunge there too. .

Adopting such technologies may not be a perfect solution, however, particularly in power generation. Some fuel cell technologies release carbon dioxide, a greenhouse gas. In addition, small-scale plants serving only residential areas or small businesses may be less able to balance the peaks in demand than are larger plants serving both types of customers.

### **Water Quality**

Air quality and climate change are the dominant, but not the only, environmental issues relating to energy use and production. Industrial and vehicular emissions, particularly of nitrogen oxides, are also detrimental to water quality. Nitrogen deposition acts as a fertilizer and promote the growth of algae in lakes, rivers, and estuaries, creating eutrophic conditions that kill submerged aquatic vegetation. In some places, such as the Chesapeake Bay, eutrophication threatens commercial fishing as well as recreational pursuits.

Even more serious is the agricultural runoff of pesticides, fertilizer, and animal waste. Technology and policy are now beginning to address runoff pollution, but it is hard to measure, much less control, because it stems from widely scattered, "nonpoint" sources.

In the past few years, however, the tools of geographic information systems (GIS) using remotely sensed data have offered new ways to identify and observe these sources. The techniques combine land-use information with hydrology, topography, and soil data to make detailed, digitized maps



at very fine scales and measure the potential for runoff. Remote sensing data on actual farming activities, collected by aircraft and satellites, can be combined with the digital maps to provide more accurate and timely monitoring and estimation of runoff. While it may not be possible to trace all the runoff to its original source, it is increasingly possible and cost-effective to trace much of it.

GIS tools have also fostered precision farm practices using real-time, computerized, and detailed information about crop health. Remote sensors on harvesting equipment enable growers to discriminate among rows of crops for irrigating and for applying pesticides and fertilizer, thus increasing crop yields and reducing chemical use. And precision agriculture may have a bright future: information technology sales in the farm sector are now comparable to sales of farm equipment.

Remote sensing technology has also begun to improve the efficiency of municipal water use. Even in the United States, water is priced in a way that encourages wasteful consumption. The problem is compounded in many other countries, particularly in the developing world, because of a lack of infrastructure to meter water use. In Buenos Aires, for example, customers pay for water based on the size of their houses or apartments. The city has recently updated its real estate maps using remotely sensed data. Some hotels had been masquerading as studio apartments and were billed accordingly. While remote sensing has not replaced the need for metering, the new data have at least allowed the city to price water more accurately.

Despite their promise, even GIS and remote sensing technologies are “two-edged” in their environmental implications. The technologies raise some privacy concerns, for instance, that could lead polluters to cloak or hide their polluting activities, further inhibiting pollution monitoring and cleanup. Several legal cases concerning constitutional protections against warrantless searches have been motivated by the use of aerial photography for monitoring environmental compliance, and in more recent cases polluters had attempted to shield their actions from surveillance. Most recently, Midwest farming conglomerates have expressed concern about the public availability of aerial imagery if it is detailed enough to disclose farming practices. Such concerns could lead to curbs on the use of remote sensing for pollution monitoring and regulatory enforcement.

### **Waste Management**

The trade-off between benefits and costs of new developments in biotechnology has made headlines in the case of genetically modified food supplies. Similar concerns surround the technology of bioremediation. Naturally occurring microorganisms have long been used to break down human, agricultural, industrial, and municipal organic wastes. Now, genetically engineered organisms are being used to treat not only industrial effluent, but also wastewater, contaminated soil, and petroleum spills. Bioremediation treats about 5-10 percent of all toxic chemicals and other hazardous waste; has successfully treated oil, gasoline, toluene, naphthalene, pentachlorophenol (a fungicide and wood preservative), and agricultural waste; and is being used at more than 30 munitions test areas across the United States.

Bioremediation can be a particularly cost-effective approach. Most of the costs of traditional cleanup technologies come in removing and disposing of contaminated soil, water, or other materials. Bioremediation requires only delivering the bacteria to the site, not excavating or otherwise disturbing it, thus reducing post-cleanup costs.

These benefits must be balanced against what some critics view as potentially large drawbacks. One concern is that bioremediation may largely immobilize rather than fully remediate contamination. Another is that instead of reverting to its original state, the site will be transformed in some unexpected way. A third concern is that the potential risks of adding genetically altered organisms to the environment, or even redistributing naturally occurring ones, may not be fully understood.

### **The Information Revolution**

The revolution in information technology promises economic changes almost as great as those of the industrial revolution itself. Digital data storage, manipulation, and communication may not appear to have environmental implications, but some examples suggest otherwise. High-speed, high-bandwidth connectivity between our homes and offices may allow us to telecommute; it may also worsen sprawl around metropolitan areas if workers find it increasingly practical to live farther from their work. Whether online shopping replaces visits to the mall or takes place in addition to trips to the dentist and dry cleaners (trips that might have been combined with trips to the mall) will also shape the Internet's impact on auto travel. Packaging of e-commerce goods for shipping may be more materials- and energy-intensive than store-bought goods. Some controversial studies have even suggested that growth in demand for electricity, driven by new kinds of customers such as computer server warehouses, may have helped overload the electrical

grid in northern California last summer. The net effect of new information technologies on energy consumption, land use, and travel has yet to be carefully studied.

From another perspective, as a tool for research and communication about the environment, the Internet appears to hold much promise. For research, it offers online bibliographic search engines, data archives and retrieval systems, rapid exchange of research results with distant colleagues, and software for scientific modeling of complex environmental processes. The Internet has also greatly expanded the public's access to and awareness of detailed environmental information.

### **Economic Incentives and Technological Innovation**

Realizing the environmental promise of these and other new technologies-that is, exploiting the beneficial side of technology's dual nature-depends in part on "getting the prices right." New technology will be better deployed to reduce environmental costs if these costs are recognized. For example, if automobile prices reflected all the environmental costs of tailpipe emissions, auto makers would have stronger incentives to use new pollution control technologies in new car models.

The "social costing" approach to environmental regulation has increasingly come into its own in the United States. For instance, tradable pollution permits-such as for sulfur dioxide emissions from coal-fired power plants-have created financial incentives for electricity generators to adopt cleaner production processes. These market-based approaches can be more cost-effective than traditional emissions limits or technology standards, because firms that can reduce emissions most cheaply cut them more than they otherwise would-and then sell their excess permits to firms that cannot. At the same time, the market-based approaches induce innovations by putting a price on emissions and reductions.

The use of such incentive-based approaches is growing not only here, but abroad. International policy discussions on global climate change include taxes on carbon emissions and the use of marketable permits. Similar approaches to getting prices right in managing water quality and waste, as in our examples above, are likely to discourage environmentally harmful uses of these resources and further encourage use of new technologies in managing them.

Information technologies in particular will help expand the scope and effectiveness of incentive-based approaches, for at least four reasons. First, improved remote sensing technologies are making incentive-based regulations, which rely on emissions monitoring, either to enforce compliance or to levy taxes on pollution, more practical. Second, technological advances will

help extend these approaches even to “smaller” polluters, possibly including small businesses and individual automobiles. Third, new information technologies are making it possible to fine-tune prices and regulatory programs—for example, by allowing pricing to reflect time of day, congestion, or atmospheric conditions. Finally, in the case of international resource management, remote sensing from space-based satellites may make it easier to monitor environmental compliance across countries.

From the steel towns of yesteryear to today’s wired cities, the interplay of new technology and its environmental effects has indeed been complex. Technology will always be a double-edged sword, but creative use of new economic approaches to environmental management should help blunt its destructive edge and hone its capacity for good.

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सार

परिचय: लोग पिछली सदी से गतिहीन आदतों को अपनाने के कारण कम सक्रिय हो गए हैं । इस परिदृश्य ने पुरानी बीमारियों जैसे हृदय रोगों, टाइप 2 मधुमेह और चयापचय सिंड्रोम की घटनाओं में वृद्धि की है। शारीरिक गतिविधियों का अभ्यास चयापचय अवस्था और प्रतिरक्षा प्रणाली को बदलकर स्वास्थ्यता को प्रभावित करता है। मध्यम तीव्रता का व्यायाम सेलुलर प्रतिरक्षा से संबंधित मापदंडों को उत्तेजित करता है और संक्रमण के जोखिम को कम करता है, जबकि उच्च तीव्रता वाला व्यायाम इन्हीं मापदंडों की कमी को बढ़ावा दे सकता है

उद्देश्य: उन अध्ययनों के लिए साहित्य की समीक्षा करना जो प्रतिरक्षा प्रतिक्रियाओं के विकास और संभावित संकेत पारगमन पथों पर शारीरिक व्यायाम द्वारा प्रचारित प्रभावों को संबोधित करते हैं।

मुख्य शब्द: व्यायामय साइटोकाइनय लिम्फोसाइटय

परिचय

पिछली शताब्दी के दौरान विकसित और विकासशील देशों के लोगों शारीरिक रूप से निष्क्रिय हो गए है । इसके मुख्यतः दो कारण हैं— काम के प्रकार में परिवर्तन और काम की मांगों में बदलाव के लिए नई आदतों को अपनाना । इस परिवर्तन के कारण पुरानी बीमारियों जैसे हृदय रोग, टाइप 2 मधुमेह, मोटापा, शारीरिक ढांचा विकार, फुफ्फुसीय रोग, कुछ प्रकार के कैंसर और न्यूरोलॉजिकल विकार बढ़ गए हैं। स्वास्थ्य की स्थिति के बावजूद गतिहीनता भी इन लोगों की गुणवत्ता और जीवन प्रत्यांशा दोनों को प्रभावित कर रही है।

व्यायाम द्वारा जो तुरंत होने वाले और कालानुक्रमिक रूप से बदलाव आते हैं— जो प्रतिरक्षा प्रणाली के कई घटकों को प्रभावित करती हैं। मध्यम तीव्रता का व्यायाम सेलुलर प्रतिरक्षा से संबंधित मापदंडों को उत्तेजित करता है और संक्रमण के जोखिम को कम करता है, जबकि उच्च तीव्रता वाला व्यायाम इन्हीं मापदंडों की कमी को बढ़ावा दे सकता है, जिससे संक्रामक रोगों का खतरा बढ़ जाता है ।

वर्तमान अध्ययन का उद्देश्य प्रतिरक्षा प्रणाली में कोशिकाओं के व्यवहार पर व्यायाम के प्रलेखित प्रभावों की व्यवस्थित रूप से समीक्षा करना और संभावित संकेत पारगमन मार्गों को प्रभावित करने की पहचान करना है, जो प्रतिरक्षा प्रतिक्रियाओं का मार्गदर्शन करते हैं।

प्रतिरक्षा प्रणाली क्या है

प्रतिरक्षा प्रणाली संक्रमण के खिलाफ शरीर की रक्षा है। प्रतिरक्षा (पी-डब्ल्यू) प्रणाली कीटाणुओं पर हमला करती है और हमें स्वस्थ रखने में मदद करती है।

प्रतिरक्षा प्रणाली के भाग क्या हैं

शरीर की सुरक्षा के लिए कई कोशिकाएं और अंग एक साथ काम करते हैं। श्वेत रक्त कोशिकाएं, जिन्हें ल्यूकोसाइट्स भी कहा जाता है, प्रतिरक्षा प्रणाली में महत्वपूर्ण भूमिका निभाती हैं।

फागोसाइट्स श्वेत रक्त कोशिकाएं कीटाणुओं के हमले से बचाती हैं लिम्फोसाइट्स (लिम्फो-सिट्स) शरीर के आक्रमणकारियों को पहचानने और नष्ट करने में मदद करते हैं।

फैगोसाइट न्यूट्रोफिल बैक्टीरिया से लड़ता है। जब किसी को जीवाणु संक्रमण होता है, तो डॉक्टर रक्त परीक्षण कराते हैं और उसमें न्यूट्रोफिल की संख्या जानते हैं। फागोसाइट्स यह सुनिश्चित करते हैं शरीर में जो कीटाणु आए हैं, उन कीटाणुओं से हमारा शरीर बचाव कर रहा है या नहीं।

लिम्फोसाइट्स के दो प्रकार हैं- बी लिम्फोसाइट्स और टी लिम्फोसाइट्स। अस्थि मज्जा में लिम्फोसाइट्स शुरू होकर या तो बी कोशिकाओं में परिपक्व होते हैं या टी कोशिकाओं में परिपक्व होने के लिए थाइमस ग्रंथि में चले जाते हैं। बी लिम्फोसाइट्स शरीर की सैन्य खुफिया प्रणाली की तरह हैं - वे अपने लक्ष्य पाते हैं और उन्हें रोक देते हैं। टी सेल सैनिकों की तरह हैं - वे उन आक्रमणकारियों को नष्ट कर देते हैं जिन्हें खुफिया तंत्र खोजता है।

प्रतिरक्षा प्रणाली कैसे काम करती है

जब शरीर बाहरी पदार्थों (एंटीजन) को पहचान लेता है तो प्रतिरक्षा प्रणाली उनसे छुटकारा पाने के लिए काम करती है।

बी लिम्फोसाइट्स को एंटीबॉडी बनाने के लिए सक्रिय किया जाता है। ये विशेष प्रोटीन विशिष्ट एंटीजन पर रोक लगाते हैं। एंटीबॉडीज व्यक्ति के शरीर में रहते हैं। इस तरह प्रतिरक्षा प्रणाली उस एंटीजन का सामना करती है और अपना काम करती है। अगर कोई व्यक्ति चिकनपॉक्स जैसी बीमारी से ग्रस्त हो जाता है, तो उसमें एंटीबॉडी सक्रिय हो जाते हैं इसलिए उसे दोबारा चिकन पॉक्स नहीं होगा।

इसी वजह से टीकाकरण (टीके) कुछ बीमारियों को रोकते हैं। एक टीकाकरण शरीर को एक एंटीजन के रूप में पेश करता है जो किसी को बीमार नहीं करता है। लेकिन यह शरीर को ऐसे एंटीबॉडीज बनाने देता है जो कि रोगाणु द्वारा भविष्य के हमले से व्यक्ति की रक्षा करेंगे।

हालांकि एंटीबॉडी एंटीजन को पहचान लेती हैं और उन पर रोक लगाती हैं, लेकिन वे टी कोशिकाओं की मदद के बिना इसे नष्ट नहीं कर सकती। टी कोशिकाएं एंटीबॉडी या कोशिकाओं द्वारा पहचाने किए गए एंटीजन को नष्ट कर देते हैं जो संक्रमित या किसी तरह से बदल जाते हैं। (कुछ टी कोशिकाओं को वास्तव में "हत्यारा कोशिकाएं" कहा जाता है) टी कोशिकाएं अपने काम करने के लिए अन्य कोशिकाओं (जैसे फेगोसाइट्स) को संकेत देने में भी मदद करती हैं।

एंटीबॉडी के अन्य कार्य :

विभिन्न जीवों द्वारा उत्पादित विषाक्त पदार्थों (जहरीले या हानिकारक पदार्थ) को बेअसर करें।

प्रोटीन के एक समूह— समपूरक को सक्रिय करें, जो प्रतिरक्षा प्रणाली का हिस्सा हैं। समपूरक बैक्टीरिया, वायरस या संक्रमित कोशिकाओं को मारने में मदद करता है।

ये विशेष कोशिकाएं और प्रतिरक्षा प्रणाली के अंग शरीर को बीमारी से सुरक्षा प्रदान करते हैं। इस सुरक्षा को प्रतिरक्षा कहा जाता है।

मनुष्य की तीन प्रकार की प्रतिरक्षा होती है – जन्मजात, अनुकूली और निष्क्रिय:

जन्मजात प्रतिरक्षा: हर कोई जन्मजात (या प्राकृतिक) प्रतिरक्षा के साथ पैदा होता है, एक प्रकार का सामान्य संरक्षण। उदाहरण— शरीर में प्रवेश करने से कीटाणुओं को रोकने में त्वचा बाधा के रूप में काम करती है। प्रतिरक्षा प्रणाली बाहरी कीटाणु को पहचान लेती है कि वो कितनी खतरनाक है।

अनुकूली प्रतिरक्षा: हमारे जीवन में अनुकूली (या सक्रिय) प्रतिरक्षा विकसित होती है। जब हम बीमारियों के संपर्क में होते हैं या जब हम टीके के साथ उनके खिलाफ प्रतिरक्षित होते हैं, तो हम अनुकूली प्रतिरक्षा विकसित करते हैं।

निष्क्रिय प्रतिरक्षा: निष्क्रिय प्रतिरक्षा एक अन्य स्रोत से "उधार" है और यह थोड़े समय के लिए रहता है। उदाहरण के लिए, एक माँ के स्तन के दूध में एंटीबॉडी एक बच्चे को अस्थायी प्रतिरक्षा प्रदान करती हैं जो माँ के संपर्क में है।

प्रतिरक्षा प्रणाली को विकसित होने में थोड़ा समय लगता है और टीकों से मदद की जरूरत होती है। समय पर अपने बच्चे की सभी अनुशंसित टीके लगवा कर, हम अपने बच्चे को यथासंभव स्वस्थ रखने में मदद कर सकते हैं।

तीव्र व्यायाम का लिम्फोसाइट्स कार्य पर प्रभाव

एक बार में तीव्र व्यायाम करने से सभी लिम्फोसाइट उप-योगों के एकत्रीकरण होता है। लंबी अवधि के तीव्र व्यायाम के बाद सभी लिम्फोसाइट संख्या में गिरावट आती है, छत्र और ज कोशिकाओं का कार्य बाधित होता है, और म्यूकोसा में स्रावी पदार्थ का स्थानीय उत्पादन बाधित होता है। व्यायाम के जवाब में न्यूट्रोफिल बढ़ जाती है और व्यायाम के बाद की अवधि में न्यूट्रोफिल वृद्धि जारी रहती है। व्यायाम के दौरान न्यूट्रोफिल एकाग्रता बढ़ जाती है और व्यायाम के बाद भी बढ़ जाती है।

रक्त में सभी लिम्फोसाइट उप-वर्गों की नवरोहण के कारण लिम्फोसाइट सघनता बढ़ जाती है। इस प्रकार के व्यायाम के दौरान सीडी 4 टी कोशिकाओं, सीडी 8 टी कोशिकाओं, सीडी 19 बी कोशिकाओं, सीडी 16 प्राकृतिक हत्यारे (एनके) कोशिकाओं और सीडी 56 एनके कोशिकाओं की संख्या में वृद्धि होती है और कम से कम एक घंटे तक चलने वाले गहन व्यायाम के बाद गिरावट आती है। इसके अलावा, लंबे समय तक व्यायाम करने के बाद एनके और बी कोशिकाओं के कार्य दब जाते हैं। इस प्रकार एनके सेल गतिविधि (एनके कोशिकाओं की एक निश्चित संख्या में ट्यूमर लक्ष्य कोशिकाओं को छीनने की क्षमता) बाधित होती है। इसके अलावा, संचलन में एंटीबॉडी उत्पादन बाधित होती है और म्यूकोसा में स्रावी पदार्थ का स्थानीय उत्पादन बाधित है।

अत्यधिक व्यायाम का साइटोकाइन स्तर पर प्रभाव

कठोर व्यायाम रक्त में साइटोकिन्स के स्तर को बढ़ाता है ८ कई अध्ययनों में इंटरल्यूकिन (IL) -6 को बढ़ा दर्शाया गया है। इसलिए एक मैराथन के बाद IL-6 का स्तर 100 गुना बढ़ जाता है। हालाँकि प्रारंभिक अध्ययन दर्शाते हैं कि व्यायाम के जवाब में IL-1 का स्तर बढ़ गया था पर हाल के अध्ययन दर्शाते हैं कि कोई वृद्धि नहीं हुई है या केवल मामूली वृद्धि हुई है।

अध्ययन दर्शाते हैं कि प्रदाहनाशी साइटोकिन के विकास कारक -1 (ए डी टोपट,) के स्तरों पर कोई भी प्रभाव नहीं पड़ता है। कड़े अभ्यास के बाद ट्यूमर नेक्रोसिस फैक्टर (TNF) - $\alpha$  की सांद्रता 2-3 गुना बढ़ जाती है। IL-1 की सांद्रता में वृद्धि के बाद IL-6 रिसेप्टर प्रतिपक्षी (IL-1 $\alpha$ ) की सांद्रता में वृद्धि होती है, जो स्वाभाविक रूप से IL-1. का स्वाभाविक रूप से होने वाला अवरोधक है।

इस प्रकार व्यायाम की समाप्ति के तुरंत बाद IL-6 अधिकतम स्तर पर पहुँच जाता है, जबकि व्यायाम दो घंटे के बाद IL-1 $\alpha$  का स्तर नहीं बढ़ता है। अध्ययन दर्शाते हैं कि है कि TNF- $\alpha$  रिसेप्टर्स (TNF- $\alpha$ ) 1 और 2 और केमोकाइन्स IL-8 और मैक्रोफेज भड़काऊ प्रोटीन (MIP-1 $\alpha$ ) का परिवहनी स्तर तीव्र व्यायाम की में बढ़ जाता है। इस प्रकार का व्यायाम एक मजबूत अनुत्तेजक प्रतिक्रिया को बढ़ाता है।

दीर्घकालीन व्यायाम का प्रभाव



गैर-एथलीटों की तुलना में एथलीटों में प्राकृतिक प्रतिरक्षा (एनके सेल क्रिया के आराम का स्तर) बढ़ा हुआ होता है एथलीटों और गैर-एथलीटों जब आराम की स्थिति में होते हैं तो प्रतिरक्षा के अन्य मानदण्ड में कोई अंतर नहीं पाया है।

अध्ययन दर्शाते हैं आराम की स्थिति के समय में एथलीटों और गैर-एथलीटों के प्रतिरक्षा कार्य प्रणाली सामान्य रूप से कार्य करते हैं। जब न्यूट्रोफिल दबे होते हैं तब प्राकृतिक प्रतिरक्षा थोड़ी बढ़ जाती है। गहन और लंबे समय तक व्यायाम प्रशिक्षण से अनुकूल प्रतिरक्षा प्रणाली (आराम करने वाली स्थिति) अप्रभावित रहता है। जन्मजात प्रतिरक्षा प्रणाली गहन व्यायाम के तनाव के लिए अलग-अलग प्रतिक्रिया व्यक्त करती है— जब न्यूट्रोफिल कार्य कम होता है तो छद्म सेल गतिविधि बढ़ जाती है।

निष्कर्ष — जीवन काल में मध्यम व्यायाम ऊपरी श्वसन पथ के संक्रमण के प्रतिरोध को बढ़ाता है, जबकि बार-बार जोरदार व्यायाम प्रतिरक्षा कार्य प्रणाली को कम कर देता है। मध्यम तीव्रता का व्यायाम सेलुलर प्रतिरक्षा से संबंधित मापदंडों को उत्तेजित करता है और संक्रमण के जोखिम को कम करता है, जबकि उच्च तीव्रता वाला व्यायाम इन्हीं मापदंडों की कमी को बढ़ावा दे सकता है

| UnHkz | pph

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## PANDEMICS IN LITERATURE

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“Literature regards each individual with compassion and goes deeper than what statistics or historical records can tell us. ..it does become a source of consolation, a way of sharing our common humanist concerns and in its own way , provides the deepest and most insightful record of the events (Harish Trivedi).

### Abstract

The novel Coronavirus is a big challenge to the world as it has created not just a health emergency but a financial crisis. Where the medical infrastructure, economic resources or the global economy has weakened the larger impact of this pandemic is psychological and behavioral. The ongoing death records from the pandemic even in the developed countries is an unpleasant sign of a looming disaster in the world’s most impoverished countries. The only source of consolation in the present situation is Literature. In this paper twenty worst epidemics and pandemics from the historical records have been mentioned and how these are described in the pandemic literature. Right from the Classics to the modern literature the great writers have given a realistic portrayal of the pandemic panorama in their writings. With the help of some examples from the pandemic and epidemic literature, this paper attempts to reveal the cause, effect and response of the people during those periods. Thus Literature has a very important part to play in framing our responses to the COVID -19 pandemic and fictional Pandemics can teach us about the real world survival.

Keywords: Pandemic, epidemic, psychological, behavioral, portrayal, panorama

The year 2020 has brought a great havoc on the earth. It is certainly a big change when the world is experiencing a great fear and the pandemic Covid-19 Novel Corona virus has spread across a large region for instance several continents affecting a large number of people. Hundreds of

thousands people have been killed and the ratio of the deaths are increasing every day. It is certainly a big misery and shock to us but if we go through the literature we can notice the description of epidemics and pandemics in numerous historical books of literature. While some readers might found these books to be oddly soothing, these stories also help to gain a new perspective.

In the Bible, the plague was viewed as one of God's punishment for sins, so the frightening description of its spread was interpreted as a warning to the Israelites to behave morally. This causal relationship between plague and sin is seen also in Greek literary texts, such as Homer's Iliad and Sophocles' Oedipus the King. Homer's Iliad, opens with a plague visited upon the Greek camp at Troy to punish the Greeks for Agamemnon's enslavement of Chryseis. The Iliad presented a story of disaster that results from ill-judged behavior on the part of all the characters involved. "The Canterbury Tales by Geoffrey Chaucer (1343 -1400) also emphasized human behavior: the fear of contagion increased vices such as avarice, greed and corruption which paradoxically led to infection and thus to both moral and physical death."( Beidler PG)

Edgar Allen Poe's short story "The Masque of the Red Death' 1842 also presents the dissolution and the horror of blood. A horrible plague ravages the countryside. Prospero walls himself and his courtiers inside his palace to attempt to avoid the Red Death. The story also depicts the failures of authority figures who want to resist the inevitable result of such a disaster. The plague personified takes the princess life and those of his courtiers :

And one by one dropped the revelers in the blood- bedewed halls

of their revel, and died each in the despairing posture of his fall." ( Poe 4)

Throughout the course of history, epidemics outbreaks have destroyed the humanity and the entire civilization. Twenty worst epidemics and pandemics are mentioned in the historical record, right from the prehistoric to the modern times. About 5000 years ago an epidemic ravaged out a prehistoric village in Northeastern China. The bodies of the dead were stuffed inside a house that was later burned down. The description of this epidemic has also been well presented through a Hindi movie named 'Chennai verses China' where the legendary Bodhidharma, a revered fighter and medic cured the people of China from the disease and saved them from the disaster.

Likewise after China, Plague of Athens in 430 BC, Antonine Plague, Plague of Cyprian, Justinian plague occurred. The Black Death in 1346-1353 had changed the course of Europe's history. Now if we have a closer look to the literature 'The Decameron' by Boccaccio is set during the Black Death . The novel reveals the vital role of storytelling in a time of disaster. Ten people self-isolate in a villa outside Florence for two weeks during the Black Death. In the course of their isolation, the character take turns to tell stories of morality, love, sexual, politics, trade and power. The stories offer the listeners ways through which to restructure their "normal" everyday lives, which have been suspended due to the epidemic.

Further there was American Plagues in 16<sup>th</sup> Century, Great Plague of London, Marseille, Russian Plague, Philadelphia yellow fever epidemic, Flu pandemic, American polio pandemic and Spanish Flu. A moving account of the 1918 Spanish Flu, which claimed an estimated 12-17 million lives in India and between 50 million and 100 million globally is found in Ahmed Ali's novel , "Twilight in Delhi" The description of the Delhi City and the people is very drastic .Ali wrote

"Delhi became a city of the dead...."

How deadly this fever is /

Everyone is dying of it/

Men become lame with it

And go out in Dolis

The hospitals are gay and bright/

But sorry is pen's plight" (171)

In 1981 HIV was the virus that caused AIDS pandemic and epidemic and has claimed an estimated 35 million lives since it was first identified. The virus made its way around the world and AIDS was a pandemic by the late 20<sup>th</sup> century. The 2009 swine flu pandemic was caused by a new strain of H1N1 that originated in Mexico. In one year the virus infected near about 1.4 billion people across the globe. The last two epidemics are West African Ebola epidemic and Zika Virus epidemic to the present day.

The Scarlet Plague published by Jack London in 1912 was one of the first examples of a post apocalyptic fiction novel in modern literature. (London). The writer London wrote many stories which would be classified as science fiction and some had pandemics and infectious diseases as subjects. The Unparalleled Invasion (1910) described a biological warfare campaign launched from the United States and the other Western Countries to arrest the uncontrolled growth of China's population and protect European Colonies in Asia from Chinese Immigration. The Scarlet Plague is set in a ravaged and wild America and the story takes place in 2073, sixty years after the spread of the Red death, an uncontrollable epidemic that depopulated and nearly destroyed the world in 2013. This is the story of the fall of the human race to a plague known as the Scarlet plague and the life that arises from those that survived. London has given a realistic portrayal of the plague in his novel 'The Scarlet Plague';

“The heart began to beat faster and the heat of the body to increase. Then came the scarlet rash, spreading like wildfire over the face and body...The heels became numb first, then the legs, and hips, and when the numbness reached as high as heart he died” ( London 78)

“When plague spread, no medicine could help and no one could stop it from striking; the only way to escape was to avoid contact with infected persons and contaminated objects.” (Tagnotti ) The viciousness of the plague London presents is greater than that presented in any earlier works. In the novel, as in reality, human reactions to plague can vary to a great extent, but still all share a terrible fear, the fear of death – both as the end of one's life and as the end of civilization.

Literature has a very important part to play in framing our responses to the COVID -19 pandemic. Fictional Pandemics can teach us about real world survival. Books of course are considered as a salve and a consolation. We may conclude that pandemic literature guides or helps us for the better understanding of the problems and the solution in the present situation. From Classics to the modern literature and also the current COVID -19, we noticed a similarity that our initial response towards the outbreaks of plague and epidemics has been the same i.e. the initial response has always been denial. We have always been late to respond and have distorted facts and manipulated figures to deny the existence of the outbreak. Much of the literature of plague and contagious diseases presents the carelessness, incompetence and selfishness of those in power as the sole instigator of the fury of the masses. Thus we have to precisely survive on this

pandemic with common decency, humanity and collective reasoning. Hamid Debashi, the Hagop Kevorkian Professor of Iranian Studies and Comparative Literature at Columbia University has rightly said-

Literature can help us survive this pandemic with a healthy  
Constellation of our mental, moral and critical faculties.”

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## Understanding Pandemic from Psychological Perspective

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### Abstract

The infectious diseases are spreads at large scale in Pandemics. It can increase the mortality and morbidity over a wide geographic area and cause significant social, economic and political disruption. A strong correlation between social isolation and degradation in physical and mental health. It may leads to separation from the family and friends, severe disruptions of routines, shortage of medicine and food, wage loss, social isolation because of social distancing programme and closure of schools Health workers are at high risk of stress response since they come in close contact with the virus and are exposed to traumatic events, such as death and dying. At the local community and broader public level, managing fear, concerns and misconceptions become as important as treating individual patients. Personality factors determines coping to deal with the crisis successfully Inorder to deal with the crisis online counselling services, using social media platforms, e-mails or electronic letters have been started by institutions and universities worldwide

**Key words:** anxiety, depression, counselling, pandemic

### Introduction

The infectious diseases are spreads at large scale in Pandemics. It can increase the mortality and morbidity over a wide geographic area and cause significant social, economic and political disruption. In the past century it is evident that the likelihood of pandemics has increased. This



situation has come as a result of enhanced global travel and integration, changes in land use, urbanization and exhaustive use of the environmental resources (Jones and others 2008; Morse 1995). In the affected societies individuals and groups undergo mental health consequences. While providing the care to the affected person, both domestic and visiting healthcare workers are also affected by the mental health issues of the outbreak. After the visiting health care providers come back home they have to face isolation and stigma as a the psychosocial impact (Chiappelli and Bakhordarian(2015). During the present pandemic Wang et al.(2020) assessed a sample of the Chinese population. They found an immediate psychological impact, with increased symptoms of depression, anxiety and stress perception of stress. Tucci, Moukaddam, Meadows, Shah, Galwankar and Kapur(2017). reported that the issues associated with mental health which take place with emerging disease and pandemic are rarely examined. Due to cultural considerations these issues are sometimes deliberately ignored.

When SARS outbreak took place in 2003, the courage of health care workers did not make them immune to stress and anxiety. It happened irrespective of the fact that the stress level of high-risk workers did not appear to differ from those of the community at the time of the outbreak, (Chua, Cheung, Cheung . et al. 2004). Such unpredictability and uncertainty of pandemic outbreak of infectious disease from its clinical presentation, epidemiological features, infectious causes, seriousness of public health impact, fast transmission pattern, novelty, implication for international public health, scale and underprepared health facilities to address the pandemic outbreak of COVID-19 have relatively large capacity for psychological fear. It often results in prevalent multitude of psychological problems such as fear, stigma, anxiety, marginalization towards the disease, prejudice and its relation of all types of individuals ranging from healthy person to at-risk individuals to care-workers (Mak et al., 2009). Individuals living with HIV require to stick to treatment regimens and sustain healthy behavior over long periods of time. If they are suffering from depression, they may be more likely to miss medical appointments. For health seeking behaviour to antiretroviral therapy depression can act as a hurdle in the process. (Pappin, Wouters and Booyesen, 2012).

The consistency of psychological factors is investigated that may contribute to outbreak-associated with public distress. The psychological models that require to describe clinically significant health anxiety may be refined and updated. Ongoing global pandemics the factors which contribute to health anxiety are clarified. It may assist the clinicians to identify persons who

might be highly prone to increased health anxiety-related symptoms (e.g., during an illness outbreak an individual with OCD who becomes increasingly distressed about contamination). Blakey and Abramowitz (2017).

A strong correlation between social isolation and degradation in physical and mental health was found by Pressman and colleagues (2005). Specifically, an individual's health may be further compromised with isolation if one is suffering from the pandemic flu.

Having been quarantined was the factor most predictive of symptoms of acute stress disorder It has been found in a study of hospital staff who might have come into contact with SARS found that immediately after the quarantine period (9 days) was completed. In the same study, while dealing with the affected patients the quarantined staff were significantly more likely to report tiredness, anxiety and detachment from others. The professional staff also experienced irritability, poor concentration and indecisiveness, insomnia, decreased work performance and lack of willingness to work or consideration of resignation (Bai, Lin , Lin, Chen , Chue and Chou, 2004).In due course some people experience post-traumatic stress disorder as they anticipate a considerable increase in symptoms ofdepressive and anxiety even though they do not have prior mental health conditions. During the current pandemic in China there is already evidence that this possibility has been under-recognized (Duanand Zhu(2020).In particular health workers are at high risk of stress response since they come in close contact with the virus and are exposed to traumatic events, such as death and dying. In such a critical situation they have to make highly challenging decisions.<sup>15</sup>There may be numberof psychological stressor including health threat to individuals and theirloved ones during the pandemic. It may leads toseparation from the family and friends, severe disruptions of routines,shortage of medicine and food,wage loss, social isolation because of social distancing programme or quarantine and closure of schools(Schults, Espinel, Flynn, Hoffmann & Cohen, 2008). In many countries of the world the state of lockdownhas led to thehalting of services and products. As a result of lockdown global supply chains has been broken and thus influencing the global economy brutally (Ebrahim et al., 2020).The staff members also give deep understanding into the MERS-CoV epidemic by using effective coping strategies. In case of all the patients they use stringent protective measures, minimizing outside exposure in the form of semiquarantine and using disposable scrubs at work reveals the extreme caution they used. In dealing with any epidemic this cautiousness has been proved to be an

important cornerstone ( Faye, Boëlle, Heleze, Faye, Loucoubar, Magassouba, Soropogui, Keita, Gakou, Bah el , Koivogui, Sall and, Cauchemez, 2015)

At the time of outbreak of infection, previous research has revealed a profound and wide range of psychosocial influence on individuals at the individual, community and international levels. On an individual level, people are susceptible to experience fear of falling sick or dying themselves, stigma and feelings of helplessness (Hall and Chapman, 2008). Mass psychogenic illness may also be caused by highly publicized disease outbreaks. In such a situation medically healthy individuals misinterpret benign bodily signs and sensations (e.g., shortness of breath or temporary dizziness). These bodily signs indicate that they have become infected which may cause them to become hypervigilant, engage in excessive safety behaviours and highly health conscious (Taylor and Asmundson 2004). According to Wong et al. (2004) the doctors had poor understanding of the disease and less experience, and inadequate clear knowledge of its infectiousness. Clearly the public will have an even more limited comprehension of the infection therefore may not understand the significance of certain measures. Additional anxiety and fear are caused by the uncertain incubation period of the virus and its possible asymptomatic transmission. Second, the trust of public is eroded from the decision-making transparency and competency of the government. It happens when public observe how government do initial downplaying of the epidemic's severity. Third, unprecedented large-scale quarantine measures in all major cities are likely to have a negative psychosocial impact on residents (Brooks, Webster, Smith, Woodland, Wessely, Greenberg, et al., 2020). When the general population adopted the strategies of increased social isolation / distancing/isolation, hand hygiene and wearing a face mask there was over 80 percent decrease in confirmed respiratory viral infection rates in during the SARS outbreak in Hong Kong (Lo et al. 2005; Collignon & Carnie 2006). At the local community and broader public level, managing fear, concerns and misconceptions become as important as treating individual patients. Mental health providers help to formulate responses to alleviate public anxiety and participate in public mental health activities. The basic understanding of emotional epidemiology can be helpful in such situations for health care providers (Ofri, 2009).

In coping with the crisis successfully whose psychological health will prove to be the most or least resilient can be understood by studying the personality factors. For example, irrespective of socio-economic level, since they view themselves as being in command of their lives and destinies people evaluated to have an internal "locus of control" cope better with all catastrophes

and crisis (Rotter, 1966). In order to deal with the crisis online counselling services, using social media platforms, e-mails or electronic letters have been started by institutions and universities worldwide (Xiao, Zhang, Kong, Li, & Yang, 2020) to facilitate psychological support for those in need. For victims of disasters and emergencies providing psychological first aid is an essential care component, but at the same time it has been observed that there are no universal guidelines or protocol for the most effective psychosocial support practices. (Dieltjens, Moonens, Van Praet, De Buck and Vandekerckhove, 2014). The treatment of pneumonia and blocking of the transmission routes should be integrated with psychological crisis interventions which include two simultaneous activities: (1) physicians along with psychologists provide intervention for the fear of disease; (2) social psychologists facilitate intervention for difficulty in adaptation and the serious mental problems (e.g. suicide behaviors, violence) must be treated by psychiatrists (Zhang, Wu, Zhao and Zhang, 2020).

**Conclusion** The infectious diseases are spread at large scale in pandemics. It can increase the mortality and morbidity over a wide geographic area and cause significant social, economic and political disruption. In order to deal with the crisis online counselling services, using social media platforms, e-mails or electronic letters have been started by institutions and universities worldwide

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## **Psycho- social Impact of COVID-19**

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### **Introduction**

In December 2019 a virus was detected near the Wuhan Vet Market, China. It was deadly in nature that started killing human beings. Medical scientists were unable to understand the nature of this virus. Later it was detected as a virus of corona family and termed as COVID-19. It was deadly in nature and no vaccine was available. People started losing their lives in huge numbers. Doctors were helpless as their was neither a mediine nor vaccine against this virus. Even doctors were unable to find the exact source of it. If global rumors are to be believed this virus is the outcome of the biological weapon programme of biological labororty of Wuhan.

### **Current Statistics**

COVID-19 has taken the form of a pandemic killing more than 150,000 lives worldwide and still not ready to lose its strength. Following is the current statistics of the major countries of the world suffering from COVID-19 pandemic-

<b>Country</b>	<b>total</b>	<b>active cases</b>	<b>deaths</b>	<b>recoveries</b>
USA	710272	609587	37175	63510
Brazil	34221	18024	2171	14026
Russia	36793	33423	313	3057
UK	108692	93772	14576	371
France	147969	94868	18681	34420
Spain	190839	96040	20002	74797
Italy	172434	106962	22745	42727
Turkey	78545	68146	1769	8631

Iran	79494	20472	4958	54064
China	82719	1058	4632	77029
India	14425	11892	488	2045
Total (world)	2261009	1527349	154726	578934

(as on 18/04/2020, source-covidvisualizer.com)

The above mentioned data is related to only major affected countries of the world. This pandemic has taken entire globe in its grip. Only few rare countries are left unaffected by it. More than 150000 people have lost their lives and still counting. Still no country in this world can invent any preventive vaccine. The most powerful nation of the world USA is bleeding tears. There is no space left in graveyards in countries like USA, Spain, Italy, France and UK. No body has the answer of the question that 'when will this end?'

Downtrodden and poor are not responsible for the spread of this virus because this is a foreign body erupted in China and spread in the entire globe through the people who air travelled from china to different countries.

The spread of this virus is very severe and short timed. An infected human can infect hundreds of healthy people. Old people, people having disease history are at high risk.

### **Psycho-social impact of COVID-19-**

Following are the possible outcomes of COVID-19 pandemic-

- 1. Depression-** when we loose a family member, a friend and a relative we enter the psychological condition called depression. The pain of loosing someone near and dear is immense. Its effect is long lasting. Corona is killing us like anything. It has made us depressed in general. Depression can affect our overall performance and can lead to frustration.
- 2. Aggression-** if we look at frustration- aggression hypothesis developed by Dollard and Miller we find that aggression is an outcome of frustration. When there is an obstacle in the path of our success we face a mental condition called frustration. Frustration is responsible for aggressive behaviour. In a recent research it was find that during corona outbreak the number of home violence cases have drastically increased. Why this happened? It happened because most of us have lost our regular routine, many of us have lost our jobs, we are living without our social circles, without any outside trips. Now we have understood it very well that social networking sites have its limitations. They cannot make us as happy as we were usual of. You cannot maintain relationships in a virtual world. Virtual world is quite different from real world.
- 3. Anxiety-** if we look at the recent cases of corona we find that people are living in continuous anxiety regarding their kith and kins and their friends. The problem is not



local but its global. Our anxiety is related to our future, future of our kids, our career and our relationships. Recently when students of UP were brought from Kota they explained that they were living in huge depression and uncertainty. They were feeling insecure. The nature of the disease is so uncertain that we cannot be sure that we are safe. the transmission rate is very unpredictable. The most powerful nation of the world USA is unable to short out any measures to check its spread. New York has become the new epicentre of the corona outbreak in the world.

4. **Interpersonal relationships-** this pandemic has affected our interpersonal relationships to a large extent. We are desperately missing face to face conversation. We are called social because of the we of interpersonal relations. We are living in a kind of social isolation, a social vacuum. Its not possible for us to stay with this type of mental setup for longer duration.
5. **Fear-** we are bound to live in continuous fear as at present there is no medicine or vaccine of corona virus available. Another fear factor is community spread. When it reaches towards community spread phase it is known as fourth stage of community transmission. In this stage it spreads in an uncontrolled speed from one individual to another. Community spread is very fatal for the humans. Asymptomatic are those patients who express no related symptoms at all still they are the carriers of the virus. Such cases are very dangerous.

#### **Social impact of COVID-19**

There are various social impact of this virus-

- 1- **Social isolation-** Lockdown and Quarentine are two newly coined terms related to covid-19 pandemic. In lockdown a person is not allowed to go outside his house without a genuine cause. This condition is quite similar to curfew. In Quarentine a person is kept in isolation under medical supervision. Its not necessary that a quarentined person is a positive case of the disease but only on the basis of suspicion you may be quarentined and separated from your family for at least two weeks. Stage of social isolation can create stress in our personality. It can change our personality from extrovert to introvert. Social isolation is one of the main feature of Lockdown.
- 2- **Economic insecurity-** people are suffering from economic insecurity especially those belonging to temporary and private jobs. Companies are not ready to pay their salaries during the lockdown period as they did not have any input during this period. People from labor class are at the edge of starvation. They were daily wage workers. They worked from dawn to dusk and received their wages in the evening. They have become jobless. They are bound to live in quarantine centres far away from their homes, far away from their fields. Economic insecurity is one of the most dominant factor of social struggle, frustration and social conflict.
- 3- **Social stigma-** social stigma is one of the important outcome of covid-19. If a person is found corona positive his entire family suffers from it. People avoid any kind of social

contact from that family even after the patient gets well. Social dignity of the entire family is adversely affected for a long duration. This is the main cause behind not coming out of their houses voluntarily for testing. This social stigma is primarily responsible for widespread of coron virus.

- 4- Social conflict-** covid -19 is responsible for increasing socila conflict among different groups. Recently we have seen that social conflict between Hindus and Muslims have increased as Hindus directly held Muslims responsible for spreading positive cases of the virus in the entire nation. Social conflict between poor and rich has been increased as poor were deprived of food and shelter whereas rich were facilitated with every kind of luxury even during the lockdown period. Labours from different parts of the country are bound to stuck as homeless in different quarentine centres thousands kilometers away from their villages and relatives.

#### **Measures for prevention of covid-19-**

- 1- Social distancing is the major prevention technique of this virus as it spreads from one person to another.
- 2- Using mask and sanitizers is another measure that should be taken.
- 3- Washing your hands properly at regular interval.
- 4- If detected positive ones must separate himself from other family members immediately to prevent the spread in other family members.
- 5- Mass testing should be done so as maximum people suffering from corona be detected and send fro treatment.



## पर्यावरण के संरक्षण के लिए

<sup>1</sup>MKW ftrUnz dekj fl g

<sup>2</sup>MKW ujUnz dekj i kBd



मनुष्य प्रकृति के साथ अनेक वर्षों से छेड़छाड़ कर रहा है, जिससे पर्यावरण को काफी नुकसान हो रहा है। इसे देखने के लिए हमें ज्यादा दूर जाने की जरूरत नहीं है। धरती पर बढ़ रही बंजर भूमि, फैलते रेगिस्तान, जंगलों का विनाश, लुप्त होते पेड़-पौधों और जीव-जंतुओं, दूषित होता पानी, शहरों में प्रदूषित हवा और हर साल बढ़ते बाढ़ एवं सूखा, ग्लोबल वार्मिंग, वैश्विक तापमान वृद्धि, ग्लेशियर पिघलना, ओजोन परत का क्षतिग्रस्त होना आदि इस बात का सबूत हैं कि हम धरती और पर्यावरण की सही तरीके से देखभाल नहीं कर रहे हैं।

वैज्ञानिकों अध्ययनों से निकले तथ्य बताते हैं कि पृथ्वी की रचना के साढ़े चार अरब साल का इतिहास उथल-पुथल भरा रहा है। पृथ्वी के बड़े परिवर्तनों में संयोग रहा हो या अनुकूलन लायक परिस्थितियों से तालमेल बिठाने का मानवीय कौशल, पृथ्वी पर मानव की विकास यात्रा जारी रही। बीसवीं सदी के अंत में हमारे संज्ञान में आया कि पृथ्वी का विकासक्रम कुछ नई चुनौतियां खड़ी कर गया है। उन्हीं में एक जलवायु परिवर्तन की विकट चुनौती है।

यह जानकर आपको किंचित आश्चर्य होगा कि पारिस्थितिकीय कारणों से नष्ट होने वाला विश्व की पहली सभ्यता चार हजार से अधिक वर्ष पहले मेसोपोटामिया में सुमेर की थी। आप संभवतः सोचते होंगे कि यह कोई प्राकृतिक आपदा थी जिससे सुमेरी सभ्यता विलुप्त हो गई, परंतु यथार्थ कुछ और ही है। वास्तव में काफी हद तक यह एक मानव निर्मित विपत्ति थी जोकि सुमेरवासियों द्वारा सिंचाई के लिए बनाई गई व्यापक नहर प्रणाली में उपजे खारेपन के कारण आई थी। ऐतिहासिक और पुरातात्विक प्रमाण इस बात की ओर संकेत करते हैं कि पारिस्थितिकीय कारणों ने सिंधु घाटी सभ्यता, यूनानी, रोमन, श्री कृष्ण की सोने की

द्वारिका जैसी समृद्ध प्राचीन सभ्यताओं के ध्वस्त होने में निर्णायक भूमिका निभाई थी। आज पुनः इसी प्रकार की संभावना हमारा खेल समाप्त करने के लिए मुंह बाए खड़ी है।

जहाँ तक मानव का संबंध प्रकृति और उसके परिवेश से है, ऐसा प्रतीत होता है कि हम जहाँ से चले थे एक बार फिर वहीं पहुँच गए हैं। यह कहा जाता है कि पर्यावरणीय विनाश के प्रमुख कारण सिर्फ अधिक उपभोग जैसे व्यक्तिगत निर्णय में निहित नहीं होते। बल्कि यह आधुनिक औद्योगिक विश्व, व्यक्तियों और राष्ट्रों के बीच व्यापक आर्थिक संबंधों की विशेषताओं के सामाजिक और ऐतिहासिक यथार्थ में निहित हैं। आज हम जिस पर्यावरणीय संकट का सामना कर रहे हैं उनके कारणों के बारे में आपका जो भी विचार हो, इस बात में कोई संदेह नहीं है कि पृथ्वी पर विजय प्राप्त करने की अपनी लालसा के कारण हम जीवाश्म ईंधन उपभोग, नदियों, भूगर्भीय जल के दोहन, ग्रीन हाउस गैसों के उत्सर्जन, अमेजन एवं अन्य जंगलों में आग, जैव विविधता में क्षरण, मरुस्थलीकरण, तापमान में वृद्धि आदि ने पृथ्वी के प्राकृतिक तत्वों को प्रभावित किया है जो जलवायु परिवर्तन वीभत्स रूप में हमारे सामने उपस्थित है

i ; kbj.k vl rnyu , oa tyok; q i f j o r l u d s d k j . k o c h k k o

पृथ्वी पर कार्बन डाइऑक्साइड, ग्रीन हाउस गैसों के कारण पृथ्वी की जलवायु में हुए दीर्घकालिक परिवर्तनों को जलवायु परिवर्तन कहा जाता है। यह गैस वायुमंडलीय क्षेत्र में जमा हो जाती है और गर्मी के वातावरण में ही रोके रखती है, जिससे ग्लोबल वार्मिंग होती है और जलवायु में परिवर्तन होता है। ऋतु परिवर्तन, वैश्विक तापमान में वृद्धि, समुद्र के स्तर में बढ़ोतरी, फसल चक्र में बदलाव के कारण न केवल हमारे बल्कि हमारे बच्चों और उनके बच्चों के लिए भी भूस्खलन, सुनामी, अकाल, महामारी एवं जन पलायन तथा स्वास्थ्य के लिए बड़ी आपदाएं हैं

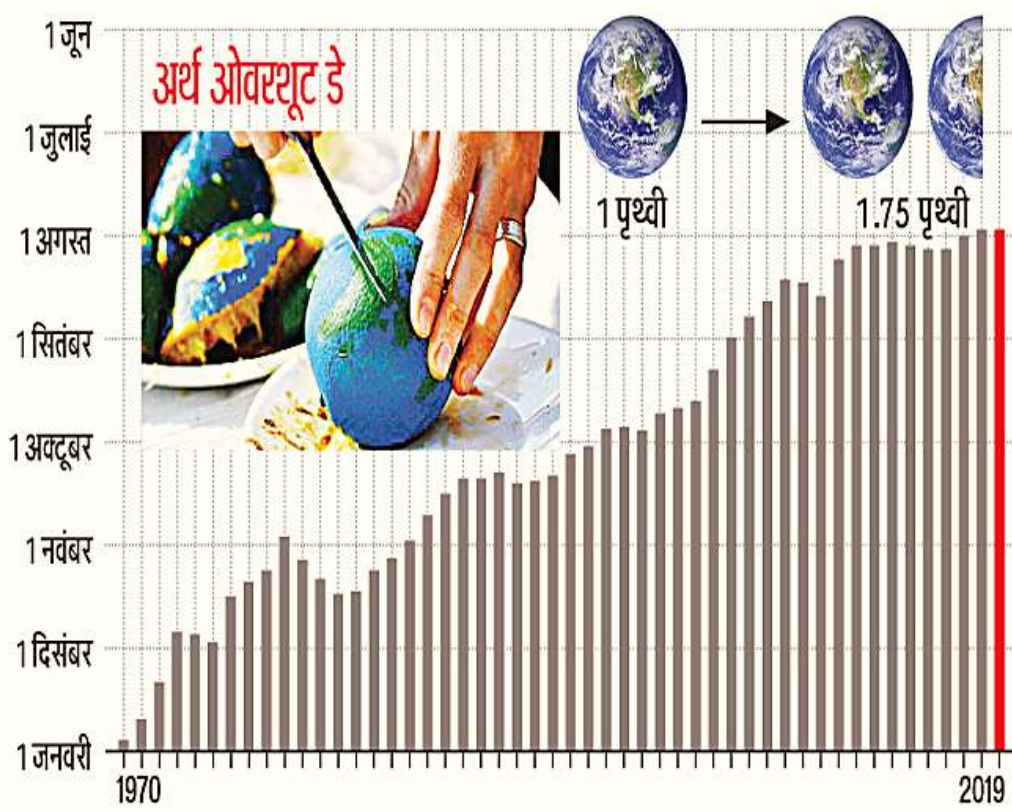
जलवायु परिवर्तन के कारण बेमौसम बारिश और औसत बारिश का आंकड़ा बढ़ना एक समस्या है, लेकिन उतना ही बड़ा संकट सूखे का है जो जलवायु परिवर्तन के कारण ही भारत के कई भागों को चिंतित करता है। सूखा या देर से बारिश से तीसरी समस्या भी भूजल गिरावट की खड़ी होती है। देश के सतही जल की मात्रा प्रति व्यक्ति माँग के लिहाज से जिस रफ्तार से कम हो रही है उसे भूजल से ही हम जैसे-तैसे संभाले हुए हैं। हाल ही में किए गए अध्ययनों से यह भी पता चला है कि गर्म हवाओं की अवधि ज्यादा हो गई है। दिन ज्यादा गर्म होने लगे हैं। रात का औसत तापमान भी बढ़ गया है।

निष्कर्ष यह निकलता है कि जनसंख्या वृद्धि का सीधा प्रभाव भू-क्षरण और भूजल प्रदूषण पर पड़ रहा है। जल विज्ञान के विशेषज्ञ भारतवर्ष के जल चक्र की स्थिति पर हमें अलग से आगाह कर रहे हैं। हमें देश में नए शहरों को बसाने की इच्छा या तमन्ना को लेकर भी यह विशेषज्ञ आगाह कर रहे हैं वह बता रहे हैं कि पृथ्वी पर जल संकट विकट समस्या है ही लेकिन भारतवर्ष तो पृथ्वी के उन देशों में है जो जल विपन्न देश की श्रेणी में आता है। ऊपर से जलवायु परिवर्तन के कारण सूखे की तीव्रता और बढ़ने का अंदेशा हमारे सामने है। आजादी के बाद से अब तक हमारी आबादी 3 गुनी हो चुकी है। भारत के पास प्रकृति प्रदत्त जल उतना ही है जितना 65 साल पहले था दक्ष जल प्रबंधन और अपनी राजनीतिक सूझबूझ से जल प्रबंधन करते हुए हम यहाँ तक तो आ गए हैं, लेकिन निकट भविष्य में जल संसाधन और बाढ़ व सूखे जैसे संगठनों से निपटने का कोई विश्वसनीय उपाय या व्यवस्था अब हमें सोचनी ही पड़ेगी।

वर्ष के अर्थ ओवरशूट का प्रतिशत

अर्थ ओवरशूट डे का अर्थ एक ऐसे पैमाने से है जिसके आधार पर वर्तमान प्राकृतिक संसाधनों की खपत का पता लगाया जा सकता है। यह वह दिन होता है जब मनुष्य किसी वर्ष के लिए निर्धारित प्राकृतिक संसाधनों का उपयोग कर चुका होता है। इस सीमा के बाद उपभोग उस वर्ष में प्रकृति द्वारा मनुष्य पर ऋण होता है। इसकी गणना 1986 से की जा रही है और यह प्रत्येक वर्ष निकट आता जा रहा है। Xykcy QMÇV uVodl द्वारा किए गए एक अध्ययन के अनुसार वर्ष के अर्थ ओवरशूट डे बीते 20 वर्षों में खिसककर दो महीने पहले आ चुका है। 2019 में अर्थ ओवरशूट डे 29 अक्टूबर को ही आ गया था जिसका अर्थ है कि हम प्राकृतिक संसाधनों का 1.75 गुना अधिक तेजी से प्रयोग कर रहे हैं, जो कि साल 2030 तक बढ़कर 2 पृथ्वियों जितना होने वाला है।

अर्थ ओवरशूट डे का विचार 'न्यू इकोनॉमिक्स फाउंडेशन' तथा Xykcy QMÇV uVodl के सहयोग से इस दिवस का आरंभ पहली बार 1987 में किया। इसे 'अर्थ ओवरशूट डे' भी कहा जाता है। पहले धरती 1 साल में कितना संसाधन तैयार करती थी पूरी दुनिया उसका इस्तेमाल करीब 13 महीने करती थी। दिन बदले, दुनिया बदली, तस्वीर बदली और अब हम धरती के 1 साल के लिए तय संसाधन हम करीब 7 महीने में ही समाप्त कर दे रहे हैं। इस हम नीचे दिये चित्र से भी समझ सकते हैं—



e: LFkyhdj .k% nfu; k ds l e{k cM# p#k#h %

मरुस्थलीकरण जमीन के खराब होकर अनुपजाऊ हो जाने की ऐसी प्रक्रिया होती है, जिसमें जलवायु परिवर्तन तथा मानवीय गतिविधियों सहित अन्य कई कारणों से शुष्क, अर्द्ध-शुष्क और निर्जल अर्द्ध-नम इलाकों की जमीन रेगिस्तान में बदल जाती है। अतः जमीन की उत्पादन क्षमता में कमी होती है। 17 त. 2019 के दौरान e: LFkyhdj .k jkdFkke fnol eukya गया। इस अवसर पर "Hkfo"; dk fuekLk l kFk feydj dj\*\* का नारा दिया गया। उल्लेखनीय भारत में 29.3 प्रतिशत भूमि क्षरण से प्रभावित हो जाती है। वर्तमान में समस्त विश्व के कुल क्षेत्रफल का पाँचवां भाग, यानी 20 प्रतिशत मरुस्थलीय भूमि के रूप में पृथ्वी पर मौजूद है, जबकि सूखाग्रस्त भूमि कुल वैश्विक क्षेत्रफल का एक-तिहाई है। संयुक्त राष्ट्र संघ द्वारा प्रस्तुत किए गये एक प्रतिवेदन में बताया गया है कि 130 yk[k oxl fdykehVj Hkife {k= ekuo dh vfoosdi #kz fØ; kvk# ds dkj .k jfxLrku e# cny x; k gA

संयुक्त राष्ट्र संघ के अनुमान के अनुसार 2025 तक दुनिया के दो-तिहाई लोग जल संकट की परिस्थितियों में रहने को मजबूर होंगे। ऐसे में मरुस्थलीकरण के चलते विस्थापन बढ़ेगा। फलतः 2045 तक करीब 13 करोड़ से ज्यादा लोगों को अपना घर छोड़ना पड़ सकता है। वर्तमान परिप्रेक्ष्य में मरुस्थलीकरण भारत की प्रमुख समस्या बनती जा रही है। इसकी वजह करीब 30 प्रतिशत जमीन का मरुस्थल में बदल जाना है। उल्लेखनीय है कि इसमें से 82 cfr'kr fgLi k d#y vkB jkT; k# jktLFkku] egkj"V# x#tjkr] tEe#d'ehj] dukVd] >kj [k. M] vkfM'kk] ee; #ns'k vkj rya#kuk e# gA

जमीन की सेहत अब प्राकृतिक कारणों की तुलना में मानव उत्सर्जित कारणों से ज्यादा बिगड़ रही है। पहले भूमि का उपयोग रहवास और कृषि कार्यों के लिए होता था, लेकिन अब औद्योगिकरण, शहरीकरण, बड़े बाँध और बढ़ती आबादी के दबाव भी भूमि को संकट में डाल रहे हैं। आज जंगल सिकुड़ रहे हैं। प्राकृतिक निर्वनीकरण, लकड़ियों का ईंधन के लिए प्रयोग करना, शिपिंग कल्टिवेशन व जमीन का खनन करके जहाँ उसे छलनी किया जा रहा है। वहीं जंगलों का विनाश करके जमीन को बंजर बनाए जाने का सिलसिला जारी है। जमीन की सतह पर ज्यादा फसल उपजाने का दबाव है, तो भू-गर्भ से जल, तेल व गैसों के अंधाधुंध दोहन के हालात भी भूमि पर नकारात्मक प्रभाव डाल रहे हैं। मरुस्थलीकरण से प्राकृतिक वनस्पतियों का क्षरण हुआ है, साथ ही कृषि उत्पादकता एवं पशुधन यहाँ तक कि जलवायवीय घटनायें भी प्रभावित हो रही हैं। मरुस्थलीकरण के कारण आज सांस, फेफड़े, सिरदर्द आदि बीमारियों की संख्या बढ़ी है। उदाहरण के तौर पर, नई दिल्ली में दिन-प्रतिदिन हालत यह हो गयी थी कि वायु प्रदूषण का स्तर रिकॉर्ड तोड़ रहा है, जिससे लोगों का स्वास्थ्य और कार्य दोनों ही प्रभावित हो रहे हैं।

मरुस्थलीकरण रोका नहीं गया, तो विश्व में 3.2 अरब लोगों का जीवन संकटग्रस्त हो सकता है। भारत के लिए यह समस्या इसलिए विकराल है, क्योंकि दुनिया की 18 प्रतिशत जनसंख्या भारत में बसती है जबकि दुनिया की कुल भूमि का भारत के पास महज 2.4 प्रतिशत भू-भाग ही है। संयुक्त राष्ट्र संघ की जलवायु परिवर्तन संबंधी अन्तर-सरकारी समिति द्वारा अगस्त 2019 में जारी एक अध्ययन रिपोर्ट में किहा गया है कि दुनिया में 23 प्रतिशत कृषि योग्य भूमि का क्षरण हो चुका है। भारत में यह आंकड़ा 30 प्रतिशत भूमि के क्षरण का है। निकट भविष्य में भूमि में व्यापक सुधार नहीं हुए, तो यह समस्या एक प्राकृतिक आपदा में बदलती चली जाएगी।

Tky | dV %

विश्व की लगभग 400 करोड़ जनसंख्या भौतिक रूप से जल-दुर्लभ क्षेत्रों में रह रही है। 84.4 करोड़ लोगों को अपने घर के निकट स्वच्छ जल का स्रोत उपलब्ध नहीं है। भारत ही नहीं वैश्विक स्तर पर जल संकट गहराता जा रहा है। इसके बावजूद वैश्विक स्तर पर आज से 100 वर्ष उपभोग किये गये जल से लगभग 6 गुना जल उपभोग किया जा रहा है जो जनसंख्या की तीव्र वृद्धि, बढ़ते शहरीकरण एवं औद्योगीकरण, खान-पान की आदतों में परिवर्तन का परिणाम है। स्थिति इस सीमा तक भयावह है कि यदि विश्व में उपलब्ध समस्त जल को एक बाल्टी में भर लिया जाए, तो उसमें से केवल चाय के प्याले के बराबर ही ताजा जल उपलब्ध होगा।

एक रिपोर्ट <sup>\*\*fculhFk n | Q] % nh LVS/ vKIQ nh oYML okVj]</sup> 2019<sup>\*\*</sup> ने स्पष्ट चेतावनी दी है कि विश्व जल संकट ज्वालामुखी के मुहाने पर खड़ा है। यदि देशों की सरकारों ने अपने-अपने स्तर पर अथवा सामूहिक स्तर पर कोई सकारात्मक पहल नहीं की तो विश्व की बहुत बड़ी जनसंख्या के समक्ष जीवित रहने का संकट ही उत्पन्न हो जाएगा। जल की उपलब्धता राष्ट्रों एवं व्यक्तियों पर प्रभाव डालती है और उनकी उत्पत्ति से प्रभावित भी होती है। इसके कारण निर्धन एवं हाशिये खड़े लोग एक कुचक्र में फंसे रहते हैं। व्यक्तियों और परिवारों को स्वच्छ एवं ताजा जल यथोचित यात्रा में उपलब्ध न हो पाने के कारण वे या तो कमजोर और बीमार रहते हैं या स्वच्छ जल संग्रहण हेतु घण्टों अपना श्रम खपाते हैं जिसे अन्यथा आय अर्जन में लगाया जा सकता है।

Tky iq "k MKW jktDnz fl g कहते हैं कि पुराने समय में पानी आने से पहले पाल बाँधा जाता था, लेकिन अब सरकारें पानी के बहाने के बाद पाल बांधने की बात करती हैं। इसकी कारण भारत जैसा पानीदार देश आज बेपानी होता जा रहा है। देश को पानीदार बनाना है तो वर्षा ऋतु से पहले सामुदायिक विकेंद्रित जल प्रबंधन करना चाहिए। नीति आयोग 2020 तक 21 शहरों में ही पानी न होने की बात कही है लेकिन यह आंकड़ा बढ़कर 90 तक पहुँच सकता है और देश का आधा भू-भाग बेपानी हो सकता है। अब सरकारों को समाज को साथ जोड़कर पानी बचाने की मुहिम चलानी होगी।

Okk; w i n "kw k %

हवा की गुणवत्ता के मामले में भारत की स्थिति दुनिया के 217 देशों से केवल चार देशों से ही बेहतर है। स्विट्जरलैंड में 25 फरवरी 2020 को वर्ल्ड एयर क्वालिटी रिपोर्ट में पीएम 2.5 के आंकड़ों को आधार बनाकर देशों, क्षेत्रों तथा शहरों की रैंकिंग जारी की गई है। रिपोर्ट के अनुसार, भारत में प्रदूषण का स्तर विश्व स्वास्थ्य संगठनों के मानकों से 500 फीसदी से भी ज्यादा है। भारत और पाकिस्तान के शहर सर्वाधिक प्रदूषित हैं। विश्व के 30 सर्वाधिक प्रदूषित शहरों में 21 भारत और पाकिस्तान में स्थित है। भारत के गाजियाबाद शहर को दुनिया का सर्वाधिक प्रदूषित शहर घोषित किया गया है। रिपोर्ट में भारत के लिए राहत पहुँचाने वाली बात यह है कि पिछले एक साल के दौरान भारत के 98 फीसदी शहरों में 2.5 की मात्रा में 20 फीसदी तक की कमी का रुझान है, लेकिन इसका स्तर बेहद ऊँचा होने के कारण इसी कमी से कोई असर हवा की गुणवत्ता पर नहीं हो रहा है। रिपोर्ट के अनुसार, विश्व की 95 फीसदी आबादी प्रदूषित हवा का सामना कर रही है। इनमें से करीब 90 फीसदी आबादी जहरीली हवा में सांस लेने को विवश है।

एक रिपोर्ट के अनुसार जीवाश्म ईंधन के इस्तेमाल से होने वाले वायु प्रदूषण से दुनिया को प्रतिदिन करीब 57 हजार करोड़ रुपये का नुकसान उठाना पड़ रहा है। यह लागत वैश्विक अर्थव्यवस्था की 3.3

प्रतिशत है। सेंटर फॉर रिसर्च ऑन एनर्जी एंड क्लीन एयर और ग्रीनपीस साउथ ईस्ट एशिया को रिपोर्ट में कहा गया है कि प्रदूषण से प्रतिवर्ष होने वाले नुकसान की लागत 64 बिलियन डॉलर है। विश्व स्वास्थ्य संगठन ने बताया है कि जीवाश्म ईंधन को जलाने से होने वाले वायु प्रदूषण की चपेट में प्रतिवर्ष दुनियाभर में 45 लाख लोगों की मौत होती है। चीन में जहाँ 18 लाख तो भारत में 10 लाख मौतों के लिए वायु प्रदूषण जिम्मेदार है। अधिकतर मौतें हृदय रोग, स्टोक, फेफड़ों के कैंसर और तीव्र श्वसन संक्रमण से होती है। हाल ही के अध्ययनों में यह सामने आया था कि भारत की राजधानी नई दिल्ली में रहने का मतलब रोज 10 सिरगेट के बराबर धुआँ ग्रहण करना है।

विश्व में करीब 7 हजार प्रकार की चीजें प्लास्टिक से बनती हैं, जो इस्तेमाल के बाद प्लास्टिक प्रदूषण का कारण बनती हैं। अगर हम प्लास्टिक के इन सभी सामानों की बात छोड़ दें, तो इनके अलावा प्रति वर्ष करीब पांच सौ अरब प्लास्टिक की थैलियों का निर्माण होता है। अब अगर प्रतिवर्ष इतनी बड़ी संख्या में निर्मित ये थैलियाँ कूड़े के ढेर या नदी-नालियों अथवा समुद्रों में समायेंगी तो प्लास्टिक प्रदूषण के हालात कितने भयावह होते जाएंगे, अनुमान लगा पाना मुश्किल नहीं है। प्लास्टिक थैलियाँ जमीन में दबकर धरती की उर्वरक क्षमता खत्म करती हैं तो पानी में मिलकर उसे भी बुरी तरह दूषित करती हैं और जलाए जाने पर निकलने वाली जहरीली गैस वायुमण्डल को विषाक्त बनाती है।

पर्यावरण, वन एवं जलवायु मंत्रालय द्वारा संसद में प्रस्तुत आँकड़ों के अनुसार देशभर में प्लास्टिक कचरे के 60 प्रतिशत भाग का पुनर्चक्रण हो पा रहा है, जबकि शेष 40 प्रतिशत कचरा धरती और जल को बुरी तरह प्रदूषित करते हुए इनके लिए बहुत बड़ी मुसीबत बन रहा है। प्लास्टिक कचरा हमारे शरीर में 15 तरह के कैंसर का कारण बन सकता है। कुछ प्लास्टिक उत्पादों को मिट्टी में घुलनशील बनाने के लिए उनमें कुछ रसायन और रंग मिलाए जाते हैं, किन्तु ये रसायन और रंग मानव और जीव-जन्तुओं के स्वास्थ्य पर बहुत भारी पड़ते हैं। आज न केवल धरती बल्कि ब्राह्मण्ड भी प्लास्टिक कचरे की चपेट में है। वैज्ञानिक अब यह भी दावा कर रहे हैं कि अंतरिक्ष में कबाड़ के रूप में जो 17 करोड़ टुकड़े इधर-उधर भटक रहे हैं, उनमें बहुत बड़ी संख्या प्लास्टिक की ही है।

**वैश्विक तापमान वृद्धि :**

समस्त ऊर्जा का स्रोत सूर्य है। सूर्य से प्राप्त होने वाली कुछ ऊर्जा हरी वनस्पतियों द्वारा प्रकाश संश्लेषण के लिए ग्रहण कर ली जाती है। शेष ऊर्जा पृथ्वी के ऊपरी सतह को गर्म कर देती है। सूर्य की ऊष्मा से गर्म होने के बाद जब पृथ्वी ठंडी होने लगती है, तब ऊष्मा पृथ्वी से बाहर वायुमंडल में विसरित होने लगती है, लेकिन कार्बन डाइऑक्साइड, क्लोरोफ्लोरोकार्बन, नाइट्रिक ऑक्साइड, क्लोरो ऑक्साइड एवं मीथेन आदि गैसों इस ऊष्मा का कुछ भाग अवशोषित कर लेती हैं एवं शेष बची ऊष्मा को पुनः पृथ्वी पर परावर्तित कर देती हैं। इस प्रक्रिया में वायुमंडल के निचले भाग में अतिरिक्त ऊष्मा एकत्रित हो जाती है। विगत कुछ वर्षों में इन ऊष्मारोधी गैसों की मात्रा वायुमंडल में बढ़ जाने के कारण वायुमंडल के औसत ताप में वृद्धि हो गई है, इसे ही ग्लोबल वार्मिंग कहा गया है। बढ़ती जनसंख्या की विभिन्न आवश्यकताओं की पूर्ति हेतु परोक्ष या अपरोक्ष रूप से व्यापक पैमाने पर वनों का विनाश को बढ़ाता है। प्रकाशसंश्लेषण की



क्रिया वायुमंडल में कार्बन डाइऑक्साइड की मात्रा को संतुलित रखती है, जबकि वनों का विनाश इसको बढ़ाता है। ग्रीन हाउस प्रभाव विश्व तापमान वृद्धि से सीधे संबंधित है। ; uÅi h us foUo i ; kbj .k fnol ij %5 tU 1989% को विश्व समुदाय को सचेत करने के लिए एक सही नारा pXykcy okÉex % Xykcy okÉuxß दिया है।

xhu gkml çHkko ds dkj .k %& रेफ्रिजरेटरों तथा एयरकंडीशनरों से निकलने वाली क्लोरोफ्लोरोकार्बन गैसों वायुमंडल के ऊपरी भाग में स्थित जीवन रक्षक ओजोन परत को नष्ट करती हैं, जिससे ग्रीन हाउस प्रभाव में वृद्धि होती है। वनों के विनाश के कारण वायुमंडल में कार्बन डाइऑक्साइड की वृद्धि हुई है। वैज्ञानिकों के एक आकलन के अनुसार प्रतिवर्ष 2 अरब टन अतिरिक्त कार्बन डाइऑक्साइड वायुमंडल में बढ़ रही है। औद्योगिकीकरण के कारण उद्योगों तथा भोजन निर्माण के लिए घरों में जीवाश्म ईंधन हो जैसे कोयला, पेट्रोलियम तथा डीजल आदि पदार्थों को उपयोग में अत्यधिक वृद्धि हुई है। वर्तमान में लगभग 4 अरब टन जीवाश्म ईंधन का उपयोग हो रहा है, जिससे प्रतिवर्ष लगभग 4 प्रतिशत कार्बन डाइऑक्साइड की वृद्धि होती है।

xhu gkml çHkko ds n|i fj .kke %& ग्रीन हाउस प्रभाव से उत्पन्न संकट एक विश्वव्यापी पर्यावरणीय समस्या बन गई है। वायुमंडल में कार्बन डाइऑक्साइड की मात्रा में वृद्धि होने के कारण विगत 50 वर्षों में पृथ्वी के औसत तापमान 1 डिग्री सेल्सियस की वृद्धि हो चुकी है। वैज्ञानिकों का अनुमान है कि सन् 2050 तक पृथ्वी के तापक्रम में लगभग 4 डिग्री सेल्सियस तक वृद्धि हो जाएगी, जिससे संरक्षित ग्लेशियर पिघल जाएंगे और समुद्र के जलस्तर में 10 इंच से 5 फुट तक की वृद्धि होने की संभावना है। इससे समुद्र तटीय नगरों के समुद्र में डूबने और लगभग 118 मिलियन लोगों के बाढ़ से प्रभावित होने का खतरा है। ग्रीन हाउस प्रभाव से पृथ्वी के ताप में अत्यधिक वृद्धि से मौसम में भयंकर बदलाव आएगा। सूर्य से निकलने वाली अल्ट्रावॉयलेट किरणों कैंसर जैसे भयानक रोग को जन्म देंगी। कहीं सूखा पड़ेगा, कहीं गर्म हवाएं चलेंगी, कहीं भीषण तूफान तो कहीं बाढ़ आएगी।

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पृथ्वी पर विविध प्रकार का जीवन विकसित हुए, जो मानव के अस्तित्व में आने के साथ ही उसकी आवश्यकताओं को पूर्ण करते रहें हैं और आज भी कर रहे हैं। प्रकृति में अनेकानेक प्रकार के पादप एवं जीव-जन्तु हैं जो परिस्थितिक तन्त्र के अनुरूप विकसित एवं विस्तारित हुए हैं और उनका जीवन चक्र क्रमिक रूप से चलता रहता है, जब तक पर्यावरण अनुकूल रहता है। जैव विविधता का प्रमुख कारण भौगोलिक पर्यावरण में विविधता है और यह करोड़ों से हजारों वर्षों चलने वाली अनवरत् प्रक्रिया का प्रतिफल है। इस पृथ्वी पर लगभग 20 लाख जैव प्रजातियों का अस्तित्व है और प्रत्येक जीव का पारिस्थितिक तन्त्र में महत्व होता है।

जैव विविधता पर संकट सम्पूर्ण विश्व के लिए हानिकारक है। जैव विविधता संकट में होने के कारण इसके निरन्तर क्षरण से यह विलोपित होती जा रही है। विश्व संरक्षण एवं नियन्त्रण केन्द्र के अनुसार लगभग 88,000 पादप एवं 2000 जन्तु प्रजातियाँ पर खतरा मंडरा रहा है। प्रति 100 वर्ष में लगभग 20 से 25 स्तनधारी एवं पक्षी विलुप्त हो रहे हैं जो पृथ्वी के पर्यावरण को नुकसान पहुँचाकर पृथ्वी को नष्ट करने में अपनी भूमिका निभाता है। जैव विविधता विलोपन के आवास स्थलों का विनाश, आवास विखण्डन, कृषि एवं

वानिकी की परिवर्तित प्रवृत्ति, नवीन प्रजातियों का प्रभाव, व्यापारिक उपयोग हेतु अति दोहन, प्रदूषण, वैश्विक जलवायु परिवर्तन, प्राकृतिक आपदाएँ आदि प्रमुख कारण हैं।

vestklu o"kkbu vkx %

i Foh dk QQMk कहे जाने वाले अमेज़ॉन वर्षावन से पृथ्वी पर हर कोई लाभ उठाता है। अमेज़ॉन पृथ्वी के वातावरण से ग्रीनहाउस गैसों को सोखने में महत्वपूर्ण भूमिका है। लेकिन जैसा कि दुनिया का सबसे बड़ा वर्षावन कटाई, खनन और कृषि व्यापार द्वारा समाप्त होता जा रहा है, इसकी बफर क्षमता भी घटती जा रही है। चूँकि आग इस क्षेत्र की प्राकृतिक घटना नहीं है, इससे स्थानीय पौधों और जानवरों पर भी प्रतिकूल प्रभाव पड़ सकता है।

2019 में ब्राजील में अमेज़ॉन के जंगलों में अभूतपूर्व आग लगी है, जिसने विश्व को काफी क्षति पहुंचायी। राष्ट्रीय अंतरिक्ष अनुसंधान संस्थान, ब्राजील के अनुसार इस बार देश में 2019 में 80000 से अधिक स्थलों पर आग लगायी, जिसमें पचास प्रतिशत से अधिक आग अमेज़ॉन में है। विशेषज्ञों के अनुसार, वनों की कटाई और जलाने की प्रथा इनमें से अधिकांश आग के लिये दोषी है। अमेज़ॉन में लोग जंगल के छोटे-छोटे हिस्सों को काटते हैं, उस क्षेत्र को सूखने देते हैं, फिर कृषि या अन्य विकास हेतु जगह बनाने के लिये अवशेष को जला देते हैं। क्योंकि ब्राजील में मवेशी पालन प्रमुख गतिविधि है, लोग मिट्टी की शक्ति को पुनः वापस लाने और मवेशियों के लिए चारागाहों के विकास को प्रोत्साहित करने के लिए भी वनों में आग लगा देते हैं।

वैज्ञानिकों के अनुसार अमेज़ॉन में लगी आग से न केवल पेड़ों और जैव विविधता को एक बड़ा नुकसान होगा, बल्कि वातावरण में अतिरिक्त कार्बन डाई ऑक्साइड भी मुक्त होगी। जंगल की आग भी प्रदूषक पदार्थ छोड़ती है, जिसमें कार्बन मोनोआक्साइड, नाइट्रोजन ऑक्साइड और गैर-मीथेन कार्बनिक यौगिक शामिल हैं। अमेज़ॉन दुनिया का सबसे बड़ा वर्षावन है, जो अन्य दुनिया के सबसे बड़े वन कांगों बेसिन और इंडोनेशिया के वर्षावनों के संयुक्त आकार से भी बड़ा है। यह बन पृथ्वी के ऑक्सीजन में 20 प्रतिशत का योगदान देते हैं और ग्लोबल वार्मिंग को धीमा करने लिए महत्वपूर्ण हैं। वर्तमान में इन वर्षावन में 16000 पेड़ की प्रजातियाँ और 390 बिलियन व्यक्तिगत पेड़ होने का अनुमान है। जबकि कीड़ों की 2.5 मिलियन प्रजातियाँ हैं। अमेज़न नदी आयतन की दृष्टि से विश्व की सबसे बड़ी नदी है। इसमें 1100 से अधिक सहायक नदियाँ हैं, जिसमें से 17 नदियाँ 1000 मील से अधिक लम्बी हैं। इसीलिए अमेज़ॉन की पृथ्वी पर हो रहे जलवायु परिवर्तन में महत्वपूर्ण भूमिका है।

### लॉकडाउन का पर्यावरण पर प्रभाव

लॉकडाउन ने सभी को घरों कैद होने पर मजबूर कर दिया है। जहाँ व्यक्ति एक घर से दूसरे घर में या एक देश से दूसरे देश में नहीं जा सकता। सभी 217 देश इस महामारी से बचने के लिए लॉकडाउन जैसे कदम उठा रहे हैं। ऐसी स्थिति में देशों में लगभग सभी गतिविधियाँ बन्द है। जिससे पूरे विश्व को मानवीय एवं आर्थिक नुकसान उठाना पड़ रहा है लेकिन जब हम इसका दूसरा पहलू देखते हैं तो कोरोना वायरस जहाँ विश्व समुदाय के लिए अभिशाप बन गया है वहीं दूसरी ओर प्रकृति के लिए वरदान साबित हो रहा है।

आज पर्यावरण साफ हुआ है, आसमान अपने चिर पुराने नीले रूप में दिखने लगा है। लॉकडाउन की वजह से खराब वायु गुणवत्ता इंडेक्स में सुधार हुआ है, इसके साथ ही नदियों का पानी भी 50 फीसदी शुद्ध हो गया है मीथेन उत्सर्जन में 35 प्रतिशत की कमी आई है, वहीं वायु प्रदूषकों में 5 से 10 प्रतिशत की गिरावट हुई है। नदियों का पानी साफ हो गया है, दिल्ली की यमुना नदी का पानी 60 प्रतिशत साफ हो चुका है। यह इस कारण हुआ है कि दिल्ली में, दिल्ली के कारण यह सब बन्द है जिसका दुषित पानी नदियों में गिरना बन्द हो गया। केन्द्रीय प्रदूषण नियन्त्रण बोर्ड के अनुसार लॉकडाउन के कारण देश की 36 में 27 नदियों का पानी नहाने लायक हो गया है।

संटर फॉर रिसर्च ऑन एनर्जी एंड क्लीन एयर (CREA) द्वारा किए गए अध्ययन के अनुसार, भारत

में कार्बन डाइऑक्साइड संरक्षण में चार दशकों में सबसे अधिक गिरावट आई है। इस अध्ययन में कहा गया है कि भारत में कार्बन डाइऑक्साइड के संरक्षण मार्च में 15 प्रतिशत और अप्रैल में 30 प्रतिशत तक कम हो गया है। अध्ययन यह भी कहता है कि तेल और गैस, कोयले की नवीनतम खपत में गिरावट आई है। पिछले वर्ष की तुलना में देश में 2019-20 में यह 30 मिलियन टन तक गिर गया है।

22 मार्च, 2020 को देश में लगाए गए लॉक डाउन ने हवा की गुणवत्ता और पानी की गुणवत्ता में सुधार किया है।

केंद्रीय प्रदूषण नियंत्रण बोर्ड के अनुसार जल निकायों में 40 मिलियन लीटर अपशिष्ट जल प्रवेश करता है। एक नदी के जल प्रदूषण को बायोलॉजिकल ऑक्सीजन डिमांड (बीओडी) के आधार पर मापा जाता है। सीपीसीबी के रियल-टाइम मॉनिटरिंग डाटा के मुताबिक, गंगा के 36 निगरानी बिंदुओं में से 27 अब स्वच्छ हैं, वहाँ पर नदी के जल वन्यजीवों और मत्स्य पालन के लिए उपयुक्त हैं। पानी की गुणवत्ता में सुधार का प्रमुख कारण यह है कि घाटों के पास स्नान, पर्यटन, मेले जैसी गतिविधियाँ रोक दी गईं। साथ ही, नदी के आसपास की प्रमुख औद्योगिक गतिविधियों को रोक दिया गया।

22 अप्रैल, 2020 को नासा (नेशनल एरोनॉटिक्स एंड स्पेस एडमिनिस्ट्रेशन) ने घोषणा की कि भारत

में वायु प्रदूषण 20 साल के सबसे निचले स्तर पर पहुँच गया है। नासा द्वारा प्रकाशित आँकड़ों के अनुसार 2016 से 2019 के औसत की तुलना में 2020 में एरोसोल ऑप्टिकल डेप्थ सबसे कम रहा है। वायुमंडल में मौजूद कणों द्वारा प्रकाश के अवशोषण को एरोसोल ऑप्टिकल डेप्थ कहा जाता है। जब एरोसोल सतह के पास होते हैं, तो 1 या उससे ऊपर की ऑप्टिकल डेप्थ धुंधली स्थितियों का सूचक है। एरोसोल ऑप्टिकल डेप्थ 2016 में 0.7 थी और अब 0.1 तक पहुँच गयी है। इस पैटर्न का अवलोकन **Moderate Resolution Imaging Spectroradiometer** मॉडल द्वारा किया गया है। है।

लॉकडाउन के चलते देश के बड़े शहरों में सुबह और शाम को पीक ऑवर में प्रदूषण में काफी कमी आई है।

देश में कोविड-19 के प्रसार को रोकने के लिए लगाए गए लॉकडाउन के कारण 2.5 माइक्रोन से कम आकार के पार्टिकुलेट मैटर में भारी कमी आई है।

सेंटर फॉर साइंस एंड एनवायरनमेंट के अनुसार चेन्नई, बंगलुरु, मुंबई, कोलकाता और हैदराबाद जैसे बड़े शहरों में प्रदूषण के स्तर में कमी आई है। इस केंद्र के अनुसार पीक ऑवर में प्रदूषण का स्तर कई शहरों में 60 प्रतिशत कम हो गया है। दिल्ली वायु गुणवत्ता सूचकांक 'खतरनाक' से 'गुड' में बदल गया। दिल्ली में 2.5 की सांद्रता के स्तर में 57 प्रतिशत की गिरावट आई है, जबकि नाइट्रोजन डाइऑक्साइड के स्तर में 64 प्रतिशत की गिरावट आई है।

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आज पृथ्वी विनाशकारी हाशिए पर खड़ी है। सचमुच प्रत्येक व्यक्ति को जागना होगा। जागकर फिर एक बार अपने भीतर उस खोए हुए मानव को ढूंढना है, जो सच में खोया नहीं है बल्कि अपने लक्ष्य से सिर्फ भटक गया है। यह भटकाव पर्यावरण के लिए गंभीर खतरे का कारण बना है। इस मामले में लोगों का व्यवहार गत रवैया और सामाजिक सांस्कृतिक संदर्भ कहीं ज्यादा बड़ी भूमिका निभाता है। 130 करोड़ लोगों के व्यवहार को प्रभावित करना एक ऐसी चुनौती है इसका सामना करने की अभी तक संसार में किसी ने कोशिश नहीं की है।

अनुशासन प्रत्येक जीवित प्राणी खास तौर पर सामाजिक प्राणियों के लिए बहुत महत्वपूर्ण है क्योंकि इसके बिना मानव जाति बर्बाद हो जाएगी। यह समाज में एक शांतिपूर्ण जीवन जीने के लिए एक पूर्व शर्त है। अनुशासन को न तो किताबों से अर्जित किया जा सकता है, ना ही इसे किसी दूसरे से सीखा जा सकता है। इसे केवल मन में बिठाया जा सकता है अगर व्यक्ति इसे सुबह आँखे खोलने से लेकर रात में सोने जाते समय के बीच, अपनी दिनचर्या में शामिल कर लेता है।

मौजूदा परिदृश्य में, अनुशासनहीनता क्या मूल इंसानी मूल्यों की कमी को हमारी सभ्यता के पतन का प्रमुख कारण माना जाता है। कोई भी देश अपने नागरिकों में अनुशासन की भावना जगाए बिना आगे नहीं बढ़ सकता। समय की आवश्यकता है कि युवाओं को रचनात्मक गतिविधियों में शामिल किया जाए और उनकी क्षमताओं को सकारात्मक दिशा में जोड़ा जाए जिससे समाज को लाभ मिले। यदि माता-पिता अपनी संतान को अपने प्रेम, त्याग, चरित्र, सदाचरण एवं समझदारी की भावना से प्रेरित नहीं कर सकते तो युवा जिनमें अनुकूल शारीरिक उर्जा होती है, बेचैन हो जाते हैं और अब उस व्यवस्था के दौरान अपने बच्चों को नैतिक मूल्यों से जोड़ा जाए। आज जो हम देखते हैं आज हमारी युवा पीढ़ी में विदेशी संस्कृति की झलक है जिसका कि हम अंधानुकरण करते आए हैं। यह वह मूल व्यवस्था नहीं है जिसे हमारे पूर्वज पोषित करते आए थे इसलिए आइए अपनी जड़ों अपने पवित्र आधार की ओर लौट आ जाए और अपनी मूल भारतीय सांस्कृतिक विरासत को पुनर्जीवित किया जाए जो तथाकथित आधुनिकीकरण की चकाचौंध में खो गई है तभी हम भावी पीढ़ियों के बदलाव का नया मार्ग निर्मित करने में सक्षम होंगे

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निष्कर्षता, जलवायु परिवर्तन आज पृथ्वी के लिए सबसे बड़ा संकट बन गया है। इसे लेकर पूरी दुनिया में हाय तौबा मची हुई है। इसको लेकर कई तरह की भविष्यवाणियाँ भी की जा चुकी है, दुनिया अब नष्ट हो जाएगी, पृथ्वी जलमग्न हो जाएगी, सृष्टि का विनाश हो जाएगा। 5 तत्व— आकाश, मिट्टी, जल, वायु और अग्नि का उल्लेख करते हुए कहा कि यही तत्व जीव का निर्माण करते हैं, इनके बिना दुनिया की कल्पना नहीं की जा सकती। इसीलिए इनका संरक्षण करना बहुत जरूरी है। यदि हम इनको नहीं बचा पाए तो जीवन भी नहीं बचा पायेंगे।

पर्यावरण और हम दोनों एक दूसरे पर निर्भर और एक दूसरे के लिये आवश्यक हैं। अतः पर्यावरण पर होन वाले परिणामों की अवहेलना करने वाला विकास उस पर्यावरण का विनाश कर देगा, जो जीवन को धारण करता है। अतः आवश्यकता है, ऐसे विकास की जो कि भावी पीढ़ियों को जीवन की संभावित औसत गुणवत्ता प्रदान करें, जो कम से कम वर्तमान पीढ़ी के द्वारा उपभोग की गई सुविधाओं के बराबर हो। धारणीय विकास की अवधारणा पर संयुक्त राष्ट्र पर्यावरण और विकास सम्मेलन (UNCED) ने इस प्रकार परिभाषित किया – 'ऐसा विकास जो वर्तमान पीढ़ी की आवश्यकताओं को भावी पीढ़ियों की आवश्यकताओं की पूर्ति क्षमता का समझौता किये बिना पूरा करें।' आज जलवायु परिवर्तन का भारतीय तकाजा यह है कि सरकार और समाज मिलकर एक ओर शिक्षा, कौशल, जैविक कृषि, कुटीर ग्रामोद्योग, सार्वजनिक वाहन, बिना ईंधन वाहन आदि की बेहतरीन व संरक्षण में लगे, तो दूसरी ओर धन का अपव्यय रोके, कचरा कम करें, पलायन व जनसंख्या नियंत्रित करें, फसल उत्पादन पश्चात् उत्पादन की बर्बादी न्यूनतम करें, नदियां बचाएं, भूजल भंडार बढ़ाएँ इत्यादि।

भारतीय संस्कृति में प्रकृति पृथ्वी को माँ कहा गया है। अर्थात् पृथ्वी हमारी माँ है और हम पृथ्वी के पुत्र हैं, क्योंकि पृथ्वी माता रूप से संपूर्ण ब्रह्मांड के जीवों का पालन पोषण करती है अतः इसका संरक्षण करना हमारा नैतिक कर्तव्य है। गांधी जी ने भी कहा था 'भविष्य की रक्षा करने एवं हमारी भावी पीढ़ियों को पृथ्वी की विरासत सौंपने के लिए पूरा विश्व एक साथ आ रहा है, इसलिए हम ऐसी दुनिया बनाने की आशा कर सकते हैं, जहाँ हम हर किसी की आवश्यकता के लिए संसाधन तैयार कर सकें।

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## **COVID-19 and its impact on Higher Education in India: Need for greater use of ICT**

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### **Introduction**

The COVID-19 pandemic is first and foremost a health crisis. Globally about 3.4 % of reported COVID-19 cases have died. COVID-19 causes more severe disease than seasonal influenza. COVID-19 is a new virus to which no one has immunity. That means more people are susceptible to infection, and some will suffer severe disease. There is a good chance of recurrence of the virus.

The COVID-19 pandemic has however affected educational systems worldwide. The lockdown of educational institutions is going to cause major interruption in students' learning, disruption in internal assessment and cancellation of public assessments for qualifications. The closure of educational institutions impact not only the students, teachers, families but has far-reaching economic and societal consequences.

In response to closure of educational institutions, UNESCO has recommended the use of distant learning programmes, open educational application and platforms that institutions and teachers can use to reach the learn

### **Objectives**

The main thrust of the paper is on the development of digital infrastructure and technology – based model such as virtual classroom to widen access to high-quality teaching. Innovative mobile-based learning models for effective delivery of education can be adopted.

Thus the main objective of the paper is to point out the importance of integrating classroom learning with e-learning model.

It is important to reconsider the current delivery and pedagogical methods.

## Suggestions

The following learner-centred methods are vital for quality education in India :

Offering blended learning and online learning options.

Blended learning has become popular as universities/colleges seek to experiment by adding online component to their classes. For this, flipped classroom is becoming more popular as a means to support student learning in Higher Education Institution by preparing students before lecturers and actively engaging students during lectures.

With increased penetration of mobile devices and internet, more learners are considering using their mobile devices as a platform for learning.

University/College can display a virtual lecture facility by connecting classroom through a Multi Protocol Label Switching (MPLS) –based data network.

Higher Education Institutions to develop ICT capacity to benefit from technological initiatives such as National Knowledge Network (NKN).

Leveraging the MOOC (Massive Open Online Course) model to provide access to high-quality content courses to the learners.

The notion of an educator as the knowledge-holder who imparts wisdom to their pupils is no longer fit for the purpose of a 21st- century education. With students being able to gain access to knowledge, and even learn a technical skill, through a few clicks on their phones, tablets and computers, we will need to redefine the role of the educator in the classroom and lecture theatre. This may mean that the role of educators will need to move towards facilitating young people's development as contributing members of society.

The COVID-19 pandemic has resulted in educational institutions across the world being compelled to suddenly harness and utilize the suite of available technological tools to create content for remote learning for students in all sectors. Educators across the world are experiencing new possibilities to do things differently and with greater flexibility resulting in potential benefits in accessibility to education for students across the world. These are new modes of instruction that have previously been largely untapped particularly in the kindergarten to Grade higher.

In this ever-changing global environment, young people require resilience and adaptability – skills that are proving to be essential to navigate effectively through this pandemic. Looking into the future, some of the most important skills that employers will be looking for will be



creativity, communication and collaboration, alongside empathy and emotional intelligence; and being able to work across demographic lines of differences to harness the power of the collective through effective teamwork.

Hence there is an urgent need for the Higher Education Institutions to ensure fast and uninterrupted internet connectivity. Parents may be able to meet with teachers via web-conferencing or other online collaboration tools.

Additionally they can check their children's attendance, assignments and grade through online frameworks. They can

like wise converse with their children from work via e-mail, texting instant messaging and video calling.

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## **AN ANALYSIS OF SINGLE-USE PLASTICS**

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Since the 1950s, the production of plastic has outpaced that of almost every other material. Much of the plastic we produce is designed to be thrown away after being used only once. As a result, plastic packaging accounts for about half of the plastic waste in the world. Most of this waste is generated in Asia, while America, Japan and the European Union are the world's largest producers of plastic packaging waste per capita. Our ability to cope with plastic waste is already overwhelmed. Only nine per cent of the nine billion tonnes of plastic the world has ever produced has been recycled. Most ends up in landfills, dumps or in the environment.

If current consumption patterns and waste management practices continue, then by 2050 there will be around 12 billion tonnes of plastic litter in landfills and the environment. By this time, if the growth in plastic production continues at its current rate, then the plastics industry may account for 20 per cent of the world's total oil consumption. Most plastics do not biodegrade. Instead, they slowly break down into smaller fragments known as microplastics. Studies suggest that plastic bags and containers made of expanded polystyrene foam (commonly referred to as "Styrofoam") can take up to thousands of years to decompose, contaminating soil and water. The most common single-use plastics found in the environment are, in order of magnitude, cigarette butts, plastic drinking bottles plastic bottle caps, food wrappers, plastic grocery bags, plastic lids, straws and stirrers, other types of plastic bags, and foam take-away containers. These are the waste products of a throwaway culture that treats plastic as a disposable material rather than a valuable resource to be harnessed.

### **Health and Social impacts**

Plastic waste causes a plethora of problems when it leaks into the environment. Plastic bags can block waterways and exacerbate natural disasters. By clogging sewers and providing breeding grounds for mosquitoes and pests, plastic bags can increase the transmission of vector-borne diseases like malaria. High concentrations of plastic materials, particularly plastic bags, have been found blocking the airways and stomachs of hundreds of species. Plastic bags are often ingested by turtles and dolphins who mistake them for food. There is evidence that the toxic chemicals added during the manufacture of plastic transfer to animal tissue, eventually entering the human food chain. Styrofoam products, which contain carcinogenic chemicals like styrene and benzene, are highly toxic if ingested, damaging the nervous systems, lungs and reproductive organs. The toxins in Styrofoam containers can leach into food and drinks. In poor countries, plastic waste is often burned for heat or cooking, exposing people to toxic emissions. Disposing of plastic waste by burning it in open-air pits releases harmful gases like furan and dioxin. The economic damage caused by plastic waste is vast. . In Europe, cleaning plastic waste from coasts and beaches costs about €630 million per year. Studies suggest that the total economic damage to the world's marine ecosystem caused by plastic amounts to at least \$13 billion every year. The economic, health and environmental reasons to act are clear.

**Public-private partnerships** and voluntary agreements can be good alternatives to bans. Voluntary reduction strategies allow citizens time to change their consumption patterns and provide an opportunity for affordable and eco-friendly alternatives to hit the market. The promotion and adoption of reusable bags is an example of a reduction strategy where the choice lies with the consumer. This strategy has changed consumer behaviour and reduced the use of conventional plastic bags in many regions. Given the broad range of possible actions to curb single-use plastics and their mixed impact, **UN Environment has drawn up a 10-step roadmap** for governments that are looking adopt similar measures or improve on current ones. The steps are based on the experiences of 60 countries around the globe:

1. Target the most problematic single-use plastics by conducting a baseline assessment to identify the most problematic singleuse plastics, as well as the current causes, extent and impacts of their mismanagement.

2. Consider the best actions to tackle the problem (e.g. through regulatory, economic, awareness, voluntary actions), given the country's socio-economic standing and considering their appropriateness in addressing the specific problems identified.
3. Assess the potential social, economic and environmental impacts (positive and negative) of the preferred short-listed instruments/actions. How will the poor be affected? What impact will the preferred course of action have on different sectors and industries?
4. Identify and engage key stakeholder groups – retailers, consumers, industry representatives, local government, manufacturers, civil society, environmental groups, tourism associations – to ensure broad buy-in. Evidence-based studies are also necessary to defeat opposition from the plastics industry.
5. Raise public awareness about the harm caused by single-used plastics. Clearly explain the decision and any punitive measures that will follow.
6. Promote alternatives. Before the ban or levy comes into force, assess the availability of alternatives. Ensure that the preconditions for their uptake in the market are in place. Provide economic incentives to encourage the uptake of eco-friendly and fit-for-purpose alternatives that do not cause more harm. Support can include tax rebates, research and development funds, technology incubation, public-private partnerships, and support to projects that recycle single-use items and turn waste into a resource that can be used again. Reduce or abolish taxes on the import of materials used to make alternatives.
7. Provide incentives to industry by introducing tax rebates or other conditions to support its transition.  
Governments will face resistance from the plastics industry, including importers and distributors of plastic packaging. Give them time to adapt.
8. Use revenues collected from taxes or levies on single-use plastics to maximize the public good. Support environmental projects or boost local recycling with the funds. Create jobs in the plastic recycling sector with seed funding.
9. Enforce the measure chosen effectively, by making sure that SINGLE-USE PLASTICS: A Roadmap for Sustainability x there is clear allocation of roles and responsibilities.
10. Monitor and adjust the chosen measure if necessary and update the public on progress \

### **Biodiversity loss and foodchain**

Contamination Plastics in the environment pose significant hazards to wildlife both on land and in the ocean. High concentrations of plastic materials, particularly plastic bags, have been found blocking the breathing passages and stomachs of hundreds of different species. Plastic bags in the ocean resemble jellyfish and are often ingested by turtles and dolphins. There is emerging evidence that the toxic chemicals added during the manufacturing process transfer from the ingested plastic into the animals' tissues, eventually entering the food chain for humans as well. When plastic breaks down into microplastic particles, it becomes even more difficult to detect and remove from the open oceans. Therefore, the most effective mitigation strategy is to reduce their input.

Health and Social impacts on the plastics often take the form of open burning, Styrofoam items contain toxic chemicals such as styrene and benzene. Both are considered carcinogenic and can lead to additional health complications, including adverse effects on the nervous, respiratory and reproductive systems, and possibly on the kidneys and liver. Several studies have shown that the toxins in Styrofoam containers can transfer to food and drinks, and this risk seems to be accentuated when people reheat the food while still in the container. In low-income regions, domestic waste - including plastics - is often burnt for heating and/or cooking purposes, exposing largely women and children to prolonged toxic emissions. Illegal disposal practices of accentuating the release of toxic gases that include furans and dioxins. Research has shown that in developed as well as in non-developing countries, littering of plastic bags and Styrofoam containers can lead to perceived 'welfare losses' associated for instance to the visual disamenity of a park being contaminated with litter. This increases the indirect social costs of plastic pollution. In developing countries with inadequate solid waste management regulations, plastic bag litter can aggravate pandemics. By blocking sewage systems and providing breeding grounds for mosquitoes and other pests, plastic bags can raise the risk of transmission of vector-borne diseases such as malaria. As previously mentioned, plastic waste and microplastics, if ingested by fish or other marine life, can enter our food chain. Microplastics have already been found in common table salt and in both tap and bottled water.

#### **Measures suggested to reduce the use of plastic ;**

**Social awareness and public pressure** Social awareness and education are essential to shape and encourage changes in consumer behaviour, but a gradual, transformational process is

necessary. A longstanding change in cultural attitudes towards environmental matters is often not attainable through brief or stand-alone awareness campaigns. It is instead best achieved through embedding messaging in regular didactic practices and school curriculums from a very young age. Public awareness strategies can include a wide range of activities designed to persuade and educate. These strategies may focus not only on the reuse and recycling of resources, but also on encouraging responsible use and minimization of waste generation and litter.

**Voluntary reduction strategies and agreements** Reduction strategies are another option to lessen the number of plastic bags and the amount of single-use plastic packaging. As opposed to bans and taxes, the value of reduction strategies is that they do not attempt to force sudden changes in the market. They build on the understanding that for the change to be long-lasting, it needs to be voluntary and based on choice.

**Bans and levies** To date, regulations on plastic bags and Styrofoam products have been introduced at the national level in more than 60 countries, and more will follow. Of the bans and levies analysed in this paper which have entered into force (over 140 regulations at the national and local levels), there is not yet sufficient information to draw robust conclusions on the environmental impacts achieved by levies and bans on plastic bags. In 50% of cases, there is no information on impact: partially this is due to lack of monitoring and reporting systems, and partially, it is due to the fact that many of the measures analysed have been implemented only recently, and therefore they are too recent to have robust data on achieved impacts.

**Raise awareness** Evidence shows that resistance is likely to decrease if consumers are aware of the social, environmental and economic impacts of mismanaged single-use plastics. These can be communicated through a variety of methods, ranging from: Educational programmes Workshops in schools Extensive multi-media awareness-raising campaigns (TV, radio, newspapers, social media). Door-to-door campaigns (this type of awareness raising has proven particularly successful in small towns, communities and islands). Development and distribution of information material. Showcasing and/or distributing alternative options to single-use plastics (reusable bags, reusable bottles, etc). Each campaign should have a clear and simple message, relevant for a wide range of stakeholders. The messaging should clarify why a certain instrument has been chosen and what will be the benefits for the

population. For instance, if a levy is to be introduced, it would be important for the public to fully understand the link between the fee that will have to be paid and the environmental benefits that will derive.

**Support uptake of eco-friendly alternatives** Before banning plastic bags (or any single-use plastic), governments may wish to verify the presence of valid alternatives. Especially in developing countries, if cheap and resistant alternatives to plastic bags are lacking, the ban may end up negatively impacting the poorest segments of the population. Eco-friendly and fit-for-purpose alternatives should provide the same or better properties of the items that are to be regulated. For instance, the materials used for fresh food packaging are often scientifically tested and chosen to provide high quality barrier protection to keep the food fresh. If the available replacement doesn't provide the same benefits, a policy to reduce overpackaging of fresh food could lead to unintended impacts such as greater food losses and waste.

#### **Use of paper bags**

A common alternative, generally proposed to swiftly replace single-use plastic bags, is paper bags. Note should be taken that it is still controversial if paper bags should be considered an affordable and eco-friendly alternative to plastic. Although paper bags they require more energy to be produced, are more expensive and once discarded take more space in collection trucks and landfills.

It is key to ensure that the process for enforcement is made clear to the users that will be impacted by the policy. For instance, in the case of a levy on retailers, it should be made clear to the retailers how and when the levy should be collected or deposited. In the case of a levy on consumers, the public should be made aware of the amount they are expected to pay. When the law includes punitive measures, prosecution of offenders will help ensure compliance to the policy (carrot and stick approach).

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## **CORONA VIRUS AND THE ENVIRONMENT**

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*Progress demands certain amount of sacrifice and therefore dilution in moral values and degradation in ethics should not be taken as an element of surprise. Destroying nature and increasing environmental pollution has more or less become a decriminalized norm. In the end of year 2019, COVID-19 took the world by storm and it's score of onslaught kept rising exponentially each day. In fact, not very many options were available other than a dedicated lockdown, however not devoid of consequential repercussions. It had both positive as well as negative facets. On one hand, it helped in mitigating the perils of the virus and on the other hand a large fleet of daily wagers and lower income group were left high and dry and there were many other similar problems. The lockdowns have undoubtedly helped the environment to recover and recoup. The rivers have become cleaner and the air more breathable. Emission of contaminated and harmful wastes, both from industries and automobiles, has declined to acceptable limits. The changes that have enlightened the environment may be transitory for the time being, but have certainly been appreciated and welcomed by the average population of the world.*

**Keywords:** COVID-19, Lockdown, Nature.

Innovations and discoveries, from time to time, have been marked by great surprises for civilizations in general and human kind in particular. Some of them have proved to be a boon and some as bane. What matters most are the intention and the methodology for utility of these inventions. Contributions of science and technology, in varying fields like electronics, electrical and agricultural genetic engineering just to name a few, have undoubtedly made life easier and comfortable. Global accessibility and socio-financial growth have been well facilitated. Even advancement in civil nuclear technology, solely meant for peaceful capabilities, has ushered in an era of durable source of power and energy. Last three to four decades have witnessed a visible

spike in global trade and commerce. Many “developing nations” are battling to enter the slots exclusively reserved for “developed nations”. Political equations and diplomatic policies between nations of different hue and shades have also undergone a sea change. Adversaries, on one side, seem to be inching closer to each other in efforts to sue better partners, and on the other hand, some allies are breaking their marriage of business convenience that are hampering their markets. Liberalized economic policies designed for most of the business enterprises have substantially changed the financial status of many nations. However, it must be understood that no gains are without pains. Progress demands certain amount of sacrifice and therefore dilution in moral values and degradation in ethics should not be taken as an element of surprise. Cut-throat competitions iced with dirty political moves, to establish one’s supremacy, have been globally accepted as part of the game. Opportunities and avenues that the technological advancements are offering have been well explored and exploited unmindful of the damage to the environment. Innumerable organisations and individuals are involved in unscrupulous global trade at the cost of corroding the natural resources. Who cares? Destroying nature and increasing environmental pollution has more or less become a decriminalized norm. Rat race in the garb of global progress seems to have no end. Despite crying murder by environmentalist, little realisation has been rendered to stop this self immolation and massacre of the environment.

### **COVID-19**

Each step towards advancement with scant regards to nature’s fury could put the human existence perilously close to extinction. Unmindful of the ensuing disasters staring loud and wide and despite warnings from environmentalists and experts, human kind has turned a deaf ear and carried on relentlessly in its misventures in plundering the nature. The human mind has considered itself to be the supreme creation with a license to do whatever it deems fit to be done. Mother Nature didn’t take long to show him the place where he actually belonged to. While the nations of the world were busy in adding new laurels in the field of technology in a bid to establish their superiority, an invisible enemy insignificant in size and dimensions, stuck the human lives out of the blue. Human pride rejected it initially as trivial. It was a virus which was overlooked and ignored as inconsequential. The deadly Corona Virus, christened as **COVID-19**, didn’t take long and soon unfathomed its potentate. It took the world by storm and it’s score of onslaught kept rising cumulatively each day. Ironically, the developed nations like the USA and most of the European countries have been the worst affected, their medical facilities supposed to

be par excellence proved to be absolutely insufficient and ineffective in countering Corona. By the time one could even comprehend the dangers of corona, it had gobbled down a sizeable number of humans all around the globe. Born and brought up in Wuhan, provincial capital of Hubei in China, it successfully travelled far and wide to Europe, North America and to almost all nook and cranny of the world. People from various class, colours and creed have fallen prey to its afflictions. Some have succumbed and a few lucky ones managed to beat it. However, fatality at a very large scale is being increasingly reported from across the world.

### **Managing COVID-19**

Medical infrastructure has proved to be far short of sufficiency in countering the devastation being brought-in by corona. Research and development of an anti-body vaccine to kill the virus is yet to see the light of the day. As per leading medical experts, conception of the vaccine/medicine is likely to take quite some time before it is inducted in the market for human administration. In the present scenario one has to be contended with usual precautionary measures like social-distancing and self isolation, the magic word being “self quarantine”. Unlike most of the advanced countries where the intensity of the onslaught seems to be more furious, reckonable efforts on part of India and South Korea have helped them to mitigate the miseries which otherwise could have bloomed into an uncontrollable apocalypse. The WHO has offered recognition as also applauded the Indian Government’s endeavours in promulgating a timely country wide lockdown which slowed the spread of the virus. In fact, not very many options were available other than a dedicated lockdown. Since no stipulated drugs are available to treat the affected corona cases, the complete government machinery was all set with the only available option of locking down and thus geared up on war footing in making the national operation a grand success. Most of the organisations, be it government or non-government, were directed to help their countrymen with whatever means they could. The gentry were instructed to remain where they were stationed and movement of any kind had to be restricted to the barest minimum. Rail, road and air traffic were suspended forthwith, all kinds of movement came to a grinding halt. Armed with full co-operation of its citizens from all quarters, the country took it as a national crisis and decided to fight the corona tooth and nail. Scope of testing and detecting affected cases was widened. Establishment and furnishing of quarantine facilities was undertaken religiously at a very fast pace. The nation stayed indoors and the administration rolled out all possible succour to the needy. Barring a few exceptions, the overall response from the public proved to be

remarkably encouraging, it paid visibly handsome dividends. The spread of the virus was check-mated to a fair degree. Notwithstanding the dense population of the country, India by and large can singularly boast of arresting the intensity of the spread much faster and more effectively than many developed nations of the world.

### **Nature and Humankind**

Quite many environmentalists are of the firm opinion that mankind has held the nature at ransom for fairly long and extorted more than his requirement. A prolonged session of plundering the environment has to be paid back with heavy interest. Reckless wastage of natural resources, deforestation, extensive mining and polluting the environment are just to name a few. The environment, it seems has had enough and is now endeavouring to maintain a sustainable balance. Havoc created by COVID-19 is being envisaged by many as a severe warning to be seen as a remedial revenge by the environment. The nature, it appears, has switched on to the “reset” mode. Corona has consumed a number of human lives, and seems to be in no mood to reprieve in near future. Lockdown, as a counter offensive to offset the spread of corona, may be a set back to the global economy but is certainly not bereft of certain decent aspects: Quite a few positive side-effects when we consider our environment. Few of them are being discussed in the following paragraphs.

**Ozone Layer-** Ozone Layer, also known as ozonosphere of the upper atmosphere, is roughly between 15 to 35 Km from the earth's surface and has a very high concentration of ozone molecules (O<sub>3</sub>). It effectively blocks almost all solar radiations of wavelengths less than 290 nanometers and other harmful ultraviolet (UV) rays from reaching the earth's surface. Over a period of several decades in the past, human industrial activities have contributed in substantial destruction and depletion of the ozone layer thereby putting the environmental balance on a thin ice. Chlorofluorocarbons, a dangerous chemical emission by industries has depleted the ozone layer to such an alarming extent that an international treaty had to be initiated. The “Montreal Protocol” in 1987 adopted immediate ban on chlorofluorocarbons and related Ozone Depleting Substances (ODSs). Lockdown and the economic freeze since last two to three months due to COVID-19 have resulted in a significant decline in emission of ODSs. In the recent past, prior to outbreak of COVID-19, there has been a reckonable increase in release of ODSs mostly from the Chinese commercial regions. Fortunately, with the onset of the virus and the consequent call for

global lockdown, the ozone layer over Antarctica has recuperated to satisfying levels promising a healthier earth in times to come.

**Air Pollution-** Total lockdown has indirectly been a great help in introducing a cogent improvement in the quality of air wrapping all around the world. Most of the countries have resorted to a full stop to all kinds of vehicular movements along with suspension of air traffic. This has had a very conducive effect in reducing emissions of carbon monoxide and lead based pollutants in the atmosphere. It was NASA which first reported a significant drop in air pollution in China's Hubei province which houses the famous Wuhan district. As per works of Marshall Burke, a prominent researcher and environmentalist from Stanford University, it has been inferred that a significant number of lives in respect of infants and senior citizens, above 70 years, have been saved which otherwise had been under a constant threat from persistent poor quality of air. A recent satellite data from NASA has indicated a conspicuous drop by 30% in harmful pollutants like NO<sub>2</sub> in many places. Less than two months ago, Delhi has been desperately struggling to catch on fresh air. More than thirteen cities of India including Delhi were slated in the list of world's 30 most polluted cities. At a rough estimate, approx one million in the country die every year owing to diseases related to air pollution. The lethal substance PM<sub>2.5</sub>, a very tiny particle and a very harmful ingredient in the urban defiled air, is the most deadly ingredient in the polluted air responsible for most of the respiratory and cardio vascular diseases. Its main sources of discharge in the atmosphere are automobiles and emissions from factories including power plants. Going by the available records, the urban emissions till 2019, at an average contained about 40 micrograms per cubic metre as against acceptable limit of 10 per cubic metre prescribed by the WHO. Encouragingly, the average AQI (Air Quality Index) during the lockdown period indicates a significant decline to 20 micrograms in a span of just 20 days. Stalling of hustle and bustle has resulted in healing the air quality which otherwise had reached unbearable levels in most of the Indian cities. It turned out to be a session of celebration for the urban population when the sky seemed to be clearer and the stars to be closer for them. "It is one hell of a change", said one senior citizen who has been suffering from chronic bronchitis and of late, after the lockdown-II, he no more starts his day with a shot of inhaler. The relatively decontaminated air is making the lives of urban population, especially the older lot and the asthmatic patients, a less painful event and a more comfortable daily living. For the time being let's be happy with the change and enjoy the freshness for as long as we can and for as long as the fresh air remains fresh.

**Greenhouse Gas Emissions-** Ceasing of economic activities and closure of shops, malls, factories and schools etc, though temporarily, has been a salient factor in reducing greenhouse gas emissions. It is estimated that the emissions are likely to reduce by 24.4% in most of the western countries in 2020. Though not much of data pertaining to India and other Asian countries has been ascertained, probably because of low intensity of the corona aggression in these parts of the globe, Marcus Ferdinand of Independent Commodity Intelligence Services (ICIS) has forecasted a 25% drop in the emission of the greenhouse gases in China. Similarly in Europe, despite belated response to corona crisis by most of the nations, one can expect a decline by 388.8 million tons in emission due to lockdown. However, post COVID-19 era is quite likely to witness the stark reality of vigorous and competitive revival of industries and allied economic activities. Apparently the decline may be transitory in nature and the relief just a short-lived breather for the world.

**Clean Water Rivers** - The industrial waste that was being mercilessly disposed off in the rivers has come to a screeching halt. Almost all factories and manufacturing industries with their shutters down have circumstantially contributed in making the river waters cleaner and hygienic. As per Dr PK Mishra, Professor at Chemical Engineering and Technology, IIT-BHU, Varanasi, a remarkable improvement of 40 to 50% in the quality of water of Ganga has been observed. Similarly, the quality of water in Yamuna River, reduced to blackish stagnant dirty water unfit to be even utilized for irrigation, has been through a sea change. Pre-lockdown stage was marked by continuous discharge of industrial waste from as many as 28 major and minor industrial clusters. The very sight of the river flowing along Delhi had turned appalling in the last few decades. The lockdown period has now given her a new lease of life and a pleasant look. Presently it displays a gentle grace and pristine flow just as has been mentioned in history books and mythological tales.



Deserted banks of Sangam, the confluence of the rivers Ganga and Yamuna, seen during lockdown in Prayagraj on 21 Apr 2020. (Photo: Reuters)

### **Lockdown and consequential repercussions**

The battle tactics of locking down the country, the only available option to fight corona, was however not devoid of consequential repercussions. It had both positive as well as negative facets. On one hand, it helped in mitigating the perils of the virus and on the other hand a large fleet of daily wagers and lower income group were left high and dry. Total inactivity during the lock-down periods promoted unemployment for a number of daily wagers with empty pockets and hungry mouths to feed. Status of students far away from homes and tourists, both from within the country as well as abroad, were stuck between the devil and the deep blue sea. They had to compulsively freeze where they were parked. Economy of the country owing to total lock-down and suspension of all activities brought-in a considerable downfall in the commercial fields. Industrial output and manufacturing sector recorded an alarming recession in growth thereby resulting in overall degradation of the world economy. India too has been no exception. Uncertainty prevails as millions from the lower income groups and daily wagers are up against a grim presumption of losing jobs. Respective governments have to dole out substantial relief packages from their coffers to sustain the very existence of such millions of lesser mortals of God. The fiscal structure is bound to be on a downhill path till such time all economic activities are brought back to life. Going by the credibility of UN Department of Economic and Social

Affairs (DESA), owing to disruption in the supply chain and international trade, the world economy could shrink by 1% as against the earlier forecast of 2.5% in 2020 due to COVID-19 pandemic. More than hundred countries have sealed their borders almost since Mar 2020 denying movement of any kind. Forging and designing of future global economic structure will much depend on the degree and the intensity of the damage incurred. Wider scope of damage by the virus would imply greater inactivity and slow restoration, which in turn shall result in greater fiscal loss. The sooner we get rid of the corona menace the better it shall be for all the nations of the world. Much is also likely to depend upon the new political alliances and animosities that are in the offing. These shall dictate the subsequent equation that will build-up between various nations. Many old markets, post COVID-19 era shall perish and new ones will perform. Blame gaming for the debacle of COVID-19 has already started simmering and the world opinion against China and WHO for being responsible for the debacle is gaining momentum. Trade war between the two commercial giants, the USA and the China, is likely to deviate from the usual business as was earlier in vogue. European countries, lead by the USA, are crying murder and breathing down the Chinese throat swearing revenge. Americans have decided to stop funding WHO since it is alleged to have helped China in hiding the lethality of corona virus and failed to alert the world of the ensuing disaster. Post COVID-19 disaster is quite likely to witness some ugly and nasty scenes. Since the status and the strength of the pandemic is yet to be discerned, precise predictions in this regard, for the time being, could be dubious and deceptive.

The teachings of Bhagvad Gita have clearly specified, "Let the human community protect the environment for their own survival and the biodiversity around". Regrettably, the human community has dumped the teachings and instead plundered the environment for its lust and unending greed. A number of warnings by Mother Nature like climatic changes, intermittent occurrences of earthquakes, storms and tsunamis have miserably failed to teach us a lesson. Deceitful perception of supremacy and "couldn't care a bit" attitude may finally inflict damages beyond repairs. If we do not mend our ways and if we still prefer to turn a blind eye to the slow and steady approach of the disaster parked just next doors, it shall be very unfortunate and unredeemable when the catastrophe hits us black and blue. Probably it shall be horrifically late by that time. The corona virus epidemic might just be another shot of warning, a wake-up call for the human community to start learning to honour the environment. It could well be a stark reminder to put an end to his journey on the perilous path that he has been treading for so long.



Disintegration of erstwhile USSR on 26 Dec 1991 established new world's order of geo-political unipolarity. It conferred upon the USA as the unchallenged singular super power. Whether one liked it or not, it had to tow the line of the USA. China with her industrialization prowess and unprecedented economic growth has been seen as a rising super power with capabilities to proffer a viable threat to the American supremacy. US-Chinese claims and contests in the troubled waters of South China Sea are a testimony to a potential conflict looming large in the South East Asian region. Deployment of various warships and lethal sea vessels by both the countries is a serious threat to the world's peace in general and South East Asia in particular.

World's economy is likely to be very seriously distressed and damaged because of the corona catastrophe. A larger section of the world squarely blames China for the terrible mess as also for thrusting an invisible pre-planned war primed to destroy the growth of economy. Surprisingly, barring China each and every country in the world is generating a negative economic growth. Only China's economic growth has been recorded at +3%. Has the Corona menace spread inadvertently or has it been released intentionally with ulterior motives? At the moment, it is a million-dollar question, and doesn't even merit an immediate answer. Subsequent inquiry and investigations may unravel the truth and lead the world to hold the culprit by the neck. What is of utmost importance right now is to find a solution to get rid of corona, to sharpen our skills to keep corona at bay. We have to synergize all available resources to find a vaccine at the earliest to fight corona and save millions of lives hanging by a slender thread.

### **Conclusion**

Viewing through a positive spectrum, the lockdowns have undoubtedly helped the environment to recover and recoup. The rivers have become cleaner and the air more breathable. Emission of contaminated and harmful wastes, both from industries and automobiles, has declined to acceptable limits. The changes that have enlightened the environment may be transitory for the time being, but have certainly been appreciated and welcomed by the average population of the world. Be that as it may, a matter of concern that remains pertinent at the back of every mind is the sustainability of environmental ambience post corona crisis. Will the industries, after corona has hung its socks, function amicably with due regard to preserve the nature or alternatively with even greater might to compensate their financial losses? Will the resumption of economic activities be eco-friendly or with even greater ruthlessness to reimburse the deficit that their

balance sheets reflect? If affirmative, that shall obviously put us back to square one. Environment will once again be at the receiving end and that shall put us through yet another polluted milieu to rot in. If that be so, one must be prepared for another round of agony and trauma with even greater dimensions and magnitude than what the dreaded COVID-19 displayed.

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डॉ० सीमा मलिक  
असिस्टेंट प्रोफेसर  
अर्थशास्त्र विभाग  
गोकुलदास हिंदू गर्ल्स कॉलेज मुरादाबाद

पर्यावरण को वातावरण या स्थिति के रूप में परिभाषित किया जा सकता है जिससे एक व्यक्ति, जीव या पौधे रहते हैं। " पर्यावरण" शब्द भौतिक और जैविक दुनिया के सभी तत्वों, साथ ही इन सभी के बीच के संबंधों को दर्शाता है। यह मानव जीवन में एक अहम भूमिका निभाता है। क्योंकि मानव जीवन पर्यावरण पर अत्याधिक निर्भर है पर्यावरण उन स्थितियों का महायोग है जो हमें निश्चित समय और स्थान के आस पास घेरे हुए हैं। यह जीवित जीव की वृद्धि एवं विकास को प्रभावित करता है। इसके प्रमुख घटक मिट्टी पानी हवा जीव और सौर ऊर्जा है पर्यावरण अर्थात् प्रकृति ने एक आरामदायक जीवन जीने के लिए हमें सभी संसाधन प्रदान किए हैं।

मनुष्य और प्रकृति के बीच का संबंध युगों से है। दोनों एक दूसरे के पूरक हैं। मनुष्य ने जब तक प्रकृति के साथ संतुलन बनाए रखा तब तक वह स्वस्थ सुखी और संपन्न रहा किंतु जैसे ही उसने इसका अतिक्रमण करना शुरू किया प्रकृति ने अपना विध्वंसक एवं विघटनकारी रूप दिखाना शुरू कर दिया प्रकृति को तिरस्कृत करके मानव कभी भी आगे नहीं बढ़ सकता है। वर्तमान में मनुष्यों ने अपनी अर्थव्यवस्थाओं और जीवनशैली को जीवन की अव्यवहारिक पद्धति पर विकसित कर लिया है। वह यह भूल गया है कि प्रकृति पृथ्वी की जननी ही नहीं बल्कि पूरा ब्रह्मांड इसी के प्रताप से चलता है। पिछले कई दशकों से मनुष्य ने पृथ्वी पर अपना वर्चस्व बनाते हुए सुविधाओं की आड़ में अनेकों मनमानियां की हैं। दुनिया से लगभग 10 लाख पेड़ पौधे वन्यजीवों की प्रजातियों को समाप्त कर दिया है। दुनिया के हर देश और हर व्यक्ति ने इस तंत्र को बिगाड़ने में भूमिका निभाई है। पृथ्वी को अपने ऐशो-आराम का अड्डा बना दिया है। सुख सुविधाओं को जुटाने के लिए वह किसी भी हद तक पर्यावरण संतुलन को भंग करने के लिए उतारू है।

मानव की इन्हीं कारगुजरियों की वजह से पिछले कुछ दशकों से कई तरह के वन्यजनित विषाणु नए नए नामों से आक्रमण कर रहे हैं। सार्स, इबोला, नेपाह वायरस, मर्स, स्वाइन फ्लू, हंटा वायरस, पिजन फ्लू और अब पिछले कुछ महीनों में कोरोना वायरस ने वैश्विक अर्थव्यवस्था और समाज को हिला कर रख दिया है। दुनिया एक दम हिल उठी है। हजारों लोगों की जानें चली गई हैं। लाखों लोग बीमार पड़े हुए हैं। आधुनिक आर्थिकी से जुड़ी तमाम इंसानी गतिविधियां ठप हैं। यह प्राकृतिक संतुलन को भंग करने के दुष्परिणाम है। 1940 के बाद से इंसानों में 142 वायरस आ चुके हैं। कई के तोड़ हमने खोज निकाल लिए लेकिन अब भी कई वायरस बहुत ही जानलेवा हैं चाहे वो कोरोनावायरस हो या एचआईवी

वी० या कोई अन्य चूहे, बंदर और चमगादड़ इंसानों में फैलने वाले 75: वायरस के लिए जिम्मेदार हैं। इंसान शायद यह भूल चुका है कि वह प्रकृति से है प्रकृति उससे नहीं जब भी हम प्रकृति से खिलवाड़ करते हैं, तो प्रकृति अपनी ताकत दिखाती है और अपने एक ही प्रहार से सब कुछ नियंत्रण में ले लेती है। प्रकृति मानो बार-बार हमें आगाह कर रही है कि हे मानव तू अब भी सुधर जा लेकिन हम अभी भी नहीं चेत रहे हैं। आर्थिक विकास की आड़ में धड़ाधड़ प्रकृतिक संसाधनों का विदोहन बिना सोचे समझे किए जा रहे हैं।

कोरोनावायरस से फैली महामारी भी प्रकृति के सन्देश की तरह है जो मानवों को उनके कृत्यों के प्रति आगाह कर रही हैं। तमाम देशों में लगने वाली जंगलों में आग, दिनों दिन गर्मी के टूटते रिकॉर्ड, टिड्डी दलों के बढ़ते हमले जैसी तमाम घटनाओं से प्रकृति हमें चेता रही है। कोरोना के चलते ठप हुई इंसानी गतिविधियों के चलते प्रकृति का निखरता रूप इंसानों की ज्यादतियों की कलाई खोलने को काफी है दशकों से नदियों को साफ करने की सरकारी और सामाजिक मुहिम उनका जल निर्मल न कर सकी महज चंद दिनों में लोक डाउन में विषाक्त हो चले नदियों के पानी में चेहरा देखा जा सकता है। आज हर शहर अच्छी व बेहतर हवा का दम भर सकता है। वाशिंगटन से होकर बहने वाली पोटोमैक एवं लंदन से होकर बहने वाली थेम्स नदी कभी यमुना व हिंडन जितनी ही प्रदूषित हुआ करती थी लेकिन उन्होंने नदियों के सुधार हेतु कड़े नियम बनाए और उनको सख्ती से लागू भी किया। परिणाम स्वरूप आज वे नदियां अविरल गति से स्वच्छ बह रही हैं। विशेषज्ञों का मानना है कि कोविड-19 जैसी महामारी को रोकने के लिए गर्म होती धरती को हमें रोकना होगा साथ ही खेती, खनन, और आवास जैसी तमाम इंसानी जरूरतों को पूरा करने के लिए वनों के अतिक्रमण पर पूरी तरह से रोक लगानी होगी। ये दोनों ही गतिविधियां वन्यजीवों को इंसानों के संपर्क में आने को विवश करती हैं। बढ़ती जनसंख्या पर भी रोक लगाना अति आवश्यक है क्योंकि बढ़ती जनसंख्या प्राकृतिक तत्वों के विदोहन का एक बहुत बड़ा कारण है।

कोविड-19 के कारण आज संपूर्ण विश्व एक साथ वसुधैव कुटुंबकम की भावना के साथ इस महामारी का सामना कर रहा है। एक दूसरे को सहायता व सहयोग कर रहा है यही भावना और दृढ़ इच्छाशक्ति हमें अपने पर्यावरण को बचाने के लिए भी दिखानी होगी आने वाली पीढ़ी को शुरू से ही शैक्षिक गतिविधियों के माध्यम से पर्यावरण की महत्ता का एहसास कराना होगा ताकि वह शुरू से ही पर्यावरण के प्रति जागरूक रहें और कोविड-19 जैसी महामारियों का उसे सामना न करना पड़े और समस्त मानव जाति स्वस्थ एवं प्रसन्न रहे सके।



## कोविड - लॉकडाउन के दौरान '19'Work From Home' के लिए शिक्षकों द्वारा इस्तेमाल कि गयी कार्यनीति और मानसिकताएक अध्ययन :

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(प्रोफेसर. असि)

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### सारांश : ( Abstract )

वीं सदी कई चुनौतियों का शतक बन गई है 21ए एक तरफ प्रौद्योगिकी की उन्नति और दूसरी ओर नई प्राकृतिक और मानवीय चुनौतियाँ। इस सदी में जब हम भूकंप सुनामी सूखा आतंकवाद आक्रामकता सीमावाद भाषावाद धार्मिकता भ्रष्टाचार जैसे कई संकटों का सामना कर रहे हैं कोविड से दुनिया भर में फैल गया है। यह वायरस दुनिया 2019 वायरस दिसंबर 19 साढ़े तीन महीने से बंद है-से अधिक देशों में फैल चुका है। पूरी दुनिया पिछले तीन 200 भर के दुनिया के सभी व्यवसायों के साथ सभी प्रतिष्ठान अध्ययन के सभी केंद्र भी बंद हैं यह सामाजिक दूरी बनाए रखने और बीमारी पर अंकुश लगाने के लिए एक आवश्यक कदम है। इसलिए भारत के सभी विश्वविद्यालय सभी शैक्षणिक संस्थान वर्क फ्रॉम होम अवधारणाओं से काम को लागू कर रहे हैं ताकि छात्रों को अकादमिक रूप से नुकसान न पहुंचे। शिक्षण प्रक्रिया में प्रौद्योगिकी का उपयोग अब एक दौर बन गया है। छात्रों, शिक्षकों, अभिभावकों, सरकार और संपूर्ण शिक्षा प्रणाली में सूचना प्रौद्योगिकी का व्यापक रूप से उपयोग किया जा रहा है। हर दिन नई खोज की जा रही है, नए सॉफ्टवेयर विकसित किए जा रहे हैं, असंख्य मोबाइल ऐप सामने आए हैं, अध्ययन और अध्यापन आसान, सरल और अधिक मनोरंजक होता जा रहा है। अधिकांश शिक्षक भी प्रौद्योगिकी के अनुकूल बन रहे हैं। इसके लिए, शिक्षकों की मानसिकता का अध्ययन करना, उस पर शोध करना आवश्यक था। अध्ययन, शिक्षण और मूल्यांकन की प्रक्रिया में शिक्षक प्रौद्योगिकी का उपयोग कैसे और किस हद तक करते हैं, यह जानने के लिए प्रस्तुत विषयों को लेते हुए शोध का प्रयास किया गया है।

### 1. प्रस्ताविक : ( Introduction )

कोविड 19 की पार्श्वभूमि के खिलाफ, भारत में शिक्षक विभिन्न प्लेटफार्मों का उपयोग कर रहे हैं, जिसके लिए सरकार ने कई मुफ्त प्रौद्योगिकी मंच, दीक्षा, स्वयं, ई पाठशाला ऐसे बहोत सारे एप भी प्रदान की है। झूम, विभिन्न विश्वविद्यालयों के पोर्टल्स, एनसीईआरटी, राज्य सरकार आदि वेबसाइटों पर सभी प्रकार की पाठ्यपुस्तकें और संदर्भ पुस्तकें उपलब्ध हैं। वीं सदी सूचना 21 प्रौद्योगिकी का युग है। जीवन के हर क्षेत्र में प्रौद्योगिकी का कब्जा है। टेक्नॉलॉजी ने कृषि, बैंकिंग, उद्योग, रक्षा, विभिन्न व्यवसायों और शिक्षा के क्षेत्रों में क्रांति ला दी है। टेक्नॉलॉजी ने शिक्षण और मूल्यांकन की प्रक्रिया को बहुत आसान बना दिया है। विभिन्न अवधारणाओं को समझने, अध्ययन, शिक्षण और मूल्यांकन के लिए प्रौद्योगिकी के विभिन्न स्रोतों और साथ ही शिक्षक प्रशिक्षण के क्षेत्र में, प्रौद्योगिकी के विभिन्न प्रवाह दैनिक आधार पर बनाए जा रहे हैं, प्रौद्योगिकी हमारे लिए एक अभिन्न अंग बन गई है। शिक्षक आज विभिन्न कक्षाएँ जैसे कि Google क्लासरूम, youtube चैनल्स, स्कोलॉजी, सोक्रेटिव, एडमोडो, moodel जैसे aaps के साथ शिक्षक शिक्षण और मूल्यांकन में व्हाट्सएप क्लास का भी उपयोग कर रहे हैं, इसलिए उच्च शिक्षा अब सभी के लिए आसान और सुलभ है। कोविड 19 पार्श्वभूमि पर महाराष्ट्र में शिक्षकों ने अध्ययन, अध्यापन, मूल्यांकन मार्गदर्शन के लिए प्रौद्योगिकी का अधिकतम उपयोग

किया, सभी शिक्षकों ने गतिविधियों को किन तरीकों से लागू किया? इस दौरान शिक्षकों की मानसिकता कैसी थी, इस अध्ययन से यही पता चला है।

## 2. समस्या कथन : ( Statement Of the Problem )

कोविड लॉकडाउन अवधि के दौरान 19 'घर से काम' ( Work From Home ) के लिए शिक्षकों द्वारा इस्तेमाल की जाने वाली कार्यनीति और का मानसिकता अध्ययन करना ।

## 3. शोध समस्या का स्पष्टीकरण : (Explanation Of the Problem )

कोविड लॉकडाउन अवधि के दौरान 19 'घर से काम' ( Work From Home ) के लिए शिक्षकों द्वारा इस्तेमाल की जाने वाली कार्यनीति और मानसिकता का पता लगाने के लिए एक लघुशोध किया गया था। शिक्षक प्रशिक्षण के क्षेत्र में प्रौद्योगिकी तेजी से आगे बढ़ रही है और समग्र शिक्षक प्रशिक्षण कंप्यूटर और मोबाइल पर विभिन्न अनुप्रयोगों का उपयोग करते हुए शिक्षक शिक्षण, शिक्षण और मूल्यांकन में तकनीकी रूप से सुखद और आत्मप्रेरित हो रहा है-, यद्यपि स्वेच्छा से और हालांकि, कोविड न अवधि के लॉक डाउ 19 दौरान, सभी शिक्षक सहमत थे क्या ? तब से शिक्षण और मूल्यांकन में प्रौद्योगिकी का उपयोग किया गया है, क्या इसके उपयोग के समय उनकी मानसिकता अलग थी? सभी शिक्षक प्रौद्योगिकी का उपयोग नहीं करते हैं, लेकिन उनका अनुपात नगण्य है और शोधकर्ता का अनुभव है कि जो लोग इसका उपयोग करते हैं उनका शिक्षण और मूल्यांकन बहुत नियमित और अद्यतित है, इसलिए इस शोध के पीछे कोविड शिक्षकों के बीच प्रौद्योगिकी के बारे में जागरूकता और 19 रुचि रखते हैं। यह जानना भी जरूरी था प्रस्तुत शोध किया गया था।

## 4. शोध समस्या में आए प्रमुख शब्दों की कार्यात्मक व्याख्या( Operational Definition )

(1)कोविड वायरस के प्रसार को रोकने के लिए 19 दुनिया भर में कोविड :लॉकडाउन 19 , सामाजिक दूरी बनाए रखने के लिए कोविड लॉकडाउन अवधि के दौरान 19 , 'घर से काम' के लिए शिक्षकों द्वारा इस्तेमाल की जाने वाली कार्य नीति।

(2)'वर्क फ्रॉम होम' वायरस दुनिया भर में न फैले। 19 देन रुके हुए हैं ताकि कोविड-सोशल डिस्टेंस बनाए रखने के लिए सभी लेन : शिक्षकों को भी घर से तकनीक की मदद से अपने शिक्षण, मूल्यांकन और मार्गदर्शन का काम ऑनलाइन और ऑफलाइन करना होगा।  
:नैतिकता और मानसिकता शिक्षक काम की (3)Covidलॉकडाउन की स्थिति में 19, शिक्षकों के घर से काम में नैतिकता और उस अवसर पर उनकी मानसिकता।

## 5. संशोधन प्रश्न : ( Research Question )

(1)कोविड की 19 पार्श्वभूमि पर अध्ययन और अध्यापन की प्रक्रिया के दौरान शिक्षक किन प्रौद्योगिकी कौशल का उपयोग करते हैं?

(2)कोविड की 19 पार्श्वभूमि पर अध्ययन और अध्यापन की प्रक्रिया के दौरान शिक्षक की रणनीति और मानसिकता क्या है?

## 6. अनुसंधान उद्देश्य ( Objectives of the research )

(1)कोविड की 19 पार्श्वभूमि पर अध्ययन ,अध्यापन और मूल्यांकन के लिए तकनीकी (प्रौद्योगिकी )का उपयोग करने वाले शिक्षकों के प्रतिशत की गणना करना।

(2)कोविड की 19 पार्श्वभूमि पर अध्ययन और अध्यापन में पढ़ाने के लिए कौनसे तकनीकी शिक्षक उपयोग करते हैं,उनका शोध करना।

(3)कोविड की 19 पार्श्वभूमि पर अध्ययन ,अध्यापन और मूल्यांकन की प्रक्रिया के दौरान शिक्षक की रणनीति और मानसिकता का पता लगाना ।

## 7. अनुसंधान की मान्यताओं ( Assumptions )

(1)घर से कोविड कार्य की पृष्ठभूमि पर शिक्षण 19और सीखने के लिए प्रौद्योगिकी के कई स्रोत उपलब्ध हैं।

(2)कोविड की पृष्ठभूमि में प्रौद्योगिकी का उपयोग घर से काम करना सीखने 19, सिखाने और मूल्यांकन की प्रक्रिया को आसान और गतिशील बनाना मुश्किल बनाता है।

(3भारत जैसे बड़े और विकासशील देश में, प्रौद्योगिकी के उपयोग की सीमाएँ हैं।  
(4ग्रामीण और आदिवासी क्षेत्रों में पर्याप्त नेटवर्क की कमी के कारण, सभी छात्र घर से दूर का अध्ययन नहीं कर सकते हैं।

## 8. अनुसंधान की व्याप्ति और मर्यादा ( Scope and limitations )

### 8.1 अनुसंधान की व्याप्ति

1. यहाँ प्रस्तुत शोध उन लोगों के व्याप्त है जो कोविड 19 पार्श्वभूमि पर Work from Home कार्य की अवधारणा को शामिल करता है, जो वर्तमान में शिक्षक के रूप में काम कर रहे हैं।

2 अनुसंधान और अनुसंधान के निष्कर्ष महाराष्ट्र राज्य में शिक्षकों के लिए उपलब्ध हैं।

### 8.2 अनुसंधान मर्यादा

1. कोविड वर्क 19 फ्रॉम होम की अवधारणा में प्रस्तुत शोध वर्तमान में केवल उन लोगों के लिए लागू है जो पुणे विश्वविद्यालय और मुक्त विश्वविद्यालय के क्षेत्र में शिक्षक के रूप में काम कर रहे हैं।

वर्तमान शोध के निष्कर्ष कोविड 20 की अवधारणा में 19 जो शिक्षक वर्क फ्रॉम होम कम कर हैं।

3. अनुसंधान के निष्कर्ष सन 2019 -20 इस वर्ष को ही लागू रहेंगे।

## 9. संबंधित साहित्य और अनुसंधान की समीक्षा ( Review of related literature and research)

प्रस्तुत शोध के लिए निम्नलिखित शोध की समीक्षा की गई।

प्रासंगिक अनुसंधान साहित्य की समीक्षा के लिए 16 संदर्भ ग्रंथों का उपयोग किया।

इसी तरह, पीएचडी स्तर पर 3 शोध प्रबंध, एम फिल स्तर पर 2 शोध निबंध और एमएड स्तर पर 1 शोध रिपोर्ट, साथ ही पुस्तकों, पत्रिकाओं, विभिन्न रिपोर्टों और विभिन्न सरकारी वेबसाइटों की समीक्षा की गई।

## 10. अनुसंधान पद्धति :

प्रस्तुत शोध के लिए शोधकर्ता ने सर्वेक्षण विधि का उपयोग किया है। यह Google फॉर्म सॉफ्टवेयर की मदद से किया गया था।

## 11. अनुसंधान जनसंख्या

सावित्रीबाई फुले पुणे विश्वविद्यालय, पुणे परिक्षेत्र के शिक्षक और यशवंतराव चव्हाण महाराष्ट्र ओपन विश्वविद्यालय, जो छात्र कॉलेज ऑफ एजुकेशन, नासिक में अध्ययन करते हैं।

## 12. अनुसंधान न्यादर्श

प्रस्तुत शोध के लिए, शोधकर्ता ने 50 शिक्षकों को प्रश्नावली लिंक देकर Google फॉर्म सॉफ्टवेयर की मदद से प्रश्नावली भरी।

## 13. अनुसंधान साधन

इस शोध में प्रयुक्त सर्वेक्षण पद्धति के बाद, शोधकर्ता ने एक स्वनिर्मित ऑनलाइन परीक्षण का उपयोग किया है, जो उत्तरदाताओं को ऑनलाइन परीक्षण के माध्यम से अपनी राय देने के लिए प्रेरित करता है।

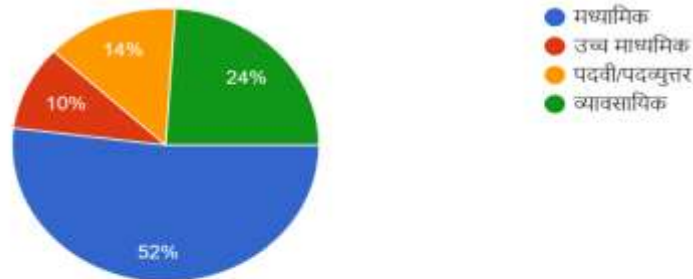
## 14. सांख्यिकीय विश्लेषण:

प्राप्त सामग्री का विश्लेषण Google प्रपत्र के माध्यम से उपलब्ध एक ऑनलाइन आँकड़ा है। विश्लेषण और व्याख्या के लिए प्रतिशत सांख्यिकीय उपकरणों का उपयोग किया गया था।

## 15. उद्देश्य निष्कर्ष:

**उद्देश्य नंबर 1.**कोविड की 19 पार्श्वभूमि पर अध्ययन ,अध्यापन और मूल्यांकन के लिए तकनीकी (प्रौद्योगिकी )का उपयोग करने वाले शिक्षकों के प्रतिशत की गणना करना।

आपला अध्यापन स्तर  
50 responses

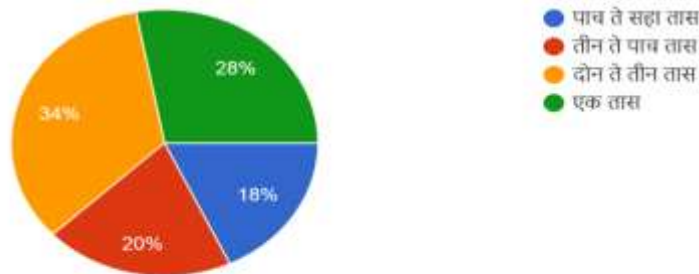


उत्तरदाता थे 50 .1, जिनमें से %52माध्यमिक स्तर पर थे, %24शिक्षक पेशेवर क्षेत्र में थे यानि B.Ed, M.Edऔर D.Edके स्तर। %14और %10शिक्षक क्रमशः डिग्री और उच्चतर माध्यमिक स्तर पर थे।

.2क्या आप कोविड 19 पार्श्वभूमि पर 'घर से काम' की अवधारणा जानते हैं? यह सवाल पूछे जाने पर, %94शिक्षक इस अवधारणा से अवगत थे, जबकि %6शिक्षक इससे अनजान थे।

%46 .3शिक्षकों ने कहा कि उन्होंने ऑनलाइन शिक्षण के लिए प्रशिक्षण प्राप्त किया है, जबकि %54शिक्षकों ने ऐसा कोई प्रशिक्षण प्राप्त नहीं किया है।

'work from Home' पार्श्वभूमिपर तुम्ही रोज कितनी तास अध्ययन, अध्यापन व मूल्यमापन कार्यासाठी खर्ची केले.  
50 responses



'घर से काम' के संदर्भ में, आपने अध्ययन, अध्यापन और मूल्यांकन कार्य में कितने घंटे बिताए?

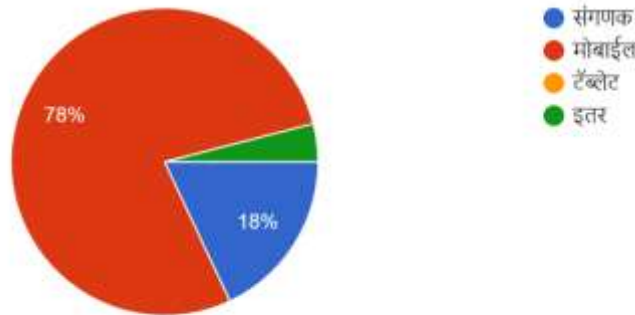
ज्यादातर, 34% शिक्षक दिन में दो से तीन घंटे बिताते हैं, और लगभग 18% शिक्षक दिन में पाँच से छह घंटे बिताते हैं।

## उद्देश्य नंबर .2

(2कोविड की 19 पार्श्वभूमि पर अध्ययन और अध्यापन में पढ़ाने के लिए कौनसे तकनीकी शिक्षक उपयोग करते हैं,उनका शोध करना।

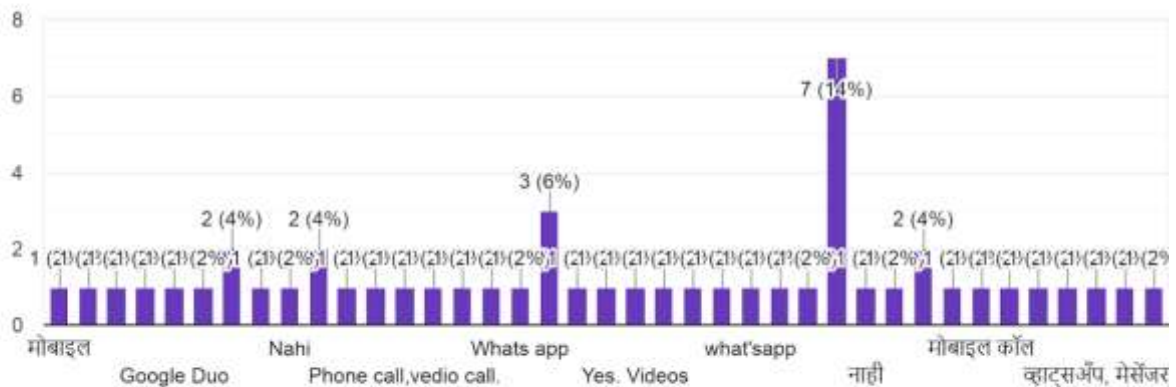


सद्यस्थितीत आपण विद्यार्थ्यांना ' वर्क फ्रॉम होम ' च्या पार्श्वभूमीवर अध्यापनासाठी कोणते तंत्रज्ञान साधन वापरतात?  
50 responses



1. मोबाइल तकनीक के आधार पर, %78 शिक्षक, %18 शिक्षक कंप्यूटर का उपयोग करते हैं और केवल %2 शिक्षक टैबलेट और अन्य सामग्रियों का उपयोग करते हैं।

तुम्ही विद्यार्थ्यांशी live संवाद साधला का? असल्यास कोणत्या माध्यमातून ?  
50 responses



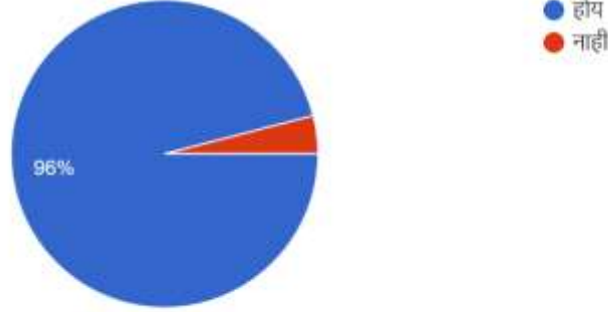
1. 'वर्क फ्रॉम होम' की पार्श्वभूमि में, क्या आप छात्रों के साथ live संवाद में रहते हैं? ऐसा सवाल पूछे जाने पर, लगभग सभी शिक्षकों ने मोबाइल, व्हाट्सएप जैसे पारंपरिक प्रारूप में एक ही जवाब दिया।

**उद्देश्य नंबर .3**

(3कोविड की 19 पार्श्वभूमि पर अध्ययन ,अध्यापन और मूल्यांकन की प्रक्रिया के दौरान शिक्षक की रणनीति और मानसिकता का पता लगाना ।

वर्क फ्रॉम होम च्या पार्श्वभूमीवर आपली तंत्रज्ञानाद्वारे अध्यापनासाठी मानसिकता तयार झाली आहे का ?

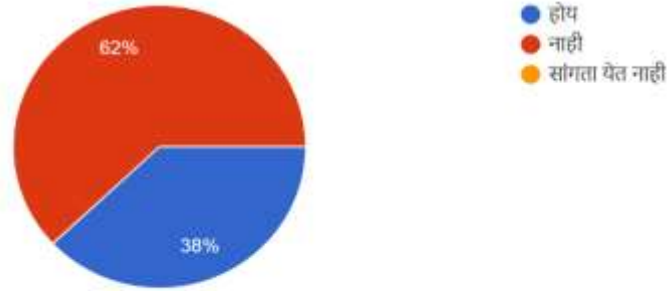
50 responses



1. Work From Home कोविड 19 की पार्श्वभूमि पर %96शिक्षक घर से काम के लिए तैयार थे, जबकि बहुत कम शिक्षक थे।  
4 % तैयार थे।

आपण यापूर्वी कधी कोणत्या ना कोणत्या कारणाने work from Home केले आहे का ?

50 responses



2. पहले, %62शिक्षकों को घर से काम का अनुभव नहीं था, जबकि केवल %38शिक्षकोंको ऐसे काम का अनुभव था।

### 16. प्रमुख निष्कर्ष :

1. 46% शिक्षकों ने कहा कि उन्होंने इस प्रकार के शिक्षण के लिए प्रशिक्षण लिया है, जबकि 54% शिक्षकों ने इस तरह के किसी भी प्रशिक्षण से नहीं गुजरा है, इसलिए कई शिक्षकों को घर से काम करते समय कठिनाइयाँ हुईं।
2. Work From Home कोविड 19 की पार्श्वभूमि पर, 96% शिक्षकों में घर से काम करने की मानसिकता थी, जबकि बहुत कम शिक्षकों में एक तैयार मानसिकता थी, जो आपको शिक्षकों की मानसिकता का अंदाजा देती है।
3. भारत जैसे बड़े देश में अभी भी शिक्षकों के लिए गुणवत्ता और अपडेट और अच्छी तरह से प्रशिक्षित सामग्रियों की कमी -टू- है।

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## **Environment Protection and International Convention and Treaties**

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No organism can live in isolation in this world. So all organism whether it is plant, animal or human live together in an community or association called as biological community or a biotic atmosphere. Biotic community depends upon physical community or abiotic components such as water heat soil etc and success of the biological for its survival or existence. The interrelation and interdependence of biotic country with the physical environment forms an ecosystem. It is the condition where biotic and abiotic components interact with each other. An ecosystem consists of Producers, Consumers, Decomposers and their relationship with each other. Any structural and functional unit of environment that can be identified is ecosystem. If we danger one part of ecosystem it will certainly affect the other part and cause environment .

Environment literally means surrounding. It consists of living (biotic) and non-living objects (abiotic),events and influences of the surroundings.is the aggregate of all the things and set of conditions which directly or indirectly influence or affect not only organism but also the physical community<sup>11</sup>. Thus life and environment are interdependent. A new organism can flourish and originate only if the environment provides conditions favorable for it. The organism and environment always shows continual changes. Organism is the result of revolutionary events of millions of years. Though there are many organism which has been lost forever. But, human being is the most successful organism .He is also the only organism who can control and influence the environment because he is having thinking power and intellectual mind. He is capable of doing many discoveries and inventions due to his intellect.<sup>12</sup> He has influenced and interfered the environment for his comfort and needs. He has cut down trees to develop cities and

<sup>11</sup> R.S. Shukla and P.S. Chandel, Plant Ecology an Soil science, S. Chand & Company Ltd. New delhi P.7

<sup>12</sup> P.K.G Nair, K.P, Achar etal, A Text Book of Biology(Stamdard XII) Himalaya Publishing House Ngapur Ed. 25<sup>th</sup>

industries for himself.<sup>13</sup> Overpopulation, urbanization and industrialization which are the human activity have contributed in the disbalance of environment through various ways which resulted in the environmental pollution. When the contaminants or pollutants enters and mixes into the natural environment and cause adverse change then it can be called as Environment pollution. The components of pollution, can be either foreign substances/energies or naturally occurring contaminants. We can see the effects of pollution every day, all around. Pollution is destroying ecosystems and becomes detrimental for human and environmental health. In 2015, pollution killed 9 million people in the world. Contaminated or polluted soil (which is the result of dumped waste) has substantial consequences for humans, animals, microorganisms and aquatic life<sup>14</sup>. It is causing various problems on the skin, respiratory problems, and even different kinds of cancers<sup>15</sup>. Solid waste is also dumped in ocean or sea which harms or kills sea creatures thus creates aquatic imbalance. Deforestation creates an ecological imbalance by reducing the amount of carbon that is naturally taken out of the atmosphere. Noise pollution can cause stress, anxiety, headaches, irritability, hearing loss, and sleep loss resulting in decreased productivity. Atmospheric characteristics reflectivity, smog formation, mode of water vaporization causes global warming and thus responsible for climate change like melting of polar ice caps, corrosive air, acid rain which make the survival of organism more and more stressful. Environment pollution has become global concern. Thus, countries around the world came across and endeavor to solve the problem. Following are some efforts made at International level.

1. **United Nation's Conference on Human Environment, 1972:** The conference which was held in Stockholm marked the beginning of a comprehensive step at global level to protect, preserve the Several important agreements for environment protection have been negotiated since then and United Nations Environment Programme (UNEP) was the efforts in such direction. Responsibility of UNEP is to keep under review the world environmental situation and ensure that when problem emerge it will be on priority and appropriate and adequate consideration must be given to the government of concerned country.
2. **World Charter for Nature, 1982:** The charter was issued by General Assembly of United Nation. It contains the 24 principle with the object in the mind that survival of humankind

<sup>13</sup> S. C. Maheshwari and K. R. Sharma, Biology: Text Book, Arya Publishing House New delhi

<sup>14</sup> P. Leelakrishnan, Environment Law in India, Ed 5<sup>th</sup> Lexis Nexis 2018

<sup>15</sup> <https://www.renewableresourcescoalition.org/pollution-causes-effects/retrieved> on 6 MAY 2020 Ed. 4<sup>th</sup>

depends upon the nature. So for the existences of mankind it is indispensable to respect the nature. Ecosystem shall be managed to achieve optimum productivity rather to imbalance its integrity.

3. **Nairobi Conference, 1982:** The conference felt that environmental problems are same as they were in Stockholm Conference. So a declaration was passed to refine the principles of 1972 conference so as to more suited to the current situation and problems. It reaffirms its commitment to Stockholm Conference.
4. **Vienna Convention for the Protection of Ozone Layer, 1985:** Convention was organized by UNEP on 22 March. The focus was on to provide legal framework for working together to reduce ozone depletion and thus protect ozone layer. The convention defines the ozone layer under article 1 and general obligation of parties under article 2.
5. **Montreal Protocol, 1987:** Montreal Protocol is an international treaty on substances that depletes the ozone layer. It came into existence in 1989 which were further amended 9 times in 1990 ([London](#)), 1991 ([Nairobi](#)), 1992 ([Copenhagen](#)), 1993 ([Bangkok](#)), 1995 ([Vienna](#)), 1997 ([Montreal](#)), 1998 ([Australia](#)), 1999 ([Beijing](#)) and 2016 ([Kigali](#)). For each group of ODSs (Ozone Depletion Substances), the treaty provides a timetable on which the production of those substances must be phased out and eventually eliminated.<sup>16</sup> As a result of the international agreement, the ozone hole in Antarctica is slowly recovering. India accepted this protocol in the year 1992 with the amendment done in London in the year 1990.
6. **Basel convention on Transboundary Movement of Hazardous Wastes, 1989:** It is usually known as Basel convention which came into force in 1992. As of October 2018, 186 states and the European Union are parties to the Convention.<sup>17</sup> The purpose of this international treaty was to reduce trans boundary movements of hazardous wastes, particularly to reduce the movement from developed to less developed which are lacking the capacity to dispose hazardous wastes in an environmentally sound manner. India ratified the convention and enacted Hazardous Wastes Management Rules Act 1989
7. **International Conference on Environment and Development, 1992<sup>18</sup>:** The conference is also known as Rio Conference or Earth Summit. It held at Rio de Janeiro from 3 to 14

<sup>16</sup> [https://en.wikipedia.org/wiki/Montreal\\_Protocol](https://en.wikipedia.org/wiki/Montreal_Protocol) retrieved on 7 May 2020

<sup>17</sup> [https://en.wikipedia.org/wiki/Basel\\_Convention](https://en.wikipedia.org/wiki/Basel_Convention)

<sup>18</sup> [https://shodhganga.inflibnet.ac.in/bitstream/10603/61937/13/13\\_chapter%203.pdf](https://shodhganga.inflibnet.ac.in/bitstream/10603/61937/13/13_chapter%203.pdf) retrieved on 8 May 2020

June. It discussed the environment issues at very wide level. It deeply focused on greenhouse effect, deforestation, desertification, ozone layer depletion. [Rio Declaration on Environment and Development](#), [Agenda 21](#), [Forest Principles](#) were some important documents of the conference and also important legally binding agreements ([Rio Convention](#)) were opened for signature<sup>19</sup> which include [Convention on Biological Diversity](#), [Framework Convention on Climate Change](#) (UNFCCC), [United Nations Convention to Combat Desertification](#).

8. **World summit on Sustainable Development, 2002:** This is known as Johannesburg Convention. It reaffirm the Rio principle and the implementation of Agenda 21. The convention discussed that sustainability will be achieved when economic development, social development and environment protect will be reinforced together.

Apart from this there are some other agreements for the protection of environment<sup>20</sup>:

- The Antarctic Treaty (Washington, 1959)
- Convention on wet lands of International importance, especially as water fowl Habit (Ramsar 1971).
- Convention concerning the protection of the world cultural and National heritage (Paris 1972).
- Convention on International Trade in Endangered species of wild fauna and Flora (Washington, 1973)
- Protocol of 1978 relating to the International convention for the prevention of pollution from ships, 1973 (MARPOL) (London 1978)
- Convention on the conservation of Migratory species of wild animals (Bonn, 1979)
- Convention on the conservation of Antarctic Marine living Resources (Cantern , 1980)
- United Nations convention on the Law of the Sea (Montego Bay; 1982)
- Convention to combat Desertification in those countries experiencing serious drought and or densification particularly in Africa (Paris, 1994)
- International tropical0inter Agreement (Geneva 1994)
- Protocol on Environmental protection to the Antarctica Treaty (Madrid, 1991)

<sup>19</sup> [https://en.wikipedia.org/wiki/Earth\\_Summit](https://en.wikipedia.org/wiki/Earth_Summit) retrieved on 8 May 2020

<sup>20</sup> [https://en.wikipedia.org/wiki/List\\_of\\_international\\_environmental\\_agreements](https://en.wikipedia.org/wiki/List_of_international_environmental_agreements)

So it can be said there are lot of initiatives and efforts are taken by International community to protect the environment. But still protection of environment is a challenging issue. The whole world is not environmentally uniform. Countries may differ in their environmental or natural resources both in quality and quantity. So, no single solution works for all the countries to protect ecosystem and thus environment. The inequalities in the world in terms of environment are also in terms of economic resources too which play major obstacles and and a barrier to the harmonious development of mankind. However, it is rightly pointed out that the general principles and prescriptions of international law are applicable to the problems of transnational pollution and environmental degradation. Thus, the environment is to be adequately protected through local, regional, national laws and policies along with International Laws, policies, Treaties and Conventions. Protecting the environment is a long and daunting task, requiring continuous planning, governmental policies, and public and industrial participation. However the result of ignoring the problem will be catastrophic .





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अनंत ब्रह्मांड के तारामंडल में हमारा यह छोटा सा सौरमंडल इसी में स्थित हैं हमारी पृथ्वी। इसी पृथ्वी का एक भाग हैं देवभूमि भारत। हिमालय का आंगन, गंगा का देश, देवताओं—अवतारों की क्रीडास्थली, भगवान श्री राम और श्री कृष्ण की लीलास्थली, ऋषियों की तपोभूमि। यहीं सुनी गई वेद, उपनिषद, रामायण, गीता की अनुज्ञ। यही भूमि है जहां भगवान शिव ने गंगा को धरती पर उतारा, यहीं पर समुद्र मंथन हुआ, यहीं जग की पीड़ा के कालकूट को गले में धारण कर शिव महादेव नीलकंठ बन गए। यहीं पर वेदव्यास, पतंजलि, गौतम, कपिल, कणाद, बुद्ध, महावीर, नानक, गोरख, तुलसी, मीरा ने अध्यात्म का अमृत रस जग को बांटा।

इसी ऋषि भूमि पर मोक्ष से लौटी दिव्य आत्माएं अवतारी पुरुष बनकर धरती पर धर्म की संजीवनी पिलाते रहे हैं। फिर भारत का भाग्य जागेगा, परमात्मा की असीम अनुकंपाओं को लेकर एक अवतारी पुरुष, एक युगपुरुष फिर प्रकटेगा कोरोना (कोविड-19) की संजीवनी के रूप में। जो भारत ही नहीं बल्कि संपूर्ण विश्व को इस वैश्विक महामारी से बचाने का प्रयत्न करेगा।

वर्ष 1720 में महामारी बनकर फैले प्लेग के कारण दुनिया भर में 10 से 15 करोड़ लोग मारे गए। प्लेग चूहों से फैलता है और फिर कीड़ों के जरिए मनुष्य इससे संक्रमित होता है। यह जहाजों के जरिए संपूर्ण विश्व में फैला। वर्ष 1820 में कॉलरा महामारी ने भारत सहित जापान, थाईलैंड, वियतनाम, ओमान, चीन, मॉरीशस और सीरिया में भयानक तबाही मचाई।

मानव इतिहास की सबसे भीषण महामारी स्पेनिश फ्लू थी। 1920 में जब दुनिया प्रथम विश्वयुद्ध की वैश्विक विभीषिका से उबरने का प्रयास कर रही थी ठीक उसी समय स्पेनिश फ्लू ने दस्तक दी। प्रथम विश्व युद्ध में जितने लोग मारे गए थे, स्पेनिश फ्लू से दोगुने से भी ज्यादा लोग काल का शिकार हुए। स्पेनिश फ्लू सैनिकों के तं और भीड़ भरे ट्रेनिंग कैंम्पो में फैला। विशेष रूप से फ्रांस के साथ लगी सीमाओं पर स्थित खाइयों में प्रदूषित वातावरण ने इसके फैलने में ज्यादा मदद की। जब युद्ध समाप्त हुआ और सैनिक

घर लौटने लगे तो वायरस उनके साथ आ गया। इस महामारी के प्रकोप से लगभग 50 करोड़ लोग प्रभावित हुए और लगभग 10 से 20 प्रतिशत अर्थात् 5 से 10 करोड़ लोगों को अपनी जान गंवानी पड़ी। स्पेनिश फ्लू ऐसे समय फैला जब दुनिया प्रथम विश्व युद्ध से उभर भी नहीं पायी थी और सार्वजनिक संसाधनों को सैन्य कार्यों के लिए बदल दिया गया था और सार्वजनिक स्वास्थ्य प्रणाली का विचार शुरुआती दौर में था इसीलिए झुग्गी-झोपड़ियों और शहरों के अन्य गरीब स्थानों पर वह लोग अधिक संख्या में मारे गए जो कम पोषण, अस्वच्छता और जिनके शरीर की प्रतिरोधक क्षमता औसत से कम थी।

स्पेनिश फ्लू जब फैला तो हवाई यातायात सेवा अपने शुरुआती दौर में थी और दुनिया में लोग हवाई जहाज के बजाय रेलगाड़ी और स्टीमरों के जरिए यात्रा करते थे। यातायात सुविधा सुगम न होने के कारण दुनिया के कौने-कौने तक पहुंचना आसान नहीं था इसीलिए कुछ जगह महीनो और यहां तक कि वार्गे इस संक्रमण के पहुंचने में लगे। अतः दुनिया में कुछ स्थान ऐसे रह गये, जो इसके भीषण प्रभावों से बच गए।

अलास्का में एक समुदाय पूरी तरह से फ्लू से बच गया। उन्होंने स्कूलों को बंद कर दिया, सार्वजनिक समारोह पर प्रतिबंध लगा दिया और मुख्य सड़कों से गांव तक का रास्ता भी बंद कर दिया। इसलिए यात्रा प्रतिबंध तकनीक से संक्रमण पर काबू पाया जा सका। वर्तमान समय में भी जिसका प्रयोग कोरोना वायरस को रोकने के लिए सर्वप्रथम चीन ने अपने देश में लाकडाउन के रूप में किया। इन सभी चीजों का पालन करते हुए इटली का एक समुदाय सुदूर पहाड़ी पर चला गया तथा वही दूर-दूर अपने रहने के आशियाने तैयार कर लिए तथा वहां आने-जाने के सभी रास्ते बंद कर दिए, अन्य लोगों से महीनों ने मिलने के कारण यह समुदाय आज तक संक्रमण से बचा हुआ है। भारत सहित दुनिया भर के अधिकतर देश इस तर्ज पर 100 साल पुरानी तकनीक को अपना कर लाकडाउन करके कोरोना के संक्रमण से अपने देश की रक्षा कर रहे हैं।

कोविड-19 से भारत में ही नहीं संपूर्ण विश्व में लाखों लोग जान गवां चुके हैं। खांसी, जुकाम, ज्वर के साथ निमोनिया इसके प्रारंभिक लक्षण हैं यह उन्ही व्यक्तियों को सबसे पहले अपनी चपेट में लेता है जिन व्यक्तियों की रोग से लड़ने की प्रतिरोधक क्षमता कमजोर होती है। यह महामारी स्पेनिश फ्लू जैसी ही है लेकिन कोविड-19 में मृत्यु दर इससे कई गुना कम है। हालांकि आकंडो के अनुसार जिनकी प्रतिरोधक क्षमता कमजोर है, ज्यादातर उन्ही लोगों की मौत हुई है।

पतंजलि पीठाधीश्वर योगगुरु स्वामी रामदेव जी<sup>2</sup> ने भी देशवासियों को कोरोना वायरस से आतंकित न होने की सलाह दी है। भारत को ऋषि-मुनियों की जननी कहा गया है। प्राचीन काल में ऋषि-मुनियों ने योग, साधना और तपस्या के बल पर स्वस्थ जीवन व्यतीत करते हुए दीर्घायु ही नहीं बल्कि इच्छा मृत्यु का

वरदान प्राप्त कर मृत्यु तक पर विजय प्राप्त की। प्राणायाम के नाम को जानने से पहले यह जानना और समझना अति आवश्यक है कि प्राणायाम कोरोना वायरस से कैसे बचा सकता है? दरअसल कोरोना वायरस का संक्रमण उन मनुष्यों को तीव्र गति से अपना शिकार बनाता है जिन व्यक्तियों के शरीर की रोग से लड़ने की प्रतिरोधक क्षमता अर्थात् इम्यून पावर अत्यधिक कमजोर होती है। आमतौर पर होने वाले संक्रमण में अगर किसी मनुष्य की प्रतिरोधक क्षमता कमजोर होती है, तो वह व्यक्ति जल्दी बीमार हो जाता है नेशनल सेंटर फॉर बायोटेक्नोलॉजी इंफॉर्मेशन द्वारा दिए गए विस्तृत शोध में भी यह प्रमुखता से दर्शाया गया है कि नियमित प्राणायाम से शरीर की प्रतिरोधक क्षमता इम्यूनिटी सिस्टम को रोग से लड़ने के लिए मजबूत किया जा सकता है। यही वजह है कि योगगुरु बाबा रामदेव द्वारा सुझाए तीन प्राणायाम: कपालभाति, अनुलोम विलोम, भस्त्रिका के नियमित अभ्यास करने व अदरक, कालीमिर्च, गिलोय, तुलसी और हल्दी का काढ़ा बनाकर नियमित सेवन से इम्यूनिटी पावर में अभूतपूर्व इजाफा होने से कोरोना वायरस के संक्रमण से बचा जा सकता है। भारत में कोरोना बीमारी से जूझ रहे अनेको व्यक्तियों ने वशिष्ठ योग फाउंडेशन के योगगुरु धीरज वशिष्ठ की सलाह पर खास तकनीक पर आधारित योग और प्राणायाम किया। वशिष्ठ प्राणायाम, अनुलोम विलोम, भ्रमरी, उज्जयी व कुंभक (सांस रोकने की खास तकनीक) से कोरोना वायरस के रोगियों की आंतरिक क्षमता में अत्यधिक इजाफा हुआ और योग शुरू करने के एक सप्ताह के अंदर ही उनका टेस्ट निगेटिव आया।

कोरोना वायरस पहले धीरे-धीरे लेकिन अब तीव्र गति से पैर पसार रहा है बीमारी से आतंकित व डरना किसी समस्या का निदान नहीं है उपरोक्त सुझावों और लगातार डॉक्टरों व वैज्ञानिकों के द्वारा किए जा रहे शोध अध्ययनों से यह निष्कर्ष निकलता है कि इस वायरस से होने वाली बीमारी से दूर रहने के लिए, प्रत्येक व्यक्ति को नियमित तीन से चार प्राणायाम, आयुर्वेदिक औषधियों के काढ़े का सुबह-शाम सेवन, स्कूल-कॉलेज बंद, सार्वजनिक समारोहों पर पूर्ण प्रतिबंध और मुख्य सड़क से शहर के गली मोहल्लो, वंग तक की यातायात सेवा पर पूर्ण विराम अर्थात् लाकडाउन का कड़ाई से पालन करना होना और सरकार को घरेलू सामान जैसे दूध, राशन, सब्जी, दवाई आदि की होम डिलीवरी चुनिंदा विक्रेताओं का कोरोना टेस्ट कराकर करानी होगी जिससे जन समुदाय को किसी तरीके की परेशानी ना हो।

मेरा भारत सरकार से विनम्र अनुरोध है कि आज जब एलोपैथी में वैज्ञानिकों के पास कोई प्रमाणिक औषधी नहीं है तो ऐसे में हम अपने पुरातन अति गौरवशाली वैज्ञानिक पद्धति पर आधारित आयुर्वेद को कोरोना संक्रमण से होने वाली बीमारी के इलाज का माध्यम बनाएं। यह आयुर्वेद न केवल अपने भारत वर्ष को इस संकट से बाहर निकालेगा बल्कि संपूर्ण विश्व में आयुर्वेद की पताका भी फैरायेगा और भारत पुनः विश्व गुरु के रूप में स्थापित होगा। कहीं ना कहीं जनकल्याण भी होगा और विश्व कल्याण भी।

संदर्भ ग्रंथ:

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# Corona And mental health

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The ongoing spread of the new coronavirus has become one of the biggest threats to the global economy and financial markets. The virus, first detected in the Chinese city of Wuhan last December, has infected people in at least 110 countries and territories globally, according to the World Health Organization. Of those infected, many people have died, according to WHO data.

China is where majority of the confirmed cases are reported . infections have been reported in the mainland so far. To contain the COVID-19 outbreak, Chinese authorities locked down cities, restricted movements of millions and suspended business operations — moves that will slow down the world's second-largest economy and drag down the global economy along the way.

To make things worse, the disease is spreading rapidly around the world, with countries like Italy, Iran and South Korea reporting many cases Other European countries like France, Germany and Spain have also seen a recent spike . Now it started destroying developing countries like India, Nepal and the list continues.

Coronavirus disease (COVID-19) is an infectious disease caused by a newly discovered coronavirus.

Most people infected with the COVID-19 virus will experience mild to moderate respiratory illness and recover without requiring special treatment. Older people, and those with underlying medical problems like cardiovascular disease, diabetes, chronic respiratory disease, and cancer are more likely to develop serious illness.

The best way to prevent and slow down transmission is be well informed about the COVID-19 virus, the disease it causes and how it spreads. Protect yourself and others from infection by washing your hands or using an alcohol based rub frequently and not touching your face.

The COVID-19 virus spreads primarily through droplets of saliva or discharge from the nose when an infected person coughs or sneezes, so it's important that you also practice respiratory etiquette (for example, by coughing into a flexed elbow).

At this time, there are no specific vaccines or treatments for COVID-19. However, there are many ongoing clinical trials evaluating potential treatments. WHO will continue to provide updated information as soon as clinical findings become available.

The novel coronavirus continues to wreak havoc on daily life around the world, and in an increasing number of countries; 180 have now reported cases. In the past seven days the total number of confirmed cases has doubled again and is still accelerating – with new cases increasing by around 20% per day (75,000 between March 31<sup>st</sup> and April 1<sup>st</sup>).

But physical distancing and lockdowns do bring results – Italy's number of new cases on April 1<sup>st</sup> was almost the same as the previous day – indicating that it is nearing the top of the new case growth curve and should see a decline in the days to come. However more worrying were spikes in new cases in Spain and France, both countries that had previously seen slowing growth. However, the data is noisy, and a slowing trend is seen in most markets that have been rigorously enforcing lockdowns and physical distancing measures.

It was said the US was, 'almost certain to overtake all other countries..', it didn't take long. The US now has a massively higher number of cases than all other countries – almost twice as many as Italy. . The fast growth in newly reported cases is partly a function of greatly increased testing, which is now uncovering the extent of the infection. Despite the sharp rise in cases, March manufacturing data from the US was more resilient than feared. But new jobless data shows a massive rise in new claims 6.64 million compared to an expected 4.88 million. That the new number is so much worse than even the most pessimistic forecast highlights that the full extent of the impact remains unclear.

However, while many states in the USA have implemented lock downs, there is still a stark contrast in indicators of activity. For example, two snapshots taken at the same time and at the same scale, from FlightRadar24, show the level of air traffic over the US compared to that over

Europe. Pre-COVID you would see comparable levels of air traffic, though the US has always been somewhat higher. But in the midst of the current crisis, we are surprised at the continued level of passenger air traffic in US airspace. While the one over Europe is early evening and that of the US is around 2pm EDT, there is clearly more traffic over the US. Inspection of the flights does show a high proportion of cargo, but many are still passenger flights. By contrast, around 80% of the flights over Western Europe are cargo flights. On April 1<sup>st</sup>, the Trump administration said it was considering isolating hotspots from flight traffic, but has not yet imposed such a restriction. That said, data shows the number of passengers in the US is dramatically lower. So while many aircraft continue to fly, most are almost empty

### **What is mental health?**

Mental health refers to cognitive, behavioral, and emotional well-being. It is all about how people think, feel, and behave. People sometimes use the term “mental health” to mean the absence of a mental disorder.

Mental health can affect daily living, relationships, and physical health.

However, this link also works in the other direction. Factors in people’s lives, interpersonal connections, and physical factors can all contribute to mental health disruptions.

Looking after mental health can preserve a person’s ability to enjoy life. Doing this involves reaching a balance between life activities, responsibilities, and efforts to achieve psychological resilience. Mental health’ is often used as a substitute for mental health conditions – such as depression, anxiety conditions, schizophrenia, and others.

According to the World Health Organization, however, mental health is “a state of well-being in which every individual realises his or her own potential, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to her or his community.”

So rather than being about ‘what’s the problem?’ it’s really about ‘what’s going well?’

To make things a bit clearer, some experts have tried coming up with different terms to explain the difference between ‘mental health’ and ‘mental health conditions’. Phrases such as ‘good mental health’, ‘positive mental health’, ‘mental wellbeing’, ‘subjective wellbeing’ and even ‘happiness’ have been proposed by various people to emphasise that mental health is about wellness rather than illness. While some say this has been helpful, others argue that using more words to describe the same thing just adds to the confusion.

As a result, others have tried to explain the difference by talking about a continuum where mental health is at one end of the spectrum – represented by feeling good and functioning well – while mental health conditions (or mental illness) are at the other – represented by symptoms that affect people’s thoughts, feelings or behaviour.

### **Factors affecting mental health during lockdown**

**Economic Crisis-** As the world grapples with the coronavirus pandemic, unresolved old wounds may trigger another financial meltdown.

As wealthy nations spend trillions trying to keep businesses afloat, they are relying on banks to maintain the flow of cash to industries and offering loan repayment holidays to consumers.

In Europe, where banks have yet to recover from the 2008 North Atlantic Financial Crisis, there are fears that bad loans will topple some banks and financial institutions.

In the United States, President Donald Trump's administration has been rolling back safeguards to prevent another financial crisis, relaxing rules on how much money banks should have on hand to cover losses, weakening stress tests and allowing more proprietary trade.

Remember when banks would bet against their own clients? For more than a decade, banks stopped using their own money to bet on markets but they have lent money to hedge funds to do just that.

Bloomberg calculated that Trump's tax cuts saved the US's top six banks \$32bn - at the same time these banks cut jobs, slashed borrowing and ramped up payments to shareholders. The 2008 financial crisis has cost US taxpayers an estimated \$23 trillion or \$70,000 dollars per American.

In Europe, despite politicians saying taxpayers would no longer be on the hook for bailouts, they are still happening. In December, Germany's \$4bn rescue of Norddeutsche Landesbank-Girozentrale was approved by the European Commission.

Emilios Avgouleas, the chair of international banking law and finance at the University of Edinburgh, shared his thoughts with Al Jazeera on whether the world could be heading for another financial crisis.

Rating agencies, both global and domestic, are unanimous that the Covid-19 pandemic will be an economic tsunami for India.

Even though the country may not slip into a recession, unlike the Eurozone, the US, or Asia-Pacific that have stronger trade ties to China, analysts believe the impact on India’s GDP growth will be significant.



India is currently in the midst of a 21-day lockdown, that began on March 25, to contain the spread of the coronavirus. The fallout of the move will spill over to financial year 2021, which begins on April 1 . In India, GDP growth is already at a decadal low and any further dent in economic output will bring more pain to workers who have seen their wages erode in recent times.

**Job insecurity-** Workers without a university degree will be hardest hit by the Covid-19 crisis, raising fears of increasing inequality across Europe, where up to 59m jobs are at risk.

Nearly 80% of workers facing job insecurity – including cuts to hours or pay, temporary furloughs, or permanent layoffs – do not have a university degree, according to new research by the consultancy firm McKinsey.

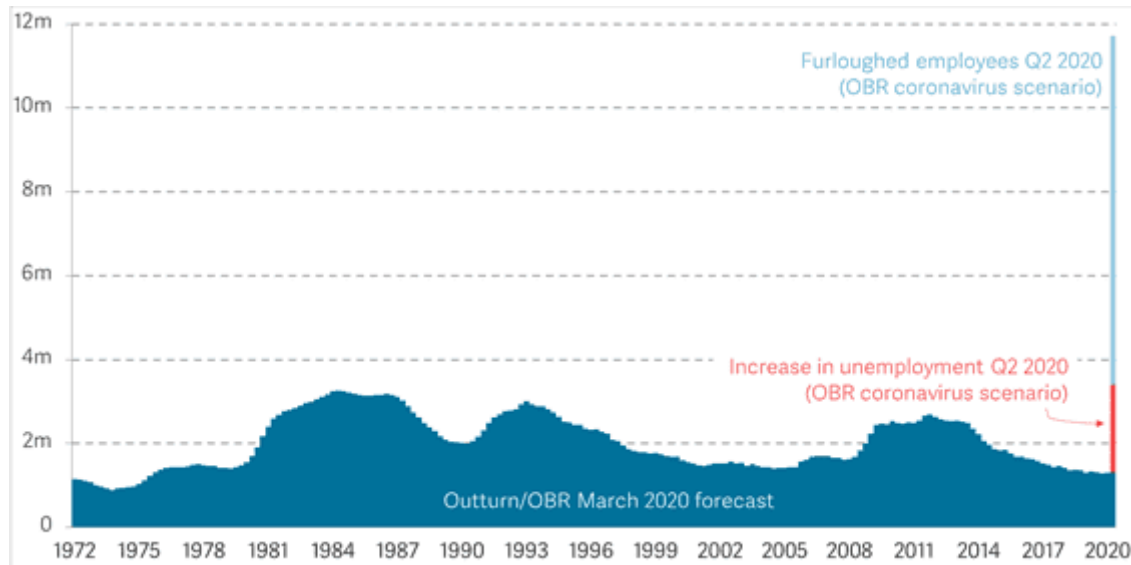
People at risk include retail staff, cooks and actors, as well as construction workers and office support staff, who are twice as likely to see their livelihoods under threat during the outbreak because they work in close proximity to others and have significant exposure to the public.

Low-insecurity occupations include workers who either do not need to work in close proximity to others, such as accountants, architects and journalists, or whose work provide essential health services, such as healthcare staff or other essential services such as police, food production, education, public transport, or utilities.

The research raises concerns that the coronavirus outbreak could widen the gap between rich and poor across the EU and UK. “Short-term job risk is highly correlated with level of education, potentially exacerbating existing social inequalities,” McKinsey said.

The warning came as Britain’s coronavirus job retention scheme starts accepting applications for government support from firms that have furloughed their staff.

While many countries, including the UK, have rolled out massive stimulus programmes to help soften the economic blow of national lockdowns, McKinsey warned that Europe could still face social unrest as a result of rising unemployment.



Chart

showing the impact of the UK's furloughing scheme Photograph: The Resolution Foundation

“Moreover, unemployed people are twice as likely to experience mental illness (and even more so for blue-collar workers), and they receive inpatient treatment more often,” the report added.

In the UK alone, up to 11 million people could end up furloughed or unemployed over the next three months, according to separate research by the Resolution Foundation, which also showed that low-paid workers would be hardest hit.

But the foundation said that the UK's coronavirus job retention scheme – in which the government will pay for 80% of a worker's pay, up to £2,500 per month – has so far shielded the UK from the worst-case economic shock. The foundation's economist, Daniel Tomlinson, said the scheme “is what stands between Britain experiencing high unemployment over the coming months and catastrophic Great Depression-era levels of long-term joblessness.

More than 15 million jobs could be lost in India's export sector due to half of all orders getting cancelled and units unable to repay loans due to the Covid-19 pandemic and the ensuing lockdown, the apex body of exporters said on Friday.

The cancellations and postponement of shipments have eroded packing credits and impacted exporters' fund-liquidity position as cash flows have completely dried up.

**Food crisis-** The Covid-19 crisis began right in the middle of *Rabi* season, when winter crops are harvested before the heatwave from April to June. This year's harvest of irrigated crops – legumes, oilseeds, cereals, fruits and vegetables, etc – was looking promising.

However, on 24 March 2020, Narendra Modi, Prime Minister of the Indian Union (29 states and eight territories), extended the original one-day “people’s curfew” to a three-week lockdown. The Trade Promotion Council of India (TPCI) on Monday said there is an above 100 per cent spike in demand in essential commodities such as rice, wheat and pulses. Other food categories like- confectioneries, sweets, organic processed food and spices have also witnessed 15-20% rise this month, the council said.

As per TPCI Chairman Mohit Singla, the major destinations where Indian food sector has witnessed demand are the US, Europe, Australia, New Zealand, Israel, Palestine and Egypt. A study by the Centre of Policy Research — A Crisis of Hunger — shows that the lockdown has created an "unprecedented food crisis in Delhi". While those with a monthly income may have a few days of food supply stocked, daily wage labourers who have been rendered jobless have no income and cannot buy food.

The Kejriwal government has announced relief measures for the vulnerable strata of the society but the survey found that "these have serious lacuna that must be identified and addressed to respond to the unfolding crisis of hunger at hand". The government had announced monetary relief for registered workers as well but this fund does not cover non-construction unorganised workers like e-rickshaw, domestic workers and workers employed in small factories and shops, etc. There is no existing mechanism to reach them, the survey report pointed out. "In order to ensure wider reach of these funds, the Chairman of the Board, the Labour Minister of Delhi, will have to expedite the constitution of the board, call an emergency meeting and either waiver or significantly lower registration requirements. If required, Supreme Court and or Parliamentary intervention must be sought to make the required amendments," recommended the report.

Out of the 2,00,000 labourers in Delhi, only 55,000 are registered, said Ashwin Parulkar, a senior researcher at CPR, who worked on the project. "In addition to that, it is an administrative management issue as well, as the boards (dealing with the registration) are defunct. Part of the work is pointing out people who would need relief. A whopping 84 per cent of India's workforce is informal and out of that 15.1 crore people are casual labourers (33 per cent of the workforce). In this emergency situation, identifying sites of vulnerability and mobility is needed to provide the cash compensation but also the food provisioning, shelter and other social protection measures," added Ashwin. India’s hinterland is suffering silently. Coronavirus may have spared it thus far but

the sudden loss of income triggered by job losses of those who migrated to cities, is taking its toll. Those who chose to stay back in the countryside and are earning their livelihoods through agriculture, are forced to feed their produce, especially the perishables, to the cattle as the lockdown has halted their fruits and vegetables from reaching the urban markets.

In Karnataka, tonnes of grapes have found their way to compost pits amounting to hundreds of crores of rupees. But that is not all. If stay-home orders are prolonged, the farmers in the villages will be staring at bigger economic losses, as early as next week. What was seen as only the problem of supply so far, could turn into a shortage of production. That should be an alarm bell for the government

**Closure of school and coachings for children-** The 2019–20 coronavirus pandemic has affected educational systems worldwide, leading to the near-total closures of schools, universities and colleges.

As of 27 April 2020, approximately 1.725 billion learners have been affected due to school closures in response to the pandemic. According to UNICEF monitoring, 186 countries have implemented nationwide closures and 8 have implemented local closures, impacting about 98.5 percent of the world's student population On 23 March 2020, Cambridge International Examinations (CIE) released a statement announcing the cancellation of Cambridge IGCSE, Cambridge O Level, Cambridge International AS & A Level, Cambridge AICE Diploma, and Cambridge Pre-U examinations for the May/June 2020 series across all countries International Baccalaureate exams have also been cancelled.

School closures impact not only students, teachers, and families, but have far-reaching economic and societal consequences. School closures in response to COVID-19 have shed light on various social and economic issues, including student debt digital learning food insecurity, and homelessness, as well as access to childcare health care housing, internet, and disability services. The impact was more severe for disadvantaged children and their families, causing interrupted learning, compromised nutrition, childcare problems, and consequent economic cost to families who could not work.

In response to school closures, UNESCO recommended the use of distance learning programmes and open educational applications and platforms that schools and teachers can use to reach learners remotely and limit the disruption of education.

Efforts to stem the spread of COVID-19 through non-pharmaceutical interventions and preventive measures such as social-distancing and self-isolation have prompted the widespread closure of primary, secondary, and tertiary schooling in over 100 countries

Previous outbreaks of infectious diseases have prompted widespread school closings around the world, with varying levels of effectiveness. Mathematical modelling has shown that transmission of an outbreak may be delayed by closing schools. However, effectiveness depends on the contacts children maintain outside of school. School closures may be effective when enacted promptly. If school closures occur late relative to an outbreak, they are less effective and may not have any impact at all. Additionally, in some cases, the reopening of schools after a period of closure has resulted in increased infection rates. As closures tend to occur concurrently with other interventions such as public gathering bans, it can be difficult to measure the specific impact of school closures.

### **Solutions for coping stress during lockdown**

- 1- The best way to spend time during lockdown is doing meditation. It relaxes and freshens our mind.
- 2- Yoga is also a good option. Certain postures and breathing exercises can help us in raising immunity.
- 3- Playing games with children and spending time with them can also help them to overcome stress
- 4- Listening to relaxative music and dancing can also relax our mind.
- 5- Everyone should practice his/her hobbies for some time.

### **Conclusion-**

It has been found that increased lockdown due to corona virus has a very devastating effect on the minds of general people. There are certain ways which can relax our minds. Yoga and meditation is a very fruitful solution to remain stress free. People should practice yoga and their hobbies for a positive mindset. They should not think about the future but should think about the present. They should treat it as a moment for spending with their family.

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## **A Short Report on COVID-19**

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DEPARTMENT OF BOTANY,Sukhdai Smarak Mahavidyaia  
Ratupura,THAKURDWARA,(U.P)

On January 2020 the Director General declared that the outbreak of 2019-nCoV constitutes a Public Health Emergency of International Concern. WHO Emergency Use Listing (EUL) is open to candidate in vitro diagnostics (IVDs) to detect SARS-CoV-2(originally called 2019-nCoV).

Since 28 February 2020, manufactures of IVDs for the detection of SARS-CoV -2 nucleic acid are invited to submit an Expression of Interest (EOI) for assessment of candidate IVDs under the EUL procedure .On 17th April WHO extended the invitation of manufacturers of rapid diagnostic test (RDTs) intended for antibody detection. Currently the following IVDs are eligible for EUL submission:

1. Assays for the detection of SARS- CoV-2 nucleic acid and.
2. Rapid diagnostic test for the detection of IgM/ IgG to SARS -CoV-2.

### **"Solidarity" clinical trial for COVID-19 treatment-**

"Solidarity" is an international clinical trial to help find an effective treatment for COVID-19, launched by World Health Organisation and partners.

The Solidarity Trial will compare four treatment options against standard of care to assess their relative effectiveness against COVID-19. By enrolling patients in multiple countries, the Solidarity Trial aims in rapidly discover whether any of drugs slow disease progression or improve survival. Other drugs can be added based on emerging evidence.

### **Participation of solidarity.**

The Solidarity Trial provides simplified procedures to enable even overloaded hospitals to participate, with no paperwork required. As of April 21, 2020, over 100 countries are working together to find effective therapeutics as soon as possible, via the trial.

WHO is inviting developers and companies to calibrate and ensuring affordability and availability of the treatment opinion if they prove effective.

**Reference to Support for solidarity.**

:Bent Hoie, Minister of Health and care Services Norway : Dr. Jeremy Farrar, Director of Wellcome and Chair of the WHO R&D Blueprint Scientific Advisory Group.





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डॉ. वंदना पांडेय  
एसोसिएट प्रोफेसर हिंदी विभाग  
गोकुलदास हिंदू गर्ल्स कॉलेज मुरादाबाद

डॉ. तुहिना पांडेय  
अतिथि प्रवक्ता  
दर्शनशास्त्र विभाग  
इलाहाबाद विश्वविद्यालय  
प्रयागराज

आज हम सभी संकट विश्वव्यापी संकट के दौड़ से गुजर रहे हैं जिसने न केवल शारीरिक बल्कि मानसिक रूप से भी हमें और हमारे सामाजिक संबंधों को नए सिरे से सोचने के लिए विवश किया है। अगर देखा जाए तो महामारियों का अस्तित्व मानव जाति के अस्तित्व के साथ ही प्रारंभ हुआ। आज से हजारों साल पहले हैजा, चेचक, प्लेग आदि महा मारियां असाध्य थीं आज हमने इन पर विजय प्राप्त की। भारत ही नहीं बल्कि पूरे विश्व एक ऐसे मोड़ पर खड़ा है जहां हमें अपनी यात्रा नए सिरे से पुनः प्रारंभ करनी है। कोरोना ने हम सभी को एक नए सिरे से, नए दृष्टिकोण से सोचने के लिए मजबूर किया है तथा मानव अस्तित्व एवं उसकी कार्यप्रणाली के भी विश्लेषण करने के लिए बाध्य किया है।

अभी तक किए गए अध्ययनों से पता चला है कि कोरोना वायरस एक ऐसा समूह है जो जानवरों और मनुष्यों में बीमारी फैला सकता है।

कोरोना वायरस मनुष्य के सांस संबंधी विभिन्न संक्रमण फैला सकता है जैसे सामान्य सर्दी खांसी बुखार बुखार फेफड़ों का इन्फेक्शन जिसे मिडिल ईस्ट रेस्पिरेट्री सिंड्रोम(डम्पै) और सीवियर एक्यूट रेस्पिरेटरी सिंड्रोम (ई) के नाम से जाना जाता है। कोविड 19 कोरोना वायरस से होने वाला संक्रामक रोग है जो दिसंबर 2019 में चीन के वुहान प्रांत में सर्वप्रथम अस्तित्व में आया। मैं इसके लक्षणों पर गौर करें तो इसके शुरुआती लक्षण बुखार, थकान, और सूखी खांसी है। यह लक्षण आमतौर पर धीरे-धीरे शुरू होते हैं लेकिन आगे चलकर यह अत्यंत घातक हो जाते हैं। इसमें सांस लेने में कठिनाई होती है और धीरे-धीरे यह हमारे शरीर के संरचना को नुकसान पहुंचाते हैं। इसमें सबसे गंभीर बात तो यह है कि यह संक्रमण बहुत तेजी से

फैलता है। यह बीमारी छोटी संक्रामक बूंदों के माध्यम से एक व्यक्ति से दूसरे व्यक्ति में फैलती हैं जोकि कोविड19 के मरीज के खांसने, छीकने के जरिए फैलती हैं। कोविड 19 संक्रमण तब भी फैलता है जब संक्रमण से ग्रस्त व्यक्ति के खास ने या सांस लेते समय निकली बूंदों को सांस के जरिए हम अपने पास ले लेते हैं। इस रोग में सबसे खतरनाक बात यह है कि इसका संक्रमण बहुत तेजी से फैलता है एक व्यक्ति से यह देखते ही देखते कई लोगों को संक्रमित करता है संक्रमण से रोकने के लिए संक्रमण से रोकने के लिए सोशलडिस्टेंसिंग को रोग से बचाव के रूप में बहुत सख्ती से अपनाया जाता है ताकि संक्रमण की कड़ी टूट सकें तथा कम से कम लोग इससे प्रभावित हों और जो प्रभावित हो उनका इलाज किया जा सके।

भारत के संदर्भ में देखा जाए तो भारत सरकार ने सोशल डिस्टेंसिंग एडवाइजरी के अनुसार डिस्टेंस एडवाइजरी के अनुसार

सभी शैक्षिक संस्थाओं जिम ,म्यूजियम सामाजिक एवं सांस्कृतिक केंद्रों को बंद रखा है

- सभी को घर में रहने की सलाह दी गई है और उन्हें ऑनलाइन पढ़ने को कहा गया है।
- प्राइवेट संस्थाओं के कर्मचारियों से कहा गया है कि वह घर से काम करें संभव हो तो मीटिंग वीडियो कॉन्फ्रेंसिंग के जरिए करने पर जोर दिया गया है बहुत जरूरी ना हो तो बड़ी बैठकों को स्थगित करने या उनमें लोगों की संख्या को कम करने की बात की गई है।

सामाजिक समारोहों कुछ समय के लिए स्थगित करने की सलाह दी ।

- एक दूसरे से हाथ मिलाने और गले लगने से बचने के लिए कहा गया है है
- कमर्शियल एक्टिविटीज में 1 मीटर की दूरी बनाए रखें
- इनका ध्यान रखें किसी भी तरह की गैरजरूरी यात्रा न करें और बस ट्रेन हवाई जहाज में यात्रा करते वक्त लोगों से दूरी बनाए रखें
- सभी प्राइवेट अस्पतालों को से जुड़े जरूरी प्रोटोकॉल का पालन करना चाहिए
- घर से बाहर निकलने पर मास्क एव दस्तानों का प्रयोग अवश्य करें।

- सभी को मालूम है कि हाथों को स्वच्छ रखा जाए और समय-समय पर नियमित अंतराल पर उन्हें धोते रहें तथा स्वच्छता का पूरा ध्यान रखें।

यह ऐसे उपाय हैं जो हम सबको मालूम हैं और हम नियमित रूप से इसे अपने जीवन शैली के रूप में अपना भी रहे और इनके प्रति जागरूक भी हैं पर यहां आवश्यक है कुछ ऐसे तथ्यों के विषय में चर्चा करने का जो हमें मानसिक, सामाजिक, मानवीय एवं संवेदनात्मक स्तर पर मजबूत करें। व्यक्तिगत स्तर पर

देखें तो इस दौरान हम सब ने कहीं न कहीं इस संकट को अपने अंदर महसूस किया एक डर के रूप में इसे जिया भी है वही डर जिसमें हमारे जीवन को अचानक ही बदल दिया। एक दिन में ही बरसों की पड़ी हुई आदत बदलना कोई आसान बात नहीं हमारी जीवनशैली, आदतें रोजमर्रा का कार्यकलाप अचानक एक दिन में कोरोनावायरस ने बदल कर रख दिया। इसका असर कहीं न कहीं हमारे ऊपर पड़ा। एक खालीपन जिसने हमें हिला दिया। पूरा दिन कैसे कटेगा, लोगों से बिना मिले कैसे रहेंगे, घर के काम कैसे होंगे, हमारी रोज की जरूरतें कैसे पूरी होगी होंगी—बहुत सारे ऐसे प्रश्न थे जिन्होंने मानसिक रूप से हमें प्रभावित किया। साथ ही सबसे बड़ा डर था कि कहीं मुझे भी कोरोना न हो जाए! इस डर ने हमारी रातों की नींद और दिन का चैन छीन लिया और इसका असर करें हमारे शरीर की प्रतिरोधक क्षमता पर भी पड़ा। यह सच है कि अगर हम मानसिक रूप से कमजोर हो जाते हैं तो शारीरिक रूप से भी कहीं ना कहीं क्षीण होते हैं। और भला कमजोर मन और शरीर के साथ हम इस कठिन संकट का सामना कैसे सकते हैं! जहां तक दवा और इलाज की बात है रिसर्च लगातार चल रही है और रोज और हर दिन हर दिन नए शोध और परिणाम सामने आ रहे हैं। अमेरिका सहित विश्व के कई देश लगातार इस पर काम कर रहे हैं और उम्मीद की जा रही है कि जल्द ही इसकी वैक्सीन बनकर तैयार हो जाएंगी। जल्द ही इसकी वैक्सीन बनकर तैयार हो जाएंगी। विज्ञान और तकनीकी ने इतनी उन्नति कर ली है इतनी प्रगति कर ली है कि जल्द ही इसका बेहतर इलाज भी आ जाएगा।

हमारे सामने प्रश्न यह है कि हम वर्तमान समय में कि उसके कैसे लड़ सकते हैं एक मजबूत दिमाग एक स्वस्थ शरीर और एक संवेदनशील हृदय आज के समय की सबसे बड़ी आवश्यकता है। पराजित एवं डरे हुए मन से हम यह लड़ाई बिना लड़े हार जाएंगे। शरीर की इम्यूनैटी मजबूत करने के लिए

हमें सर्वप्रथम अपने खान-पान पर ध्यान देना होगा अपने खाने में ऐसी चीजों को सम्मिलित करे जो हमारी प्रतिरोधक क्षमता को बढ़ा सकें हमारे घर में उपलब्ध है—आवश्यकता है उन्हें पहचानने की और उनका प्रयोग करने की। कुछ बिंदुओं पर विचार करते हैं—

- दिन में कई बार गरम पानी नींबू युक्त पानी हल्दी वाले पानी का सेवन करें
- अपने भोजन में तरल पदार्थ को अधिक स्थान दें
- अदरक काली मिर्च अदरक तुलसी का प्रयोग करें।
- विभिन्न प्रकार के काढ़ों का प्रयोग करें।

अपने भोजन में फल और हरी सब्जियों को स्थान दें।

- मेडिटेशन योग प्राणायाम नियमित रूप से करें।

संकट के समय में महामारी से निपटने का सबसे कारगर तरीका है कि हम अपने जीवन में उन चीजों को स्थान दें जिन्हें अभी तक हमने हाशिए पर रखा था। रोज की आपाधापी में हम उन बातों को भूल गए थे और वह है हमारी संवेदनशीलता जो हमें एक तार में जोड़ती है। आगे बढ़ने की होड़ में हमने जीवन के कुछ जरूरी तथ्यों एवं तत्वों को नजरअंदाज कर दिया था जिस पर हमें विचार विश्लेषण करना बहुत आवश्यक है हमारा अस्तित्व बचा और बना रहे। हम इस पर विजय प्राप्त करेंगे पर अभी समय है कि हम किस तरह दूरी बनाते हुए इसका मुकाबला कर सकें और इस पर जीत सकें ताकि आने वाले समय में हम अपनी पीढ़ियों को यह बता सकें हमने कितनी बहादुरी और समझदारी से इस समय सामना किया था और विजयी हुए थे।



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अपनी शै"वावस्था से आजतक "साहित्य समाज का दर्पण है" उक्ति हमारे मस्तिष्क पर छाई रहती है। अतः हम सभी साहित्य में जीवन की जटिलता, सच्चाई व गूढ़ बातों को ढूढते रहते हैं और साहित्य के माध्यम से जीवन को जीने की को"ी" करते हैं। पुस्तकों में अनायास ही कुछ ऐसी जीवन की विषम व कभी न सोच समझने वाली बातें इन तक पहुँच जाती है जोकि हमको वर्तमान में होने वाली असाधारण परिस्थिति को भी दर्शाती हैं। चाहे वह हिन्दी साहित्य हो अथवा अंग्रेजी साहित्य, हमको लगभग 100 वर्षों में होने वाली इस महामारी के अव"ेष चिन्हित होते हुए दिखाई देते हैं और वह भी स्वयं भोगी हुई पीड़ा के रूप में। यदि हम बात करें हिन्दी साहित्य की तो प्रसिद्ध कवि सूर्यकान्त त्रिपाठी 'निराला' ने स्वयं 1918 की विभीषिका का वर्णन किया जब वे मात्र 22 वर्ष के थे और अपनी नवयौवना पत्नि से मिलने जा रहे थे तो फलू के कारण उन की पत्नि का देहान्त हो गया था। न सिर्फ उनकी पत्नी अपितु एक माह की पुत्री व अनेकों पारिवारिक सदस्यों को उन्होंने इस भीषणकाल में खोया। मु"ी प्रेमचन्द्र की कहानी में भी हैजा नामक महामारी से मृत्यु, फणी"वर रेणु का वि"व प्रसिद्ध उपन्यास मैला आँचल भी महामारी से एक डाक्टर के संघर्ष की कहानी, और अनेकों ऐसे उदाहरण मौजूद है। मेरे दादाजी को निरालाजी का सानिध्य प्राप्त हुआ था और उन्होंने मुझे एक बार ये उद्धरण सुनाया था कि निराला जी को वो वाक्या बाद में भी समकक्ष पीड़ा देता था। अगर हम अंग्रेजी साहित्य की बात करें तो 20वीं शताब्दी में जेम्स जॉन्स जोकि अल्बर्ट कर्म्स के द्वारा रचित है इस के वि"व युद्ध एवम् उसके बाद प्लेग के फैलने के कारण भयावह रूप से पैदा होने वाली हृदय विदारक घटनाओं का चित्रण किया गया है।

इसी प्रकार अहमद अली का उपन्यास 'शूंसपहीज पद क्मसीप' जोकि 1918 की पलू नामक महामारी का वीभत्स रूप और उससे दिल्ली की बदहाल हालत का विवरण देता है। इसी प्रकार विभिन्न भाषाओं का साहित्य हमारे सामने इस प्रकार की परिस्थितियों को इस रूप में हमारे सामने उकेरता है कि हम यह सोचने पर विवर्ग है कि जब जब धरती पर मानवता का हास हुआ है और मानव ने ईवरीय सत्ता को अपने हाथ में लेने की कोर्गी की है, इस प्रकार की ईवर प्रदत्त आपदाओं ने विनार्ग का कहर बरपाया है। साहित्य एवं लेखक की लेखनी समाज व मानव मात्र को आगह करती है कि इन आपदाओं से हम को किस प्रकार सामना करना है एवम् अपना आचार व्यवहार कैसे करना हैं। इस समय में अपने मानसिक स्वास्थ्य पर भी हमको ध्यान देना है और इस सबके लिये साहित्य से अच्छा कोई साथी हो हीन ही सकता। रवीन्द्रनाथ टैगोर की प्रसिद्ध कविता 'पुरातन भरतिया' जोकि एक सेवक की जीवनी पर आधारित है जोकि अपने मालिक की उस समय से सेवा करता है जब चेचक की चपेट में है और सब उसका साथ छोड़कर जा चुके हैं। यह कविता प्दजमतदमज से सब से ज्यादा चर्चित कविताओं में से एक है किन्तु इसका सन्दर्ग हमको मानवता का पाठ पढ़ाता है।

अतः हम चाहे जिस भाषा के साहित्य कोभी देखें या पढ़ें, हमको सभी में अन्तर्निहित एक ही सन्दर्ग मिलता है कि इस महामारी काल में मानवता ही सर्वोपरि है। जिस प्रकार महामारी विनार्ग का कारण बनती है हमें कभी भी अपने अन्दर बुराइयाँ जैसे कि ईर्ष्या, द्वेषको पनपने नहीं देना चाहिये। साहित्य में मिलने वाले इन सभी सन्दर्भों को हम दो तरह से ले सकते हैं, एक तो स्वयं साहित्यकारों की आपबीती जैसे कि महाकवि निराला जोकि उनको लेखनी के मर्म को और बढ़ावा देते हैं और दूसरे वो लेखक जोकि महामारी या समकक्ष घटनाओं को आधार बनाकर रचनाएँ सृजित करते हैं जैसे कि रेणू की काल जयी रचना "मैलाआंचल"। इन सभी साहित्यिक कृतियों से चाहे वे किसी भी भाषा में हों, हमारे मन मस्तिष्क में इस प्रकार की वीभत्स एवं कपकपां देने वाली संभावनाओं का एक खाका बन जाता है। पढ़ने पर तो यह सब अप्रत्यार्गित सा लगता है किन्तु जब शताब्दी में एक बार होने वाली इस प्रकार की सच्चाई को रूबरू होना पड़ता है तो यह हमारे मस्तिष्क में पढ़ी गई इन पुस्तकों को साकार करती हुई प्रतीत करती है। साहित्य की तुलना विज्ञान से तो नहीं की जा सकती क्योंकि विज्ञान संभावनाओं पर आधारित नहीं है जबकि साहित्य कल्पनार्गील है। किन्तु साहित्य की कल्पनार्गीलता कही न कहीं हमारे मन को भयावहता को सहने व समझने की शक्ति प्रदान करती है और हम किसी भी परेर्गानी की पराकाष्ठा को सोच पाते हैं। जिसके परिणाम स्वरूप हमारी मानसिक स्थिति इन सब बातों को झेलने की क्षमता विकसित कर पाती है और कहीं न कहीं मानव जन इस पीड़ा को झेल लेता है।

अतः साहित्य न सिर्फ मानव मात्र को अन्धी शिक्षा प्रदान कर रहा है। अपितु जीवन में आने वाली विषम से विषम परिस्थितियों के बारे में न सिर्फ आगह कर रहा है अपितु मानव के चेतन या अवचेतन मन में उससे लड़ने की क्षमता भी विकसित कर रहा है। जैसा कि टी. एस. एलीयट ने साहित्य को परिभाषित किया है कि "साहित्य को अतीत की आवाज़ देनी चाहिए। वर्तमान को परिष्कृत करना चाहिए और भविष्य को ढालना चाहिए" डब्ल्यू.बी. येट्स परिभाषित करता है "साहित्य युगों के जुनून और वि"वासों के साथ भरा होना चाहिए अन्य यह कालानुक्रमिक है" हर्नी हडसन परिभाषित करते हैं कि "इतिहास में तारीखों और नामों के अलावा कुछ भी सच नहीं है। जबकि साहित्य में सबसे कुछ सच है नाम और तारीखें" प्रत्येक साहित्यिक के भीतर युग का चित्रण होता है। यही कारण है कि प्रत्येक युग में अपने स्वयं के लिटरेचर को गैस करता है जो इतिहास का चित्रण है। जैसा कि डब्ल्यू.बी. येट्स का दावा है कि "कलाकार अपने जीवन को बेहतर ढंग से जी सकता है।"

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दयानंद आर्य कन्या महाविद्यालय,  
मुरादाबाद

हम सब को कोरोनावायरस डराने लगा है । रक्तबीज की तरह बढ़ता यह वायरस इंसानी सभ्यता की अब तक की सबसे बड़ी चुनौती बन चुका है। इसकी काट खोजने में वक्त लगेगा, लेकिन इतना निश्चित ही है कि इस जंग में जीत तो निश्चित ही इंसानियत की ही होगी, बस हमें संयम और संकल्प को नहीं छोड़ना है।

इतिहास गवाह है कि महामारियों ने कई बार दुनिया में खलबली मचा दी है, लेकिन यह भी निश्चित है कि हर महामारी के बाद एक नया सूरज निकलता है। तत्पश्चात नई राहें, नई सभ्यतायें विकसित होती हैं। ऐसी ही कुछ महामारियों का जिक्र करना आवश्यक है। यूरोप में चौदहवीं सदी का पांचवां और छठा दशक यूरोप के लिए काफी मुश्किल का वक्त था, जब प्लेग के कारण लगभग एक तिहाई आबादी खत्म हो गई। जिससे सामंती व्यवस्था खत्म हो गई और उपनिवेशवाद को बढ़ावा मिला। पंद्रहवीं सदी के आखिर में चेचक, खसरा, मलेरिया, हैजा, टाइफस आदि बीमारियों ने दुनिया की आबादी को बहुत कम कर दिया। जिसके परिणामस्वरूप कार्बन डाइऑक्साइड का संयंत्र नीचे आया और हिमयुग लौट आया। एक और बीमारी जिसे यलो फीवर के नाम से जाना गया, इसने भी कई देशों की जन-धन हानि में बहुत सक्रिय योगदान दिया। 1888 से 1897 तक अफ्रीकी देशों में राइंडरपेस्ट नामक वायरस ने पालतू पशुओं को लगभग खत्म ही कर दिया था।

अचानक ही कोरोनावायरस ने दस्तक दी । उससे पहले हम व्यस्तता को कोसते आ रहे थे, अपने परिवार के लिए भी हमारे पास समय नहीं था। यदि कुछ लोगों को छोड़ दें तो सभी अपने परिवार के साथ हैं। की बार यह ख़्याल आता था कि काश ! समय होता तो यह करती। लो हो गई मुराद पूरी, कर लीजिए जो करना चाहते थे, किसने रोका है आप को। अपनी आर्थिक क्षमता के अनुसार दमित इच्छाओं को पूरा करने का फैसला ले सकते हैं आप। यह तो रही व्यक्तिगत जिंदगी, परन्तु विपत्ति की इस घड़ी में समाज के लिए कुछ विचार हमारे जहन में न आए तो हम बिना पूंछ के पशु के समान हैं। मेरी मानिए तो यह समय अपनी प्राथमिकताओं पर पुनः विचार करने का है। असमय आई विपदाओं और विपत्तियां हमें हमारी लापरवाही पर ध्यान देने का अवसर देती हैं।



दो दृ दो महायुद्धों की बिभीषिका झेल चुके विश्व के शासकों को यह संदेश जरूर प्राप्त हो गया कि सरकार का पहला दायित्व संकट की घड़ी में अपनी प्रजा की मूलभूत आवश्यकताओं को पूरा करना होना चाहिए। वायरस के रौद्र रूप ने सम्पन्न यूरोपीय देशों को भी घुटने टेकने के लिए मजबूर कर दिया। यूरोपीय देशों ने भी अपनी सीमाओं पर होने वाले खर्चों को रोक, अपने देश के नागरिकों के न्यूनतम जीवन जीने योग्य आवश्यक सामग्रियों को अपनी प्राथमिकताओं में शामिल किया। व्यक्तिगत रूप से मुझे यह पहली ऐसी सीख दिखाई देती है कि चाहे कितने भी हथियार खरीदे जायें परन्तु किसी भी देश के नागरिकों की चिकित्सा और जीवन रक्षा से समझौता नहीं किया जाए। सम्पूर्ण ब्रह्माण में आप अपनी विजय पताका फहराने का स्वप्न जरूर देखें लेकिन उससे पहले यह सुनिश्चित करना कि उस देश के नागरिकों को भूख से समझौता तो नहीं करना पड़ रहा है। वःजीरे आलाओं की वह विजय पताकाएं व्यर्थ हैं यदि देशों के नागरिकों को फाके मारने पड़ रहे हैं।

भारत जैसे विशाल जनसंख्या वाले देश में कोई भी एक ऐसी व्यवस्था की सख्त आवश्यकता है जिसमें राजा हो या रंक उसकी स्पष्ट पहचान हो ताकि आपातकालीन परिस्थितियों में तत्काल मदद की जा सके। इसके साथ ही वर्तमान समय हमें यह भी शिक्षा दे रहा है कि हमारी शिक्षा इस प्रकार की हो कि हम आपातकालीन परिस्थितियों के कर्मठ योद्धाओं पर पत्थर न बरसायें, न ही आप बेकसूर को बेवजह बदनाम करें। कुल मिलाकर हमारी स्वास्थ्य सुविधाएं जनसंख्या वृद्धि के हिसाब से ही दुरुस्त होनी चाहिए।

वर्तमान समय बार बार हमें यह बताने का प्रयास कर रहा है, कि अपनी भूलों को यहीं सुधार लो, वक्त लौट कर आने वाला नहीं है। सम्राट अशोक ने भी कलिंग युद्ध जीत तो लिया था परन्तु अंत में संन्यास ही लेना पड़ा। कोरोनावायरस से लड़ाई को वर्तमान का कलिंग युद्ध ही माना जाय और एक सुरक्षित भविष्य की नींव रखी जाए।

सरकारी हित की बात की जाए तो निजीकरण के इस दौर में सरकार के पास यह महाधिकार होना चाहिए कि आपातकालीन परिस्थितियों में बह निजी क्षेत्रों को अपने हिसाब से जनहित में प्रयोग कर सके। तत्कालीन सरकारें ही मदद के लिए आगे आती हैं, ऐसे अनेकों राजनैतिक दल होते हैं जिन्होंने बरसों तक उन राज्यों पर राज्य किया होता है, उन्हें संकट की इस घड़ी में संकुचित राजनीतिक विचारधारा को त्यागकर मदद के लिए आगे आना चाहिए, साथ ही अन्य दलों का हौसला भी बढ़ाना चाहिए। एक आम नागरिक को भी बनाए गए कानूनों का सख्ती से पालन करते हुए अपना कर्तव्य निर्वहन करना चाहिए।

वर्तमान समय जैसे तैसे कर बीत ही जाएगा लेकिन सामाजिक दूरी का नियमित पालन हमें लम्बे समय तक करना होगा। यदि ऐसा नहीं किया तो कोरोनावायरस के विरुद्ध संघर्ष में शहीद हुए लोगों का यह वलिदान और यह लॉकडाउन की तपस्या भंग होते देर नहीं लगेगी। यह सामाजिक दूरी का जीवन चक्र अपनाना निश्चित ही भयभीत करने वाला है लेकिन यदि मन को तैयार कर लें तो जीत निश्चित ही इंसानियत की होगी।

एक और सीख जो यह वायरस हमें सिखा गया कि जब-जब हम प्रकृति का अति दोहन करते हैं तब तब प्रकृति ने हमें न केवल सचेत किया है अपितु हमारे इस भ्रम को भी तोड़ा है कि वेशक यह युग विज्ञान का युग है अपितु विज्ञान को भी चीजों का हल खोजने में वक्त लगता है। इस वायरस ने पुनर्विचार के उस दौराहे पर लाकर खड़ा कर दिया है जो चीख चीखकर अपनी जीवनशैली में बदलाव की वकालत कर रहा है। हम यह भूल जाते हैं कि हमारा वजूद प्रकृति से है ना कि प्रकृति का हमसे, हमें प्रकृति को अपने अंग के

रूप में स्वीकार करना होगा। महात्मा गांधी जी ने कहा भी था कि पृथ्वी हर मनुष्य की आवश्यकताओं को पूरा कर सकती है, परन्तु हमारे लालच को नहीं।

आज सब कुछ बंद है, हमारी दुकान भी और हमारे प्रतिद्वंद्वी की दुकान भी। शहर ही क्या पूरा विश्व ही बंद है। चारों ओर समय और फुर्सत के क्षण हैं। यह समय भी गुजर जाएगा लेकिन यह बात सोच कर हमारी रूह कांप उठेगी कि जिन चीजों में हम व्यस्त थे उन सब चीजों ने संकट की इस विकराल घड़ी में हमारा एक रत्ती भी साथ नहीं दिया। हम विश्व विजय के लिए युद्ध की तैयारियों में जुटे हुए थे, अस्त्र शस्त्र बना रहे थे, समाज को सम्प्रदायों और जातियों में बांटने की कोशिश में लगे हुए थे। लेकिन यह अजीब सा वायरस है कि किसी को भी नहीं वरखा रहा है। हम साम, दाम, दण्ड, भेद से अर्थ अर्जन कर रहे थे, लेकिन हर परिस्थिति में पैसा काम नहीं आता यह भूल जाते हैं हम। चाहे जितना भी बड़ा भू माफिया हो, चक्रवर्ती हो, जो जहां है वहीं पर रुक कर बस दो वक्त की रोटी ही खा रहा है। आज हम सब केवल मनुष्य हो गये हैं। लेकिन केवल मनुष्य होने का दावा करने वाला यह क्रम कितने दिनों तक चलेगा इसमें मुझे थोड़ा संदेह है।



## **Yoga and meditation – A way for fighting corona**

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### **Corona virus**

Coronavirus disease (COVID-19) is an infectious disease caused by a newly discovered coronavirus.

Most people infected with the COVID-19 virus will experience mild to moderate respiratory illness and recover without requiring special treatment. Older people, and those with underlying medical problems like cardiovascular disease, diabetes, chronic respiratory disease, and cancer are more likely to develop serious illness.

The best way to prevent and slow down transmission is be well informed about the COVID-19 virus, the disease it causes and how it spreads. Protect yourself and others from infection by washing your hands or using an alcohol based rub frequently and not touching your face.

The COVID-19 virus spreads primarily through droplets of saliva or discharge from the nose when an infected person coughs or sneezes, so it's important that you also practice respiratory etiquette (for example, by coughing into a flexed elbow).

At this time, there are no specific vaccines or treatments for COVID-19. However, there are many ongoing clinical trials evaluating potential treatments. WHO will continue to provide updated information as soon as clinical findings become available.

### **Corona – A pandemic situation**

Schools shut down, markets in disarray, some countries even in a lockdown - this is the global impact that has been caused by the COVID-19 Coronavirus. This virus originated in the Wuhan

district of China in December 2019 and, in a few months, has become a worldwide pandemic. The virus spread is similar to that of influenza, where a person is exposed to the virus because of coughing and any other form of respiratory droplets.

Coronavirus, when it affects a person, comes out in the form of cold, dry cough, and fever. If an infected person's saliva touches a surface, then that surface becomes a host for the virus. Any person who touches the surface, for example, a doorknob, a napkin, or even the button of an elevator then there is a chance to contract this virus. As Covid-19 scare grapples the whole country, people are getting concerned about their health. While practising good hygiene is a practice everyone must adopt, the one thing you can really do is to look for ways to boost your immunity naturally.

Yoga is one way you can naturally uplift your vitality without having to step out of the comfort of your home during this lockdown.

In a recent post, acclaimed nutritionist and celebrity dietician talked about the benefits of the same. Yoga guru Baba Ramdev also talked about different yoga poses which could come in handy during these times of crisis.

### **Simple Asaanas for raising immunity**

Yoga has been used for centuries in keeping the body functioning fit and fine, holistically. However, the benefits of yoga are not just limited to stress relief and mental wellness.

If practised properly, yoga can recharge your body, get rid of the toxins, negative energy and keep your vital organs functioning well. It can help you build resilience both inside and out. Certain yoga positions can help support, balance and boost the immune system. It can also help fight oxidative stress which poses a risk to the healthy cells. If done regularly, yoga reduces stress systemically in the body, which in turn, cuts down inflammation and degeneration.

Hence, while yoga does offer a great deal of wellness and support for your mind and body as a whole, here are four yoga poses which you can try to recharge your immunity and cut down your risk of danger.

**1-Windmill**-Keeping your legs strong throughout will give you a firm base from which to extend your arms and torso and turn from side to side. Feel your limbs being energized as circulation increases throughout your body.

1. Separate your feet wider than shoulder-width. Turn your toes out slightly. Inhale and stretch your arms over your head, interlock your fingers, and turn your palms up. Stretch your neck back to look at your hands, if comfortable.
2. Exhale and bend from the hips until your back is parallel to the floor.
3. Inhaling, release your fingers and extend your arms to the sides.
4. Exhale and swivel to the left from your waist, bringing your right hand to your left ankle, while rotating your entire torso to the left. Raise your left arm straight up, turning your head to look at your left hand. Your palm faces the left. Hold the pose for 20 to 30 seconds with slow and even breathing.
5. Exhale and swivel to the right, repeating the pose on the other side.
6. Rotate back to center, then slowly raise your torso, lowering your arms. Walk your feet together and relax.

## **2- Jumping Jacks**

Jumping jacks are an efficient total-body workout that you can do almost anywhere. This exercise is part of what's called plyometrics, or jump training. Plyometrics is a combination of aerobic exercise and resistance work. This type of exercise works your heart, lungs, and muscles at the same time.

Specifically, jumping jacks uses

- quadriceps
- hip flexors

Jumping jacks also involve your abdominal and shoulder muscles.

Read on to learn more about the benefits of jumping jacks and how to incorporate them into your exercise routine.

## **3- Ardhamatsyendraasana**

This pose is believed to have come from a fish that was blessed by Shiva after he realized that it had learned yoga after listening to him explain yoga to Parvati. The tale has it that the fish

remained motionless the entire time. After it was blessed by Shiva as Matsyendrasana, lord of fishes, it took on a divine form and came to land. On land, it sat in a spinal twisting posture that allowed it to absorb the teachings.

Ardha Matsyendrasana (ARE-dah MOT-see-en-DRAHS-anna) is a seated twist pose. It is the 9<sup>th</sup> of the 12 basic poses in Hatha Yoga. In Sanskrit, Ardha means half, matsya means fish, indra means king, and asana means pose. It, therefore, translates to Half Lord of the fishes pose. It is also called the spine twisting pose

#### **4- Garuda aasana**

This balancing pose helps to stimulate fresh blood flow throughout the body by squeezing pressure points—giving the body a jolt of immunity-boosting fluid. The squeezing motion in the legs and arms helps to boost circulation and release toxins. Thus increases immunity.

#### **5- Uttanasana**

1. Start standing with your hands on your hips. Exhale to hinge from the hips and bend forward. Think about creating as much length as possible from your hips to your head.
2. Release your fingertips toward the ground or your blocks.
3. Root down into the four corners of your feet.
4. Release the back of your head and neck.
5. On inhales, feel your torso lengthen, and on exhales, feel your chest reach toward your toes.
6. Stay in uttanasana for up to one minute.
7. To exit the pose, return your hands to your hips and slowly lift up, keeping the length in the front and back of your torso.

#### **6- Viparita Karani**

1. Begin seated beside an open wall, with your hip and shoulder against the wall.
2. Gently lower your torso down to the ground as your legs lift up against the wall.
3. Option to wiggle closer to or further away from the wall to your comfort level.

4. Option to place a block, pillow, or folded blanket under your hips to release any discomfort in the low back or hamstrings.
5. Allow your head to rest on the ground or a pillow and place your arms wherever they are most comfortable.
6. Stay anywhere from one to 15 minutes.
7. To release, push the bottoms of your feet into the wall and lift your hips slightly. If using a support, move the support out of the way. Gently roll to one side and stay for a few breaths before returning to your seat.

### **Simple breathing exercises to stay away from corona virus**

#### **1- Cat and cow breathing exercises**

This is a great yoga sequence that helps to improve circulation and clear congestion in the bronchial region and sinuses.

Benefits of Cat and Cow breathing exercise:

1. It stimulates digestion and, through muscular contraction and extension, pumps blood and lymphatic fluid through the thoracic muscle groups.
2. It increases cardiovascular fitness and helps stimulate the kidneys while relieving stress from the neck and shoulder area, and extending the lumbar spine region.

#### **2- Kapal bhati-**

Kapal meaning skull, Bhati meaning shining and pranayama meaning breathing technique. It is a great breathing exercise and can improve bodily functions. This breathing exercise can remove 80% of the toxins in our body through the outgoing breath. Regular practice of Kapal Bhati Pranayama can help detoxify all the systems in our bod How to do Kapal Bhati Pranayama.

Benefits of Kapal Bhati:

1. Helps in increasing the metabolic rate,
2. Improves digestive functioning, absorption, and assimilation of nutrients,
3. Improves blood circulation and nervous system functioning.

### **3 Bee Breath (Bhramri Pranayama) –**

Bhramari Pranayama or the humming Bee Breath produces a sound similar to the humming of a bee. Bhramari comes from the Sanskrit word 'Bramar' which means a kind of black Indian bee. Bhramari pranayama has a soothing effect on the brain and calms the mind. Gives relief if you have a slight headache

Benefits of Bhramari pranayama (Bee Breath)

1. Helps mitigate migraines
2. Helps clear the nasal and ear canals
3. Clears the sinuses
4. Helps in Improving concentration and memory
5. Effective in reducing blood pressure

### **3-Dog Breathing**

Dog Breathing cleanses and detoxifies the body while expelling the toxins out from deep inside your tissues. The sharp contracting movements while practising Dog Breathing strengthens the abdominal muscles.

Benefits of Dog breathing:

1. It beneficial in preventing fat deposition in the abdominal area,
2. Helps in improving the respiratory capacity and prevents thRelax your neck and shoulders.
3. Keeping your mouth closed, inhale slowly through your nose for 2 counts.
4. Pucker or purse your lips as though you were going to whistle.
5. Exhale slowly by blowing air through your pursed lips for a count of 4.e person from catching any respiratory disorder if practised regularly.



### 3- **Bhastrika-**

It strengthens the immune power. Practice bhastrika pranayama for 10 minutes in the morning and evening on an empty stomach daily for one month.

#### Benefits of Bhastrika Pranayam

1. Helps reduce episodes of cold, cough and flu
2. Improves thyroid function and tonsils

### 4- **Anulom Vilom-**

- 5- 1-Sit in any meditative posture either *Sukhasana, Padmasana* etc.
- 6- 2-Spine should be upright
- 7- 3-Using the right thumb, block the right nostril. Inhale through the left nostril for 2 seconds. Now block both nostrils and hold the breath for 4 seconds. (*Cardiac, Blood pressure patients and pregnant women should not hold their breath while doing this pranayama just keep inhaling and exhaling.*)
- 8- 4-Keep the left nostril blocked and release the right nostril. Exhale through the right nostril for 2 seconds. Now inhale through the right nostril for 2 seconds. Block both the nostrils and hold the breath for 4 seconds. Keep the right nostril blocked and release the left nostril. Exhale for 2 seconds from the left nostril. Block both the nostrils. Hold the breath in suspension for 2 seconds. This completes one single round.
- 9- 5-Start the cycle again this time inhaling from the right nostril. Repeat for a maximum of 10 rounds. Try to increase the counts of inhalation and exhalation with regular practice. Try to maintain the ratio of equal counts for inhalation, exhalation, and suspension of the breath while holding the breath for double the duration.

### 10- **Pursed lip breathing-**

- 1-Relax your neck and shoulders.
- 2-Keeping your mouth closed, inhale slowly through your nose for 2 counts.
- 3-Pucker or purse your lips as though you were going to whistle.

4-Exhale slowly by blowing air through your pursed lips for a count of 4.

### **6-Diaphragmatic breathing**

1. Lie on your back with your knees slightly bent and your head on a pillow.
2. You may place a pillow under your knees for support.
3. Place one hand on your upper chest and one hand below your rib cage, allowing you to feel the movement of your diaphragm.
4. Slowly inhale through your nose, feeling your stomach pressing into your hand.
5. Keep your other hand as still as possible.
6. Exhale using pursed lips as you tighten your stomach muscles, keeping your upper hand completely still.

### **11- Breath focus technique-**

1-Sit or lie down in a comfortable place.

2-Bring your awareness to your breaths without trying to change how you're breathing.

3-Alternate between normal and deep breaths a few times. Notice any differences between normal breathing and deep breathing. Notice how your abdomen expands with deep inhalations.

4-Note how shallow breathing feels compared to deep breathing.

5-Practice your deep breathing for a few minutes.

6-Place one hand below your belly button, keeping your belly relaxed, and notice how it rises with each inhale and falls with each exhale.

12- Let out a loud sigh with each exhale.

- 13- Begin the practice of breath focus by combining this deep breathing with imagery and a focus word or phrase that will support relaxation.
- 14- You can imagine that the air you inhale brings waves of peace and calm throughout your body. Mentally say, “Inhaling peace and calm.”
- 15- Imagine that the air you exhale washes away tension and anxiety. You can say to yourself, “Exhaling tension and anxiety

### **Role of meditation in removing stress**

If stress has you anxious, tense and worried, consider trying meditation. Spending even a few minutes in meditation can restore your calm and inner peace.

Anyone can practice meditation. It's simple and inexpensive, and it doesn't require any special equipment.

And you can practice meditation wherever you are — whether you're out for a walk, riding the bus, waiting at the doctor's office or even in the middle of a difficult business meeting.

Meditation can give you a sense of calm, peace and balance that can benefit both your emotional well-being and your overall health.

And these benefits don't end when your meditation session ends. Meditation can help carry you more calmly through your day and may help you manage symptoms of certain medical conditions.

Meditation and emotional well-being

When you meditate, you may clear away the information overload that builds up every day and contributes to your stress.

The emotional benefits of meditation can include:

7. Gaining a new perspective on stressful situations
8. Building skills to manage your stress
9. Increasing self-awareness

10. Focusing on the present
11. Reducing negative emotions
12. Increasing imagination and creativity
13. Increasing patience and tolerance

#### Meditation and illness

Meditation might also be useful if you have a medical condition, especially one that may be worsened by stress.

While a growing body of scientific research supports the health benefits of meditation, some researchers believe it's not yet possible to draw conclusions about the possible benefits of meditation.

With that in mind, some research suggests that meditation may help people manage symptoms of conditions such as:

- Anxiety
- Asthma
- Cancer
- Chronic pain
- Depression
- Heart disease
- High blood pressure
- Irritable bowel syndrome
- Sleep problems
- Tension headaches

Be sure to talk to your health care provider about the pros and cons of using meditation if you have any of these conditions or other health problems. In some cases, meditation can worsen symptoms associated with certain mental and physical health conditions.

Meditation isn't a replacement for traditional medical treatment. But it may be a useful addition to your other treatment.

Meditation is an umbrella term for the many ways to a relaxed state of being. There are many types of meditation and relaxation techniques that have meditation components. All share the same goal of achieving inner peace.

Ways to meditate can include:

14. Guided meditation. Sometimes called guided imagery or visualization, with this method of meditation you form mental images of places or situations you find relaxing.

You try to use as many senses as possible, such as smells, sights, sounds and textures. You may be led through this process by a guide or teacher.

15. Mantra meditation. In this type of meditation, you silently repeat a calming word, thought or phrase to prevent distracting thoughts.

16. Mindfulness meditation. This type of meditation is based on being mindful, or having an increased awareness and acceptance of living in the present moment.

In mindfulness meditation, you broaden your conscious awareness. You focus on what you experience during meditation, such as the flow of your breath. You can observe your thoughts and emotions, but let them pass without judgment.

17. Qi gong. This practice generally combines meditation, relaxation, physical movement and breathing exercises to restore and maintain balance. Qi gong (CHEE-gung) is part of traditional Chinese medicine.

18. Tai chi. This is a form of gentle Chinese martial arts. In tai chi (TIE-CHEE), you perform a self-paced series of postures or movements in a slow, graceful manner while practicing deep breathing.

19. Transcendental Meditation®. Transcendental Meditation is a simple, natural technique. In Transcendental Meditation, you silently repeat a personally assigned mantra, such as a word, sound or phrase, in a specific way.

This form of meditation may allow your body to settle into a state of profound rest and relaxation and your mind to achieve a state of inner peace, without needing to use concentration or effort.

20. Yoga. You perform a series of postures and controlled breathing exercises to promote a more flexible body and a calm mind. As you move through poses that require balance and concentration, you're encouraged to focus less on your busy day and more on the moment.

### **Conclusion-**

We can conclude that yoga and meditation is best way to fight with the pandemic situation of corona virus. Yoga asanas are the way to boost our immunity and lead a healthy lifestyle. Everyone should include yoga in their daily lifestyle. Few breathing asanas are very fruitful in fighting with symptoms of corona virus. Meditation is the best way to cherish our mind. In the situation of increased lockdown stress is a very common problem. From a small child to an old person everyone is in stress due to only a single reason . This everyone should practice yoga and meditation daily

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## ENVIRONMENT FACTORS LEADING TO EMERGING DISEASES

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Human Beings and Nature are closely related to each other. Air, Water, Birds, Animal, Trees, Rivers, Oceans, Minerals are given by nature to make life beautiful. In ancient times, there were some provisions to worship the nature. Now in modern times on the name of development, the human beings have started over exploitation of natural resources. Due to this, our environment cycle has many changes and these surroundings are getting more polluted day by day. Acid Rain, depletion of ozone layer, increasing poisonous air, dirty rivers, reducing forest area - all these are the result of environmental changes. We can divide environment in two parts- Natural environment, Man Made environment.

Human activities are responsible for polluting the pure environment given by nature. Our cultural values and religious faiths related to nature are declining. There are many environmental factors which are responsible for leading the emerging diseases –

**(A) Climate Change:** Health is the main part in the life of human being. The population of world is increasing day by day. This increased population needs additional food grains, water, air and health facilities etc. The unchecked increase of population has created imbalanced environment. Due to climate changes, many diseases have arisen such as HIV/AIDS, hepatitis C, SARS and currently the whole world is facing Covid-19. Climate changes put effect on epidemic diseases. The climate is also responsible for transmission of infectious diseases. Conditions of climate such as – temperature, rainfall can transmit vector- borne diseases. Many zoonotic enter in pathogens including salmonella; VTEC and campylobacter are known to exhibit seasonal patterns. Cancer of brain and nervous system is increasing rapidly. Autism is another example of fatal disease. Learning disability, development related disability, behavior related disability – all these are due to disturbance in our environment. Man and wild life conflicts put effects on food chain and results in loss for humans and animals. Imbalance between them, poaching of wild life, habitat degradation are dangerous for biodiversity and finally for human health.

**(B) Water Factor:** There is no life without water. Water is used for drinking, cooking and so many activities by human beings. Water born infections can take place by impurities of drinking water, recreational water and food. Water plays an important role in ecology of diseases. Ocean water level is increasing due to climate change. Insecticides, chemicals fertilizer, radioactive wastes, thermal pollutants, industrial waste, domestic sewage are the sources of water pollution. Improper disposal of sewage wastes, dirty water can infect easily. Viruses, bacteria, protozoa and multicellular parasites are infectious agents. Infectious diseases are transmitted directly or indirectly in human beings from animals. Malaria, cholera, diarrhea, dengue spread easily. In the

present time, cities and villages are facing the problem of salinity and water logging. This also effects the quality of water and human health.

**(C) Atmospheric Factors:** Changes in atmosphere are the biggest challenge for health of human beings. A number of studies have found relationship between atmospheric pressures, humidity, sunlight, air and cardiovascular diseases. Allergic diseases, asthma are also arising due to it. Air is polluted because of increasing population, increasing number of vehicles, improper disposal of garbage. Industrialization, urbanization, modernization, reducing forests and other human activities are responsible for air pollution. Diseases related to eyes, air, skin and breathe are spreading widely. Different causes of air pollutions are - aerosol, dust, fog, mist, fly ash, droplets, fume, smoke, vapors etc. Atmospheric factors have immediate and long term effects on human body, vegetation and on other organism. Poor air quality index is a matter of worry. Global warming, greenhouse effect, depletion of ozone layer, acid rain are caused by changes in climate. All these affect human health adversely.

**(D) Soil pollution:** This factor is also responsible for the decline of human beings. Increasing needs, increasing population, new industries running on large scale, floods, exceed use of chemical pesticides, various types of waste materials; plastic and poly beg uses have reduced fertility of land. Soil erosion is the main reason of soil pollution. Human being, animals, plants and soil - all are affected by land pollution. Many diseases such as – typhoid, jaundice, liver problem arise due to this. Uncertain deaths can increase.

**(E) Marine Pollution:** It affects marine organism, marine grass, fishes, birds, coral reefs and ultimate on human beings. Industrial waste material, agriculture chemical wastes, flowing sewage by rivers, waste heat, oil spill, sea litter, radioactive wastes- these are sources of marine pollution. Through food chain the polluted ocean water results negative effects on humans. Concentration of deadly chemicals in human body can lead to carcinogenic. Hence, oceans and seas are directly related with air, water and land. Purity of air, cleanliness of water and quality of land can be maintained by controlling marine pollution.

**(F) Agriculture and Irrigations:** Agriculture sector has to produce more food grains, vegetables, fruits to fulfill the need of increasing population. To save the crops, use of chemical fertilizers and pesticides is increasing. The consumption of these types of materials is harmful for health and gives birth to many diseases. Irrigation water sources also give contribution in reducing the quality of food grains, fruits and vegetables. Exceed use of chemicals is continue. These chemicals enter in human body through air and water. The embryo in mother's womb also gets affected by these and sometimes it may result in mental disability, physical disability, cerebral palsy or other types of disability.

**(G) Deforestation:** Trees cutting is continuous for agriculture, industrial and residential use on large scale. Forest area can provide food, medicines and fuel for life. Deforestation is the reason of less rainfall, soil erosion, floods, draughts, and injurious air. Ultimately, it effects natural cycle and human beings' health is affected later on.

**(H) Radioactive Pollution:** Nuclear tests, nuclear explosion, nuclear waste, mining and refinement of uranium and plutonium, industrial uses of radioactive matter – all these human created. In long term, they give birth to cancer and cardio related diseases. Radioactive substances and radiations put negative effects on health. Pre-metal death, inborn abnormalities are result of it.

**(I) Natural disasters:** Cyclone, tsunami, earthquakes, floods, draughts, landslides – these natural disasters disturb human health and life on large level. The natural calamities cause a number of diseases. Sagar Island of Sundervan is an example of natural destruction. Amphan cyclone had destroyed the life in Sagar Island and Odisha. Dead trees and dead bodies of animals created big danger for human life. Rise in sea level is because of changing climate. The lack of disaster



management gives contribution to increase diseases of different types. Birth rate, death rate are also effected. At present, the whole world is facing Covid-19. This epidemic is also due to the imbalance of nature. Lockdown is done to save human beings from spreading *corona virus*. Covid-19 is a message of nature to human to be aware in future to save life. The central government of India enacted Epidemic Disease Act 1897, Disaster Management Act 2005 to fight with Covid-19. Covid-19 is affecting humans' physical, mental, psychological health and economic aspects also. It's a challenge before citizens of every country to keep them safe from being effected by Corona Virus.

Indian culture is playing now important role to increase the quality of life. Yoga, dhyana, Chintan - Manan, pranayan, change in food pattern and life style are giving support to fight with Corona Virus. Human beings should know that nature is the most powerful. "Health is the real wealth" this is true. Our body needs physical, mental, self-lockdown for physical mental and spiritual - refinement. Money is essential but health is more essential than it. To save human beings from diseases, human have to become aware of their environment and should take necessary steps.

Quality of human life is included with the quality of environment. Development means – to progress economic, technical, social, industrial, culture sectors. But this development needs physically, socially and mentally strong people. Education and training are the two important tools for developing the efficient population for the nation. It is must to establish balance between environment and human beings. It is the right time to make ourselves aware towards environment. Government is doing many efforts, has started many projects to protect the environment. Strict rule are required. Politicians, teachers, students, businessmen, environment experts, media workers, aware citizens of nation should join hands together to save environment and human health from diseases. Ignorance towards polluted environment will lead to new diseases. Covid-19 has largely affected the whole world. Tests, for Vaccine of Corona Virus, are continuing. Now, we have to live life with fear of Corona Virus. We have to be one to fight with this disease. It is our duty towards future generation to provide them healthy and safe lives.

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## विज्ञान वर्ग के किशोरों में कोविड-19 के कारण बढ़ता तनाव

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foosd vk;l

असि.प्रो. बी.एड. विभाग

मनोविज्ञान शोधार्थी

रा. रजा स्नातकोत्तर महाविद्यालय, रामपुर, उ.प्र. कुमाउं विश्वविद्यालय, नैनीताल, उ.ख.

iLrkouk

आज विश्वव्यापी महामारी कोविड-19 ने मानव जाति पर जीवन और मृत्यु का प्रश्नचिन्ह लगा दिया है। जो महिला गर्भवती है वह व उसका होने वाला शिशु, शिशुओं की किड़ाएं, बालकों की शैतानियां, किशोरों का मेल-मिलाप, युवाओं का बेखौफ भ्रमण, व्यस्कों की जिम्मेदारियां तथा वृद्धों की किस्से कहानियां सभी पर कोविड 19 का प्रश्नचिन्ह है कि किसी भी प्रकार की क्रिया से यह बीमारी उन्हें न हो जाए अथवा उनका परिवार इस महामारी की चपेट में न आ जाए। चीन, संयुक्त राज्य अमेरिका, इटली तथा स्पेन जैसे देशों के हालात देखकर भारत ने समय रहते जो कदम उठाए वह सराहनीय है जिसके फलस्वरूप भारत में इसका विकराल रूप सामने नहीं आया है। जहां हम लॉकडाउन के नियमों के पालन करते हुए इस महामारी से बचने का प्रयास कर रहे हैं वहीं मानव एक उद्देश्यहीन समय भी व्यतीत कर रहा है। एक माह से अधिक के लॉकडाउन के बाद भी हम यह सुनिश्चित करने में असमर्थ हैं कि मानव जाति इस महामारी से छुटकारा प्राप्त कर भी पाएगी अथवा नहीं और यदि छुटकारा मिलेगा तो कैसे?

इन सभी प्रकार के प्रश्न मानव के समक्ष समस्या के रूप में उजागर हो रहे हैं जिसके फलस्वरूप लोगों में तनाव, चिन्ता, कुण्ठा, निराशा तथा अन्य मानसिक विकार उत्पन्न हो रहे हैं। नेशनल इंस्टीट्यूट ऑफ मेंटल हेल्थ एंड न्यूरोसाइंस की एक रिपोर्ट के अनुसार महामारी की शुरुआत में साइकोलॉजिकल हेल्पलाइन में 1000 फोन और दूसरे ही दिन 3000 फोन आए। इनकी एक रिपोर्ट के अनुसार इस महामारी के बजाए इसके डर से होने वाले मानसिक विकारों से लोगों को ज्यादा खतरा है। महामारी की अधिक खबरें सुनकर भी लोगों के मन में तनाव घर कर रहा है। लोगों को एक दूसरे से बात करने में डर तथा दहशत भरी खरीदारी ऐसे लक्षण हैं जो तनाव की पुष्टि करते हैं। मनोवैज्ञानिकों के अनुसार वे लोग जो पहले से ही मानसिक विकारों से ग्रसित हैं उनके लिए यह समय किसी हॉरर चलचित्र से कम नहीं है।

आज समाज की प्रत्येक ईकाई में चाहे वह परिवार हो, विद्यालय हो, महाविद्यालय हो या फिर कोई संस्था हो हर स्थान पर आपको तनाव देखने को मिलेगा। आज मानव जीवन बहुत जटिल बन गया है। जन्म से मृत्यु तक व्यक्ति अपने जीवन में विभिन्न प्रकार के असामान्य परिस्थितियों से प्रभावित होता है इसलिए इस युग को 'तनाव का युग' कहना अनुचित नहीं होगा। समाज में एक व्यक्ति दूसरे व्यक्ति से अन्तःक्रिया करके ही एक-दूसरे के व्यवहार को समझते हैं तथा एक-दूसरे को प्रत्यक्ष या अप्रत्यक्ष रूप से प्रभावित करते हैं। व्यक्ति के व्यक्तिगत, शैक्षिक, आर्थिक, राजनैतिक, व्यवसायिक आदि सभी क्षेत्रों में

समस्यायें होती हैं जिनसे व्यक्ति में तनाव उत्पन्न हो सकता है। कार्य की समय सीमा, पीरवार की जिम्मेदारी, आर्थिक दबाव, कार्य क्षेत्र में पदोन्नति आदि से व्यक्ति प्रतिदिन प्रभावित हो रहा है। तनाव के बढ़ने पर व्यक्ति के व्यवहार, कार्य क्षमता एवं कार्य निष्पादन पर प्रतिकूल प्रभाव पड़ता है। 75 प्रतिशत बीमारियां तनाव के कारण ही होती हैं। हृदय एवं कैंसर जैसे रोगों का कारण भी तनाव हो सकता है। तनावपूर्ण परिस्थितियां व्यक्ति में मानसिक विकार उत्पन्न करती हैं।

मानव जीवन की भूमिका बचपन है तो वृद्धावस्था निष्कर्ष है। किशोरावस्था जीवन की सर्वाधिक उर्जावान अवस्था होती है। इस अवस्था में किशोरों को अधिक ज्ञान न होने के कारण वह धीरे-धीरे तनाव की ओर अग्रसर होने लगते हैं। युवा होते ही वह कई तनावों से घिर जाते हैं। युवा बनना कुछ और चाहते हैं परन्तु विवश होकर कुछ और ही करने लगते हैं। यहीं से तनाव आरम्भ हो जाता है। अपने वर्तमान जीवन से असंतुष्ट होकर उनका मानसिक संतुलन बिगड़ने लगता है।

तनाव के कारण हमें आए दिन विद्यार्थियों की आत्महत्या की खबरें सुनने को मिलती हैं। 'कोटा' जो एजुकेशन हब माना जाता है अब आत्महत्या का हब बन रहा है। तनाव किशोरों को इतना बेबस कर देता है कि वह अपने माता-पिता का स्नेह तक भूल जाता है। विद्यार्थियों की इस तनावपूर्ण स्थिति को समझने की आवश्यकता है। यह एक ऐसा विचारणीय विषय है जिस पर प्रशासन, माता-पिता, शिक्षण संस्थानों को एवं स्वयं छात्रों को व्यवहारिक रूप से सोचने होगा।

तनावग्रस्त विद्यार्थी अपनी स्थिति के लिए स्वयं को ही दोषी समझता है। आज के प्रतिस्पर्धा के दौर में वह स्वयं को दूसरे विद्यार्थियों से निम्न समझने लगता है। परीक्षा में कम अंक आना, प्रश्नों को देर से समझना, स्वयं को निष्क्रिय समझना तथा अंग्रेजी की कम समझ होना आदि ऐसे कारण हैं जिससे वह तनाव की ओर बढ़ने लगता है। एक तरफ उसकी असमर्थताएं हैं दूसरी ओर उसके माता-पिता की अपेक्षाएं जिनपर वह चाह कर भी खरा नहीं उतर पाता। वह यह समझने लगता है कि उसकी असफलता से उसके माता-पिता को दिक्कतें हो रही हैं। अंततः वह इन सभी समस्याओं का समाधान एक ही ढूंढ पाता है वह है – आत्महत्या।

प्रत्येक बच्चे के माता-पिता चाहते हैं कि उनके बच्चों का भविष्य उज्ज्वल हो जिस कारण कई बार वह अपनी सामर्थ्य से बाहर जाकर उसकी शिक्षा में निवेश करते हैं। इस कारण बच्चे भी अपने माता-पिता के अरमानों को पूरा करने के लिए प्रतिबद्ध हो जाते हैं। बच्चों को परीक्षाओं में सफल बनाने के लिए वह उन्हें कई उदाहरण देते हैं तथा उनकी तुलना अन्य बच्चों से करने लगते हैं।

वह अपने आर्थिक खर्च भी उन्हें बताने लगते हैं। बच्चों के कम अंक आने पर उन्हें डांटा भी जाता है तथा उन पर उत्तम अंक लाने का इतना दबाव बनाया जाता है कि उनकी स्वयं की इच्छाएं समाप्त हो जाती हैं। बच्चा कुछ और बनना चाहते हैं परन्तु उसके माता-पिता उसे डॉक्टर, इंजीनियर, आई.ए.एस. बनाना चाहते हैं।

प्रत्येक विद्यार्थी सफल होना चाहता है परन्तु प्रत्येक विद्यार्थी की एक अपनी सीमा होती है। उसका वातावरण, पूर्व शिक्षा, अध्यापकों का मार्गदर्शन, घर का माहौल आदि सभी घटक उसके भविष्य की सफलता का निर्धारण करती हैं।

प्रस्तुत लघु शोध प्रबन्ध किशोरों के तनाव पर आधारित है। आज विश्व सवास्थ्य संगठन की रिपोर्ट के अनुसार प्रतिवर्ष लगभग 8 लाख लोग आत्महत्या करते हैं। भारत में प्रत्येक 55 मिनट में एक छात्र आत्महत्या कर लेता है। पिछले पांच वर्षों की बात करें तो देश में 52 प्रतिशत की वृद्धि छात्र आत्महत्याओं में हुई है। पांच वर्षों में लगभग 40 हजार छात्र आत्महत्या कर चुके हैं।

किसी भी देश का भविष्य उसके किशोरों पर निर्भर करता है। यदि उसके जीवन की शुरुआत ही तनाव व उससे सम्बन्धित समस्याओं से होगा तो फिर देश की बागडोर भविष्य में किसके हाथों में रहेगी। आज किशोरों पर सपने थोपे जा रहे हैं। उन्हें बताया जा रहा है कि नम्बर ही सब कुछ है। 90 प्रतिशत से अधिक अंक लाने वाले किशोरों का ही नामांकन देश के प्रमुख विश्वविद्यालयों में हो रहा है। शेष औसत दर्जे के किशोरों में निराशा घर कर रही है।

ruko % , d i f j p ;

तनाव को मनोविज्ञान में i f r c y या c y k ? k k r के नाम से भी जाना जाता है। प्रतिबल को सर्वप्रथम g l l l h y s ने वर्ष 1936 में समझाया था। भिन्न-भिन्न क्षेत्रों में इसके अर्थ अलग-अलग होते हैं। तनाव शब्द उन्नीसवीं शताब्दी में प्रयोग किया गया।

प्रतिबल शब्द अंग्रेजी भाषा के L V l l (stress) का हिन्दी रूपान्तरण है जिसे लैटिन भाषा के f L V l l s j (stringere) शब्द से लिया गया है जिसका तात्पर्य दुःख, व्यथा व तनाव से है।

तनाव को मनोवैज्ञानिक तीन रूप में स्वीकार करते हैं—

1- m n n h i d d k j d k l d s # i e l l इसमें तनाव को सभी विकृतियों का कारण माना जाता है। कुछ मनोवैज्ञानिक कहते हैं कि तनाव वह परिस्थितियां हैं जो व्यक्ति को असामान्य क्रियाएँ करने के लिए उकसाती हैं।

j c j ] , y u r f k k j c j 2009 ने इस अर्थ में इसकी परिभाषा देते हुए कहते हैं कि, ^ i f r c y H k k f r d ] e u k o K k f u d तथा सामाजिक भाक्तियों तथा दबावों के रूप में व्यक्ति में चिंता, तनाव या द्वन्द्व m R i l l u d j u s d k , d l c y L = k r g l l ^

2- i f j . k k e d s # i e l l कुछ मनोवैज्ञानिकों ने परिणाम या अनुक्रिया के रूप में तनाव को परिभाषित करने की कोशिश की है। व्यक्ति जब चिन्ता, क्रोध, आक्रामकता आदि जैसी मनोवैज्ञानिक अनुक्रियाएँ एवं पेट की गड़बड़ी, नींद न आना, रक्त चाप में वृद्धि आदि जैसी दैहिक अनुक्रियाएँ दिखलाता है तो हम कहते हैं कि व्यक्ति में तनाव उत्पन्न हो गया है।

l s y h के अनुसार, "तनाव से तात्पर्य भारीर द्वारा आवश्यकतानुसार किए गए अविशिष्ट v u f d z k l s g k r k g l l ^

j c j ] , y u r f k k j c j 2009 के अनुसार, ^ i f r c y e u k o K k f u d r u k o d h i , d f L f k f r g l l जो विभिन्न भाक्तियों या दबावों से उत्पन्न होती है।"

I jkl ju rFkk I jkl ju 2010 के अनुसार, ^tc 0; fDr fdl h ckgjh i fjfLFkrh ds fy, vi f{kr fdz k ; k i fdz k djus ea v; kx; ; k v{ke gkrk gS rks bl l s mRi Uu Hkko ; k i fdz k dks i frcy dgrs gA^

3- mnñhi d o i fj.kke ds l Ecu/k ds #i e& कुछ मनोवैज्ञानिकों ने उपर्युक्त दोनों रूपों को मिलाकर तनाव को परिभाषित करने की कोशिश की है। इन मनोवैज्ञानिकों के अनुसार तनाव, व्यक्ति तथा वातावरण के बीच एक विशेष सम्बन्ध को दर्शाने का काम करता है। ystkj l ] QkYdeU एवं Vsyj इस उपागम के मुख्य समर्थक रहें हैं।

ekxlu] fdx] foLt ,oa Ldkj yj के अनुसार, ^ge ykx ruko dks ,d vkuRfjd अवस्था के रूप में परिभाषित करते हैं जो भारीर के दैहिक मांगों या वैसे पर्यावरणीय एवं l kekftd i fjfLrffkfr; ka ftl s l pep ea gkfudkj d] vfu; a.k ; kx; rFkk fucVus ds ekstin l k/kuka dks pukaSh nsus okyk ds #i ea eW; k fdr fd; k tkrk gS l s mRi Uu gkrk gA^

cjku के अनुसार, ^ruko ,d , d h cgm; keh i fdz k gS tks geykx ea oS h ?kVukvka ds i fr vufdz k ds #i ea mRi Uu gkrh gS tks gekjs nfgd ,oa eukoKkfud dk; ka dks fo?kfvR djrk gS ; k fo?kfvR djus dh /kedh nrk gA^

okYQ के अनुसार, ^ifrcy thou dh ,d lgt i fdz k gA ; g ,d xfrd voLFkk gS tks ckgjh ,oa vkuRfjd i Hkkoka ds iR; Rrj ea vfhk; kstu grq l nS rRi jr k dh ofRr mRi Uu djrk gS ftl l s i.k.kh vius thou ea ik; % ifrcy dh voLFkk ea jgrk gA^

अतः हम कह सकते हैं कि तनाव एक ऐसी अवस्था है जिससे व्यक्ति प्रभावित होता है तथा उससे निबटने के लिए उसे वैकल्पिक समायोजन की आवश्यकता पड़ती है। तनाव एक दबाव है जो व्यक्ति में विभिन्न असामान्यताएं उत्पन्न करता है। किसी चुनौती के सामने होने पर हम अधिक प्रयास करते हैं तथा चुनौती से निपटने के लिए अपने सारे संसाधनों को भी संघटित कर लेते हैं। सभी चुनौतियां, समस्याएं तथा कठिन परिस्थितियां हमें तनाव में डालती हैं। अतः तनाव का ठीक से प्रबन्धन किया जाए तो वह व्यक्ति के जीवन को दीर्घ बनाती है। तनाव कोई ऐसा घटक नहीं है जो व्यक्ति के भीतर या पर्यावरण में पाया जाता है। यह एक सतत् चलने वाली प्रक्रिया है जिसके अन्तर्गत व्यक्ति अपने सामाजिक एवं सांस्कृतिक पर्यावरणों में कार्य सम्पादन करता है, इन संघर्षों का मूल्यांकन करता है तथा उनसे उत्पन्न होने वाली विभिन्न समस्याओं का सामना करने का प्रयास करता है। तनाव एक गत्यात्मक मानसिक/संज्ञानात्मक अवस्था है। वह समस्थिति को विघटित करता है जिसके कारण उस असन्तुलन के समाधान को पुनःस्थापित करने की आवश्यकता उत्पन्न होती है।

प्रत्येक व्यक्ति की तनाव के प्रति अनुक्रिया उसके व्यक्तित्व, पालन पोषण तथा जीवन के अनुभवों के आधार पर भिन्न-भिन्न होती है। हममें से कुछ व्यक्ति अपनी तनाव अनुक्रियाओं को पहचानते हैं तथा अपने लक्षणों की गम्भीरता तथा प्रकृति के आधार पर अथवा व्यवहार में परिवर्तन के आधार पर समस्या की गहनता का आंकलन कर लेते हैं। तनाव के ये लक्षण शारीरिक, संवेगात्मक तथा व्यवहारात्मक होते हैं।

उपर्युक्त परिभाषाओं के आधार पर तनाव की निम्न विीशताएं हैं—

1- तनाव एक बहुआयामी प्रक्रिया है।

2- व्यक्ति के जीवन में तनाव नकारात्मक घटनाओं के साथ-साथ स्वीकारात्मक घटनाओं से भी उत्पन्न होता है।

ग्ल | syh ने तनाव को दो भागों में बांटा है— Lohdkj kRed ruko तथा udkjkRed ruko उन्होंने स्वीकारात्मक तनाव को ; LV (eustress) तथा नकारात्मक तनाव को fM LV (distress) की संज्ञा दी। स्वीकारात्मक तनाव से व्यक्ति में क्रियात्मकता उत्पन्न होती है तथा नकारात्मक तनाव से व्यक्ति में दुःख एवं चिन्ता उत्पन्न होती है।

3- तनाव व्यक्ति के लिए एक दबावपूर्ण स्थिति है।

4- वह परिस्थितियां या घटनाएं जो व्यक्ति में तनाव उत्पन्न करती हैं वह व्यक्ति के नियन्त्रण में नहीं होती हैं।

5- तनाव में व्यक्ति मनोवैज्ञानिक तथा दैहिक दोनों प्रकार की अनुक्रियाएं करता है। व्यक्ति दोनों रूप से क्षुब्ध महसूस करता है।

6- तनाव अल्पावधि में भी समाप्त हो सकता है तथा दीर्घावधि तक भी चल सकता है। तनाव की अवधि तनाव उत्पन्न करने वाली घटना या परिस्थिति की प्रकृति पर निर्भर करती है।

7- तनाव की सामान्य अवस्था व्यक्ति के लिए फायदेमन्द है जबकि तनाव की प्रबल अवस्था व्यक्ति में विकृतियां उत्पन्न करती है।

तनाव को चार भागों में बांटा जाता है— 1- ncko 2- fpUrk 3- vUr}U} 4- dq Bk

1- ncko & | h-th- ekfj | के अनुसार, ^ncko , d idkj dk eukoKkfud ifrcy gS ftl e<sup>^</sup> व्यक्ति यह अनुभव करता है कि उसे एक विीश भावना के अनुसार रहना या व्यवहार करना है ; k ml s rsth | s cnyrs gq okrkoj .k ds | kfk vudyu LFkkfi r djuk g<sup>^</sup>

व्यक्ति के अधिकतर दबाव उसकी अपनी प्रतिष्ठा से सम्बन्धित होते हैं। उच्च मानकों वाला जीवन निर्धारित करने के पश्चात् व्यक्ति में आन्तरिक दबाव उत्पन्न होने लगता है। आज का समाज परिवर्तनशील होने के कारण व्यक्ति के अपने अनुसार जीवन न जी पाने के कारण वह दबाव में आते जाता है।

2- fpUrk & dksyeU के अनुसार, ^fpUrk 0; fDr dk | keU; y{k.k gS tks dh | Hkh idkj ds व्यक्तियों में किसी न किसी मात्रा में पाया जाता है। यह किसी भय अथवा आँका के द्वारा mRi Uu gkrk g<sup>^</sup>

यह तनाव का ऐसा रूप है जिसमें व्यक्ति भीतरी रूप से परेशान रहता है। कुछ व्यक्ति तो लगभग सभी परिस्थितियों में चिन्ता में रहते हैं। कुछ व्यक्ति कुछ विशेष परिस्थितियों में ही चिन्ता का अनुभव करते हैं।

3- vUr}U} & यह एक ऐसी अवस्था है जिसमें व्यक्ति के समक्ष दो उद्देश्य उत्पन्न हो जाते हैं। दोनों उद्देश्य या तो धनात्मक हो सकते हैं या नकारात्मक। इस अवस्था में व्यक्ति या तो दोनों उद्देश्यों को प्राप्त करना चाहता है या दोनों उद्देश्यों से छुटकारा पाना चाहता है परन्तु वह ऐसा नहीं कर पाता तथा

द्वन्द्व में पड़ जाता है। कभी एक ही उद्देश्य में दोनों पक्ष सम्मिलित होते हैं। इसी द्वन्द्व से व्यक्ति समायोजन करने में असक्षम हो जाता है।

4- दृष्टि हमारी उद्देश्य प्राप्ति में आने वाली असफलताओं तथा हमारे पास संसाधनों की कमी जिससे उद्देश्य की प्राप्ति हो सकती थी, के कारण उत्पन्न होने वाली भाव को कुण्ठा कहते हैं।

तनाव को परिणामों के आधार पर भी परिभाषित किया गया है अर्थात् तनाव कई कारणों से उत्पन्न होता है। ये निम्न हैं—

1- बलात्कार, मृत्यु, नौकरी से हटा देना आदि व्यक्तिगत कारण।

2- कॉलेज में प्रवेश, नौकरी मिलना, पिता बनना, विवाह करना आदि।

3- दुर्घटनाएं, प्राकृतिक संकट, भूकम्प, सैनिक लड़ाई, सम्प्रदायिक दंगे आदि।

4- शारीरिक रोग, शारीरिक क्षति, शारीरिक अक्षमता आदि।

5- निराशा, द्वन्द्व तथा सामाजिक आभार, पारिवारिक उत्तरदायित्व, अभिलाषा स्तर जैसे कारकों से उत्पन्न मानसिक दबाव आदि।

6- अवास्तविक चिन्तन, उंची अभिलाषा व उपलब्धि स्तर, सीमाओं से हटना, दुर्बल अहं क्षमता, दोषपूर्ण आत्म सम्प्रत्यय आदि।

7- निराशा, तनाव, अज्ञानता आदि।

### किशोरावस्था : एक परिचय

किशोरावस्था यानि 13 से 19 वर्ष की आयु के युवक एवं युवतियां। इस अवस्था में शारीरिक बदलाव होने लगते हैं जिनमें प्रमुख है व्यवहार परिवर्तन, आक्रामकता, मदिरा सेवन आदि जिनके कारण जीवन में तनाव उत्पन्न होता है। अमेरिकी मनोरोग एसोसिएशन की रिपोर्ट के अनुसार अत्यधिक मनोरोग लगभग 14 वर्ष से आरम्भ हो जाते हैं।

विश्व स्वास्थ्य संगठन के अनुसार 20 प्रतिशत किशोरों को मानसिक रोगों से ग्रसित पाया गया। किशोरों में मानसिक तनाव विभिन्न कारणों से उत्पन्न होता है जैसे— माता-पिता से अनबन, मस्तिष्क में रसायनों के असन्तुलन से, आनुवांशिक, पोषक तत्वों की कमी, मादक द्रव्यों के सेवन से, घरेलू हिंसा, गरीबी, आदि। किशोरों में चिड़चिड़ापन, उदासी, निराशा, आत्मसम्मान में कमी आदि कई लक्षण तनाव के दौरान दिखाई पड़ते हैं।

किशोर एवं किशोरियों में यह विश्वास कि प्रौढ़ों का उसके बारे में अच्छा विचार नहीं है उसका प्रौढ़ावस्था में प्रवेश कर पाना कठिन कर देता है। उसका माता-पिता के साथ तनाव उत्पन्न कर देता है। जिससे माता-पिता एवं किशोर के बीच एक दीवार खड़ी हो जाती है जिससे वह अपनी समस्या को हल करने में उनकी मदद नहीं ले सकता है।

के अनुसार, कोलफ़क़ दस नक़मदज 0; फ़डर दस फ़ोदक़ि धि दक़बज़ वल; हक़ि वोलफ़क़ , द ह उघा ग़स फ़तल एड उदक़ि क़रेड ख़क़ा दक़ ग़क़ुक़ वक़ि फ़ु; एड) वक़िप.क़ दक़ वलक़को इतना अधिक स्पष्ट हो।”

किशोरावस्था में बालक के व्यवहार में पायी जाने वाली अस्थिरता अपनी चरम सीमा पर होती है। किशोर के व्यवहार में कभी-कभी स्वार्थपरता दिखायी पड़ती है। उत्साहपूर्ण व्यवहार करने के बाद उदासीन हो जाना, आशा रखने के बाद निराश होना आदि प्रकार की अस्थिरता किशोर के व्यवहार में परिलक्षित होती है। वास्तविकताओं के सम्पर्क में आते ही उसकी महत्वाकांक्षाओं का विनाश हो जाता है। यह अस्थिरता अधिकांशतः असुरक्षा की भावना का प्रतिफल है। घर और विद्यालय में जो उससे अधिक की मांग की जाती है उससे उसकी असुरक्षा की भावनाएं तीव्र हो जाती हैं और बालक में अस्थिरता बढ़ जाती है।

किशोर एवं किशोरियों की अधिकांश समस्याएं उनकी निजी समस्याएं होती हैं। जिनका सम्बन्ध किसी न किसी रूप में उनके प्रेम व कामेच्छा से सम्बन्धित होती है। किशोर के सम्मुख आने वाली समस्याओं का सम्बन्ध जीवन के ऐसे क्षेत्रों से होते हैं जिनका उसे पहले से अनुभव नहीं होता है। किशोरों की समस्याएं उनकी आकृति, स्वास्थ्य, सामाजिक सम्बन्ध, विद्यालय कार्य, विपरीत लिंगियों से सामाजिक सम्बन्ध, शिक्षा व्यवस्था, जीवन साथी आदि से सम्बन्धित होती हैं। किशोरावस्था ऐसी अवस्था होती है जब किशोर बालक की इच्छाओं और समाज की अपेक्षाओं में घोर अन्तर्द्वन्द्व चलता है।

किशोरावस्था में समस्या बाहुल्यता के कारण ही इस अवस्था को समस्याजनक अवस्था कहा जाता है। किशोरों की समस्याओं की गम्भीरता तब घटती है जब वे अपने माता-पिता व शिक्षकों से चर्चा करने में आज़ादी का अनुभव करते हैं। बालक दो अवस्था के मध्य में होने के कारण अपनी भूमिका निर्वाह में असमंजस की स्थिति में होता है। इस अवधि में किशोर के उपर उत्तरदायित्व एवं जिम्मेदारियों का भार अधिक होता है।

किशोरावस्था काम जागरण की अवस्था है। फ़ायड के अनुसार किशोर बालक की विजातीय कामुकता में उसके शैशवावस्था की कामुकता की स्पष्ट झलक पायी जाती है। किशोर बालक अपनी प्रेमिका में अपनी मां का स्नेह ढूँढ़ता है तथा किशोरी अपने प्रेमी में अपने पिता का प्यार देखना चाहती है। अतः कामुकता किशोरावस्था की मूलभूत समस्याओं में से एक है। ब्लेयर, जोन्स, सिम्पसन व किन्स ने अपने अध्ययन में पाया है कि 95 प्रतिशत किशोर व किशोरियां 15 वर्ष तक की आयु तक पहुंच कर नियमित रूप से काम-क्रिया में लग जाते हैं।

किशोरावस्था में भरपूर जोश होता है जिसके परिणामस्वरूप वे कठिन कार्य करना चाहते हैं। यदि वे इस कार्य में सफल नहीं होते तो उनमें निराशा व कुंठा का जन्म होता है। वे स्वतन्त्र रूप से समस्या का समाधान करना चाहते हैं। वे अपने भविष्य के प्रति लक्ष्य निर्धारण नहीं कर पाते हैं। विपरीत लिंगों के प्रति आकर्षित होने एवं उनके साथ समायोजन न होने पर किशोर मन दुखी हो जाता है। अतः यह अवस्था तनाव की अवस्था भी कही जाती है।

इस अवस्था में किशोर एवं किशोरियों में अनेक प्रकार के शारीरिक व मानसिक परिवर्तन देखे जाते हैं। पुराने एवं नए मूल्यों के मध्य द्वन्द्व की स्थिति उत्पन्न होती है और द्वन्द्व संवेगात्मक अस्थिरता को



जन्म देता है। इस अवस्था के अनेक लक्षण शैशवावस्था के लक्षणों से मिलते हैं। इस काल में बाल्यावस्था की भांति शांति नहीं दिखयी पड़ती बल्कि किशोर बालक शिशुओं की भांति एक बार पुनः चंचल हो उठता है। उसे यह भ्रान्ति रहती है कि वह प्रत्येक व्यक्ति के ध्यान व आकर्षण का केन्द्र है। विशेष रूप से वह प्रेमात्मक समस्याओं को लेकर कभी-कभी एकाकीपन की डगर पर भी चल पड़ता है। अत्यधिक कल्पना और दिवास्वप्न बालक को प्लायनवादी बना देते हैं।

किशोरावस्था के बालको से परिवार और समाज के व्यक्ति भिन्न-भिन्न भूमिकाओं की अपेक्षा करने लगते हैं। परिणामतः उनमें संवेगात्मक अस्थिरता व दुश्चिन्ता के लक्षण प्रदर्शित होते हैं। उनका संतुलन बिगड़ जाता है। व्यवहार में वास्तविकता की कमी पायी जाती है। बालक अत्यधिक महत्वाकांक्षी हो जाता है। उन्हें ऐसा लगता है कि लोग उनका तिरस्कार कर रहें हैं जिसके परिणामस्वरूप बालक में हीनता की भावना पनपने लगती है।

इस अवस्था में किशोरों पर सामाजिक दबाव पड़ता है जिसके परिणामस्वरूप वे अपना व्यवहार समाज द्वारा निर्मित मानकों के अनुरूप करते हैं। यदि उनका व्यवहार समाज द्वारा मान्य नियमों व मानकों के अनुरूप नहीं है तो उन्हें इसके लिए दण्ड व तिरस्कार भी सहना पड़ता है। वे आत्म नियन्त्रित व स्वतन्त्र होने के लिए चिन्तित रहते हैं। अपनी समस्याओं के लिए किशोर कल्पनाओं का सहारा लेता है। कभी-कभी लक्ष्यपूर्ति में असफलता के कारण भी किशोर का मन दुखी होता है।

gMks deMh के अनुसार, "ग्यारह या बारह वर्ष की आयु में बालक की नसों में ज्वार भुरु हो जाता है। यदि इस ज्वार को वृद्धि के समय ही उपयोग कर लिया जाए एवं इसकी भाक्ति तथा धारा के साथ-साथ नयी यात्रा प्रारम्भ की जाए तो हमारा विचार है कि यह । KSHKX; की ओर ही नवकिशोर को ले जाएगी।"

किशोरावस्था में उत्पन्न समस्याएं स्वभाव से अत्यन्त जटिल एवं गम्भीर होती हैं। इनका सम्बन्ध सीधे बालक के समायोजन व उनके व्यक्तित्व विकास के साथ होता है। यदि इन समस्याओं का समाधान शीघ्र न किया जाए तो ये बालक की प्रौढ़ावस्था में भी बनी रहती हैं और व्यक्ति उनका समाधान फिर कभी नहीं कर पाता है।

जीवन का शायद ही कोई ऐसा पक्ष हो जिसमें किशोर को किसी प्रकार की समस्या की अनुभूति न हो। परिवार, पाठशाला, शिक्षा, मित्र, मनोरंजन आदि से सम्बन्धित समस्याएं किशोर को सताया करती हैं। जिसके परिणामस्वरूप बालक चिन्तित, निराश, भयाक्रान्त व हीन भावना से ग्रसित हो जाता है। इसका प्रमुख कारण यह है कि किशोर बालक के माता-पिता, अध्यापक तथा अभिभावक उसकी समस्याओं का मूल्यांकन प्रौढ़ मानदण्ड के आधार पर करते हैं।

अतः किशोरावस्था के इन सभी विशेषताओं व कारणों के कारण किशोरों में तनाव उत्पन्न होता है तथा वह उसका प्रबन्धन भी नहीं कर पाते हैं। जिसके परिणामस्वरूप उनके व्यक्तित्व में विकार उत्पन्न होने लगते हैं तथा वह अन्त में आत्महत्या तक करने पर मजबूर हो जाते हैं।

mnns ;

प्रस्तुत लघु शोध प्रबन्ध के उद्देश्य निम्न हैं—

1- Nk= rFkk Nk=kvk<sub>1</sub> e<sub>1</sub> ruko dh fLFkfr dk v/; ; u o muds e/; ruko Lrj ds l kFkd vUvj dh tkp djuka

2- dUinh; ckMZ rFkk jkT; ckMZ ds fo|kFkZ; k<sub>1</sub> e<sub>1</sub> ruko fLFkfr dk v/; ; u o muds e/; ruko Lrj ds l kFkd vUvj dh tkp djuka

i fjdYi uk, a

प्रस्तुत लघु शोध प्रबन्ध की निम्न परिकल्पनाएं हैं—

1- Nk= rFkk Nk=kvk<sub>1</sub> ds ruko Lrj e<sub>1</sub> dkbz l kFkd vUvj ugha gkrk gA

2- dUinh; ckMZ rFkk jkT; ckMZ ds fo|kFkZ; k<sub>1</sub> ds ruko Lrj e<sub>1</sub> l kFkd vUvj gkrk gA

I EcfU/kr v/; ; u

I athr d<sub>1</sub>ekj feJk 2011 ने "NRrhI x<+ ckMZ ,oa dUinh; ckMZ ds fo|kFkZ; k<sub>1</sub> e<sub>1</sub> ruko dk v/; ; u % e<sub>1</sub>; kadu ifdz k dh vfHkofRr ds l nHkZ e<sub>1</sub>" विषय पर शोध किया और पाया कि छत्तीसगढ़ बोर्ड के छात्रों में तनाव केन्द्रीय बोर्ड के छात्रों से अधिक पाया गया। छत्तीसगढ़ बोर्ड के छात्रों में छात्राओं की अपेक्षा अधिक तनाव पाया गया। केन्द्रीय बोर्ड की छात्राओं में छात्रों की अपेक्षा अधिक तनाव पाया गया।

i hrh d<sub>1</sub>ekjh 2018 ने "राजधानी लखनऊ के ग्रामीण व बाहरी क्षेत्र के कि<sub>1</sub>ोरों में तनाव का v/; ; u" विषय पर शोध किया और पाया कि ग्रामीण क्षेत्र की तुलना में शहरी समुदाय के किशोरों किशोरियों में तनाव अधिक था। किशोर बालकों की तुलना में किशोर बालिकाओं में तनाव अधिक पाया गया।

Mk<sub>1</sub> i h- सुरे<sub>1</sub>ा प्रभु 2015 ने "LVMh vklu , dMfed LV<sub>1</sub> ve<sub>1</sub> gkb; j l ds Mjh LVM<sub>1</sub>VI " विषय पर शोध किया। यह शोध तमिलनाडू के नमक्कल जनपद में किया गया। उन्होंने पाया कि शैक्षिक तनाव किशोर बालकों की तुलना में किशोर बालिकाओं में अधिक था। शहरी किशोर में ग्रामीण किशोरों की तुलना में शैक्षिक तनाव अधिक था। सरकारी विद्यालय के किशोरों में निजी विद्यालय के किशोरों की तुलना में अधिक तनाव था। विज्ञान वर्ग के किशोरों में कला वर्ग के किशोरों की तुलना में कम तनाव था।

fcLyk i hrh व अन्य 2017 ने "स्टडी ऑफ डिप्रे<sub>1</sub>ान, एनजाइटी एण्ड स्टेस अमंग स्कूल गोइंग , Mk<sub>1</sub>y<sub>1</sub> <sub>1</sub>VI " विषय पर शोध किया। यह शोध हरियाणा के पलवल क्षेत्र में किया गया। उन्होंने पाया कि किशोर बालकों कि तुलना में किशोर बालिकाओं में अधिक तनाव था।

कुमारी भारती मु<sub>1</sub>ताक, के- Qjkg 2003 ने "कि<sub>1</sub>ोरावस्था के दौरान भौक्षिक दु<sub>1</sub>िचन्ता और स्कूली l <sub>1</sub>oxkRed fLFkjrk" विषय पर शोध किया और पाया कि शैक्षिक तनाव में मुस्लिम किशोरों का

मध्यमान हिन्दू किशोरों से काफी अधिक पाया गया। हिन्दू किशोरियों का मध्यमान हिन्दू किशारों से अधिक पाया गया।

2015 में "टीन डिप्रेषन रिसर्च स्टडी ट्रीटमेन्ट ऑफ रेसीडेन्ट डिप्रेषन" विषय पर शोध किया। यह शोध संयुक्त राज्य में बड़े स्केल पर किया गया। इसमें बच्चों में 2.5 प्रतिशत तथा किशोरों में 8.3 प्रतिशत तक अवसाद पाया गया।

जैन ने "छात्रों का तनाव छात्रों की अपेक्षा अधिक है।" विषय पर शोध किया और पाया कि छात्रों का तनाव छात्रों की अपेक्षा अधिक है।

2000 में "दुश्चिन्ता एवं भौक्षिक उपलब्धि का एक अध्ययन" विषय पर शोध किया और पाया कि छात्रों के प्रत्यक्षीकृत माता-पिता व्यवहार का दुश्चिन्ता, शैक्षिक उपलब्धि एवं समाजिक – आर्थिक स्थिति पर सार्थक प्रभाव पड़ता है।

2004 में "लखनऊ के 11 व 12वीं के विद्यार्थियों की दुश्चिन्ता और पारिवारिक पृष्ठभूमि सम्बन्ध का एक अध्ययन" विषय पर शोध किया और पाया कि एकाकी एवं संयुक्त परिवारों से आने वाले माध्यमिक स्कूल के विद्यार्थियों का दुश्चिन्ता स्तर समान पाया गया। कार्यशील और गैर-कार्यशील माताओं के विद्यार्थियों की दुश्चिन्ता में कोई सार्थक अन्तर नहीं होता है। जिन विद्यार्थियों को पैतृक स्नेह मिलता है, उनमें उन विद्यार्थियों से जिन्हें माता-पिता का कोई विशेष स्नेह नहीं मिलता की अपेक्षा कम दुश्चिन्ता ग्रस्त हैं। शांत गृह वातावरण वाले बच्चों में अच्छे शोरगुल पारिवारिक वातावरण वाले बच्चों की तुलना में दुश्चिन्ता की कमी पायी गयी। गंभीर पारिवारिक समस्याओं वाले बच्चे ज्यादा दुश्चिन्ता का शिकार होते हैं।

2005 में "किशोर विद्यार्थियों के आत्म सम्प्रत्यय तथा दुश्चिन्ताओं के मध्य पाये जाने वाले सम्बन्ध का उनके द्वारा व्यक्त चिन्ताओं के स्तर में सार्थक सह-सम्बन्ध है। इस दिशा में लड़कियों में लड़कों की तुलना में अधिक सार्थक सह-सम्बन्ध पाये गये।

2016 में "किशोर छात्रों की अध्ययन आदतों का उनके समायोजन एवं दुश्चिन्ताओं के सन्दर्भ में मनोविलेशनात्मक अध्ययन" विषय पर शोध किया और पाया कि अच्छी अध्ययन आदतों वाली छात्रों में उच्च समायोजन का स्तर होता है। किशोर छात्रों की अध्ययन आदतें एवं समायोजन

उनके स्वास्थ्य, सामाजिक एवं संवेगात्मक अध्ययन को प्रभावित करती है, परन्तु उनकी दुश्चिन्ताओं को प्रभावित नहीं करती है।

jkcvl tkt] gfeYVu 1988 ने “विद्यार्थियों के विकास पर व्यक्तिगत और भौक्षिक तनाव का i Hkko^ विषय पर शोध किया और पाया कि विद्यार्थियों के व्यक्तित्व पर तनाव का प्रभाव देखा गया, जिसमें विद्यार्थियों की शैक्षिक उपलब्धि पर तनाव का सकारात्मक प्रभाव देखा गया तथा विद्यार्थियों के व्यक्तित्व और शैक्षिक तनाव के मध्य धनात्मक सह-सम्बन्ध पाया गया।

ehukxh] , l - , oa plnzl dju] oh- 2015 ने ^, LVMh vkWu , dMfed LVd vkWQ gk; j l d. Mjh Ldny LVMMVI ^ विषय पर शोध किया और पाया कि बालक, बालिकाओं की अपेक्षा कम तनाव लेते हैं। निजी विद्यालय के बालकों में सरकारी विद्यालय के बालकों की तुलना में अधिक तनाव रहता है।

MkW t; Jh ckFke] MkW Nk; k gkfMZ; k 2017 ने “शहरी एवं ग्रामीण किशोरों में चिन्ता तथा कुंठा के e/; l gl Ecu/kkRed v/; ; u^ विषय पर शोध किया। उनका यह शोध खंडवा जिले के सन्दर्भ में किया गया। उन्होंने निष्कर्ष में पाया कि शहरी किशोरों की चिन्ता तथा कुण्ठा में सार्थक सहसम्बन्ध है। इसमें शहरी किशोरों में चिन्ता की अपेक्षा कुण्ठा अधिक पायी गयी। शहरी किशोरों में प्रतिस्पर्धा और शिक्षा को लेकर अधिक चिन्ता व कुण्ठापायी जाती है। ग्रामीण किशोरों की चिन्ता व कुण्ठा में सार्थक सहसम्बन्ध पाया गया। इसमें ग्रामीण किशोरों में चिन्ता की अपेक्षा कुण्ठा अधिक पायी गयी।

food dekj fl g] MkW t; fl g] 2017 ने “किशोरावस्था के विद्यार्थियों में भौक्षिक तनाव पर vfHkHkkod vfHki j .kk dk i M us okys i Hkko dk v/; ; u^ विषय पर शोध किया और पाया कि किशोरावस्था के विद्यार्थियों में अभिभावक अभिप्रेरणा का पड़ने वाले प्रभाव का सीधा सम्बन्ध है और छात्र व छात्राओं में शैक्षिक तनाव पर अभिभावक अभिप्रेरणा का पड़ने वाले प्रभाव में कोई सार्थक अन्तर नहीं है।

vxoky] efgk 2014 ने ^i kjLi fj d l Ecu/k vkj bM/juV 0; l u % ruko] funk] l kKukRed असफलता व विलम्बन के भविष्यवक्ता के रूप में” विषय में शोध किया और पाया कि पारस्परिक सम्बन्ध, संज्ञानात्मक असफलता व निद्रा का नकारात्मक भविष्यवक्ता है तथा तनाव का सकारात्मक भविष्यवक्ता है। पारस्परिक सम्बन्ध का विलम्बन के साथ असार्थक नकारात्मक सहसम्बन्ध पाया गया। इंटरनेट व्यसन को तनाव, संज्ञानात्मक असफलता, निद्रा व विलम्बन का सकारात्मक भविष्यवक्ता पाया गया। इंटरनेट व्यसन को पारस्परिक सम्बन्ध का नकारात्मक भविष्यवक्ता पाया गया। लिंग-भेद के सन्दर्भ में पारस्परिक सम्बन्ध, इंटरनेट व्यसन, निद्रा व संज्ञानात्मक असफलता में सार्थक अन्तर पाया गया जबकि तनाव व विलम्बन में सार्थक अन्तर नहीं पाया गया।

Johnson 1977 ने "शैक्षणिक उपलब्धि और सीखने पर दुश्चिन्ता, मनोवैज्ञानिक तनाव और बुद्धिमत्ता के संबंध में" विषय पर शोध किया और पाया कि उच्च दुश्चिन्ता और निम्न दुश्चिन्ता वाले विद्यार्थियों के प्रदर्शन में केवल ड्राइव स्तर पर ही प्रतिबन्धित अन्तर था, जहां प्रायोगिक परिस्थितियों में तनाव की मात्रा समान थी। कुल मिलाकर उच्च दुश्चिन्ता और निम्न दुश्चिन्ता वाले विद्यार्थियों का स्वयं तनाव और प्रदर्शन प्रायोगिक परिस्थितियों में उच्च था।

बिश्ठ, ए-व्ज- 1980 ने "विद्यार्थियों के शैक्षणिक तनाव पर स्कूली वातावरण और शैक्षणिक उपलब्धियों की आवश्यकताओं के बीच कार्य करने वाले प्रभाव का अध्ययन" विषय पर शोध किया और पाया कि शैक्षणिक तनाव के प्रभाव के सम्बन्ध में वे स्वयं एक दूसरे से पृथक नहीं थे।

बिश्ठ, ए-व्ज- 1980 ने "विद्यालयी वातावरण और शैक्षणिक उपलब्धियों के सम्बन्ध में तनाव का अध्ययन" विषय पर शोध प्रस्तुत किया और पाया कि शैक्षणिक तनाव व स्कूली तनाव के मध्यमान में त्रिग के आधार पर कोई अन्तर नहीं था। लेकिन लड़के और लड़कियों की शैक्षणिक उपलब्धि और शैक्षणिक तनाव में सार्थक अन्तर था।

Johnson 1988 ने "विद्यालयी वातावरण और शैक्षणिक उपलब्धियों के सम्बन्ध में तनाव का अध्ययन" विषय पर शोध प्रस्तुत किया और पाया कि सामान्य रूप में सरकारी विद्यालयों के बच्चों में अन्य विद्यालयों के बच्चों की अपेक्षा तनाव पाया गया तथा लड़कियों की तुलना में लड़कों में अधिक तनाव पाया गया। अकादमिक प्रदर्शन से तनाव नकारात्मक रूप से सम्बन्धित था।

Johnson 1992 ने "विद्यालयी वातावरण और शैक्षणिक उपलब्धियों के सम्बन्ध में तनाव का अध्ययन" विषय पर शोध किया और पाया कि शैक्षणिक उपलब्धियों तथा तनाव के स्तर के बीच विपरीत सम्बन्ध पाया गया। जिसमें कम चिन्ता स्तर वाले छात्र विद्यालय में उच्च प्राप्तांक रखने वाले पाये गए। जबकि उच्च उपलब्धि प्राप्तकर्ता छात्र बहिर्मुखी, बुद्धिमान, भावात्मक रूप से स्थिर, जोशीले तथा निराशा रहित पाये गए जबकि निम्न उपलब्धि प्राप्तकर्ता संकोची, कम बुद्धिमान, भावात्मक रूप से कम स्थिर तनाव ग्रस्त व निराश पाये गए।

Johnson 1992

प्रस्तुत लघु शोध नैनीताल जनपद के रामनगर तहसील के इंटरमीडिएट कक्षाओं के विज्ञान वर्ग के विद्यार्थियों पर आधारित है। प्रस्तुत लघु शोध प्रबन्ध में प्रतिदर्श के रूप में रामनगर तहसील में इंटरमीडिएट कक्षाओं के विज्ञान वर्ग के 200 विद्यार्थियों को लिया गया है।

mi dj .k

प्रस्तुत लघु शोध में डॉ. जाकी अखतर द्वारा निर्मित 'विद्यार्थी तनाव मापनी' का प्रयोग किया गया है। यह मापनी 13 से 18 वर्ष के विद्यार्थियों के तनाव मापन हेतु प्रयुक्त की जाती है।

fof/k; ka

प्रस्तुत लघु शोध | o{k.k fof/k के द्वारा किया गया है। प्रयोज्यों की अनुक्रियाएं 'fo | kFkhZ ruko eki uh^ जो एक प्रश्नावली के रूप में है के द्वारा ली गयी हैं। जिस कारण इस लघु शोध में प्रश्नावली विधि का भी प्रयोग हुआ है। 'fo | kFkhZ ruko eki uh^ अथवा प्रश्नावली MkW tkdh v[krj द्वारा निर्मित है। प्रयोज्यों की अनुक्रियाएं लेने के पश्चात मापनी की स्कोरिंग की गयी है तथा परिकल्पनाओं के अनुसार परिणामों का Vh&i jh{k.k किया गया है जिससे परिकल्पनाओं की सत्यता की जांच की जा सके।

i fj .kke

प्रथम परिकल्पना हेतु आंकड़े एकत्रित करने तथा उनका सांख्यिकी विश्लेषण के पश्चात् निम्न परिणाम प्राप्त हुए—

	छात्र 100		छात्रा 100		मानक त्रुटि	सांख्यिकी मूल्य		
	मध्यमान	मानक विचलन	मध्यमान	मानक विचलन		Vh eku	स्वातन्त्रय संख्या	सार्थकता स्तर
तनाव स्को	156-62	18-30	166-82	24-01	3-01	3-38	198	0-01

द्वितीय परिकल्पना हेतु आंकड़े एकत्रित करने तथा उनका सांख्यिकी विश्लेषण के पश्चात् निम्न परिणाम प्राप्त हुए

—

	के.बो.100 विद्यार्थी		रा.बो.100 विद्यार्थी		मानक त्रुटि	सांख्यिकी मूल्य		
	मध्यमान	मानक विचलन	मध्यमान	मानक विचलन		Vh eku	स्वातन्त्रय संख्या	सार्थकता स्तर
तनाव स्कोर	156-08	20-27	167-36	22-11	2-99	3-77	198	0-01

## निष्कर्ष

परिणामों के अनुसार परिकल्पनाओं की जांच करने पर प्रथम परिकल्पना  $\hat{N}_k = rF_k N_k = kv_k$  ds ruko Lrj e dkbz l kFkd vUj ugha gkrk gA<sup>^</sup> vLohdr की जाती है।

द्वितीय परिकल्पना  $\hat{d}_{lnh}$ ; ckMZ rFk jkT; ckMZ ds fo | kFkz; k ds ruko Lrj e l kFkd vUj gkrk gA<sup>^</sup> Lohdr की जाती है।

## निष्कर्ष

सम्पूर्ण आंकड़ों का विश्लेषण के पश्चात् जो परिणाम प्राप्त हुए उनका विश्लेषण करने के बाद निम्न निष्कर्ष प्राप्त हुए हैं—

1. 100 छात्रों में से 72 छात्र तनावग्रस्त पाए गए।
2. 100 छात्रों में से 58 छात्र तनावग्रस्त पायी गईं।
- 3- vr%  $N_k = kv_k$  dh vi s{k Nk = k dh l a[; k rukoxLr gkus e vf/kd gA
4. केन्द्रीय बोर्ड के 100 विद्यार्थियों में से 59 विद्यार्थी तनावग्रस्त पाए गए।
5. राज्य बोर्ड के 100 विद्यार्थियों में से 71 विद्यार्थी तनावग्रस्त पाए गए।
- 6- vr%  $d_{lnh}$ ; ckMZ dh vi s{k jkT; ckMZ ds fo | kFkz; k dh l a[; k rukoxLr gkus e vf/kd gA
7. प्रथम परिकल्पना  $\hat{N}_k = rF_k N_k = kv_k$  ds ruko Lrj e dkbz l kFkd vUj ugha gkrk gA<sup>^</sup> आंकड़ों के विश्लेषण के पश्चात् vLohdr कर दी गयी क्योंकि दोनों के तनाव स्तर में सार्थक अन्तर है।
8. द्वितीय परिकल्पना  $\hat{d}_{lnh}$ ; ckMZ rFk jkT; ckMZ ds fo | kFkz; k ds ruko Lrj e l kFkd vUj gkrk gA<sup>^</sup> आंकड़ों के विश्लेषण के पश्चात् Lohdr की जाती है क्योंकि दोनों के तनाव स्तर में सार्थक अन्तर है।
- 9- dly 200 fo | kFkz; k e l s 130 fo | kFkz rukoxLr i k, x, A

l pko

विद्यार्थियों को तनाव से बचने के लिए सुझाव निम्न प्रकार हैं—

1. प्रतिदिन 30 से 40 मिनट व्यायाम करें क्योंकि व्यायाम, तनाव से छुटकारा दिलाने और संज्ञानात्मक कार्य में सुधार करने में मदद करता है।

2. मसाज थैरेपी तनाव कम करने काफी सहायता करती है। मसाज शांत रहने और शारीरिक और भावनात्मक तनाव कम करने का एक शानदार तरीका है।
3. संतुलित आहार तनाव को कम करने में महत्वपूर्ण है। अच्छी तरह से पोषित शरीर, शारीरिक और भावनात्मक तनाव के साइड इफेक्ट का सामना करने में अच्छी तरह से सक्षम होता है।
4. अपने सोने के समय में सुधार करें। नींद झूठी दिलासा देने और त्याग करने में बहुत महत्वपूर्ण है। शोध में पता चला है कि 60 से 90 मिनट अतिरिक्त सोने वाले ज्यादा खुश, स्वस्थ और सुरक्षित रहते हैं।
5. एक सकारात्मक विचारक बनें और अपनी रोजमर्रा की बातचीत में अधिक आनन्द लें। एक आशावादी व्यक्ति तनाव की स्थिति का बेहतर तरीके से सामना कर सकता है।
6. अधिक हंसें क्योंकि हंसने से तनाव काफी हद तक कम हो जाता है।
7. यह समझने का प्रयास करें कि आप सब कुछ नियन्त्रित नहीं कर सकते हैं।
8. तनावपूर्ण स्थिति का सामना करें न कि उससे बचने का प्रयास करें।
9. अपनी दैनिक कार्यों की एक योजना बनाएं तथा जीवन को उद्देश्यपूर्ण बनाएं।
10. अपनी प्रतिबद्धताओं को नियन्त्रित करें।

शिक्षकों व अभिभावकों के लिए सुझाव निम्न प्रकार है—

1. किशोरों के साथ अधिक समय व्यतीत करें।
2. किशोरों के साथ दोस्त जैसा व्यवहार करें। सहानुभूतिपूर्वक व्यवहार विद्यार्थियों का शैक्षिक और मानसिक तनाव कम करने में सहायक होता है।
3. किशोरों पर किसी बात व कार्य के लिए दबाव न डालें।
4. किशोरों को अपने फैसले स्वयं लेने व स्वतन्त्र होकर कार्य करने की अनुमति व सहयोग प्रदान करें।
5. किशोरों को आर्थिक प्रबन्धन सिखाएं।
6. वर्तमान परिस्थितियों व माहौल को खुशहाल बनाने का प्रयास करें।
7. अपने तनाव को किशोरों के समक्ष प्रस्तुत न करें।
8. किशोरों से सीमा से अधिक महत्वाकांक्षाएं न रखें।
9. किशोरों से क्रियात्मक व समस्या समाधान वाली क्रियाएं कराएं।
10. किशोरों की तुलना किसी अन्य लोगों से न करें।
11. किशोरों को प्रेरणात्मक कहानियां व आदर्श व्यक्तित्वों का उदाहरण दें।



12. किशोरों के आत्मविश्वास को बढ़ाने के लिए उन्हें प्रोत्साहन दें।
13. अत्यधिक कठोर अनुशासन, संरक्षण अस्वीकृति तथा उपेक्षा, इन प्रमुख दशाओं से बचकर अभिभावकों को अपने बच्चों के प्रति उचित संरक्षण प्रदान करें।

शोधार्थियों के लिए आगामी शोध हेतु सुझाव निम्न प्रकार हैं—

1. प्रस्तुत लघु शोध प्रबन्ध में जिस उपकरण का प्रयोग हुआ है उससे शोधार्थी 13 से 18 वर्ष के किशोरों पर शोध कार्य कर सकते हैं चाहे वह किसी भी कक्षा में हो।
2. शोधार्थी विज्ञान वर्ग के विद्यार्थियों के अलावा अन्य वर्ग के विद्यार्थियों पर शोध कार्य कर सकते हैं।
3. शोधार्थी कक्षा 11 व 12 के विद्यार्थियों में तनाव की स्थिति का तुलनात्मक अध्ययन कर सकते हैं।
4. शोधार्थी विज्ञान व कला व वाणिज्य वर्गों के विद्यार्थियों में तनाव की स्थिति का तुलनात्मक अध्ययन कर सकते हैं।
5. शोधार्थी ग्रामीण व शहरी विद्यार्थियों के तनाव की स्थिति का तुलनात्मक अध्ययन कर सकते हैं।
6. शोधार्थी संयुक्त व एकाकी परिवार के विद्यार्थियों के तनाव की स्थिति का तुलनात्मक अध्ययन कर सकते हैं।

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## ENVIRONMENTAL FACTORS LEADING TO EMERGING DISEASES

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### ABSTRACT-

Emerging infectious diseases & their root causes present a challenge to the security of nations & even of the world. Behavioral & environmental decisions can have a significant effect on the appearance & dissemination of certain EIDs which need care. Factors leading to the emergence of new and persistent infectious diseases are addressed. The aim of this analysis is to present several prominent current examples of evolving & re-emerging diseases of the RNA virus (influenza, hantavirus, Ebola virus and Nipah virus). Throughout this report, we will analyze the numerous factors focusing on emerging infectious diseases and evaluate recent reports on emerging & overlooked infectious diseases & illustrate the spectrum, trends & developments in the management of infectious diseases, with a special emphasis on the WHO's key priority emerging infectious diseases (EIDs) & neglected tropical diseases.

**KEYWORDS-** Emerging Infectious Diseases, Ecological, Economic, Microbial Adaptation, Human Demographics & Behavior, Public Health Measures & Deficiencies

### INTRODUCTION

Emerging Infectious Diseases (EID) is a form of disease that arises as a consequence of infections of emerging microorganism strains. These can even recur from respiratory disorders that might have arisen several years before. Emerging infections (EIs) could be described as 'infections that have recently arisen in a community or have occurred previously but are increasingly growing in occurrence or geographic spread. The EIs influenced the path of human life and induced tremendous suffering & death. A modern condition of acquired immune deficiency syndrome (AIDS) was first described in 1981. For a mass murderer, Hiv now aims to eclipse the Black Death of the 14th century and the flu pandemic of 1918–20, both of which destroyed at least 50

million people. Reasons for the emergence / recurrence of infectious diseases are nuanced and interrelated. Such infectious disorders are either recent or are expected to become epidemics in the immediate future. Few specific indicators of EID include HIV / AIDS, hepatitis, measles, malaria, dengue, cholera, Ebola & many others to list (Drotman et al., 2018). Moreover, the prevalence of such diseases is induced by several causes which have been the subject of this study.

### **Factors that impact EID**

The origin of the occurrence of every contagious illness relies on environmental & human influences. Human considerations cover age, loss of knowledge and social influences. Environmental influences include climate change, natural hazards, microbial tolerance & resistance. Those are the key causes that affect the production of multiple infectious diseases. Factors like inadequate delivery of health care programs, urbanization & economic hardship are also contributing to EID prevalence. Evolution in viruses & bacteria often means that diseases are developing constantly. The recognition of such variables is also a prerequisite for successful management & regulation of the EID.

### **Ecological changes and agricultural development impact EID**

The enhanced distance of the virus to the host and the optimal environments are liable for the growing population of the microbes or their vectors. About 7,000 deaths occur yearly in Asia, correlated to flooding in rice-growing lands. Environmental environmental shifts, like temperature or weather disturbances, can have the same impact (Eisenberg et al., 2007). Natural hazards are very frequently blamed for the occurrence of the EID. After calamities, the sanitation of nature is destroyed, contributing to favorable conditions for the breeding & distribution of EID. Agricultural production involves the propagation of cattle & poultry diseases.

### **Social and behavioural factors that influence infectious diseases**

Social trends such as rural-urban displacement result in poor sanitation services and cramped living environments. In fact, the shortage of adequate services in cities often triggers the incidence of EID (Suhrcke et al., 2011). Both these factors are related to population increase and have led to the recurrence of many diseases, like measles, cholera, typhoid and plague. For eg, every year there is a re-emergence of malaria endemics in India. That is attributable to the good effects of the wet season & cooler climate. Bad housing standards in heavily developed cities are another factor.

### **Economic factors that influence infectious diseases**

Both factors perform a crucial role in influencing the occurrence of infectious diseases. Regions with a high cost of wages will provide a better quality of living. That says, lack of adequate hygiene, and more occupants in the same room. As a consequence, they are more vulnerable to respiratory disorders such as diarrhea. It is exacerbated by a shortage of proper hygiene and clean water. Lack of innovation in research and production of modern vaccines and antimicrobial medicines raises the occurrence of EID (Suhrcke et al., 2011). The ineffectiveness of the implementation of emerging technology often contributes to the production and recurrence of infectious diseases. Such systems have the ability to monitor the transmission of infection.

### **Awareness about a disease**

These are many steps, such as knowledge of prevention strategies, i.e. social isolation from sick people, adequate and effective vaccines, etc., to deter the transmission of infectious diseases (Suhrcke et al., 2011). To starters, the demand for measles, mumps & rubella vaccines rose in the event of an epidemic of measles. Knowledge of the nature of the illness is effective in rising the severity of the outbreak.

### **Changes in human demographics and behaviour**

Significant migrations attributable to natural (flood, earthquake) or manmade circumstances (war) trigger infectious diseases including rural urbanization (Suhrcke et al., 2011). Those are the major causes of the danger to infectious diseases. For starters, hemorrhagic dengue is now widespread in some Asian cities. High prevalence of contamination due to the abundance of open containers used for water storage. It offers the ideal spawning area for the mosquito host.

### **International travel & commerce**

Infectious diseases disperse throughout the globe due to transportation, commerce or war. People from the impacted regions migrate to geographically remote places. Individuals in the safe region may have been diagnosed with diseases triggered by travelers (Suhrcke et al., 2011). Infectious disease is infectious in nature as individuals relocate or fly to other areas & could be at risk of disease transmission. Immigration is another explanation for the proliferation of EIDs from one disease with another. One popular example is the propagation of the Zika virus.

### **Technology and industry impact EID**

Improvements in technology & business have an effect on the incidence of EIDs as diseases could transfer from infectious individuals to healthy individuals through organ or tissue transplantation, globalization of food sources, respectively. (Suhrcke et al., 2011). Excessive application of antibiotics induces a difference in the genetic composition of the bacteria, rendering them quite virulent despite adaptation.

### **Microbial adaptation and change impact EID**

Microbes are emerging at a very fast rate, increasing the production of antibiotic-resistant bacteria (Doorn, 2014). Mutation of viruses is induced by higher levels of mutation. For instance, owing to changes in two types of the influenza virus & other variations, the affected individual becomes reinfected. Altered antigens are not easily detected by the immune system.

### **Breakdown of public health measures and deficiencies in public health infrastructure.**

Pathogens are also found in a hibernated condition in ponds or in the ecosystem. Re-emerging diseases are others, such as cholera, that once decreased but are now increasingly growing again (Dikid et al., 2013). Bad public safety programs and hygiene initiatives contributing to the occurrence of EIDs. The Government of countries with signs of these infectious diseases will implement proactive strategies in the area of public health. The policy will therefore maintain adequate immunization & vector management programs. This would guarantee that the proliferation & re-emergence of infectious infections is prevented.

### **Influenza Virus**

Influenza virus variants which cause widespread outbreaks (pandemics) are textbook examples of new viruses which are retained in certain animal hosts prior to human transfer. Influenza viruses are derived from a large variety of species, including humans, cows, goats, wild and domestic birds, & also marine mammals. The most destructive viral outbreak of this century was triggered not by HIV, and also by Spanish influenza, that killed more than 20 million people worldwide. Genetic reports indicate that the Spanish influenza virus arose from animals. In comparison, the causative viruses of the 1957 & 1968 influenza pandemics were crosses of human & avian influenza viruses. Since humans did n't have immunity to avian influenza viruses, hybrid viruses caused catastrophic effects (70,000 and 46,500 deaths worldwide in the 1957 & 1968 pandemics, respectively). It's also important to consider the processes at which new influenza strains incapable of triggering pandemics are evolving.

### **Hantavirus**

Hantaviruses are RNA viruses that have a position with the Hantavirus group in the Bunyaviridae family. Hantaviruses are held in various rat libraries, in which the specimens are continuously infected with no signs of disease. Explicit hantaviruses spread from diluted urine and infected rat dung cause two main human illnesses, hemorrhagic fever with renal syndrome (HFRS) and hantavirus suction syndrome (HPS). A significant amount of instances of HFRS are accounted for per year across Euro-Asia, while few instances of HPS are accounted for in North and South American nations. Because rodents are uncommon as popular stores for hantaviruses & human-to-human infection, knowing the ecosystem of hantaviruses within their characteristic supply is critical for foresting and managing the production of such diseases (Khan,1996). Generally late usage of the PCR approach has enabled the production of viral genomes from a small number of

rats or human tissues without the virus being isolated by excellent culture techniques. In this process, several duplicates of a bit of DNA or RNA are combined after the synthesis reactions have been reshaped. The study of a variety of hantavirus genomes from various rat populations has shown a fair association between the rat population and the genotype of the virus, indicating that hantaviruses have coevolved with their normal hosts for a span of 0.20 million years after the main humans had progressed (Marshall, 1993). Be that as it may, the manner in which hantaviruses reside inside a rat store remains muddled, particularly how they set up a tireless disease. When doing various experiments with guinea pigs and mice, a few meetings have demonstrated that a tentatively infected baby species rapidly builds up an industrious illness, even though the adult species only builds up a transient illness and recovers entirely. Epizootiological tests have since demonstrated that the infection is spread between adult species by damage and that individuals are continuously infected. Such difference may be explained by concealing the healthy arrangement of adult rodents in nature that causes virus endurance, comparing and immunologically pristine adult testing centers in which virus disease is cleared (Meyer, 2003). The effect of mixed infection on a few species, which contributes to the preservation of equilibrium between the host and the parasite in nature, should be studied in more depth.

### **Ebola Virus**

The Ebola virus is a non-segmented RNA virus that, along with the Marburg virus, is a family of filoviruses. This now popular series of viruses was identified in 1967, when the Marburg virus was recognised as an etiological expert in the hemorrhagic fever episode in the offices in Europe, which took charge of the tissues of African green monkeys transported from Uganda. Throughout this way, Ebola viruses have been found to be the source of all hemorrhagic fever flare-ups throughout 1976 in the Democratic Republic of Congo (DRC, once in the former Zaire) and Sudan. Such flare-ups have been found to be triggered by two separate subtypes of the Ebola virus known as the Zaire and Sudan subtypes. Death levels of up to 80 per cent were reported in these and subsequent incidents in the DRC and Gabon in 1995–96. Epidemiological knowledge from late flare-ups suggests that close contact is necessary for the successful transmission of Ebola from one person to another, and little evidence can be found for vaporized transmission of the virus (Peters,1999). Given substantial attempts to identify the signature store for Ebola and Marburg viruses, the host community remains a mystery. While non-human primates have been involved as a vector of viral transmission to humans during a few of the known flare-ups, they are

not seen as likely to speak to animals as a consequence of their impotence to high-mortality hemorrhagic illnesses such as those found in humans. Minimal genetic distinction has been established between Ebola-Zaire viruses confined 20 years apart and more than 1,000 km away from each other, indicating that natural rather than hereditary components that assume predominant roles in the onset of Ebola hemorrhagic fever flare-ups (Sanchez, 1996).

### **Nipah Virus**

Nipah virus is a newly identified entity in the paramyxovirus community of non-segmented RNA viruses. This virus was responsible for viral encephalitis flare-up in Malaysia, which was first identified in October 1998 and finished in midsummer 1999. This incident resulted in about 300 confirmed illnesses, and the mortality rate for hospitalized patients was nearly 35%. At first, Malaysian experts believed the incident was triggered by Japanese encephalitis (JE) virus, a mosquito-borne RNA virus. However, JE inoculation and vector prevention campaigns have been ignored to stop the pandemic. Indeed, a few highlights of the disease transmitting analysis appeared in contrast with previous JE flare-ups, most notably with the absence of disease in children and, at the same time, disproportionately respiratory disorders in pigs. Study facility tests by Dr. K. B. Chua at the University of Malaysia identified the guilty group, the recently found Nipah virus (Chua, K. B., Goh 1999). Plague management measures also culminated in the winnowing of more than 1 million pigs in impacted ranches. The discovery of Nipah virus destroying antibodies in natural product bats of the Pteropus class has ensnared them as a potential source of viruses. The virus gives the illusion that it was originally introduced into pigs, where near interaction induced by scaled-up breeding rehearsals contributed to the effective transfer of pig-to-pig and thereby to the spread of pig-to-human disease. Nearly all human events occurred in vicinity to the pigs (Centers for Disease Control and Prevention, 1999). Hereditary analysis found that the Nipah virus was closely associated with the Hendra virus, which was recently reported in Australia as a source of disease in ponies and humans and is also present in the Pteropus genus of natural product bats. Such natural bat-related viruses tend to form another genus in the paramyxovirus family. The Limited Heritage Varied Variation was established within the Nipah Virus and Hendra Virus Samples, suggesting that biological factors, instead of genetic variables, are likely to play an increasingly significant function in deciding such disease innovations. These models feature a subtle parity of ecological and genetic elements that can form



the different developmental examples observed for RNA viruses and reflect the unpredictability of these systems, rendering it challenging to forecast possible viral infections.

### **MEETING THE CHALLENGE OF EMERGING INFECTIONS**

Infectious diseases will proceed to develop and reappear, prompting eccentric plagues and troublesome difficulties to public health and to microbiology and united sciences. Observation and reaction, the key components in controlling EIs, be they normally happening or intentionally built, rely upon quick clinical conclusion and identification and regulation in populaces and in the earth. Internationally, such endeavors are composed by the World Health Organization, which as of late drove a multifaceted exertion to effectively contain the worldwide SARS episode of 2002–2003 (WHO SARS 2003). In the United States, such endeavors are driven by the US Centers for Disease Control and Prevention (CDC) (Centers for Disease Control and Prevention), which alongside state and local health divisions and different agencies have been making critical walks in national reconnaissance reaction limit. The gigantic inundation of US government-subsidized research assets (to a great extent through the National Institutes of Health) and public health assets (fundamentally through the CDC, and state and local public health agencies) in light of the expanded risk of a bioterrorist assault (Fauci 2003) will brace the reaction capacities identified with all EIs. However, it is evident that reconnaissance and different exercises that customarily fall inside the area of public health are not in themselves adequate to satisfactorily address the issue of EIs. Of basic significance are fundamental, translational and applied research endeavors to create propelled countermeasures, for example, reconnaissance devices, demonstrative tests, immunizations and therapeutics<sup>86</sup>. Genomics, proteomics and advances in nanotechnology (Shaping Biomedical Research. Discussion Report (2002)) are progressively being misused in indicative, remedial and microbial research applications, and in judicious medication and antibody plan. Immediate and computational basic assurance (Baker 2001), expectation of protein–protein collaborations among microorganisms and medicates, and complex bioinformatics methods bolster examine in the entirety of the above territories. These advances have prompted various advances in certifiable utility against EIs, most quite in the improvement of more than 20 antiretroviral drugs that can adequately stifle HIV replication. Where they are accessible and appropriately utilized in HIV-tainted people, these meds have significantly decreased HIV horribleness and mortality (Dybul, 2002). Quality and protein-based microarrays can be utilized to identify pathogen signals, to screen protection from hostile to infective

operators, to describe have quality reactions to late contaminations, and to encourage the advancement of new medications and antibodies (.Zhu, H., Bilgin 2003). Fundamental and applied research together have given promising new antibody stages, for example, recombinant proteins, immunogenic peptides, stripped DNA immunizations, viral vectors of superfluous genes encoding immunogenic proteins (counting delusions), replicons and pseudovirions (Gluck, R 2002). Numerous epic antibody up-and-comers are currently being created against EIs, for example, HIV, Ebola virus, West Nile virus, dengue, the SARS coronavirus, tuberculosis and intestinal sickness. Of specific note are novel tuberculosis immunizations that as of late entered clinical preliminaries — the first run through in over 60 years that new ways to deal with inoculation for tuberculosis have been evaluated in people. Chimaeric flavivirus immunizations for West Nile virus, dengue and Japanese encephalitis virus are successful in creature models and are in different phases of clinical testing (Jordan Report: twentieth Anniversary. Quickened Development of Vaccines (2002)). Our developing comprehension of the human safe framework is likewise assisting with quickening immunization advancement. This is particularly obvious on account of intrinsic invulnerable reactions, which are developmentally more established, less explicit and quicker acting than the versatile reactions that have been the conventional focuses of antibodies (Bendelac, A 2002). As we study natural insusceptibility and its relationship with the versatile invulnerable framework, chances to make increasingly powerful antibody adjuvants will develop. For instance, engineered DNA successions that contain rehashed CpG themes impersonate the stimulatory action that bacterial DNA parts apply on the natural resistant framework. These successions show guarantee as immunization adjuvants that quicken and expand resistant reactions (O'Hagan 2003). We can foresee more advancement of this sort as we keep on portraying the mind boggling connections among natural and versatile insusceptible reactions. The sequencing of the human genome, the genomes of six different creatures, including the mouse, and those of microbial vectors and microorganisms themselves (for instance, *P. falciparum* and its mosquito vector, *Anopheles gambiae*), have raised microbiology to a wholegenome level. The capacity to arrangement microbial genomes in a couple of days or less, and to inspect have vector–microorganism cooperations at both the genome level and at the tertiary protein basic level, will assist us with understanding the atomic components that underlie the pathogenesis of infectious disease and host guards, including opposition and safe avoidance (Fraser 2002). These advances will encourage the improvement of new countermeasures. Other

ripe regions of research incorporate the utilization of land data frameworks and satellite imaging to help field study and pestilence prevention (for instance, foreseeing HPS and Rift Valley fever plagues in indigenous zones by satellite symbolism of water and vegetation identified with creature supply and vector pervasiveness) (Cromley,2003). Hidden disease rise are developmental clashes between quickly advancing and adjusting infectious operators and their gradually advancing hosts. These are battled out with regards to quickening natural and human conduct modifications that give new ecological specialties into which developing microorganisms can promptly fit. It is basic that extensively based prevention techniques, just as good as ever countermeasures (that is, observation devices, diagnostics, therapeutics and immunizations), be persistently tried, refined and overhauled, requiring a fortified connection between public health and essential and clinical sciences. The test introduced by the continuous clash between pathogenic microorganisms and man has been very much summed up by a prominent boss of the war on EIs, Joshua Lederberg: "The eventual fate of organisms and humankind will presumably unfurl as scenes of an anticipation spine chiller that could be entitled Our Wits Versus Their Genes". The worldwide logical and public health networks must stand up to this reality with mind, yet additionally with vision and supported promise to address a ceaseless difficulty.

### **LITERATURE REVIEW**

Nicholas Israel Nii-Trebi et al. (2017) Infectious diseases have a major effect on public safety and the financial soundness of social structures all over the planet. These have been among the key causes of mortality and failure for such a long time and have led health protection and human development to experience difficulties. In fact, the danger faced by infectious diseases is increased by the advent of modern, unrecognized and existing infectious disease pandemics of worldwide impact. In the last three and a half decades, at any pace, 30 new infectious operators have increased, most of them zoonotic & their birthplaces tend to be fundamentally related to political, natural and ecological variables. When these elements begin to grow, placing people in greater interaction with pathogen-causing diseases, there is fear that infectious diseases that begin to be exposed to an oppressive check. Consistent understanding, the effectiveness of effective strategies for managing infectious diseases and the creation of diseases along these lines remain important. This study provides momentum updates on the creation and release of infectious diseases which involves the expansion, elements which advances in infectious diseases for

executives with a particular emphasis on the WHO's high-needed emerging infectious diseases (EIDs) and overlooked tropical infectious diseases.

Felissa R. Lashley et al. (2003) Emerging Infectious Diseases (EIDs) have been getting expanded attention for more than two decades. This concern has emerged as a consequence of the expectations of extending the obstruction of microorganisms of traditional antimicrobials, the identifying facts of once-obscure disease operators and the diseases they inflict, and the awareness that the notion of globalization involves a regional introduction of disease specialists some time earlier confined to few, sporadic, or remote areas. Unfortunately, throughout the fall of 2001, the capacity for the use of microbial experts as instruments of terror and decimation became evident with the outbreak of *Bacillus anthracis* distributed throughout the United States, primarily through postal, while substances and organic operators had only been using in such lines throughout the preceding century. The relation between infectious diseases and social, political and financial developments, from the most recent to the current, has been very much documented. Rising and important infectious diseases present a challenge to the wellbeing of countries and definitely of the planet. Purposes behind the rise / reappearance of infectious diseases are mind-blowing and interrelated. The big city also opens doors for the production and spread of diseases, creating big monetary and social incentives. Despite the fact that the features of microorganisms, such as genetic dynamic shifts, are important in the growth of infectious diseases, influences under human influence are undergoing an immense amount of research. Conduct and way of life choices are moreover a major influence on the growth and spread of a variety of EIDs which need consideration. Variables that contribute to the prevalence of emerging and recurrent infectious diseases are investigated.

Jonathan A. Patz et al. (2000) Ecologically disturbing consequences have an influence on the production and dissemination of intestinal disease and zoonotic parasitic diseases, including leishmaniasis, cryptosporidiosis, giardiasis, trypanosomiasis, schistosomiasis, *®* lariasis, onchocerciasis, and layasis. Each natural alteration, in the event that it happens as a typical marvel or by human intercession, changes the ecological balance and the environment under which disease hosts or vectors and parasites develop, induce and spread disease. Growing species requires a different ecological specialization, and sub-populations of vector species are especially common and inherited when they respond to man-made environments. Most zoonotic species have three unmistakable life cycles: sylvatic, zoonotic, and anthroponotic. Adjusting to shifting

natural circumstances, including a decreased non-human population and an increased human population, a few vectors display a transition from a fundamentally zoophyllic to primarily anthrophyllic path. Deforestation and resulting improvements in land usage, human occupation, industry growth, street creation, water management systems (dams, rivers, water network structures, repositories) and the environment, individually and in conjunction, have been followed by worldwide rises in deforestation and modern parasitic disease mortality. Supplying forest with seed production, forestry and breeding of small animals may provide a suitable environment for parasites and their host vectors. If the land use of the deforested territories varies, the example of human occupation is changed and the fracturing of the natural ecosystem will offer a chance to exchange and spread parasites to uninfected citizens. Developing flood management undertakings may contribute to changes of vector species such as snails and mosquitoes and their parasites. Developing streets in advance out of control of forested territory will contribute to disintegration and stagnant lakes by obstructing the flow of streams as the water increases during the stormy season. The cumulative impacts of ecologically adverse shifts in local soils and modifications in the global environment have disturbed the typical biological structure and could present a danger of transfer of parasitic diseases to the human population.

Lucia Migliore et al. (2009) In the current audit, we summarize the late advances in understanding the collaboration between hereditary qualities and natural elements involved in complex multi-factorial neurodegenerative issues such as Alzheimer's Disease (AD), Parkinson's Disease (PD) and Amyotrophic Lateral Sclerosis (ALS). The discovery of a few genes responsible for the family structures has contributed to a greater understanding of the sub-atomic mechanisms implicated in the individual neuronal degeneration, which is evident for each of these disorders. Be it as it can, the bulk of instances happen as contradictory systems, possibly owing to the dynamic relationship between cost and price. Many biological factors, including contaminants, chemicals, head trauma, behaviors and nutritional propensities, have been related to an elevated risk of illness or even to health. Many genetic variants have been investigated as possible danger factors for incompatible systems, but the findings are mostly contradictory, not reshaped or unclear. New approaches to work with natural health studies show that improvements to the standard policy may be synthetically introduced at the premises and underline the significance of recognizing the vulnerability of the human epigenome in terms of nutritional and other ecological impacts.

David M. Morens et al. (2004) Infectious diseases have traditionally been defined by conflict and famine as significant obstacles for human development and resilience. They remain among the world's key causes of death and injury. On a constant base of pollution, the proliferation of fresh and old infectious pathogens is intermittently amplifying the worldwide burden of disease. Investigations of these infection discoveries show the revolutionary effects of pathogenic microorganisms and the complex linkages between microorganisms, their hosts and their nature.

## CONCLUSION

Factors for the emergence / recurrence of infectious diseases are dynamic and interrelated. The global village, that offers global economic & social resources, also provides incentives for illness to grow and propagate. While the traits of microorganisms, such as genetic adaptation modifications, are essential in the creation of infectious diseases, human-controlled influences play a significant role. Behavioral & environmental decisions have a significant influence on the appearance & dissemination of multiple EIDs. Effectively managing risks from evolving infectious diseases involves collaboration and coordination between a broad variety of experts, even those with experience in livestock diseases, biology, behavioral sciences, epidemiology, biological sciences, environmental health, pharmacy & nursing.

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# Impact of Technology in protecting as well as Exploiting the Environment

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**Abstract:** The impact of technology on the environment can either be positive or negative. Due to the rapid growth of population and the industrial growth the technology plays a major role in increasing the potential of the industry and Meet the demands according to population growth. From the year 2001, the whole world is facing many environmental problems like climate change, moving back biodiversity, depletion of the ozone layer, overpopulation which is a Major Concern. Due to the technological growth, water and air pollution is a major problem along with the disposal of toxic waste that comes out from the industries. For the developing countries, besides there is a lack of proper sanitation and drinking water the dust and other harmful chemicals also cause various diseases and can increase the Mortality rate. In this paper, I have discussed the factors of technology that can affect the environment. I also discuss the impacts of the Construction project which are running for the water storage which helps in the generation of power and for human use, as a result of which there is shifting of the animals and parasites. Constructions of roads can lead to deforestation and cause erosion. This combined effect of the human-generated environmental effect for their use can lead to transmitting various types of microbial disease from the parasites to humans.

**Keywords:** Technology, protecting, and exploiting the environment.

**Introduction-**Technology plays an important role in human life. Everybody encounters technology in most of the work like online classes and for online shopping from our homes. We use technology to make easy our life, but we slightly turn to be wrong as we realize that from when we started to use technology in our daily life we are getting sick quickly and our immune system becomes very weak. I agree that technology does make our life easier but how can we stay

physically and mentally fit. People take more risks to their health with the development of technology. D. Shankar Polish also justified by his paper that technology is good or bad for the human being. He explains the good or bad effect of technology on the environment like electrical energy power today's technologies, but to generate the increasing demand for energy, by product harmful to our physical health and our earth.

Technology influences on our society. The impact of technology on the environment can be positive and negative .after the development of the factories and industries human population growth rate has increased. People who are literate in technology, science, and engineering should be aware of methods that have been developed to reduce the environmental impact on technology. From the development of technology, an individual can use the information and communication technology to work from home, and from to use of computers we conserve energy.

NAEP, 2014 submit their report on the effect of technology on the natural world the key principles in their report-

1. The use of technology can impact the environment both positive and negative.
2. Technology-focused positive effect on the economy.
3. Technology increases competition with another one.
4. Some technology can reduce the negative impact.

Technology can exploit the environment like land, water, air, plants, and animals. Not only technology affects the environment but the environment also affects the technology by providing raw materials and sources of energy. Technology includes trade-offs between economic needs both give a positive impact.

“Technology is a useful servant but a dangerous master” by Christian Louse Lange.

Technological development has a great positive impact on our environment. In this paper, the researcher explains in detail of technological protection of the environment in the below paragraphs.

**Technology protecting the environment in these forms:-**

- 1- Waste management
- 2- Agriculture
- 3- Digital coin mining
- 4- The information revolution
- 5- Economic incentives

- 6- Education
- 7- Bio-fuels
- 8- Recycling the solution
- 9- Water quality
- 10- Electrical energy production
- 11- Biotechnology

**Waste management-** We are also known as that waste material effects on public health and our environment. Technology develops many techniques for recycling, composting anaerobic design, incineration, and landfilling, etc. [1]The government makes a plan which covers all type of waste. Specifying the measures need to deal with it in a continuous resource-efficient manner.[11]

**Agriculture-** Technology maintains continuous crop production. From the use of technology farmers use quality seeds and planting, efficient water use. Technology identifying climate-adapted planting energy and agriculture production practices. Farmers must be educated, well equipped, and utilize technology and superior planting material, livestock, intensive and financial support.[4]

**Digital coal mining-** It is quite familiar that in the 21<sup>st</sup> century each sector/nation wants to be digitally successful. In addition to this mining sector is not exempted from this. Several top-class mining companies are trying to adopt fully digitalization.[7] In terms of digital training to their worker's data analyzing safety implementation, innovations manpower development operational activities avoid environmental effect and atomization.[18]

**Information revolution-** The information revolution is playing a vital role in our life. It saves time by using the internet for shopping, negotiation, and teaching. [14]It would mean massive changes that will affect the method we perform shopping, receive services, and educate, working, and entertaining ourselves. Right now computers are capable to speak and understand natural language and translate such languages.[3]

**Water quality-** Water is one of the essential needs of human beings. The shortage of water and poor water quality in a region affects human health, food, and other areas. Quality of water belongs to the chemical, physical, biological, and radiological properties of water. It is a degree of measurement of the condition of water-related to the requirements of one or more biotic species or any human need or any other purpose. It is most important to set standards against which compliance. Normally obtained through the treatment of water can be assessed. The will known standard used to assess water quality relates to the health of ecosystems safety of human contact and drinking water.

**Biotechnology-** Biotechnology plays a very important role in medical science. It is a very extensive area of biology related to living systems and organisms to develop products. It includes

genetic engineering and cell technologies. Biotechnology is the research development in the laboratory using bioinformatics for exploration, extraction, and production from any living organism. The biotechnology department was also responsible for leading to antibiotic and bacterial inspection control.[16]

**Electrical energy production-** Electrical energy production depends upon several methods or technology i.e. Turbine, power plant. This is the process of producing electric power from the source of primary energy. Electrical energy generally generated at a power plant by electro-mechanical generators which is run by a heat engine fueled by combustion or nuclear fission. In another manner can be produced by the kinetic energy of flow in water, wind, geothermal power. The very common method of electric generator transforms kinetic energy into electrical energy followed by faraday laws.

Today human being realizes that the environment can no longer be used in the traditional way therefore many organizations at various levels are looking into the environmental problems and means of sustainable development. In 1980, UNEP clarifies the area of technology we whereas in the figure:

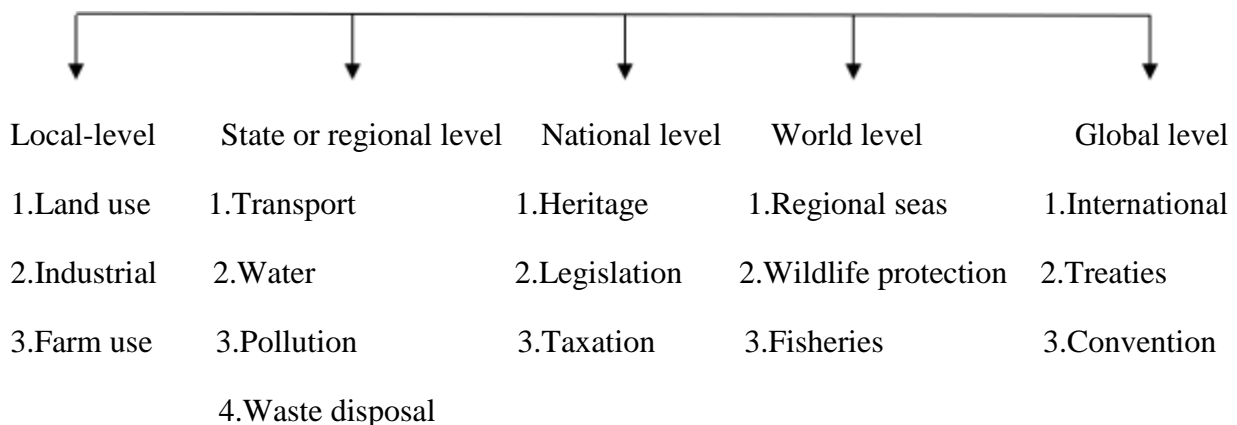


Figure 1(figure explain the organization where technology use in our world)

**Technological Exploitation on Environment**

Rio de Janeiro, 1992 the conference agenda for the environmental problems. He divides UNCED AGENDA, 21 in four sections. Section A,B,C,D . Section A includes social-economic problems. Section B includes the conservation and management of resources. Section C strengthening the role of major groups and Section D includes means of implementation.[15]

The exploitation of this technology on the environment has concluded the misuse and compensation of our world. Technologies have to defame our environment in many aspects-

- 1- The exploitation of the natural environment.

2- The exploitation of the family environment.

3- The exploitation of the community environment.

### **1. The exploitation of the natural environment**

- ❖ The Exploitation of technology on the environment is very broad that there are radical climate changes around the environment.
- ❖ In summer season super hot environment while in winters get very chill.
- ❖ Many environmental problems are creating in the form of global warming, the extinction of birds, trees, and many diseases.
- ❖ Many technological inventions like vehicles, air-conditioning, gadgets, fossil fuel reduction, carbon-di-oxide to the air have caused global warming in the air.
- ❖ Global warming led to the destruction of the natural environment as the weather has changed causing long periods of drought in the areas.
- ❖ The use of fossil fuels has greatly led to getting rid of the forest.
- ❖ Western technological inventions like industries have a bad impact on water. Oil and waste material pollute the water and kill aqueous animals.
- ❖ The liquid waste material and deadly chemicals of industries throw into the ground which may cause lousy predictability of agriculture.
- ❖ Nov degradable and non-recyclable solid waste of industries deposited to such areas  
.where people leave causing bad smells and take a big risk of health.

### **2. The exploitation of the family environment-**

- ❖ Global warming exploits to individuals. From the air pollution humans being suffering from breathing problems.
- ❖ Poor families are forced to their children to do the work of factories and industries due to the industrialization.
- ❖ Rural-urban migration causes family separation. People leave their urban homes for getting employment and leaving the rest of the family.
- ❖ Vehicles caused bad effects on our health. People do not walk and do exercise causing obesity to young children. A person becomes less active and faces many health problems.

- ❖ Greater uses of computers, cell phones students are getting lazy and they lose their interest in reading books. Hence their performance levels in schools are very poor.
- ❖ For the use of technology, most families spent their time on technical devices like-T.V. Due to these devices family members do not spend their time together. Children do not pay attention to their parents.
- ❖ Technology affects the developing mind of the children. Children lack with their ideas and creativity.
- ❖ From the development of machines, the demand for the workers is low and the unemployment rate becomes high.[2]

### 3. The exploitation of a community environment-



The use of online social media people gives less importance of face to face communication and interaction.



In the last time, people used to community sharing for lands for the communal works but now a day's people use mobile phones for sharing information. Due to the technology people depends on their own.



The effect of technology on community everyone thinks about the individual. They do not share and care for the community. Everyone depends on their own without being mindful of the other's welfare.



The advancement of the technology local industries shutting down.[10]

### Conclusion:-

In conclusion, technology impacts the environment in both sections. One side technology protects and enhances the social and economic fields and makes the human lifestyle. Today our world is facing Corona Virus or COVID19 which is a very dangerous disease. It also slows down the world's economy. No one can move one place to another in this situation. How we do our work this is the broad challenge in front of ours. At this time technology plays an important role. For example – By using technical devices like computers, Smartphone's we are doing our work from home. We are communicating with our relatives, friends, and family members. Students also study by the use of technological devices from video and audio calling. Professors and teachers use ICT in their lectures, conferences, seminars, etc.

On the other hand technology a mismanagement and environmental problems by users and innovators. Environmental issues related to the economic, social, and natural change from human works, Environmental pollution, ecological system disturbances, depletion of natural resources,

and climate changes resulting from global warming are technological influence, the ozone layer, overpopulation. Due to technological growth water and air pollution is the major problem along with the disposal of toxic waste which comes from industries we are also exploiting the aquatic life by our fishing for the demand of population due to technological growth. We are also exploiting the aquatic life by overfishing to meet the demands of the population as due to the technological growth we have developed various tools and machines for fishing which leads to overfishing and Can imbalanced the aquatic life. Because of the increase in pollution in the rivers we are also decreasing the dissolved oxygen level in the water.[8]

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## IMPACT ASSESSMENT OF THE COVID-19 OUTBREAK ON GLOBAL TOURISM INDUSTRY

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### ABSTRACT

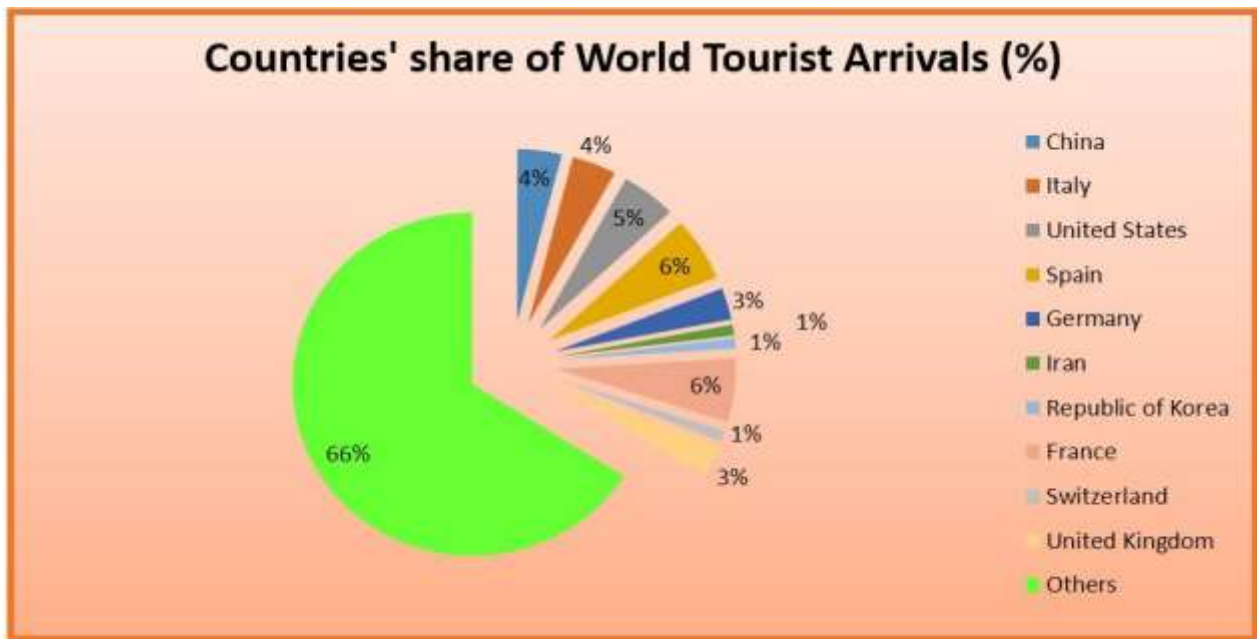
These days, we are facing an unprecedented global health emergency due to the recent outbreak of COVID-19 and the World Tourism industry is one of the most affected and hardest-hit by this pandemic. It has completely ceased the travel demand, supply and led unparalleled and unforeseen impacts on economies, lives, societies, travel business, livelihoods and on entire tourism system. Furthermore, there is high growing risk of global recession and massive loss of jobs in the near future. United Nations World Tourism organization (UNWTO) is working closely with World health Organization (WHO) and supporting all the measuring taken to curb the outbreak of COVID-19 and to ensure a coordinated and effective response. This research paper has assessed the impact of COVID -19 outbreak on global tourism industry through analyzing the data statistically, suggested standing measurement to curb the outbreak of it and also highlighted future consequences and risk factors.

**Keywords;** COVID-19, Tourism business, Impact assessment, Future strategies

### INTRODUCTION

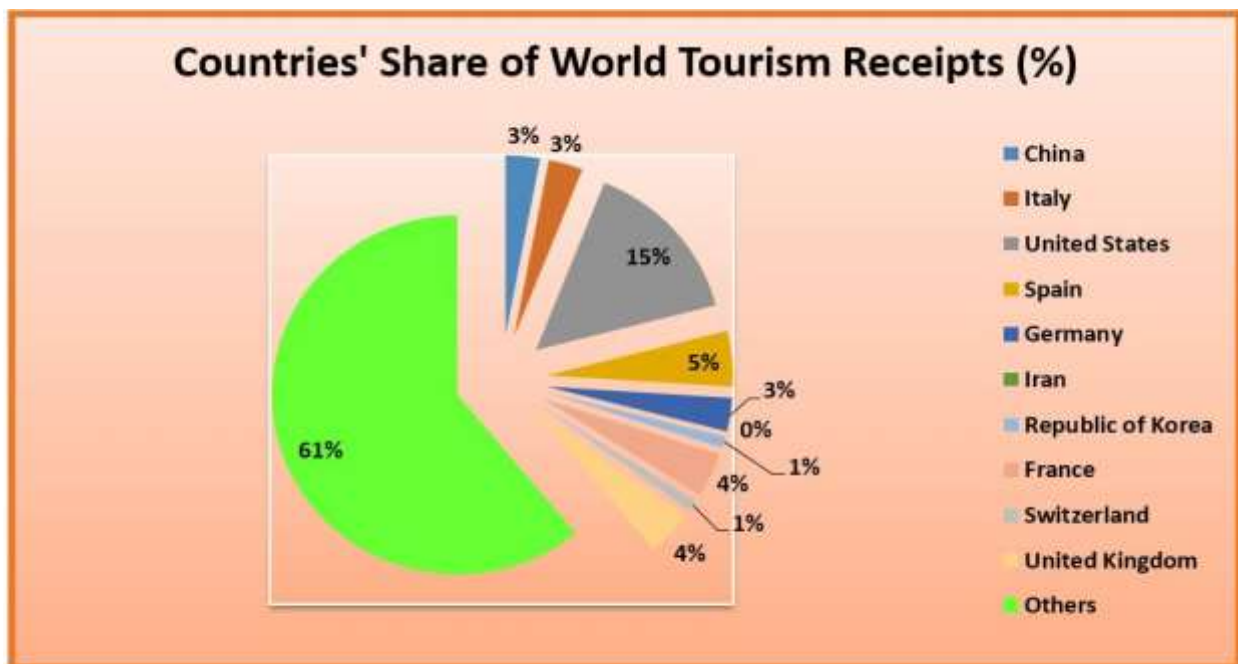
International Tourism was growing with great outpace over the years and number of tourists arrivals worldwide have reached to 1403 million in the year 2019, which shown 5 % growth rate from the previous year 2018 and total receipt was 1448 billion US\$ in the same year, out of which 10.56 million tourists visited India and total receipt 28.58 billion US \$ in 2019. This remarkable figures was reached two years ahead of UNWTO forecast and tourism had emerged as one of the leading contributor to global GDP. Amid of this fastest growth rate, sudden outbreak of COVID-19 has divested, changed everything and it is considered as unparalleled and fast-evolving crisis in the history of human being. The entire tourism industry and its subsectors got affected badly like hospitality, Travel agent, tour operator business, Airlines industry, local vendors, local communities and various other stakeholders who are directly or indirectly depended on Tourism industry. These current scenarios and statistics are alarming towards the future challenges and deep crises of economies, regrowth and development, employment and rejuvenating it again on the same track. Figure 1.1 showing the 10 top most countries worst affected by the COVID-19 outbreak, though these countries sharing 34% of total tourists arrivals in the world, where Spain

and France received highest number of tourists and unfortunately which are most affected these days followed by United States, Italy and China.

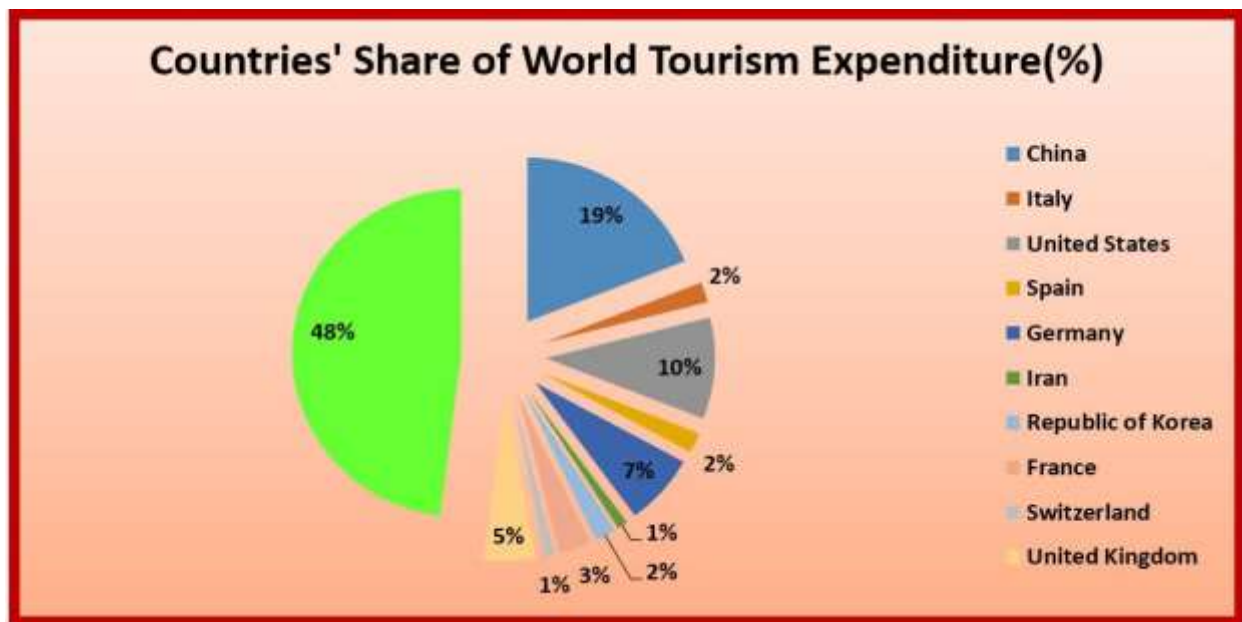


**Figure 1.1 Percentage share of tourist arrivals by top most affected countries by COVID-19 outbreak.**

Furthermore, figure 1.2 shows the total earning from the tourism by these countries and which is 39% of total tourism receipt in world. United States is earning highest from the tourism and which has highest number of COVID -19 cases so far.



**Figure 1.2 Percentage share of tourism receipt by top most affected countries by COVID-19 outbreak.**

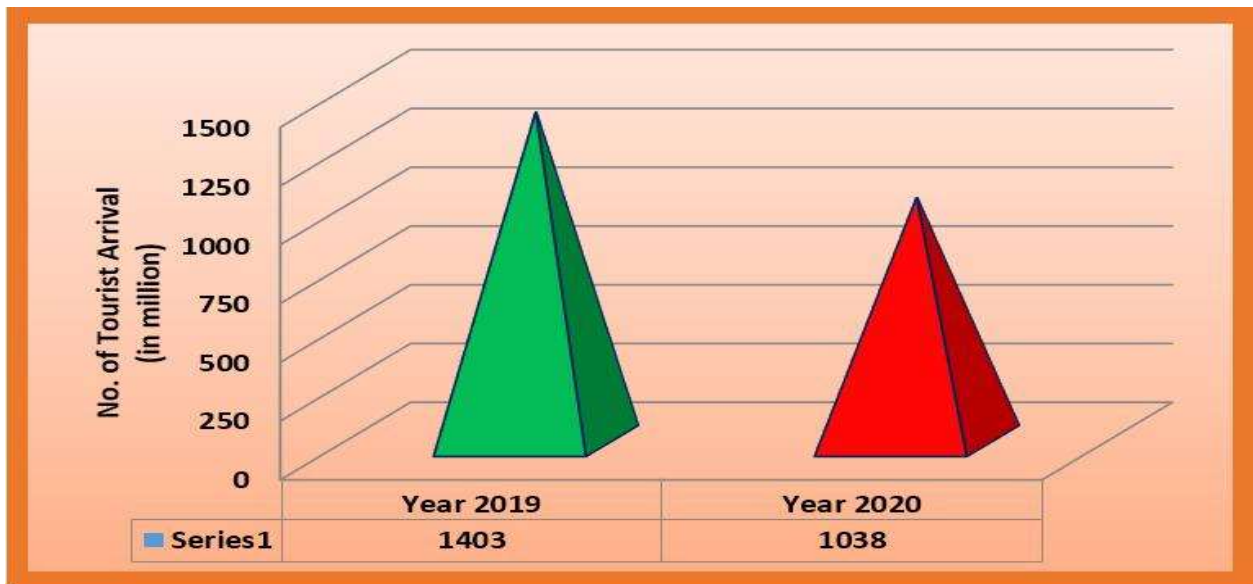


**Figure 1.3 Percentage share of tourism expenditure by top most affected countries by COVID-19 outbreak.**

These 10 countries collectively spending 52% of total tourism expenditure in which china (which is origin place of COVID-19 outbreak) alone spending 15% followed by United States, Germany, United kingdom and other countries.

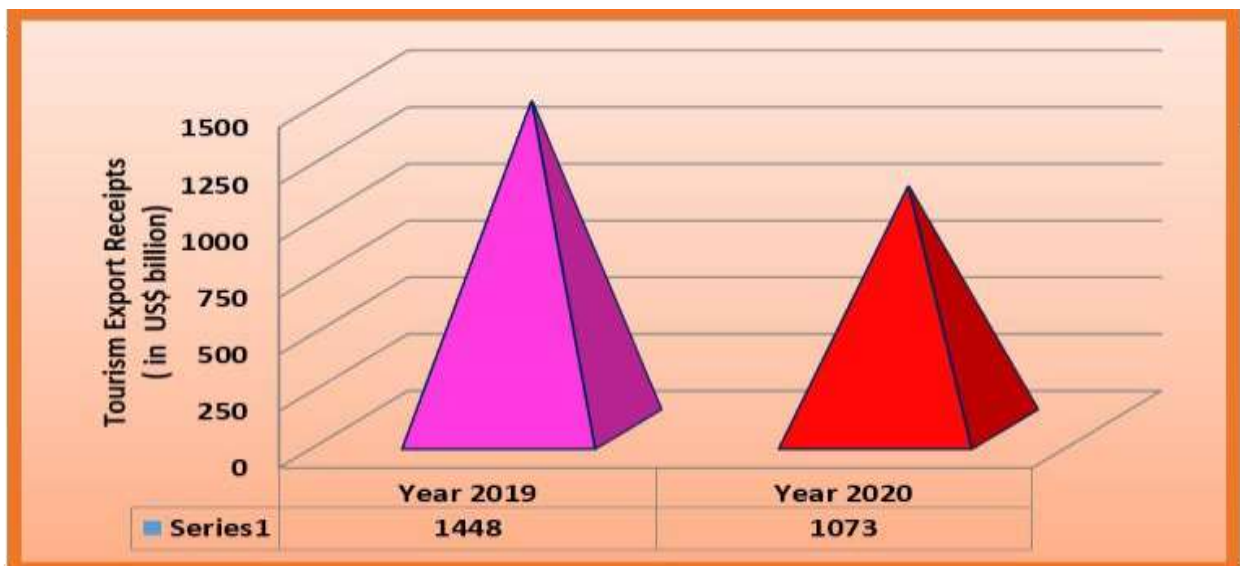
### IMPCAOT OF COVID-19 OUTBREAK

International and domestic both tourism have extremely affected by this pandemic sudden outbreak of COVID-19. Because of sudden occurrence everything got changed immediately like take travel demand, supply, travel bans, cancellations of bookings, and closed borders by most of countries of Europe, Asia, Africa, Middle East, pacific, America regions which represents around 50% of international tourism. Outbreak of COVID-19 was most dangerous than previous crises patters (2003 SARS and 2009 global economic crisis).



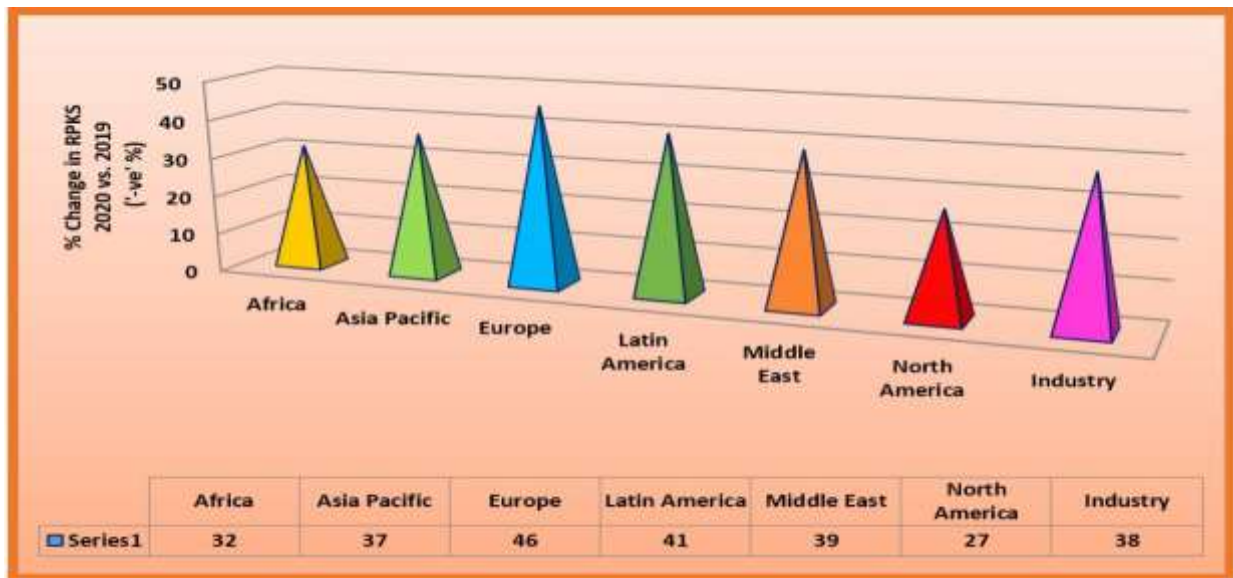
**Figure 1.4 Expected decline in the number of Tourists arrivals in 2020**

UNWTO estimates that, international tourist arrivals could decline by 20% to 30% in the year 2020 as compare to 2019, when total number of tourists’ arrivals was 1403 million. This estimation is based on current situation of tourism industry where travel demand and supply has completely ceased and all the advance bookings have been cancelled.



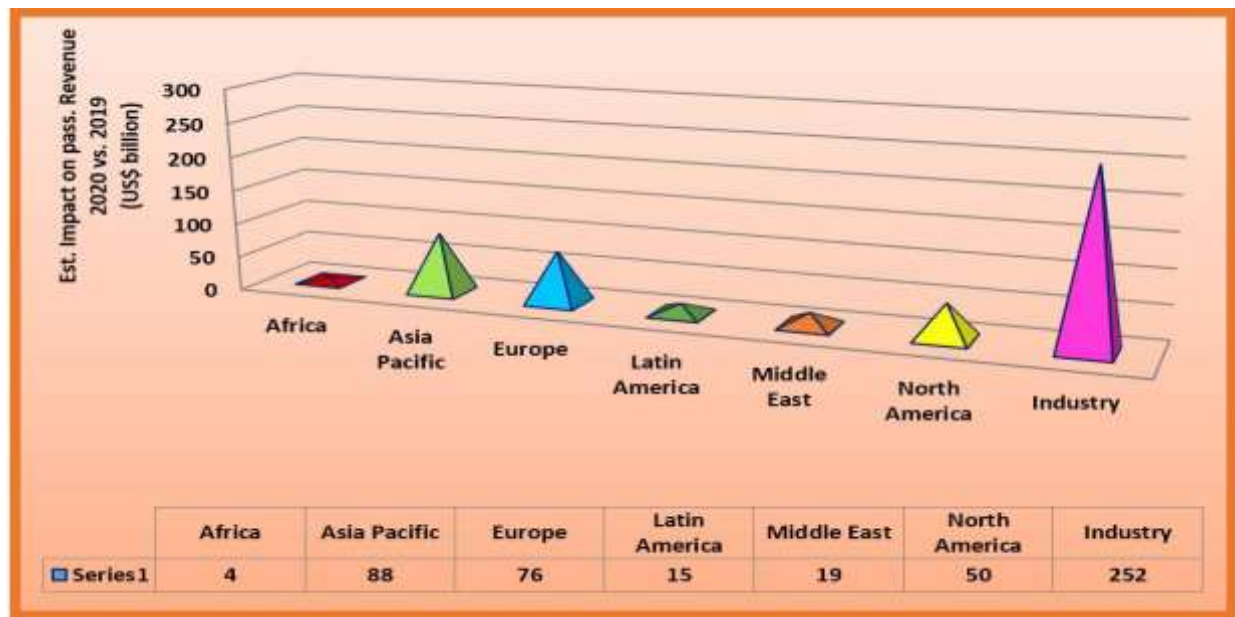
**Figure 1.5 Expected decline in the total Tourism receipt in 2020**

Figure 1.5 shows that expected decline in the total tourism receipt in the year 2020 which is approximately 300 to 450 US\$ billion that makes total 1073 US\$ billion tourism receipt in 2020. This is almost one third of the total tourism receipt and globally in the worst-case scenario so far in the history of tourism. These estimates should be interpreted with caution in view of the magnitude, volatility and unprecedented nature of this crisis.



**Figure 1.6 Percentage decline in the Revenue passenger kilometer (RPKs) of Aviation sector as compare to 2019**

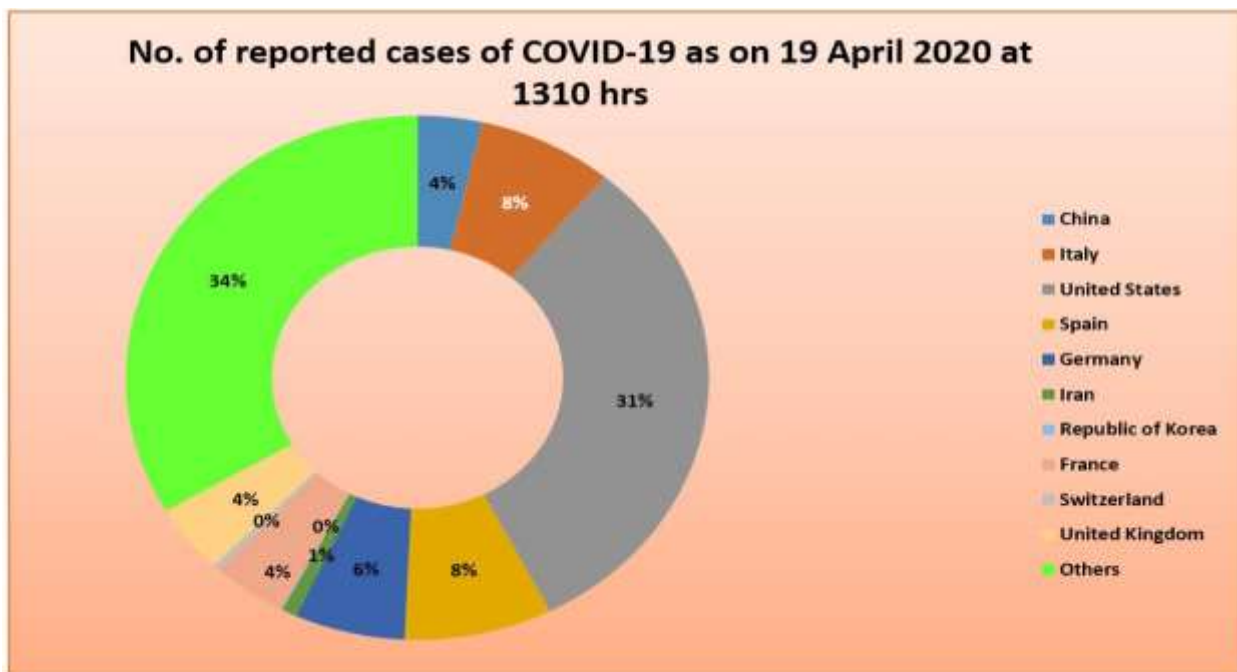
Under the tourism, Aviation is one of the most important sector which contribute substantial number of economy in the tourism industry. Because of COVID-19 outbreak the entire Aviation sector affected badly. In terms of Revenue passenger kilometers (RPKs) there notable decline of 32 % in Africa, 37% Asia pacific, 46% Europe, 41% Latin America, 39% Middle East, 27% North America and 38% rest industry as compare to year 2019.



**Figure 1.7 Decline in the Passenger Revenue of Aviation sector as compare to 2019**

Passenger revenue is the important factor to determine and contribute in the total revenue generated by the Air transportation, due to this pandemic values passenger revenue are also declined significantly by 4 US\$ billion in Africa, 88 US\$ billion in Asia Pacific, 76 US\$ billion in Europe, 15 US\$ billion in Latin America, 19 US\$ billion in Middle East, 50 US\$ billion in North America and by 252 US\$ billion in rest regions of the industry

Total number of COVID -19 cases keep increasing everyday by the significant numbers especially in the countries which are most important in term of Tourists arrivals, receipt and expenditure. As per the current statistics United Nations contribute highest percentage of total COVID cases in the World which is 31% followed by the Italy 8%, Spain 8%, Germany 6%, China 4%, France 4%, United Kingdom 4%, Iran 1 % and other countries 34 % as on 19<sup>th</sup> April 2020 at 1310 hours.



**Figure 1.8 Total number of Active COVID -19 cases in the top 10 countries in terms of Tourism**

- Ease of business guidelines for travel agents, tour operators, hoteliers and other service providers.
- Fight together and collectively to overcome this pandemic as soon as possible.
- Promote only responsible and sustainable and tourism development (STD).

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