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COVID 19: Impact and Response

Volume IX

Editors

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PREFACE

The new respiratory pandemic disease i.e. COVID-19 has caused disruptions in the lives and customs of people with significant impact on the economies of nations. The outbreak of the disease is a global health emergency and of international interest. This global health challenge leads to the infection, morbidity and mortality of many people.

In the weeks since the World Health Organization manifest the corona virus (COVID – 19) episode a worldwide unstipulated wellbeing crisis, the COVID-19 pandemic has influenced 212 nations and forfeit increasingly than 400,000 lives. Still today there is no successful remedy to lockup the spreading of this infection. The pandemic is developing prior disparities, uncovering vulnerabilities in social, political and financial frameworks which are thusly intensifying the effects of the pandemic.

Governments of various nations adopted restrictive measures involving both within the countries and at international borders as effective response to the corona virus pandemic. These measures includes confinements of workers and order to work from home, banning of social and religious gatherings, closure of market places, closure of workplaces including airports, building or creation of testing and isolation centers, quarantining/isolation of suspected persons, self-imposed isolations, and the use of face masks whether surgical or cloth type in situations where there is a cogent reason to defy the restriction.

Academic communities were not left out as institutions of learning were requested to close in many countries since it is very easy to spread the virus among students and youths in tertiary institutions where socialization is an essential part of their lives.

To address the various issues related with the COVID – 19 we have published the present book. The interdisciplinary approach of the book will make the book useful and informative to the students, teachers, researchers, scientists and policy makers in India and abroad.

We thank all contributors, publishers and all our well-wishers for their blessings, without which this book would not have come into existence.

- **Editors**

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A REVIEW OF ASYMPTOMATIC COVID-19 INFECTIONS

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Abstract:

Corona virus illness 2019 (COVID-19) has been causing major damage and presenting significant issues in over 200 nations and areas throughout the globe since its breakout in late December of this year. However, there is growing evidence that many COVID-19 individuals are asymptomatic or have relatively moderate symptoms, but they are nonetheless capable of transmitting the virus to others. There are problems in checking for asymptomatic illnesses, which makes it harder to prevent and manage this pandemic on a national scale at the present time. This article examines the features, management, and results of asymptomatic COVID-19 infections in the hopes of assisting in the early prevention and management of this significant public health concern around the globe.

Keywords: SARS-CoV-2, COVID-19, asymptomatic infections, epidemiological characteristic, outcome

Introduction:

New corona virus pneumonia that started spreading in Wuhan, China, at the end of December has already expanded nationwide. On February 11, 2020, the World Health Organization (WHO) designated this illness as corona virus disease 2019 (COVID-19), the first time this disease has been given this designation. A novel corona virus dubbed acute respiratory syndrome corona virus 2 was also designated by the International Virus Identification Commission (ICTV) at the same time as the new corona virus (SARS-CoV-2). Since its emergence, COVID-19 has caused significant damage and presented significant issues in more than 200 nations and areas throughout the globe. At this point, more than 3,000,000 cases have been verified around the globe, with a total of more than 200,000 fatalities to date. 1,2 COVID-19 instances were first categorized into four categories: mild, moderate, severe, and critical cases, respectively. 3 Although there is growing evidence that many COVID-19 infections are asymptomatic, with the worldwide pandemic of corona viruses comes the possibility that they

may be capable of transferring the virus to others. Asymptomatic infections are defined as those in which nucleic acids of SARS-CoV-2 have been detected in patient samples by transcriptase domino effect (RT-PCR), but in which there are no typical clinical signs or signs, and in which there are no apparent abnormalities on imaging studies, such as lung CT scans. 4 Table 1 shows the clinical features of silent infections as well as different forms of COVID-19 infections and infection types. The early identification of an infected individual, as well as the interruption of the transmission channel, are critical in the management of COVID-19. However, since there are no visible clinical indications and because there is a lack of preventative knowledge, the majority of asymptomatic infections do not seek medical attention, which contributes to the fast spread of COVID-19. As a result, preventing and controlling this particular kind of patient on a global scale is a significant problem that demands more global attention.

Antigenicity:

Asymptomatic infections are just as infectious as symptomatic illnesses in terms of spreading disease. A 53-year-old patient from the United Kingdom who has an asymptomatic COVID-19 disease has been reported to have caused 11 infections. 6 According to one investigation, one asymptomatic individual who had been contaminated with viral DNA for 19 days after coming into touch with the cause of contamination may have spread the virus to as many as five other persons. 7 It is possible that these asymptomatic patients may play a role in transmission, posing a serious challenge to infection prevention and control efforts. Forecasting the prevalence of asymptomatic infections would help to better grasp the epidemiological possibilities of COVID-19 transmission as well as the genuine universality of the illness. There have been several research conducted on the incidence of asymptomatic illnesses but each study has its own set of restrictions. First and foremost, China's 1.6 percent infection rate may be overestimated owing to a lack of awareness of silent illnesses and poor detection skills in the early stages of an epidemic. 8 Another research, which looked at 565 Japanese citizens who had been relocated from Wuhan at the end of January, found that the rate of asymptomatic illnesses was 30.8 percent. 9 Another example is the "Diamond Princess" cruise ship, which was grounded in the Japanese seas in early February owing to a COVID-19 infection. The ship's crew discovered that 51.7 percent of the passengers had asymptomatic illnesses. 10 Some experts believe that the two studies mentioned above overstated the occurrence, but in reality, if a person comes into close contact with confirmed or suspected infected folks in a reasonably limited place, he or she is at greater risk. Other studies on the prevalence of asymptomatic infections had certain limitations, such as those conducted in Korea¹¹ and Washington¹², which produced misleading findings owing to the small sample size. In one instance, the incidence of 1391

children under the age of 15 who had been in close contact with infected or suspected cases was monitored in Wuhan. 13 It has been hypothesized that the lower prevalence of symptomatic infections in children than in the general population is due to the specific immune system and ACE2 levels in the children's bodies. 14 This research indicates that asymptomatic infections are capable of spreading the virus and that these people are likely to be the source of a new wave of epidemics. As a result, identifying asymptomatic infections is critical for the early detection and management of COVID-19 across the globe. It is believed that patients may spread the virus throughout the incubation phase, which is about the time between the initial encounter with the virus and the manifestation of clinical symptoms or indications. 15 Asymptomatic infections do not need any extra incubation time since they do not manifest any clinical indications. However, according to a recent study, the viral load measured in asymptomatic individuals was comparable to that detected in symptomatic patients, suggesting that silent illnesses have the capacity for transfer, which may generally “ in the course of the illness.16 Since viral nucleic acid positive refers to the fact that the virus's load in samples has reached a certain threshold, the infectivity of the virus is primarily determined by whether or not the virus is in a proliferative condition. 17 Thus, even when there are persistently high virus loads, no live virus can be recovered, indicating that viral nucleic acid positive does not always reflect infectivity. 18 It has also been shown in a clinical trial in which recovered COVID-19 individuals who had no visible clinical symptoms were found positive for Severe acute respiratory by excitable viral nucleic re-examination techniques, despite the fact that these individuals had not produced any new infections. 19 Because of the limited evidence from existing research, we believe that we must be very watchful in the case of asymptomatic infections. Furthermore, it has been claimed that viral nucleic acid positive is not always taken into consideration, and further clinical trials are required to confirm this. Previous research showed that the median time for asymptomatic individuals to go from viral DNA positive to negatives was 9.5 days, with the longest length ranging from up to 21 days among some of the 24 asymptomatic patients studied. 20 Another research discovered that the median time between contact and diagnosis, as well as the time between the last positive nucleic acid test, was 19 days (8–24 days) and 21.5 weeks (10–36 days), respectively. 21 For infections with normal or abnormal chest computerized tomography (CT) features, the median time from identification to negative nucleotide test was 7.5 days (2-20 days), while the median time for infections with typical CT findings was 12.5 days (8-22 days). 21 While an asymptomatic illness should be isolated for 14 days till now22, additional research is required to determine the length of infectivity of asymptomatic patients. If further care is

required for any specific infected persons who need extended segregation as a consequence of the results of the nucleic acid test, it should be provided.

Administering:

Strong connections of patients diagnosed or suspected of having an illness are the most probable source of silent infections, and family groups have been reported before. Additionally, coworkers, acquaintances, and those whose lives intersect with the trajectories of identified or suspected sufferers are also considered high-risk groups. Because of the prevalence of familial clustering, it has been difficult to prevent and manage the pandemic. It has become a serious challenge in the prevention of COVID-19 when certain family members do not show any clinical symptoms, but the nucleic acid test results are positive, as has happened in several cases. An example of this is a case report in which all three members of a family were classified with COVID-19, with just one member of the family exhibiting clinical symptoms. ²³ The first patient was found to be in excellent health, with no clinical signs such as fever or cough, according to another family cluster report. The patient also denied having any main ailments. He just went to the local treatment center since he was experiencing urticaria. The patient expressed his dissatisfaction with the situation, claiming that he had lived in the neighborhood for a long time and had never visited the epidemic area. However, according to the findings of the disease management expert's study, the patient had been in frequent touch with his family in Hubei Province for at least a week prior to exhibiting symptoms. Last but not least, after interviewing the patient's family members and close friends, it was discovered that three lung CT scans were normal, but that the nucleic acid test findings had been positive. ²⁴ Even in the absence of symptoms, relatives of COVID-19 patients should be regularly followed and evaluated to ensure that they are not infected. These examples also illustrate the need of conducting a thorough epidemiological examination in order to avoid the omission of potentially harmful sources of contamination. Individuals may manifest clinical indications that vary from one another. Diseases are more prevalent in groups of young and middle-aged people who have a good functional performance level and no underlying disorders, according to research. The prevalence of asymptomatic cases was higher among middle-aged adults in Shenzhen (median age: 49 years, 30.9 percent between 30-49 years)²⁵ and a few younger generations in Nanjing (median age: 49 years, 30.9 percent between 30-49 years) (median age:32.5 years). ²⁰ Among other factors, age, and physical condition may have a significant effect on the intensity of COVID-19 infection, which may be associated with various immune functions and other possible pathogenesis.

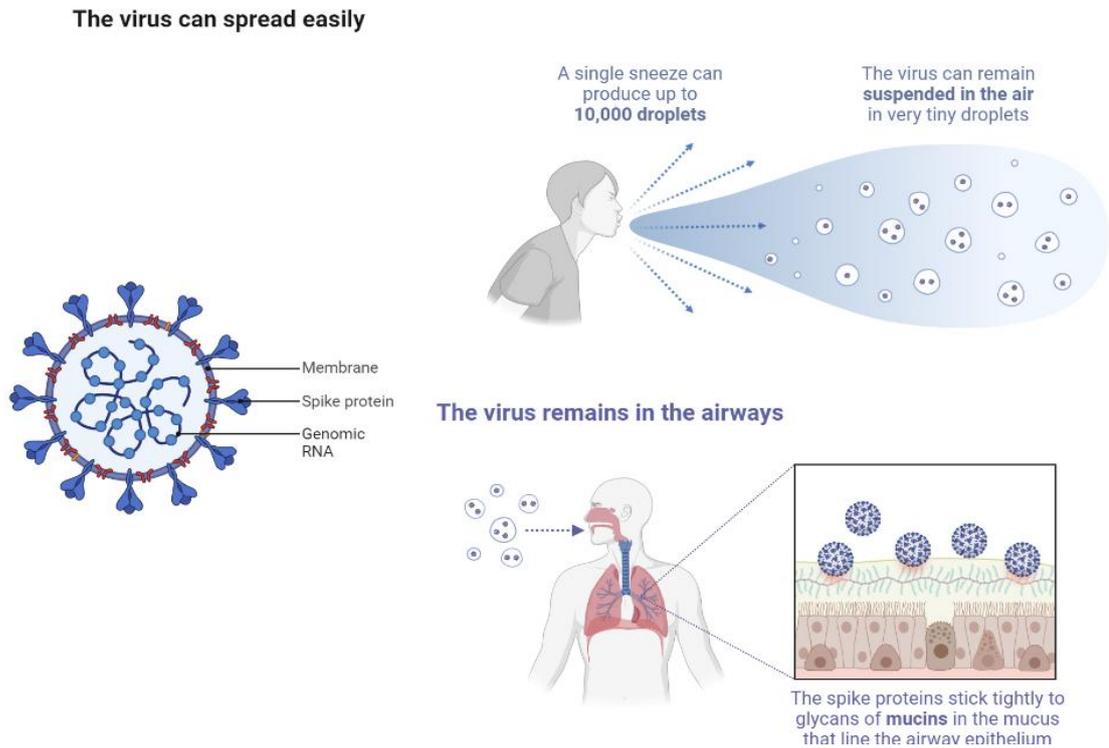


Figure 1: Pathological process of Covid 19

Pathological process:

SARS-CoV-2, like SARS-CoV, infects cells by attaching itself to the angiotensin-converting enzyme 2 (ACE2), which serves as its receptor. 26 Because angiotensin II (Ang II) degradation, which is mediated by ACE2, is critical in the pathophysiology of severe lung collapse after a viral illness, the intensity of the virus infection is strongly connected to the maturity and binding ability of ACE2. 27 Consequently, we predicted that a lower amount of ACE2 in the bloodstream, as well as a reduced binding capability with SARS-CoV-2, would be a primary component contributing to the lack of any clinical symptoms in silent infections. When the SARS-CoV-2 virus infects asymptomatic people, it has been observed that only a particular moderate immune response occurs. 28 More clinical samples, however, should be obtained, and relative analysis of ACE2 should be undertaken and compared for various kinds of COVID-19 patients, as this would be useful in explaining the pathophysiology of the condition.

Preventative and curative measures:

COVID-19 is primarily transmitted by droplet and contact transmission, as well as high-concentration aerosols, as the primary method of transmission. When humans in close proximity swallow or inhale respiratory droplets, droplet transmission occurs. There has been a significant difference between SARS and SARS-CoV-2 in terms of successfully isolating live viruses from

throat swabs, indicating that phage in upper respiratory body tissue is energetic and that SARS-CoV-2 is more efficacious than SARS-CoV in terms of trying to spread through active shedding of pharyngeal virus infections. 18 One study in Germany revealed that even though the symptoms of COVID-19 were minor, some patients had significant quantities of the virus detected in their throat swabs. This suggests the pathogen was swiftly released and spread to others by coughs and sneezes (droplet transmission). 29 This suggests that preventative measures, such as wearing protective masks, may help to reduce the risk of infection with novel coronavirus strains to a certain amount. Because there are no visible clinical indicators and because there is a lack of information about infection prevention, the vast majority of persons who have an asymptomatic illness do not seek medical attention. There were more epidemiological measures used to identify persons who were suffering from asymptomatic illnesses, such as close contact screening, cluster epidemiological surveys, and follow-up surveys to determine the source of their infection. Because of their low prevalence in the general population and the quantity and length of viral clearance, asymptomatic infections are not considered to be a significant source of infection. Clinical symptoms, on the other hand, are disguised, and we can only receive information about the infection via immunology or nucleotide detection technologies; as a result, this kind of infectious source cannot be successfully detected, making it very difficult to avoid and manage. Nucleic acid testing should be undertaken on anybody who has had contact with a COVID-19 patient who has been diagnosed or suspected of having the virus. Someone who is suffering from an asymptomatic illness should be isolated for at least 14 days. 22 The release from the quarantine of persons who have negative test results in two consecutive swabs of nucleic acid (with a sampling interval of at least 24 hours) after the quarantine period expires is theoretically possible after the quarantine period ends. If a person develops symptoms while under quarantine, they should be hospitalized as soon as possible. However, because of the limits of specimen collection and detection techniques, it is important to consider the impact of the high false-negative rate of the RT-PCR, which may result in a missed diagnosis or a delay in the implementation of an efficient diagnostic strategy. 30 It is recommended that for patients with a strong suspicion of SARS-CoV-2 infection, a combination of repeat nucleic acid testing and chest Scanning examination be used in conjunction to get the best results.

Treatment and Result:

According to the most recent guidelines issued by the Chinese health authorities³, suspicious and confirmed cases of COVID-19 should be handled in isolated hospitals with appropriate isolation and protective measures in place. The therapy is divided into two

categories: (1) general treatment, which includes careful monitoring of vital signs, and (2) symptomatic support treatment. (2) Antiviral therapy: Patients who have a positive nucleic acid test result may be treated with a variety of antiviral medications such as interferon, lopinavir/ritonavir, ribavirin, chloroquine phosphate, and others. (3) Treatment of severe patients with mechanical ventilation and rehabilitative plasma therapy. Treatment with traditional Chinese medicine is number four. There is considerable debate about the best way to manage asymptomatic infections, according to the experts. Some researchers believe that antiviral medication may speed up the clearance of viral infections that are not accompanied by symptoms. 20,24 For asymptomatic infections, however, it has been observed that isolation and careful monitoring are sufficient measures. It was shown in one study that lopinavir/ritonavir and abidol did not work as well as expected in terms of relieving symptoms or speeding viral clearance. 32 Also noted was that despite the usage of aerosolized interferon (IFN) 2 and two tablets of lopinavir/ritonavir (200 mg/5 mg) twice a day for 10 days, viral nucleic acid tests were remained positive, indicating that these antiviral medicines were not effective. In addition, several negative effects of antiviral medication, including liver dysfunction, have been reported. 33 As a result, antiviral medications are not recommended for asymptomatic infections at this time; however, more clinical trials may be required to further validate their usefulness. Until recently, seclusion and careful monitoring were considered to be the most effective treatment for these silent illnesses. During isolation, a small number of persons with an illness may evolve into symptomatic cases, but the great majority of people will recover on their own. A study of 24 asymptomatic individuals revealed that all of the patients did not build severe disease or death. Of the 24 patients, 18 (75.0 percent) were virus cleared after antiretroviral therapy, nine were discharged from the hospital, and nine were kept in the clinic for observation, the researchers found. One patient in particular tested positive again despite having tested negative on two previous occasions using nucleic acid. 20 The only way for them to be released is if they have had at least two consecutive negative nucleic acid test findings (tested 24 hours apart). 2 Some individuals retest positive after being released; thus, further isolation therapy and ongoing nucleic acid testing may be needed for patients who have been discharged. The continuation of isolation management and health exams should be maintained for at least 14 days after being released, with frequent follow-up visits undertaken in the second and fourth weeks following being discharged, it is advised. 3

Conclusions:

Those who have an asymptomatic COVID-19 infection were studied for their epidemiological features and preventative methods, which were discussed in this publication. However, the study data is relatively limited, and additional research is needed to determine the precise features of asymptomatic infections. Briefly stated, extensive epidemiological studies and lab tests are both necessary for the accurate identification of persons who are suffering from asymptomatic illness. The screening of dense populations such as close relations, especially in a tight area with diagnosed or accused infected patients, is recommended to better prevent and manage the risk of COVID-19 disease. This will aid in the early detection and control of this global epidemic, which will be beneficial in the early control of this global pandemic.

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IMPACT OF SCHOOL CLOSURE DURING COVID-19 PANDEMIC ON STUDENTS AND PARENTS

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Abstract:

Education system is still not mature at the cities. Midday meal is the program organized to attract the students to get education. Under these circumstances government imposed nation wise lockdown on March 25th, 2020 to combat COVID-19 has made sever impact on the education system. India has the world's second largest school system, after China. According to UNESCO, 63 million teachers were affected in 165 countries. A total of 1.3 billion learners around the world were not able to attend schools or universities, and approximately 320 million learners are affected in India alone. It has changed the traditional education system to the educational technologies model in which teaching and assessments are conducted online. Both the positive and negative impacts of COVID-19 on Indian education system are observed. This paper aims to analyze the impact of COVID-19 on Indian education system, focusing on education during online teaching and assessment of student getting online classes in this pandemic from settings at home.

Introduction:

Indian government has announced the lockdown and closure of educational institutions as a logical solution to enforce social distancing within communities. The nationwide lockdown has had a tremendous impact on the education system of the country. Since the education system is dominated by classroom study, the present scenario has made the functioning of the educational institution go very difficult.

All educational activities like examinations school admissions, entrance tests of various universities and competitive examinations, others, are being held during this period. As the days are passing by with no immediate solution to stop this outbreak, the closure of schools and

universities is hugely affecting the learning across the country. The structure of the Indian education system i.e. learning methodology, teaching techniques and assessment methodologies, is quite affected, resulting in a shift to online education with most focus on virtual education to accomplish the set aims and objectives. But only a handful of schools and universities could adopt such methods and the low- income private and Government schools are quite inefficient to adopt the same, thus resulting in a shutdown.

School closure has resulted into increase in the online mode of teaching and learning to a huge extent Almost all the teaching are not held online from KG classes to PG classes. The students from 1st to 8th standard are in the process of building the foundation for the future. The sudden lockdown nationwide has forced them too to learn online. We know that online mode can be the substitution but will not perfectly fit for everyone. The mindset of student's upto 8th standard is totally different. The real interaction of teachers with the students in the school is so important for a good future. They will face difficulty to adjust with this virtual world. This had slowed down or weakened the construction of their educational foundation.

One more side of this is that the sudden locking of such students into the houses for such a long time is worse affecting their mental and physical health.

The online mode of learning also has a positive side. We know that the world is shifting to digital. Now, due to the online classes; the school students are getting familiar to the gadgets like phone and laptop. So being familiar to such things at this age will be so beneficial to them in future. Another positive impact can be the online mode of teaching and learning has made the distance learning more easy, which will be beneficial to so many students.

This is the small survey to study these factors mainly of students along with their parents.

Objectives:

The overall objective of this study is to analyze the Impact of school closure during COVID-19 on Education System. In particular, this study will examine:

1. Impact on the foundational educational abilities of the students of 1st to 8th standard
2. Impact on the mental and physical health of these students
3. How the positive impact helpful to students in the scenario of the online education.
4. The overall parents views on negative and positive side of the school closure and the parent's role to overcome the negative impact.

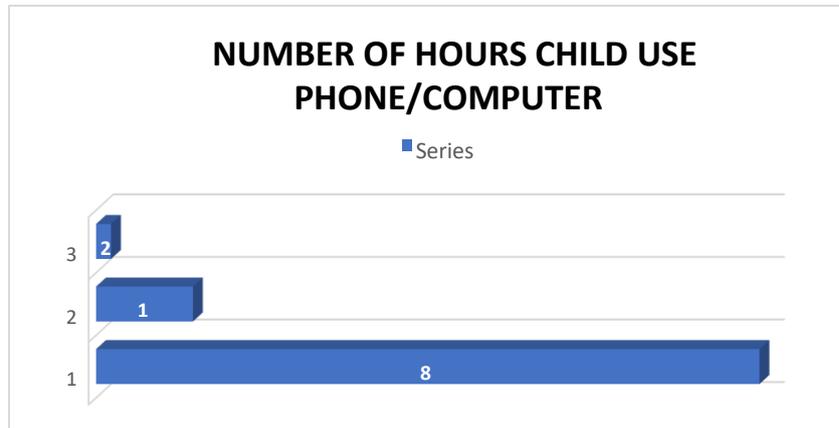
Methodology:

Data and information presented in the study are collected from Google form with the help of by students and parents during impact of COVID-19 pandemic. Information is collected from

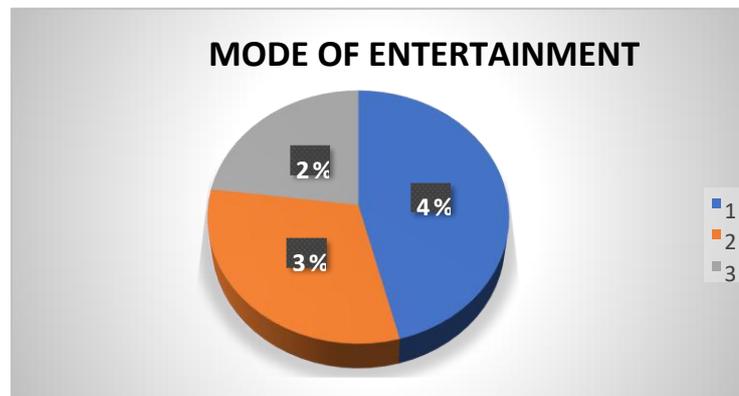
various websites. Some journals are also referred relating to impact of COVID-19 on educational system are referred.

Data analysis:

1. Graphical representation

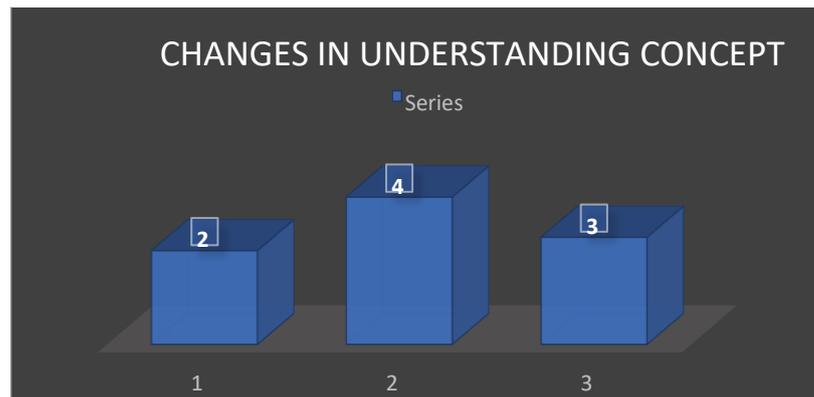


The above graph shows that, majority of the students use phones and computers for 1 to 4 hours daily and some students use for 10 to 12 hours

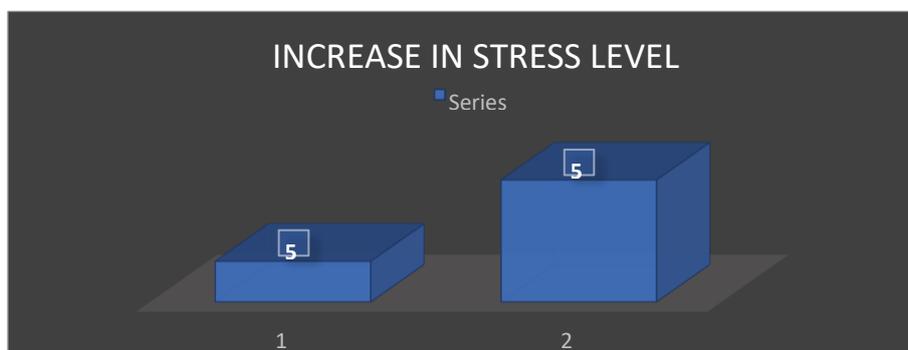


Form the above graph, we can conclude that, 46% students prefer TV for their entertainment and 31% prefer phone /laptops/internet/online mode and only 23% prefer physical mode.

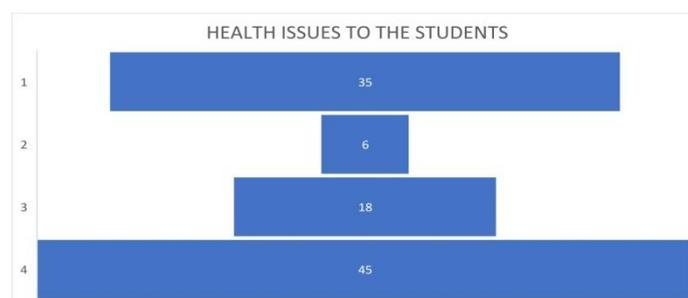
Form the below graph, we can conclude that, 27% parents says that there is an positive change in their child while understanding the concept from online classes, 42% says there is a negative change and 31% says there is no any change.



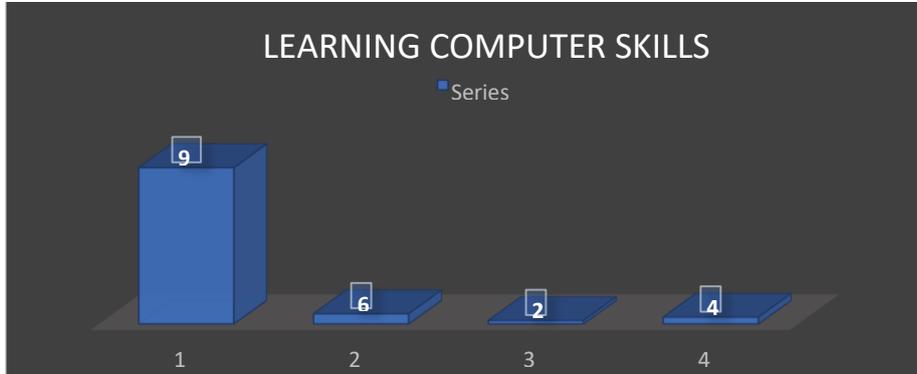
From the above graph, we can conclude that there is almost a tie between the views on the increase and no increase in the confidence level of the child.



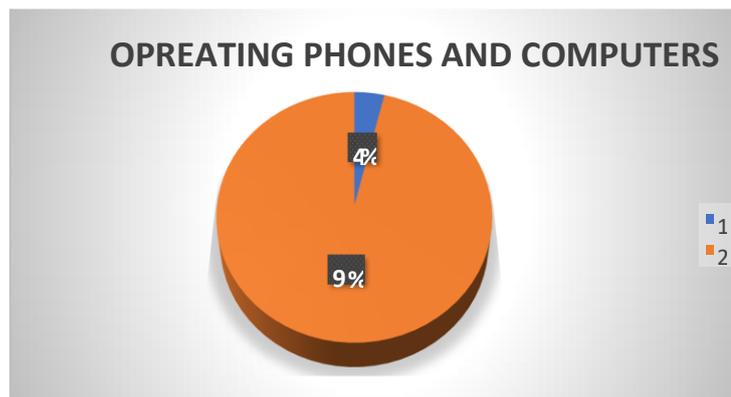
The above graph shows that, there is no any increase in the stress level of the students during the lockdown and 48% says that their stress level has been increased.



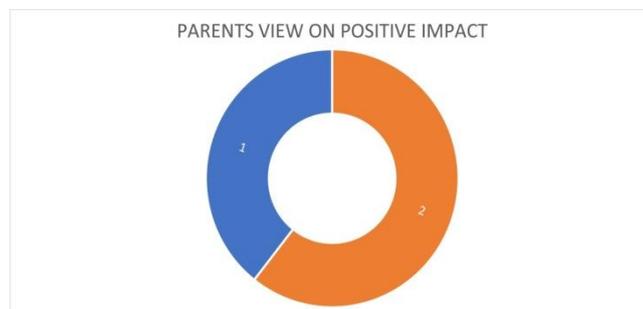
The above graph shows that 34% students are facing eye problem, few are facing problem of organ pain, 17% are facing other problems but most of them i.e at least 43% are not facing any health problem due to online classes and lockdown.



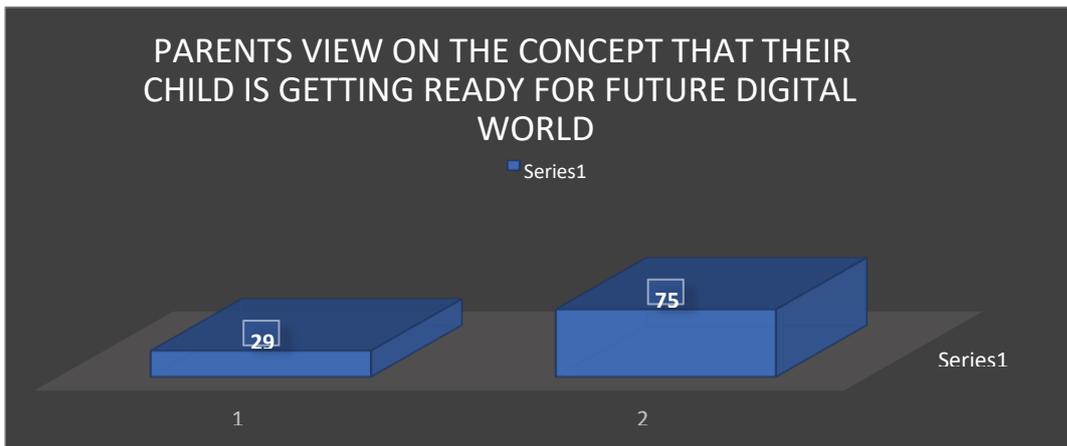
Above graph shows that almost 88% students are not learning any computer based skill, and remaining 12% are learning typing, excel and other courses.



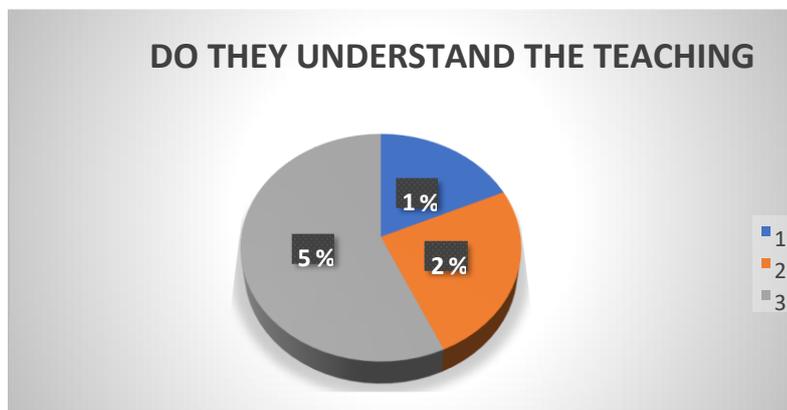
The above graph shows that almost 96% students can operate phones/laptop/computer easily and 4% cannot operate.



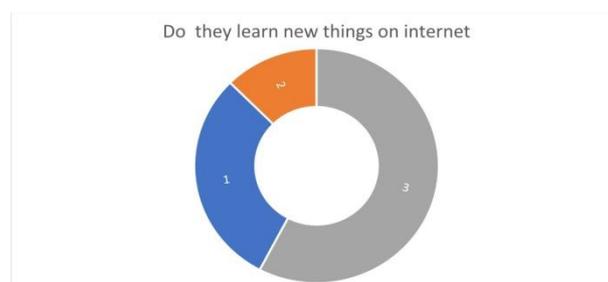
From the above graph, it can be conclude that about 40% parents think that there is some positive impact of these online classes and 60% think that there is no any positive impact.



The above graph shows that 72% parents agree that their child is getting ready for the future digital world because of the online classes and 28% parents disagree with it.

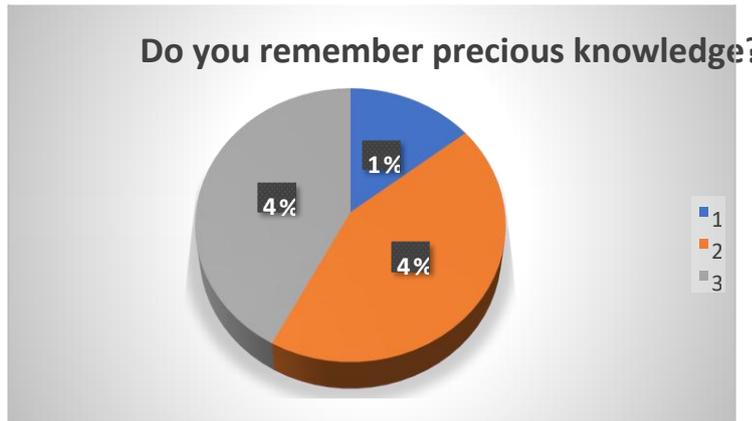


The graph shows that, most of the students sometimes don't understand the concept, 18% don't understand anything and 25% understand it



The above graph says that, 29% students learn new things on phone and computer, 13% just watch program and 58% do both.

The below graph shows that, 14% students remember what they had learned in their previous years, 43% says they don't and 42% says they are not sure.



Chi -Square Test:

Chi square test is a very versatile statistic that crops up in lots of different circumstances. However, for the purposes of this handout we will only concentrate on two applications of it: Chi-Square "Goodness of Fit" test: This is used when you have categorical data for one independent variable, and you want to see whether the distribution of your data is similar or different to that expected (i.e. you want to compare the observed distribution of the categories to a theoretical expected distribution). Chi-Square Test of Association between two variables: This is appropriate, to use when you have categorical data for two independent variables, and you want to see if there is an association between them.

Chi-Square Test of Association between two variables the second type of chi square test we will look at is the Pearson's chi-square test of association. You use this test when you have categorical data for two independent variables, and you want to see if there is an association between them. For this example, let's stick with the theme of driving, but this time consider gender performance on driving tests. This time we have two categorical variables: Gender (two levels: Male vs Female) and Driving Test Outcome (two levels: Pass vs Fail). In this case, the statistical question we want to know the answer to is whether driving test outcome is related to the gender of the person taking the test. Or in other words, we want to know if males show a different pattern of pass/fail rates than females. To answer this question, we would start off by putting out data into a contingency table, this time containing only the observed frequency information. We can then use this table to calculate expected frequencies.

Condition for validity of Chi-Square test

For the validity of chi-square test of 'goodness of fit' between theory and experiment, the following conditions must be satisfied:

1. The sample observations should be independent.

2. Constraints on the cell frequencies, if any, should be linear, e.g., $\sum n_i = Y$; or $\sum O_i = E_i$
3. N , the total frequency should be reasonably large, say, greater than 50.
4. No theoretical cell frequency should be less than 5.

If any theoretical cell frequency is less than 5, then for the application of χ^2 -test, it is pooled with the preceding or succeeding frequency so that the pooled frequency is more than 5 and finally adjusts for the d.f. lost in pooling.

Hypothesis:

Null Hypothesis-

H_0 : Students previous years remembers is independent of their understanding in their online classes.

Alternative Hypothesis-

H_1 : Students previous years remembers is dependent of their understanding in their online classes.

Attribute:

Let us consider two attributes A and B

A: No. of students possesses the attribute A_i ; $i=1, 2, 3$.

B: No. of students possesses the attribute B_j ; $j=1, 2, 3$.

Understanding	Remembrance			Total
	Yes	No	May Be	
Yes	22	1	3	26 [A1]
No	4	7	8	19[A2]
Some Times Not	19	7	33	59[A3]
	45=B1	15=B2	44=B3	

Calculation:

$$\chi^2_{cal} = \sum [(O_i - E_i)^2 / E_i] = 22.6068 \quad d.f = (n - k - 1) = (7 - 0 - 1) = 6$$

$$\chi^2_{(6, 0.05)} = 12.592 \quad \text{Here, } \chi^2_{cal} > \chi^2_{tab} = \text{we reject } H_0 \text{ and accept } H_1$$

$$\chi^2_{cal} > \chi^2_{tab} = \text{reject } H_0 \text{ and accept } H_1$$

This implies Precious year's concept remembrance of the students depends upon their understanding in the online classes.

Conclusions:

1) Impact on the foundational abilities of students of 1st to 8th standard

From all the above discussion, we came to the final conclusion that most of the students are not getting the concepts which are been taught in the online classes, which is inversely affecting their foundational abilities.

2) Impact on the mental and physical health of these students

Above discussion tells that, the students are regularly using phones and computers for the online classes and for entertainment because of the lockdown, which is creating the health problems like eye problem, organ pain etc, to them.

3) How the positive impact helpful to the students in the scenario of the online classes.

Due to the online classes and the school closures, the students are exploring the digital world due to availability of the time. The percentage of the students learning compute based skills is less but is not zero. And most of the students are learning new things from internet along with entertainment.

4) The overall parents view

Most of the parents are aware about the positive impact of the online classes. Most of the parents agree that these online classes are preparing their children's for the future digital world.

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SOCIO-ECONOMIC IMPACT OF COVID-19 ON INDIA AND WORLD AT RAGE

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Abstract:

The rapid spread of COVID-19 has endangered humans, hindered lives and health, and effected the economy, and businesses across the globe. The global economy has begun to experience significant disruptions, and it is on the verge of a severe recession and an unprecedented economic crisis. The COVID-19 pandemic has had a significant impact because the global economy is highly integrated and interdependent via global supply chains. Although all countries faced difficulties as a result of Covid-19, South Asian countries faced a more difficult situation due to their large population, insufficient health facilities, high poverty rates, low socioeconomic conditions, poor social protection systems, limited access to water and sanitation, and inadequate living space, all of which required them to maintain physical distance and take other necessary measures. The present and prospective impacts, dangers, and complexities of Covid-19 on key social and economic sectors such as migration, tourism, the informal sector, agriculture, and rural livelihoods are investigated in this paper. COVID-19 is expected to have an impact on economic growth, increase the fiscal deficit and monetary burden, increase the risks of macroeconomic instability, decrease migration and remittances, reduce income from travel and tourism, and result in dwindling micro-small and medium-sized businesses and informal businesses, according to the analysis. This is likely to worsen poverty, increase unemployment, and raise the risks of household food insecurity. This has the potential to exacerbate social differences, interrupt social stability, and cause tension and turbulence if not addressed properly.

Introduction:

COVID-19, a pandemic caused by a new strain of coronavirus that emerged in Wuhan, China, in December 2019, has been declared a pandemic by the World Health Organization. It has created an insecure environment for individuals, as well as a loss of business activities and employment. Because of the infectious nature of the disease, many economic activities have

been halted, and there is currently no vaccine. There were approximately 9,129,146 cases worldwide as of June 24, 2020, with 4,73,797 deaths. In terms of confirmed cases, India ranks fourth in the world and first in Asia. The total number of confirmed cases in India is 4,56,183, with 14,476 deaths, the vast majority of which occurred in Maharashtra and Delhi (Ministry of Health and Family Welfare). Most countries, including developed nations such as the United States, Italy, and the United Kingdom, are unprepared to deal with this pandemic. Economic disruptions are likely to be more severe and prolonged in developing and emerging countries, which have larger domestic outbreaks and a more fragile and weak healthcare system, as well as greater exposure to international spillovers through various channels such as trade, tourism, commodity and financial markets, weaker macroeconomic frameworks, and widespread informality and poverty.

India is also in the grip of a severe crisis. "This is the greatest emergency for the Indian economy since independence," said Raghuram Rajan, former Governor of the Reserve Bank of India. This is worse than the 2008 financial crisis, which affected demand but allowed workers/people to continue working; the government of India's financial condition was sound, but it appears that everything is working against the economy this year.

Effect on economic: Over the last 21 years, the world's extreme poverty has been reduced. Then came SAR-COVID – 19, with its massive job losses, economic downturn, and loss of livelihoods. According to newly released data, the SAR COVID -19 will push 96 million people into extreme poverty by 2022.

Covid-19 has had an impact on every field. In 2021, there will be a gap in human history. World trade fell by about 8.5 percent, with the contraction favouring trade. Because of the pandemic, GDP growth has slowed in various sectors, such as private GDP, which was 7.4 in 2018-19 but has dropped to 5.9 in 2019-20 and -7.1 in 2020-21. GDP in the government sector was 6.3 in 2018-19, 7.9 in 2019-20, and 2.9 in 2020-21.

Covid also has an impact on IMORTS and EXPORTS GDP, which was 12.3 in 2018-19, -3.3 in 2019-20, and -8.1 in 2020-21. Whereas IMPORTS were 8.6 in 2018-19, 2019-20 was -0.8, and GDP Growth was -17.6.

When it comes to GAV Growth, it is defined as "an economic productivity metric that measures the contribution of a corporate subsidiary, company, etc." The sector, which includes agriculture, forestry, and fishing, was 2.6 in 2018-19, 4.3 in 2019-20, and 3.0 in 2020-21. In the industry sector, the 2018-19 year was 5.0, the 2019-20 year was -2.0, and the 2020-21 year was -

Agriculture and related activities: Agriculture and allied sectors are not a culturally homogenous collection of activities, but rather an accessory of various activities, each with its own complexities. As a consequence, the impact of COVID-19 on this sector varies depending on the activities involved, such as crops, livestock, and fisheries. Crops affected differently include horticulture and foodgrain production. Because of the nature of perishability, horticulture is likely to bear the brunt of the impact, whereas agricultural crops are nonperishable and, aside from extraction issues and labour shortages, are unaffected. Rabi harvesting has been effective, and an MSP increase for Kharif crops has been declared, ensuring farmers a 50–83 percent return on their manufacturing costs.

Manufacturing sector:

Prior to COVID-19, the engineering and manufacturing sector, which accounts for 50% of the manufacturing sector, was also suffering from low consumer demand, inadequate credit facilities, and other issues caused by the NBFC recession. The health of India's auto sector is in jeopardy due to demand–supply disruptions caused by COVID-19. The auto sector is expected to decrease between 22 and 35 percent in various industry segments in FY21, assuming GDP growth of 0–1 percent, according to SIAM's most recent assessment of the impact of COVID-19. Rajan Wadhera, President of SIAM, stated.

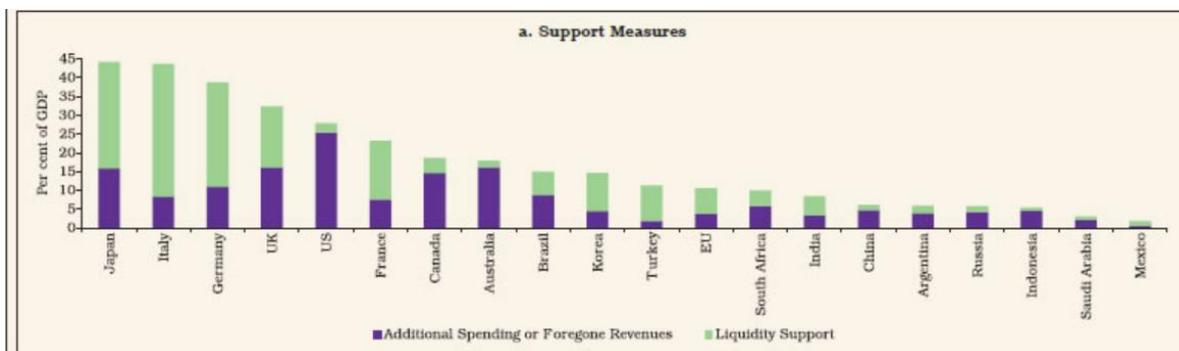
Sectors	Outstanding as on March 26, 2021 (₹ crore)	Year-on-Year Growth (Per cent)		
		2018-19*	2019-20#	2020-21##
1	2	3	4	5
Non-food Credit (1 to 4)	96,62,022	12.3	6.7	4.9
1. Agriculture & Allied Activities	12,99,914	7.9	4.2	12.3
2. Industry (Micro & Small, Medium and Large)	29,18,028	6.9	0.7	0.4
2.1. Micro & Small	3,83,854	0.7	1.7	0.5
2.2. Medium	1,36,054	2.6	-0.7	28.8
2.3. Large	23,98,121	8.2	0.6	-0.8
(i) Infrastructure	10,91,624	18.5	-0.2	3.6
of which:				
(a) Power	5,66,455	9.5	-1.6	1.2
(b) Telecommunications	1,13,080	36.7	24.4	-21.3
(c) Roads	2,36,947	5.2	0.7	34.4
(ii) Chemicals & Chemical Products	1,86,911	17.5	6.0	-7.9
(iii) Basic Metals & Metal Products	3,28,663	-10.7	-5.7	-6.2
(iv) Food Processing	1,65,669	1.1	-1.9	7.5
3. Services	26,30,566	17.8	7.4	1.4
4. Personal Loans	28,13,513	16.4	15.0	10.2

*: March 2019 over March 2018. #: March 2020 over March 2019. ##: March 2021 over March 2020.
Note: Data are provisional.
Source: RBI.

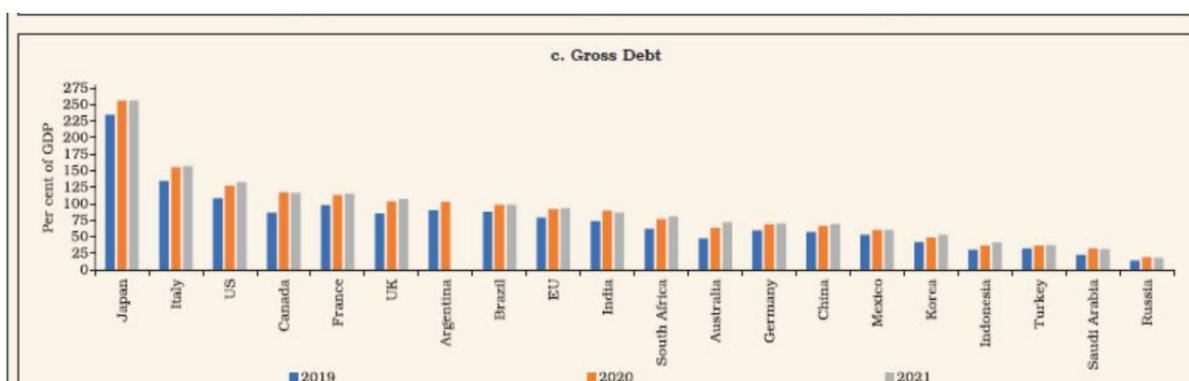
In 2020-21 general government finances recorded larger deviation from budget across the globe, Indian was no exception. To protect live & livelihoods, again the spread of the pandemic,

government unleashed large scale fiscal deficits and support measures amount to around US\$ 16 trillion, including US\$ 5.7 trillion in the form of quasi fiscal operation.

Average public debt in the world surged to an unprecedented 97% cent of GDP in 2020.



Per support measures of few countries used in fiscal deficits till the year 2020 and the gross debt of different countries from 2019 to 2021 were also effected in covid- 19.



During the wake of pandemic, the government announced a series of economic reform on 26 March 2020 government announced Pradhan mantrigraibkalyan package which was focus to protect the livelihoods of vulnerable section. Total scheme was 2 and total amount was around 1.70.000 crore which are shown in the tables.

S. No.	Scheme	Amount
1	Pradhan Mantri Garib Kalyan Package	1,70,000
2	PM's Health Package	15,000
3	Revenue Loss due to Tax Relief Measures	7,800
4	AatmaNirbhar Bharat Abhiyan 1.0	11,02,650
5	PMGKP Anna Yojana Extension	82,911
6	AatmaNirbhar Bharat Abhiyan 2.0	73,000
7	AatmaNirbhar Bharat Abhiyan 3.0	2,65,080
8	Total	17,16,441

Source: Press Information Bureau, Gol.

Conclusion:

The COVID-19 pandemic presents a significant risk and had a massive effect on people's economic factors and livelihood opportunities globally. The coronavirus is still spreading, and it is impossible to predict when it will be eradicated completely. The unprecedented COVID-19 global epidemic necessarily entails immediate and decisive action to make sure that people's lives are saved, livelihoods are protected, and the economy recovers. The Covid-19 outbreak has had a direct and high impact on human health and economic activity, with the weakest and most marginalized communities bearing the cost of the consequences.

Because health, the environment, and social issues are all intertwined, coordinated efforts are required to mitigate and recover from the COVID-19's effects on our societies and economies. Governments must prioritise their activities in terms of the short, medium, and long term. Regional and global cooperation is also required to address the COVID-19's repercussions on various societies.

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INCIDENCE OF BIRDS DURING COVID-19 LOCKDOWN AT MORADABAD, UTTAR PRADESH, INDIA

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Abstract:

Coronavirus disease (COVID-19) is an infectious disease caused by the SARS-CoV-2 virus. Moradabad is well known as metal city which is famous for its metal ware all around the world. Covid has emerged as annihilation worldwide yet as a creator of explicit comprehensive viewpoints at Moradabad. Moradabad is known as metal city which is famous for its metal ware all around the planet. Typical AQI of Moradabad was extending at upsetting rate in light of steady release from brassware plants, vehicles and various sources. In earlier years, it was assessed Approx. 438 (Indian Central Decontamination Control Board), yet later lockdown it came to 107-134. The birds of different transient species were episode near Ram Ganga River close by the nearby birds from lockdown 1.0 to lockdown 5.0.

Keywords: Lockdown, Corona virus, Indian Birds, Air Quality Index, Brass City.

Introduction:

Corona virus, transformed all of us to some degree confounding and disturbing. Subsiding into self-segregation might appear to be a test. As of late, Irvin (2013), with increasing interest in the use of urban green space to promote human & Birds health, there is a need to understand the extent to which park users conceptualize these places as a resource for health and well-being [1].

There are a couple of ways by which one can stay associated with nature and untamed life from own home and nursery the writing peruses [2]. Implemented quarantine due to the ongoing novel corona virus (agent of COVID-19) has an immense impact on human & Birds mobility as well as on air quality. Since then, and due to the drastic reduction in pollution levels in cities across the world, a large discussion has been magnetized regarding if the lockdown is an adequate alternative counter-measure for enhancing air quality [3]. Indeed, even as the lockdown has put individuals to difficulties, it has come as a treat for bird watchers. Consequences of the

extended lockdown birding by Central India Birders Network (CIBN), a gathering of city birders uncovered that many bird species, which are typically found close to timberlands and water bodies or greener scenes, have been habitually located in the city regions [4-6].

Air and commotion contamination has diminished getting back to typical AQI because of the keep an eye on Brass processing plants, development, cars, development of the two individuals and vehicles. As individuals are for the most part bound to their homes, there is lesser impedance of people moreover. During lockdown 1.0 transitory bird were episode close to water bodies taking various flyways. Birds convey more when there is less commotion.

As indicated by Divya Priya, [7] who studies birds in a locale, where the commotion contamination is low, the bird populace will be great. The surrounding commotion in the city 'covers' the call of the bird, so it needs to expand its recurrence and tumult to be heard. (Seasons of India, Nov, 20, 2019).

As indicated by Jeganathan [8] the birds can't be found settling inside the initial hundred meters close to side of the road in woodland because of commotion. This lockdown period will help the ornithologists and scientists everywhere. The investigations about connection between the bird calls and commotion contamination, needs broad review.

Singing, peeping and chatting of birds began during first seven day stretch of lockdown 1.0 at Moradabad UP. It tends to be on the grounds that there is less commotion in the climate, because of the lockdown also the contamination in the environment [9].

Individuals living in packed metropolitan regions are bound to see birds that can cause a disturbance than those that make us truly glad, a review has found. Scientists at the University of Exeter and the British Trust for Ornithology in the UK observed that jam-packed metropolitan regions have fewer larks like tits and finches, and more potential disturbance birds, like pigeons, jaybirds and gulls. They analyzed proportions of birds-to-individuals and observed spaces of high-thickness lodging have fewer birds in general. [10]

Material and Method:

Day by day perception at various spans time of the day were made and classified, photography was finished with the assistance of Nikon Coolpix camera at the site close (Approx. 300mt.- 500mt.) Ram Ganga River, Moradabad. The ID of birds was embraced from Merlin bird picture id by Cornell lab, California.

Perception

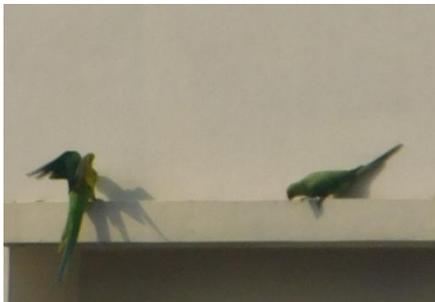
Perception was made at sight close to Ram Ganga River, Moradabad, UP, India (Table-1). Every day frequency of adjacent five new types of birds was noticed usually during lockdown 1.0, where Dove, Brown stone talk, Nuthatch, Parrots, (Fig-1) were finding in bounty.



Dove



Brown Rock Chat



Parrots



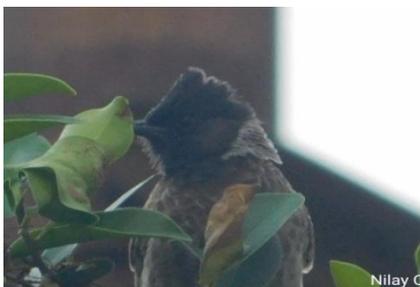
Nuthatch



Indian Magpie Robin



Purple Sunbird



Red Vented Bulbul



Myna



White Throated Kingfisher



Common Kingfisher



Roufus Treepie



Prrple Sunbird



Ashy Prinia



Crow

On the ensuing long periods of lockdown 1.0-2.0 Indian jaybird robin, Purple sunbird (Fig-2) with their bright coat were seen however with less count. Daily incident of Red Vented bulbul, Myna, white throated kingfisher, common kingfisher (Fig-3) started looking normal to our sight during lockdown 2.0. At the end of lockdown 2.0 mustard colour bird called Roufus treepie (Fig-4) was seen in flocks flying over the sky.

Toward the finish of lockdown 2.0 mustard shading bird called Roufus treepie (Fig-4) was found in herds flying over the sky. Sound of Cuckoo reverberation, Ashy prinia, Crow, Pigeons and Eagle (Fig-5) were heard till the end lockdown 3.0 nonetheless, transient birds count diminished with beginning of lockdown 4.0.

Table 1: Species of birds found at different intervals of period of lockdown at Moradabad

Sr. No.	Period of Lockdown	Species of Birds
1.	Lockdown from 1.0 to 2.0 (from 25.03.2020 to 14.04.2020)	Dove, Brown rock chat, Nuthatch, Parrots
2.	Lockdown from 2.0 to 3.0 (from 15.04.2020 to 03.05.2020)	Red Vented Bulbul, Myna
3.	Lockdown from 3.0 to 4.0 (from 04.05.2020 to 31.05.2020)	Cuckoo, Sparrow, Crow, Pigeons and Eagle
4.	Lockdown from 4.0 to 5.0 (from 01.06.2020 to 30.06.2020) Restricted only in containment zones.	Cuckoo, Sparrow, Crow, Pigeons and Eagle

It demonstrates that warming temperatures, moving seasons, rising ocean levels and other ecological elements are disturbing the conduct of padded and flying animals and the environments that help them [11-14]. Individuals living in packed metropolitan regions are bound to see birds that can cause an irritation than those that make us truly cheerful, a review has found. Scientists at the University of Exeter and the British Trust for Ornithology [15] in the UK observed that packed metropolitan regions have fewer larks like tits and finches, and more potential irritation birds, like Pigeons, Magpies and Gulls. They inspected proportions of birds-to-individuals and observed spaces of high-thickness lodging have fewer birds by and large. A few downpour showers during lockdown 1.0 to 5.0 (from 25.03.2020 to 30.06.2020) were likewise a shelter for the occurrence of birds at local location close to Ram Ganga River.

Transient and other local birds observed their space spotless and clear because of crown pandemic inspiration. It is prudent to government to make less improvement close to Ram Ganga waterway to give favorable place and transitory pathways for birds.

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IMPACT OF COVID-19 ON HIGHER EDUCATION

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COVID-19 spread quickly around the world and was declared a pandemic by the WHO on 11 March 2020. According to the WHO, on 1 April 2020 (at the time this Survey was conducted), there were 783360 confirmed cases of COVID-19 in 205 countries or territories around the world, having caused the death of 37 203 people. One month later, on 7 May, there were 3634172 confirmed cases of COVID-19 in almost all countries and territories of the world, having caused the death of 251 446 people.

The effect of COVID-19 has begun to have an impact in other aspects of students' career progression and lives. The panic in the community is palpable, and many are confused by how to proceed in the wake of COVID-19.

As students and faculty adapt during this pandemic, it will be important to study the extent to which the changes currently being introduced in response to COVID-19 impact medical education overall, as well as medical student career progression, personal health and safety.

COVID-19 affects all over the education system, examinations, and evaluation, starting of new semester or term and it may extend the school year.

In a couple of months, while the virus was spreading around the world, China managed, thanks to radical distancing and confinement measures, to reduce the cases of local transmission to zero. The success of social distancing and confinement measures adopted by China and strongly recommended by the WHO, encouraged many other countries to take the same measures.

As of 1 April 2020, already more than 3.4 billion people, representing 43% of the world population, were in lockdown in more than 80 countries and territories around the world. The lockdown and social distancing measures immediately had an enormous impact on higher education.

The World Health Organization (WHO) has made the assessment that, COVID-19 (Corona Virus) can be characterized as a pandemic & this virus can spread in too many countries & territories.

As a moral responsibility of college management especially college has trained and encouraged our students to become medical volunteer to prevent and control the spread of Covid 19 virus. Our students visited home to home and talked their community and others about how to prevent and control the spread of Covid 19 viruse.

During this time teachers are advised to use an online platform like learning management system, email, whats app, you tube etc. to made available the literature and assignments to their students with the subject standard contents of their respective classes.

In this stressful environment, students faced numerous social, mental, physical and educational problems. To overcome all this educational issues and encourage to the students to be at home and utilized the proper time to upgrade their subject knowledge and hobbies like reading, writing, painting, craft etc. They also guided the students to be aware & create awareness of COVID-19 in the society through electronic media.

Students to develop their self confidence to succeed in spreading awareness among other students and communities regarding pandemic disease COVID-19.

The COVID-19 crisis increases social inequality in schools. Students from more advantaged parents attend schools with better digital infrastructure and teachers might have higher levels of digital technology skills. Some schools can be well equipped in digital technology and educational resources.

The COVID-19 pandemic has not clear investigation when the virus will be controlled, but there is an indication it will at for two years and the virus will occur again and challenge the world.

The education system needs strategies on how to prepare teachers and students to respond effectively and efficiently during and after COVID-19. Teachers may not teach all the time in a face-to-face classroom; students may not learn in the face-to-face class all the time. When the COVID-19 pandemic is over, the education system needs to prepare everyone to be flexible and adapt quickly to various learning platforms during a time of crisis. The global community may need to support the educational systems.

Perhaps most importantly, the crisis has exposed the value proposition of universities. Students are unlikely to commit large amounts of time and money to consume online content. Students go to universities to meet great people, have inspiring conversations with faculty, collaborate with researchers in the laboratory and experience the social life on campus.

To remain relevant, universities will need to reinvent learning environments so that digitalisation expands and complements, but does not replace, student teacher and student-

student relationships. Students are already demanding a partial refund of their tuition fees and many institutions have made pro-rata refunds on room and board, or have offered fee deferrals. With the enrolment of international students for the next academic year severely compromised, this will cut into universities' bottom line, affecting not only their core education services, but also the financial support they provide domestic students, as well as research and development activities.

The financial losses are not limited to higher education institutions. Countries have traditionally relied on international student mobility to facilitate the immigration of foreign talent and contribute to both knowledge production and innovation nationally.

Higher education has often been considered a refuge in periods of low employment, enabling adults to develop their skills. In contrast to previous economic downturns, the lockdown measures of this current crisis have affected the delivery of learning and the experience of studying abroad in ways that have no precedent. It has also raised awareness of the vulnerability of international students in times of crisis. All of this is likely to influence students' perception of the value they will get from studying abroad in relation to the price they are willing to pay.

Faced with these challenges, higher education institutions will need to develop a new value proposition that reassesses the quality of learning and delivery mechanisms in the classroom, and that addresses the needs of an international student population that may be less willing to cross borders for the sole purpose of study.

Incoming student mobility in tertiary education, by level of study (2018) International or foreign student enrolment as a percentage of total enrolment in tertiary education 78 86 60 50 40 30 20 10 0 % All tertiary Bachelor's or equivalent Master's or equivalent Doctoral or equivalent Luxembourg Australia New Zealand United Kingdom Switzerland Austria Canada Czech Republic Netherlands Hungary Denmark Belgium¹ Germany Ireland Estonia Latvia EU23 total France Finland Slovak Republic Iceland Portugal Sweden OECD total Italy Lithuania United States Japan Saudi Arabia Slovenia Norway South Africa² Russian Federation Poland Spain Greece Israel Argentina² Korea Turkey Costa Rica² Chile Brazil Colombia Mexico India Indonesia 11 THE IMPACT OF COVID-19 ON EDUCATION - INSIGHTS FROM EDUCATION A

Moreover, technology does not just change methods of teaching and learning, it can also elevate the role of teachers from imparting received knowledge towards working as co-creators of knowledge, as coaches, as mentors and as evaluators. That being said, the COVID-19 crisis struck at a point when most of the education systems covered by the OECD's 2018 round of the

Programme for International Student Assessment (PISA) were not ready for the world of digital learning opportunities.

A quarter of school principals across the OECD said that shortages or inadequacy of digital technology was hindering learning quite a bit or a lot, a figure that ranged from 2% in Singapore to 30% in France and Italy (OECD, 2019[31]). Those figures may even understate the problem, as not all principals will be aware of the opportunities for instruction that modern technology can provide. Technology is also only as good as its use. According to OECD's Teaching and Learning International Survey (TALIS) in 2018 just 53% of teachers on average let their students frequently or always use information and communication.

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IMPACT OF COVID-19 ON HOSPITALITY, EDUCATION AND HEALTHCARE SECTORS IN INDIA

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COVID-19 took us unaware and hit all of us two years back. It was declared a pandemic and has been there since, around us, in form of its different variants and varying infection range. Pandemic- once-in-a-century event; most of us had just read about it in our books or heard from our grandparents. However, the effect of the pandemic and measures undertaken during pandemic in earlier times were quite different from this one. We are living in a modern, technological era and the impact on various areas affecting our lives, is far reaching. On the other hand, this same technology and modernisation has provided us with highly advanced healthcare system, communication system and other solutions.

The pandemic impacted every area and aspect of human life either directly or indirectly. However, two sectors that were most badly hit during this pandemic are the hospitality industry and the education system, and an area that was heavily impacted in many ways is the healthcare industry.

As the pandemic started taking its toll globally, the policy makers in India started enforcing restrictions leading to acute measures of imposing lockdown- a complete shutdown, except for running the very basic and essential services. Even the rail, road and air transport came to a complete halt leading to people getting stuck up and forced to stay put wherever they were placed. The prevailing fear of infection along with government restrictions caused a lot of panic among the general public. Such disquieting conditions, which became alarming with each passing day, left people thinking about health and basic survival necessities as the utmost priority for themselves and their near and dear ones. All thanks to the communication technology that helped people stay connected in one way or the other and relieved them of some of their anxiety and stress.

The hospitality industry broadly includes service related areas like food, lodging, travel, tourism, event planning, theme parks etc. These areas, for some, may be an essential part of life, as for a person who thrives on a job that requires him to travel around to meet people (e.g.

marketing personnel), eat on the go and take lodging to rest for the night before moving ahead or heading back. On the other hand, theme parks, tourism and eating out in restaurants are no doubt luxury or lifestyle aspects. However, availing any of these services were just out of question due to untoward situation and also due to lockdown, even if the people could afford it, except for travel in a dire emergency and only after due permission from concerned authorities.

There was a huge upheaval. How was the hospitality industry expected to run its business and survive in such a situation! Those in the hospitality industry did wait and watch for sometime but the virus was in no hurry to leave or disappear. The large businesses had more time in hand but the ones with marginal margins had a situation fast slipping through their hands. Within a short time, most of the small businesses were shut down as a lot was at stake, viz., maintenance costs, skilled and unskilled labour to look after to, one's own family to feed and much more. Many businesses were shut down because there was no one to look after, as either the business head or their family and relatives were fighting with the virus, struggling to remain healthy and alive and helping hands were migrating to their homeland. According to the Hotel Association of India, there are some 150,000 branded hotels in India and about 20-25% of them faced the risk of permanent closure¹. The hospitality industry faced a great loss during the pandemic. According to FHRAI, the Indian hotel industry took a hit of over 1.3 trillion rupees (\$17.4 billion, €14.7 billion) in revenue for the fiscal year 2020-21 because of the pandemic¹. The Indian Hotels Company Limited (IHCL), South Asia's biggest hospitality group, reported a loss of about 7.2 billion rupees in the pandemic-stricken 2020-21 financial year, as opposed to a profit of 3.54 billion rupees in the previous fiscal year¹. As a consequence of the closures, many lost their jobs. Hari Sukumar, a senior executive of the Jaypee Palace Hotel, told DW that millions of jobs in the hotel industry are at risk due to the pandemic. He said, "the Indian tourism and hospitality industry is staring at a potential job loss of around 38 million, which is 70% of the sector's total workforce, due to COVID"¹. One study by Nair *et al* (2021) stated that hiring and recruitment in the hotel industry have currently come to a standstill².

The world witnessed a humungous change in how to conduct business and survive in an adverse situation which was forced upon everyone in the form of the pandemic. A senior manager in Taj hotels said, "The one important lesson it has taught is self-sustainability is the key and along with that comes multiple sub-sectors like reduced manpower/ energy conservation/ multi-skilling of employees"². The hospitality industry started thinking of and implementing novel/ underutilized strategies and measures to cater to the consumers and come back in the market and digital technology played an important role e. g. take-away and online

food delivery became the new normal to stay in the market. The next step was to ensure the health and safety of the consumers to attract them back to the services. The employees had to be trained accordingly. However, most areas are still in the recovery phase but the brighter side is that challenges open up new vistas for improvement and expansion.

The education sector includes school, college and university level education and institutions. The education sector underwent closure of institutions simultaneous with the imposition of the lockdown, at least till the situation came under control. No one had thought that it was going to take more than two years until the situation came somewhat under control and, when it would, then the scenario would be what we call now 'a new normal'. As per the Government's economics watchdog, among all the sectors that are affected by COVID-19 crisis, the most affected is education sector, which is a critical determinant of a country's economic future³.

When the lockdown was announced, the educational institutions were also shut down temporarily, although in phases viz; schools, colleges and then higher study centers as universities etc.; initially for the students and later for teaching professionals too. But without contact between the teacher and taught, the teaching-learning process was stalled. The pandemic disrupted the education system to the core. As many as 1.5 million schools remained shut during 2020 due to the pandemic and lockdowns, impacting 247 million children enrolled in elementary and secondary schools in India, according to data released by UNICEF Wednesday⁴.

Again, the people and the Government had other priorities and the teaching-learning process *per se* was put on the back-burner. But, that could not go on forever. The Government intervened and the process resumed in form of online curriculum delivery with the aid of digital technology. which became the saviour of the education sector. Nevertheless, it was slow and gradual implementation at several levels as most of the institutions; teachers and the students were not equipped with the technology knowhow, infrastructure, gadgets etc. India also faced the problem of the digital divide. The online mode of curriculum delivery further exacerbated the problem worsening already stark levels of inequality and weighing on economic growth⁵. Certain small private academic setups who could not survive the shutdown went permanently out of business. The pandemic thus, impacted the continuity of education for many students and there was a rise in dropouts mainly due to digital divide and increasing unemployment. A report published by India Today said 'Unemployment has been rising since the COVID-19 pandemic started in early 2020, which has pushed parents to prioritize survival over children's education, especially fees in private schools'⁶. There were job losses, recruitment curtailment and salary cuts though Government had announced and appealed to the institutions not to impose lay-offs or salary cuts.

The pandemic brought out the shortcomings of lack of vocational and skill education in the Indian education system, unlike many other European and Western countries; which now is an essential part of New Education Policy-2020. The online mode of learning, modification in the assessment and examination system did take a toll on the physical and mental well-being of students, parents and teachers in many ways.

Nevertheless, the way the education sector geared up and took the challenge in its stride is highly commendable. It also opened doors for immense opportunities. There has been a huge paradigm shift in almost every aspect of teaching and learning. In a country like India, where the digital technology was not in the mainframe of teaching-learning aspect came to the rescue of the education sector and developed at an unimaginable pace. The pandemic provided immense opportunity for restructuring, reimagining and experimentation in the education sector. The education sector began with online mode of learning in phases with simultaneous establishing and upgrading their infrastructure and systems, capacity building by training their personnel to use digital technology and also modifying their curriculum, assessment and examination system to suit the need of the hour. The pedagogy since then has been continuously evolving from teacher-centric to student-centric and from online mode to flipped classroom, flexi mode, hybrid/blended mode and still evolving. The underutilised e-resources (SWAYAM, Diksha, ePG Pathshala etc.) became a necessity and essential part of the pedagogy. The digital technology provided endless opportunities for collaboration and networking like never before and brought out the importance of interdisciplinary/ multidisciplinary research, to the fore.

The healthcare system and the industry were heavily impacted in many ways and also got a boost in some ways, the pandemic being a healthcare issue largely. During the pandemic, the healthcare system was exposed to the root, which was heavily loaded but also was the ray of faith and hope that would salvage humankind from the prevailing trying times imposed by the pandemic. The healthcare system was one of the most essential services that were working round the clock. Whatever may have been the cause and effect of COVID-19 but we ought to salute our health workers who worked in the most difficult conditions day and night, no less than the soldiers, to save our lives at the risk of their own.

The healthcare system was initially shaken, almost on the verge of collapsing with the number of people getting infected, increasing every day. In spite of huge, well-equipped isolation facilities being created continuously, it never seemed to suffice the growing numbers. Not to mention the second wave when there was lot of panic among the public due to inadequate availability of oxygen cylinders, oxygen concentrators and incubators. It was also reported that

the incubators, though available in hospitals were lying unused due to lack of trained personnel who could operate them. It exposed the grim conditions and also opened up avenues for new job opportunities in form of need for skilled personnel. It also gave a boost to the medical equipment, medicines and other medical supplies business. There rose a huge demand for simple medical supplies like masks, sanitizers, oximeters etc. There has been a significant drop in both in-patient and out-patient footfall for private hospital chains—be it a single specialty, multi-specialty, tertiary-care hospitals or even diagnostics businesses, during this lockdown⁷.

In spite of various shortcomings, the healthcare system did get a boost in terms of infrastructure improvement, employment generation and economic spurt with intervention and investment both from the government and the private players. The pandemic was a wake-up call for the Government to improve the basic healthcare system. There has been continuous effort to equip and upgrade the existing facilities and establish new ones. As part of the newly announced PM Atma Nirbhar Swasth Bharat Yojana, nearly 64,180 crores will be invested over six years to improve primary, secondary and tertiary healthcare⁸. A lot of work was done by the Government to be in touch with and monitor the spread of infection. Again technology played an important role. The Aarogya Setu app was launched which helped in mapping, contact tracing, monitoring and counselling the infected persons who were in home isolation. The technology also helped in the dissemination of information about government guidelines and facilities so that they could reach the remotest of the corner of the country. It was the technology which helped to manufacture COVID-19 rapid virus detection kits and the production and distribution of vaccine to cater to huge population of India. The Indian Government has done a laudable job of getting the citizens vaccinated at its own expense and achieved the milestone of getting a huge population vaccinated either partially or fully. As per available data, in India, 95% of the eligible population (15+) has received at least one shot, and 80% of the eligible population (15+) is fully vaccinated⁹. The COVID-19 pandemic has also transformed the way the government and private players are planning to bring change in the healthcare system. There has been an increased focus on telemedicine services and the government also issued new guidelines to make telemedicine a legal practice in India¹⁰. There has been rising awareness about health insurance and capacity building, which also got a boost as an off-shoot to the healthcare industry.

When we talk about the healthcare system it includes not just physical but also mental health. I am sure the readers would agree that in trying times (the pandemic took us through one big time) mental health needs equal attention as physical health. During the pandemic, many suffered from anxiety and stress due to uncertainty, panic, health disorders, fear of isolation etc.

that may aggravate into mental disorders akin to depression or likewise. There was a rising need and realisation for guidance and counselling at all levels for the mental well-being of the people. To conclude, the pandemic has no doubt perturbed the 'normal' life of the people worldwide, bringing it to a standstill for quite a while, bringing in the 'new normal'. At the same time it has evoked in all of us the thought that the necessities of life are just the bare minimum and the rest of them non-essentials. The importance of family and health was realised by one and all. The pandemic rendered us an opportunity in disguise to work on our present shortcomings for long-term sustainability goals for a brighter future.

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ECONOMIC IMPACT OF THE COVID-19 IN INDIA

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Abstract:

The outbreak of the Covid-19 pandemic is an unprecedented shock to the Indian economy. The economic impact of Covid-19 is also very disturbing. It was already in a parlous state before Covid-19 struck. The magnitude of the economic impact will depend upon the duration and severity of the health crisis, the duration of the lockdown and the manner in which the situation unfolds once the lockdown is lifted. Businesses across the world namely hospitality, entertainment, aviation etc have seen a major negative impact. Various sports events such as IPL and Olympics have been postponed. Schools and colleges have been closed. Countries such as USA, Italy and Spain are suffering the most since their death toll is very high. In this chapter we describe the state of the Indian economy in the pre-Covid-19 period, assess the potential impact of the shock on various segments of the economy.

Keywords: Covid-19, Lockdown, Economy, Government, sectors, Global, Pandemic

Introduction:

The coronavirus disease (COVID-19) pandemic, which originated in the city of Wuhan, China, has quickly spread to various countries, with many cases having been reported worldwide. As of May 8th, 2020, in India, 56,342 positive cases have been reported. As of till September 10th 2020, 4,470,166 positive cases are reported and death rate increased to 75,119. India, with a population of more than 1.34 billion—the second largest population in the world—will have difficulty in controlling the transmission of severe acute respiratory syndrome coronavirus 2 among its population. Multiple strategies would be highly necessary to handle the current outbreak; these include computational modeling, statistical tools, and quantitative analyses to control the spread as well as the rapid development of a new treatment.

The Ministry of Health and Family Welfare of India has raised awareness about the recent outbreak and has taken necessary actions to control the spread of COVID-19. The central

and state governments are taking several measures and formulating several wartime protocols to achieve this goal. Moreover, the Indian government implemented more than 100-days lockdown throughout the country that started on March 25th, 2020, to reduce the transmission of the virus. This outbreak is inextricably linked to the economy of the nation, as it has dramatically impeded industrial sectors because people worldwide are currently cautious about engaging in business in the affected regions.

Current Scenario in India

Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), which causes coronavirus disease (COVID-19), was first identified in December 2019 in Wuhan city, China, and later spread to many provinces in China. As of September 10th, 2020, the World Health Organization (WHO) had documented 28,052,222 positive COVID-19 cases, and the death toll attributed to COVID-19 had reached 908,475 worldwide (1). So far, more than 212 countries and territories have confirmed cases of SARS-CoV-2 infection.

On January 30th, 2020, the WHO declared COVID-19 a Public Health Emergency of International Concern (2). The first SARS-CoV-2 positive case in India was reported in the state of Kerala on January 30th, 2020. Subsequently, the number of cases drastically rose. According to the press release by the Indian Council of Medical Research (ICMR) on May 8th, 2020, a total of 14, 37,788 suspected samples had been sent to the National Institute of Virology (NIV), Pune, and a related testing laboratory (3). Among them, 56,342 cases tested positive for SARS-CoV-2 (4). A state-wise distribution of positive cases until September 10th, 2020, is listed in Table 1, and the cases have been depicted on a chart and Indian map (Figure 1, 2, 3).

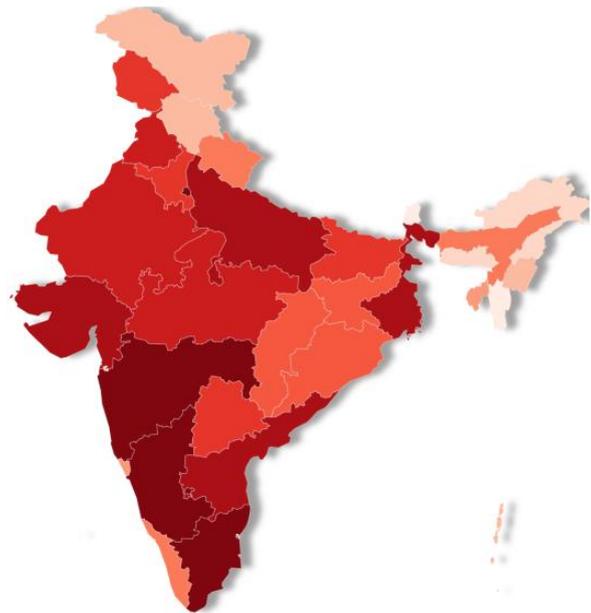
With a total of over 36 million cases, India recorded its highest single-day spike with 78,701 cases on Aug 29. The spike is also the highest daily cases of any country in the world since the pandemic outbreak (5). The dubious title was previously held by the US which recorded 77,638 cases on July 17. In fact, on Aug 29, cases in India were more than the cases in any other continent, and were over 30% of the 2, 57,000 new cases recorded globally.

In the face of India reporting over 75k daily new cases for the last 5 consecutive days, the central gov't has released Unlock 4.0. With the opening up of more activities from September 1, India is set to remain at the top of world rankings (6). Already, international newspapers are highlighting India's spiraling numbers (The New York Times, The Guardian, etc). Now with unlock 4.0, 1,00,000 cases per day seems a real possibility.

STATE	CASES	ACTIVE	RECOVERED	DEATHS
Maharashtra	9,67,349 ▲ 23,577	2,53,100 ▲ 9,291	6,86,462 ▲ 13,905	27,787 ▲ 380
Andhra Pradesh	5,27,512 ▲ 10,418	97,271 ▲ 502	4,25,607 ▲ 9,842	4,634 ▲ 74
Tamil Nadu	4,80,524 ▲ 5,584	49,203 ▼ 1,010	4,23,231 ▲ 6,516	8,090 ▲ 78
Karnataka	4,21,730 ▲ 9,540	99,489 ▲ 2,552	3,15,433 ▲ 6,860	6,808 ▲ 128
Uttar Pradesh	2,85,041 ▲ 6,568	64,028 ▲ 772	2,16,901 ▲ 5,791	4,112 ▲ 65
Delhi	2,01,174 ▲ 4,039	23,773 ▲ 1,396	1,72,763 ▲ 2,623	4,638 ▲ 20
West Bengal	1,90,063 ▲ 3,107	23,341 ▲ 87	1,62,992 ▲ 2,967	3,730 ▲ 53
Bihar	1,52,192 ▲ 1,690	15,626 ▲ 280	1,35,791 ▲ 1,400	775 ▲ 10
Telangana	1,50,176 ▲ 2,534	32,106 ▲ 452	1,17,143 ▲ 2,071	927 ▲ 11
Odisha	1,35,130 ▲ 3,748	29,255 ▲ 627	1,05,295 ▲ 3,110	580 ▲ 11
Assam	1,33,066 ▲ 2,243	29,166 ▼ 40	1,03,504 ▲ 2,265	396 ▲ 18
Gujarat	1,08,133 ▲ 1,329	16,296 ▼ 23	88,688 ▲ 1,336	3,149 ▲ 16
Kerala	95,917 ▲ 3,402	24,616 ▲ 1,336	70,917 ▲ 2,054	384 ▲ 12
Rajasthan	95,736 ▲ 1,610	15,108 ▲ 18	79,450 ▲ 1,578	1,178 ▲ 14
Haryana	83,353 ▲ 2,294	17,328 ▲ 438	65,143 ▲ 1,828	882 ▲ 28
Madhya Pradesh	79,192 ▲ 1,869	17,702 ▲ 497	59,850 ▲ 1,341	1,640 ▲ 31
Punjab	69,684 ▲ 2,137	17,065 ▲ 835	50,558 ▲ 1,231	2,061 ▲ 71
Jharkhand	56,897 ▲ 1,601	15,726 ▲ 288	40,659 ▲ 1,297	512 ▲ 16
Chhattisgarh	52,932 ▲ 2,818	28,041 ▲ 1,126	24,414 ▲ 1,622	477 ▲ 70
Jammu And Kashmir	47,542 ▲ 1,617	12,839 ▲ 980	33,871 ▲ 620	832 ▲ 17
Uttarakhand	27,211 ▲ 1,117	8,577 ▲ 316	18,262 ▲ 789	372 ▲ 12
Goa	22,251 ▲ 621	4,833 ▲ 334	17,156 ▲ 281	262 ▲ 6
Puduchery	18,084 ▲ 335	4,770 ▼ 61	12,967 ▲ 386	347 ▲ 10
Tripura	17,252 ▲ 535	7,086 ▲ 183	9,993 ▲ 340	173 ▲ 12
Himachal Pradesh	8,147 ▲ 316	2,487 ▲ 161	5,597 ▲ 152	63 ▲ 3
Manipur	7,362 ▲ 160	1,774 ▲ 91	5,548 ▲ 68	40 ▲ 1
Chandigarh	6,704 ▲ 332	2,484 ▲ 150	4,140 ▲ 180	80 ▲ 2
Arunachal Pradesh	5,545 ▲ 143	1,630 ▼ 40	3,906 ▲ 183	9

INDIA COVID-19 PANDEMIC TRACKER

Statewise tally of Covid-19 cases & deaths. The tally includes foreigners infected with coronavirus



Impact on Economy:

There is a big shift in the world economic market and the share market has witnessed crashes day by day (7). Factories, Restaurants, Pubs, Markets, Flights, Super Markets, Malls, Universities and Colleges etc. were shut down. Fear of corona virus has limited the movement of the individuals. People were not even going to buy the daily essentials and these all were somewhere impacting the economy of the world as a whole (8). The Organization for Economic Co-operation and Development (OECD) reveals that they have cut their expectation for global growth to 2.4% from 2.9%, and warns that it could fall as low as 1.5%.

India faces a huge decline in government revenues and growth of the income for at least two quarters as the coronavirus hits economic activity of the country as a whole (9). A fall in investor sentiment impacts privatization plans, government and industry.

The lockdown in India will have a sizeable impact on the economy mainly on consumption which is the biggest component of GDP.

India's total electronic imports is equal to 45% that of China. Around one-third of machinery and almost two-fifths of organic chemicals that India purchases come from China (10). For automotive parts and fertilizers China's share in India's import is more than 25%. Around 65 to 70% of active pharmaceutical ingredients and around 90% of certain mobile phones come from China to India.

Impact of Covid-19 in India and the Global Economy

As per the official government guidelines, India is making preparations against the COVID-19 outbreak, and avoiding specific crisis actions or not understating its importance will have extremely severe implications. All the neighboring countries of India have reported positive COVID-19 cases. To protect against the deadly virus, the Indian government have taken necessary and strict measures, including establishing health check posts between the national borders to test whether people entering the country have the virus (11). Different countries have introduced rescue efforts and surveillance measures for citizens wishing to return from China. The lesson learned from the SARS outbreak was first that the lack of clarity and information about SARS weakened China's global standing and hampered its economic growth (11, 12–13).

The outbreak of SARS in China was catastrophic and has led to changes in health care and medical systems (13, 15). Compared with China, the ability of India to counter a pandemic seems to be much lower. A recent study reported that affected family members had not visit the Wuhan market in China, suggesting that SARS-CoV-2 may spread without manifesting symptoms (18). Researchers believe that this phenomenon is normal for many viruses. India, with a population of more than 1.34 billion—the second largest population in the world—will have difficulty treating severe COVID-19 cases because the country has only 49,000 ventilators, which is a minimal amount. If the number of COVID-19 cases increases in the nation, it would be a catastrophe for India (19). It would be difficult to identify sources of infection and those who come in contact with them. This would necessitate multiple strategies to handle the outbreak, including computational modeling as well as statistical and quantitative analyses, to rapidly develop new vaccines and drug treatments. With such a vast population, India's medical

system is grossly inadequate. A study has shown that, owing to inadequate medical care systems, nearly 1 million people die every year in India (21).

India is also engaged in trading with its nearby countries, such as Bangladesh, Bhutan, Pakistan, Myanmar, China, and Nepal. During the financial year 2017–18 (FY2017–18), Indian regional trade amounted to nearly \$12 billion, accounting for only 1.56% of its total global trade value of \$769 billion. The outbreak of such viruses and their transmission would significantly affect the Indian economy. The outbreak in China could profoundly affect the Indian economy, especially in the sectors of electronics, pharmaceuticals, and logistics operations, as trade ports with China are currently closed. This was further supported by the statement by Suyash Choudhary, Head—Fixed Income, IDFC AMC, stating that GDP might decrease owing to COVID-19 (20).

Future Perspectives:

Infections caused by these viruses are an enormous global health threat. They are a major cause of death and have adverse socio-economic effects that are continually exacerbated. Therefore, potential treatment initiatives and approaches need to be developed. First, India is taking necessary preventive measures to reduce viral transmission. Second, ICMR and the Ministry of AYUSH provided guidelines to use conventional preventive and treatment strategies to increase immunity against COVID-19 (22). These guidelines could help reduce the severity of the viral infection in elderly patients and increase life expectancy (23).

The recent report from the director of ICMR mentioned that India would undergo randomized controlled trials using convalescent plasma of completely recovered COVID-19 patients. Convalescent plasma therapy is highly recommended, as it has provided moderate success with SARS and MERS (24); this has been rolled out in 20 health centers and will be increased this month (May 2020) (3). India has expertise in specialized medical/pharmaceutical industries with production facilities, and the government has established fast-tracking research to develop rapid diagnostic test kits and vaccines at low cost (25).

In addition, the Serum Institute of India started developing a vaccine against SARS-CoV-2 infection (26). Until we obtain an appropriate vaccine, it is highly recommended that we screen the red zoned areas to stop further transmission of the virus. Medical college doctors in Kerala, India, implemented the low-cost WISK (Walk-in Sample Kiosk) to collect samples without direct exposure or contact (26,27) After Kerala, The Defense Research and Development Organization (DRDO) developed walk-in kiosks to collect COVID-19 samples and named these as COVID-19 Sample Collection Kiosk (COVSACK) (28).

After the swab collection, the testing of SARS-CoV-2 can be achieved with the existing diagnostic facility in India. This facility can be used for massive screening or at least in the red zoned areas without the need for personal protective equipment kits (29, 30). India has attempted to broaden its research facilities and shift toward testing the mass population, as recommended by medical experts in India and worldwide.

Conclusion:

A global recession now seems inevitable. But how deep and long the downturn will be depends on the success of measures taken to prevent the spread of COVID-19, the effects of government policies to alleviate liquidity problems in SMEs and to support families under financial distress. It also depends upon how companies react and prepare for the re-start of economic activities. And, above all, it depends on how long the current lockdowns will last. The country is facing an extra ordinary challenging time in this financial year. India has to urgently find a way to cushion the demand side shocks induced by potential lockdowns and other ongoing containment measure.

Developing countries like India has more fragile economic and social fabric and the present situation will create more suffering for the unorganized sectors and migrant labour. Borrowing the words of former RBI governor C Rangarajan “Government of India must provide lifelines to businesses - extend loans and tax waivers to small businesses and the self-employed to retain staff give direct support to severely affected industries and provide more funds to states, tax waivers to households etc.”

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THE ONLINE LIBRARY SERVICES AND THE E-RESOURCES IN INDIA: THEIR RELEVANCE DURING THE COVID - 19 PANDEMIC

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Abstract:

The paper highlights the impact of the pandemic situation from different angles. Firstly, the changes in our social life, the emergence of ‘the new normal’ situation, have been touched upon. Then the collapse of the education sector as a result of the pandemic has been discussed. The replacement of the traditional classroom teaching method by the online learning method has been dealt with. The interruption of the school education and the hampering of the demand of international higher education have been highlighted. The spiking of the rate of unemployment in India from 8.75% in mid-March to 23.52% during Lockdown as per the statistics of CMIE has been highlighted since it is alarming for the educated young generation of our country. Some discussions have been made on the DIKSHA platform, an initiative of NCERT, for the benefit of the school teachers. In order to combat this pandemic situation, the endeavours of the librarians and the vital role played by the libraries have been elaborated. The seamless endeavours of the libraries to provide access to e-journals, e-books and the other e-contents to keep continuity of the online education have been stressed upon. The services adopted by the librarians, such as, running virtual information services, maintaining electronic book inter-library loan, collaborating with the publishers to arrange for the free access of the e-journals, e-books, etc. directly from their websites have been highlighted. The importance of NDLI and the World Digital Library to combat the pandemic situation has been discussed. The services provided by the university libraries through E-Shodh Sindhu Consortium and the college libraries through NLIST, have been discussed. It has been concluded that the use of e-libraries which is a dire necessity of ‘the new normal’ situation will continue to grow exponentially.

Keywords: Pandemic, COVID 19, CMIE, Online Library Services, NDLI, Digital Library, E-Shodh Sindhu Consortium

Introduction:

The COVID-19 pandemic crisis has put the world in an unprecedented alarming situation. The world has come to a standstill as a consequence of lockdown. In India, the lockdown started from the last week of March, 2020. The pandemic has brought about several

changes in our social life and it is being termed as ‘new normal’ situation, like, wearing of masks while going out of home, maintaining social distance, maintaining proper hygiene like washing hands with soap and using sanitizer quite often. The policy of social distancing means we should maintain physical distance from each other but this should not lead to creation of mental distance amongst us. We should mentally support each other during this pandemic crisis and be united to fight against the COVID - 19 pandemic so that the world can once again get into normalcy.

Impact of COVID on education sector

From mid March, 2020, onwards, the educational institutions of all levels, namely, the schools, colleges and universities were shut down by the state governments all over India as a measure to contain the pandemic disease of COVID-19. Consequently, all the board examinations, various entrance tests and competitive examinations and even the school admission tests were hampered. The closures of the educational institutions have hampered the 285 million learners of India. The impact on the education sector will again have far-reaching impact on the economic sector and the society.

The teaching, learning and assessment methodologies have been severely affected due to the closure of the educational institutions. In case of school education, the private schools with higher incomes have been able to take resort to online learning solutions. But their government counterparts with relatively lower income could not afford this facility and thus the students of these schools have been completely detached from the opportunities of learning. Besides, these students have been deprived of the mid-day meal during this time leading to a sort of economic stress for their families.

The higher education sector which determines the future of the country has also been adversely affected. Many students from India enrol in the universities of US, UK, Australia and China, the countries which have been badly hit by the pandemic. Consequently, the Indian students have not enrolled in these universities thereby causing a decline in the demand of international higher education.

The rate of unemployment in the country spiked to 23.52% in April, 2020, on the second day of Lockdown 3 in India meant to contain COVID-19 as per the report of Centre for Monitoring Indian Economy (CMIE). This unemployment rate was 8.75% in mid-March, 2020, before the Lockdown. However when Unlock 1 started on 1st June, 2020, the rate of unemployment gradually started declining showing slight rays of hope in the dark cloud of the pandemic. But unfortunately when the second wave of COVID surged in India from April, 2021, onwards and fresh lockdown had been imposed in different parts of the country, the rate of

unemployment had again started to spike. The educated youths fear that there would be a withdrawal of job offers from the corporate houses even after the pandemic.

The statistical data of the rate of unemployment in India as per the report of Centre for Monitoring Indian Economy from the period April 2020 to July 2021 is given below:

Table 1: Rate of unemployment in India

Centre for Monitoring Indian Economy Pvt. Ltd.

Month	Unemployment Rate (%)		
	India	Urban	Rural
Mar 2021	6.52	7.24	6.19
Feb 2021	6.90	6.99	6.86
Jan 2021	6.53	8.08	5.83
Dec 2020	9.06	8.84	9.15
Nov 2020	6.50	7.07	6.24
Oct 2020	7.02	7.18	6.95
Sep 2020	6.68	8.45	5.88
Aug 2020	8.35	9.83	7.65
Jul 2020	7.40	9.37	6.51
Jun 2020	10.18	11.68	9.49
May 2020	21.73	23.14	21.11
Apr 2020	23.52	24.95	22.89

Statistical Profiles - Unemployment in India

Centre for Monitoring Indian Economy Pvt. Ltd.

Month	Unemployment Rate (%)		
	India	Urban	Rural
Jul 2021	6.95	8.30	6.34
Jun 2021	9.17	10.07	8.75
May 2021	11.90	14.73	10.63
Apr 2021	7.97	9.78	7.13
Mar 2021	6.50	7.27	6.15
Feb 2021	6.89	6.99	6.85
Jan 2021	6.52	8.09	5.81
Dec 2020	9.06	8.84	9.15
Nov 2020	6.50	7.07	6.24
Oct 2020	7.02	7.18	6.95
Sep 2020	6.68	8.45	5.88
Aug 2020	8.35	9.83	7.65

Statistical Profiles - Unemployment in India

In order to combat with the pandemic situation, the teaching and learning methodology has been shifted towards online learning solutions from the traditional ones. The educational institutions, may it be schools or higher education institution, should adopt the open-source digital learning solution and Learning Management Softwares so that the teachers can continue with the online teaching and the students can access that education. The school teachers can make use of DIKSHA (digital Infrastructure for knowledge sharing) platform, an initiative of National Council of Educational Research and Training (NCERT) for assistance regarding online teaching. The teachers can access lesson plans, worksheets and activities related to school curriculum. The students can clear concepts, revise lessons and do practise works. The parents can also clear doubts related to the school curriculum. DIKSHA has been receiving an average of three core hits per day since March 2020. According to the report of DIKSHA portal of Government of India as updated on August 21, 2021, 3,37,19,84,507 times the learning activities

were undertaken using DIKSHA platform by the learners. 41,56,12,54,866 is the usage time in minutes.

As per the DIKSHA portal of Government of India, the following is the usage pattern of the different states of India as updated on August 2021:

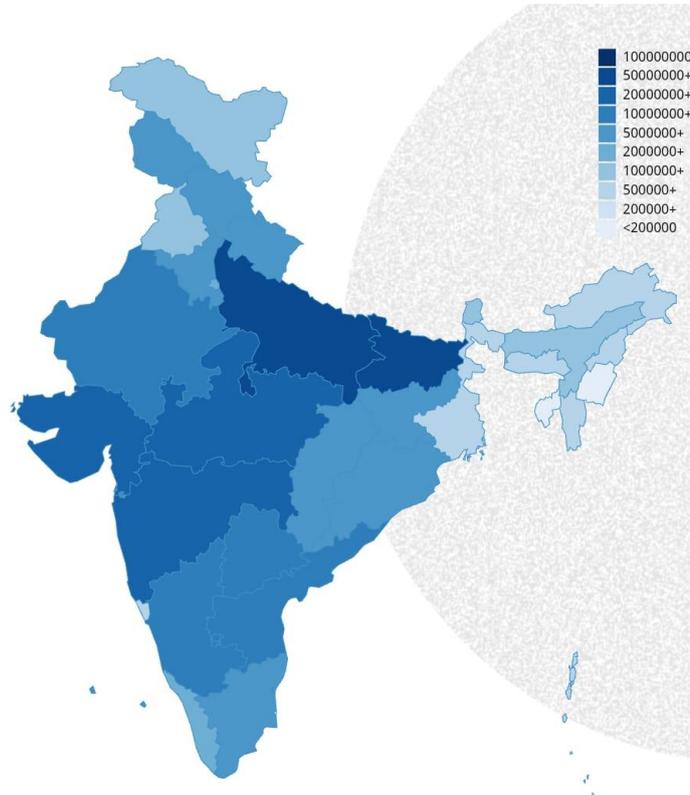


Figure 1: Online usage pattern of the different states of India

The government should take measures to adopt the inclusive learning solutions for the students residing in remote areas. The increased use of smart phones even in the remote areas which is going to reach 85% of households by 2024 has enabled the remote students to seamlessly access the education online. Wherever the situation permits, the blended method of education can be adopted, that is, integrating the technology-based online education with the traditional classroom-teaching method of education. Recently, keeping in mind the present situation of the pandemic in India, The University Grants Commission (UGC) of India, has drafted a guideline for blended teaching whereby the higher education institutes like colleges and the universities would be allowed to teach 40% of the course through the online mode. UGC has sought suggestions from the different stakeholders on this issue.

The learning sessions of the top ten states of India in terms of usage are as follows:

Table 2: Learning sessions of the top ten states of India in terms of usage

	STATE / UT	Total Learning Sessions
1	Bihar	25 Million
2	Uttar Pradesh	23 Million
3	Gujarat	16 Million
4	Madhya Pradesh	14 Million
5	Maharashtra	11 Million
6	Rajasthan	9.47 Million
7	Karnataka	8.91 Million
8	Telangana	6.93 Million
9	Andhra Pradesh	6.90 Million
10	Tamil Nadu	4.92 Million

Challenges and services of libraries during COVID 19:

As the education sector gets adversely affected as a consequence of the pandemic COVID 19, the main supporting wing of the education sector, the libraries are also worst hit. With the closure of the educational institutions, the academic libraries are also shut down. Besides, the public libraries and the other institutional libraries are also shut down. Consequently, the libraries are facing the challenges of ensuring the continuity of library services to their clientele and thereby safeguarding their existences. Due to the outbreak of COVID 19 pandemic, the efficacies of digital libraries and the other online library services have become more prominent. The educational institutions have shifted to distance and online learning modes. Thus, the students and the scholars are accessing more and more e-books, e-journals and the other e-contents for supplementing their knowledge. In this situation, the role of the librarians becomes vital in ensuring the seamless service.

Again, there is occurring information explosion related to the pandemic. In this situation, the importance of the libraries and the librarians become vital in organising and disseminating this information. Much incorrect information is being forwarded through various social media which will only enhance the chaotic situation. As stated by the Director-General of the World Health Organization (WHO), a situation of ‘infodemic’ has been created. The libraries can best save the people from rumours and misinformation. The authentic information is required by the researchers for the advancement of the research relating to COVID vaccines and other medical treatments of COVID. They need the results of the previous related research works and also the

information on the ongoing related research. They can access this information from the peer-reviewed academic journals, books, reports, patents, standards subscribed by the libraries. In this situation of the dire necessity of authentic information, the librarians are tirelessly endeavouring to organize and disseminate the information for the researchers whether they are working on-campus or off-campus. Some of the remarkable services offered by the librarians during this pandemic period are running of virtual information services curating the information sources for the healthcare and the other professionals, maintaining electronic inter-library loan services and providing referral services.

The librarians and the publishers are collaborating together and the publishers are permitting to access the contents, namely, the e-journals and the e-books of their websites free of cost for a limited period. The university libraries in India can provide off-campus free access to the different publishers' websites through the E-ShodhSindhu Consortium. It has been formed based on the recommendation Of Ministry of Education by merging the three consortia initiatives, namely, UGC-INFONET Digital Library Consortium, NLIST and INDEST-AICTE Consortium. It provides access to more than ten thousand core peer-reviewed journals, bibliographic, citations and factual databases in different disciplines. Some of the publishers who have provided free access to their e-contents to support the students, researchers and the other academicians are as follows:

- 1) American Institute of Physics
- 2) ACM Digital Library
- 3) Annual Reviews
- 4) Cambridge University Press
- 5) JSTOR Archives
- 6) Proquest Database
- 7) SIAM (Society for Industrial and Applied Mathematics)
- 8) Springer-Nature

The university libraries can also provide access to e-contents to the post-graduate students through e-PG Pathshala which is an initiative of Ministry of Education under its National Mission on Education through Information and Communication Technology (NME-ICT) being executed by the University Grants Commission (UGC) of India. It provides high quality, curriculum based interactive e-content in 70 subjects in all disciplines of social sciences, arts, fine arts and humanities, natural and mathematical sciences. The college libraries in India, who have subscription of NLIST project, a college component of E-ShodhSindhu, are providing access to 6,000+ e-journals and 1.64,300+ e-books. In higher education, the libraries are also

providing service through the open source online resources like Directory of Open Access Journals (DOAJ) and the like.

In cases of school and teacher education, the libraries and the librarians are also providing service to their users with the help of various Open Educational Resources (OER) like National Repository of Open Educational Resources (NROER) which is a collaborative platform bringing together all interested in school and teacher education, an initiative by the Department of School Education and Literacy, Ministry of Education, Government of India. It is managed by the Central Institute of Educational Technology, National Council of Educational Research and Training (NCERT).

In this pandemic situation, the importance of digital libraries and their contribution to sustainable development have gained prominence. In its 'Manifesto for Digital Libraries', UNESCO and the International Federation of Library Associations and Institutions (IFLA) point out that 'The mission of the digital library is to give direct access to information resources in a structured and authoritative manner and thus to link information technology, education and culture in contemporary library service'. In India, the National Digital Library of India (NDLI) with its headquarters at IIT Kharagpur, is a leading online platform. It is sponsored and executed by the Ministry of Education, Government of India, through its National Mission on Education through Information and Technology (NMEICT). It provides access to over 50 million e-books and other e-contents in various disciplines to about three million regular users. It has undertaken a digitization project to materialize the digitization of heritage contents in collaboration with the heritage archives. It also provides access to the e-cultural texts. The World Digital Library, developed by UNESCO and the Library of Congress is a gateway for providing access to e-contents of intellectual understanding of 200 countries. The digital libraries are thus a boon to all of us during this pandemic situation. They have not allowed the world of knowledge to come to a standstill as that of the material world. When the people are confined in their homes as a measure to contain the COVID 19 virus, the digital libraries are helping the people to access the knowledge world. Behind these activities of providing access to the e-knowledge are the tireless endeavours of the librarians and the other library staff members. They are working continuously to organize and disseminate the information of the e-contents seamlessly in this challenging situation.

Even some efforts are being made to provide online access to e-books to the physically disabled group. For example, SugamyaPustakalaya, a joint venture of Tata Consultancy Services (TCS), Daisy Forum of India and National Institute for Empowerment of Persons with Visual Disabilities (NIEPVD), Government of India, provides online access to e-books to the visually-impaired people. The users can access about 675612 books, download them and can maintain their individual reading shelves online. The National Digital Library of India (NDLI) and the

other leading e-libraries also have undertaken the projects to include the physically disabled group in the digitization process. Hence, the physically impaired group is also getting some access to the e-contents during the present pandemonium.

Conclusion:

Thus, the libraries and the librarians are playing a vital role during this pandemic situation of COVID 19. The society cannot disregard the importance of the libraries and the librarians. This pandemic has made the merits of the digital libraries prominent. It is hoped that the use of e-libraries will exponentially rise in the new normal situation in view of the experience gained by the society of the advantages of online library services during this pandemic of COVID 19.

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PERSONAL AND COMMUNITY-BASED MITIGATION MEASURES TO PREVENT THE SPREAD OF COVID-19 PANDEMIC IN INDIA

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Abstract:

The COVID-19 pandemic has caused havoc on education systems around the world while also creating a fantastic environment. The Isolation strategy of the Ministry of Health and Family Welfare highlights the government's measures to stop the pandemic, and also personal and community-based approaches to COVID-19 infection control. It includes advice on social distancing measures, the suspension of large gatherings, the closure of schools and universities, the suspension of public transportation, and the quarantine of COVID-19 case handlers. My paper examines how individual and community protection measures, in addition to governmental legislation, play an important role in infection management and illness containment and mitigation. Following the COVID-19 outbreak in India, the Indian government is recommending that the prevent the spread of Covid-19 instances across the country, the problem should be controlled by implementing individual and community-based mitigation strategies. These measures, on the other hand, pertain to a well-coordinated mix of personal and community-based activities. This type of initiative approach involves the consideration of several factors, the most essential of which are the reduction of multiple out broke and case results, as well as the creation of a positive environment. Provide instructions on how to properly use a face mask and wash hands, as well as how to attend small gatherings and major events securely. It becomes impossible to separate all infected individuals once the virus spreads in the community with signs of sustained local transmission. Mitigation measures are required in such scenarios to slow the spread of illness during the COVID-19 Pandemic Period in India. This article will provide insights into personal and community mitigation and protective measures like hand washing, mask use, physical separation, and ventilation.

Keywords: COVID-19, Lockdown, containment of the disease, WHO, Mitigation - measures, GOI, MOHFW, individual and community based measures.

Introduction:

In India, Sources of evidence have suggested that social detachment and control strategies to restrict social mixing are the most effective ways for minimizing COVID-19 outbreaks after the epidemic in India. Given the severity of the situation, the Honourable Prime Minister of India declared a nationwide total lockdown on the 24th of March, beginning at midnight and lasting 21 days, to halt the spread of COVID-19. Individuals, organisations, and governments can employ or deploy Personal and Community Mitigation Measures to limit COVID-19 transmission in the community. Physical isolation and mask wearing, as well as risk communication and illness education, as well as interventions like contact tracing, are examples of these measures. During periods of low transmission, communities should plan for more transmission. Mitigation activities in the neighbourhood should be adapted to the transmission scenario as well as the unique community and context. Avoiding exposure to the virus that causes COVID-19 by utilising personal protective measures such as hand washing, mask use, physical distance, and ventilation is the best method to prevent disease and transmission of disease. Provide instructions on how to properly use a face mask and wash hands, as well as how to attend small gatherings and major events securely. COVID-19 transmission is a danger in schools and workplaces because people from diverse families interact for lengthy periods. Mask use, greater ventilation, physical separation, and transferring activities to outside settings wherever possible are all precautions that can help mitigate COVID-19 transmission. Individual and community mitigation measures are efforts done to minimise the transmission of infectious illnesses and safeguard all people, particularly those at higher risk of severe illness, disproportionately impacted groups, and critical workers. However, encouraging personal responsibility to take recommended actions, emphasising government and community responsibility to ensure people have access to the information and resources they need to take recommended actions, ensuring government, community institutions (schools, places of worship, marketplaces, childcare providers), businesses, and households implement recommended actions, with a focus on actions that protect those at increased risk of severe illness.

The following are some of the most important personal and community mitigation measures are as follows:

- 1. Imposition of countrywide Lockdown:** Imposition of a national policy. The most effective measure for minimising COVID-19 outbreaks are lockdown. Given the severity of the situation, the Honourable Prime Minister of India declared a nationwide total lockdown on the 24th of March, beginning at midnight and lasting 21 days, to halt the spread of COVID-

19. When COVID-19 instances spiked across India on April 14, 2020, the lockdown was prolonged for another 14 days across the country. To prevent the spread of COVID-19, the Ministry of Home Affairs ordered lockdown 3.0 from May 4 to May 17, which was then extended until May 31, allowing several business activities around the country to stabilise the nation's deteriorating economy due to the COVID-19 situation. India has now transitioned to Unlock 1.0 or Lockdown 5.0. Until the lockdown, India implemented zone-based activity restrictions. Until lockdown, regions were separated into three zones based on the number of COVID-19 cases. RED zone (Hotspot): an area with active cases; classification is based on the number of active cases, the rate at which confirmed cases double, the scope of testing, and surveillance feedback. GREEN ZONE: Districts with no confirmed cases in the last 21 days. ORANGE ZONE: Districts that do not fall into either the red or green categories. States/union territories and district administrations defined a containment zone within the red and orange zones. According to the government edict, no population activity was permitted in certain areas. Local authorities in the Red/Orange zones are diligent in their containment zone actions, which are aimed at halting the unrelenting COVID-19.

2. **Maintaining a social distance:** Another important mitigation measure is social distancing. The timely implementation of aggressive strategies that create social distance and reduce close contact of people has proven effective in delaying the rates of transmission and reducing severe illness and death in times of pandemics. Social separation is another significant mitigating strategy. In times of pandemic, timely deployment of aggressive methods that establish social distance and decrease close human contact has proven successful in slowing transmission rates and minimising severe illness and mortality. The 1918 influenza pandemic demonstrated that non-pharmaceutical methods like social separation are just as crucial as pharmaceuticals and vaccines in containing a pandemic. The Wuhan lockdown to contain the COVID-19 outbreak in China had a favourable impact, with much lower growth rates and a longer time for cases to double. Isolation of ill persons, quarantine of their contacts, work-from-home possibilities, school closures, and cancellation of major gatherings are all examples of social distancing methods. To avoid the spread of the virus through respiratory droplets, the WHO recommends keeping a distance of at least 1 m (3 ft) between individuals.
3. **Isolation at home when sick:** Patients with suspected COVID-19 can be handled at home following triage at the point of initial healthcare contact if they have a mild illness and there is no risk of rapid progression. Oral paracetamol can be used to treat patients' symptoms. Patients in this situation should be placed in a single, well-ventilated room, with their

movements restricted within the house and their common space decreased. Visitors should not be allowed until the patient has made a complete recovery, and a single caretaker should be chosen from among the household members. Both the patient and the carer should wear respiratory masks, and the patient should have his or her linen and eating utensils. All those who have been in close touch with the patient who has a probable infection should be checked.

- 4. Taking care of the most vulnerable people:** One of the most important aspects of COVID-19 has been the substantially greater mortality seen in people over 60 years old compared to young adults and children. The greatest case fatality rate was found to be 14.8 per cent in those over the age of 80. These findings highlight the importance of bolstering protection for people who belong to these vulnerable groups. Because children are frequently asymptomatic disease carriers, their engagement with the elderly should be minimised. Help with grocery shopping and delivery of food, medicines, and other important services and supplies will go a long way in reducing our vulnerable population's unnecessary exposure. Such tiered social-distancing measures may be a more long-term acceptable response to the current pandemic.
- 5. Increasing the capability for testing and treatment during COVID-19:** Initially, only government facilities were equipped to test for COVID-19 via reverse transcription-polymerase chain reaction, with the Indian Council of Medical Research (ICMR) recommending that only symptomatic patients with a history of international travel to affected countries or close contact with a laboratory-confirmed positive case²⁰ be tested. India has increased diagnostic and laboratory testing for the SARS-CoV-2 virus, recognising the critical need for improved case detection to halt the disease's spread. There is a need to ensure that the country has adequate clinical infrastructure as well as a sufficient supply of personal protective equipment for healthcare workers. The ICMR-National Institute of Virology in Pune has successfully recovered the SARS-CoV-2 strain from affected patients, with a 99.98 per cent homology. To break the chains of transmission, a comprehensive approach is required, and more aggressive testing, early identification, and isolation, as well as an effective treatment, appear to be the way forward in combating this virus in the future. As India prepares for the worst-case scenario, all individuals must adhere to strict hygiene procedures to ensure self-protection and prevent the infection from spreading further throughout the population. The success of mitigation techniques will be determined by public compliance.

- 6. Screening and monitoring:** The Ministry of Health and Family Welfare issued an advisory on January 17, 2020, for screening of international travellers from China at Delhi, Mumbai, and Kolkata airports, with a temporary suspension of Chinese visas announced on February 3, 2020. On March 4, 2020, travellers from COVID-19-affected countries were required to undergo universal screening upon arrival, which was later expanded to include the completion of a self-declaration form by passengers. On March 23, 2020, India halted all international to and fro flights.
- 7. Maintaining Cluster Containment:** COVID- 19 mitigating methods were included in India's Containment Plan. When there is local transmission, a cluster of human instances forms. To interrupt the chain of infection, cluster containment entails regional quarantine, home quarantine of contacts, and case isolation. Individuals who have not yet become ill but have been exposed to the COVID-19 case and are thus at risk of spreading infection are placed in quarantine. Isolation refers to the separation of COVID-19 instances that are sick, suspected, or confirmed.
- 8. COVID-19 is being contained by raising public awareness:** The Ministry of Health and Family Welfare (MOHFW) of the Government of India (GOI) has issued an advisory to the general public to avoid the spread of COVID-19. The Government of India is raising awareness under the slogan "Help Us to Help You." These are some of the measures: During a phone call, providing information to the general public about self-identification of symptoms and COVID -19 prevention (caller tune). Stop spitting in public areas by watching this video and learning about the repercussions. Dissemination of information via social media, emphasising respiratory hygiene, frequent hand washing, social distancing (keep a 2-meter distance), and wearing a face mask whenever in public to prevent COVID-19 transmission, among other things. The Ministry of Health and Family Welfare has established a toll-free helpline 1075/011-23978046 to disseminate COVID-19-related information across India. Arogyasetu applications are being launched. This app contains all of the GOI's public awareness videos as well as the health conditions of those affected by COVID-19. The Government of India has also worked on Non-Pharmacological Interventions to build individual immunity to combat COVID-19 infection. Videos of immunity booster Kaadha, turmeric milk, sipping warm water, and using Unani and Ayurvedic medical goods have been produced by the AYUSH ministry.
- 9. The testing, vaccine trials, and therapy have increased:** The National Institute of Virology in Pune serves as the nodal laboratory for COVID-19 testing in India. COVID-19 will be tested at both government and private labs in India. The plan of updating private labs to test

for COVID-19 has only been partially successful, owing to the high expense of establishing the facility. It is difficult to achieve in all laboratories across the country due to the high cost of polymerase chain reaction (PCR) thermos cyclers, as well as the high cost of biosafety and PCR cabinets certification. A key difficulty across the country is finding well-trained and experienced clinical microbiologists and molecular biology expert technicians. According to the Indian Council of Medical Research (ICMR), a total of 45,24,317 tests have been done in India. The Indian Council of Medical Research (ICMR) has given its clearance for vaccination studies, hydroxyl chloroquine usage, and convalescent plasma therapy protocols to be registered. Plasma from donors with a strong neutralising antibody titre against the virus is used in this treatment.

10. Establishment of Quarantine Centers: During COVID-19, these centres played a critical role. According to a research of 182 nations' international health standards, 81 (45%) had preventative capacities and 78 (43%) had reaction categories at the level of enabling function and operational capability to address this type of epidemiological catastrophe. Because of joint family norms, Indian families are generally crowded, and self-isolation in the event of quarantine is difficult. India has converted train compartments, schools, and other spaces into quarantine centres, although their capacities and functionality remain unknown. Many functional plant quarantine stations have been established in India, along with contact information.

Conclusion:

During all transmission scenarios, governments should encourage community members to continue to practise personal protective measures. To identify, manage, and care for new instances of COVID-19, everyone should enhance their level of preparedness, alertness, and response. Individuals will not be able to rejoin now that the infection has spread throughout the community. The health economy in India is unlikely to stabilise until the COVID-19 situation is resolved. When correctly applied, effective lockdown techniques combined with social distancing, awareness, and education through the media will be immensely useful in containing the infection. Before embarking on a long-distance voyage, a travel screening procedure should be in place to trace passengers after they have arrived. Similarly, everyone who has close contact with a COVID-19 patient, whether suspected or confirmed, should be quarantined and their health monitored for 14 days following the last interaction.

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IMPACT OF COVID-19 ON TEACHING AND LEARNING

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Abstract:

The COVID-19 pandemic has caused the greatest disruption to education systems in human history, affecting billions of learners in more than 200 countries. The closure of schools, institutions and other places of learning affect more than 94% of the global student population. This has brought about far-reaching changes in all areas of our lives. Social distancing and restrictive movement guidelines have significantly disrupted traditional educational practices. Many universities and colleges worldwide have suspended face-to-face teaching and switched to online teaching due to the novel coronavirus pandemic. The current cross-sectional study was conducted to analyse the impact of the COVID-19 lockdown on school performance. Reopening schools after restrictions are eased is another challenge as many new Standard Operating Procedures are introduced. Although online education provides an opportunity for self-study, the main challenge faced by online education in basic sciences is delivering practical instruction. Therefore, since most of the subjects are practical, it is not easy to learn it online. Online education could be improved by being more interactive, showing medical procedures in real situations, providing concise information and providing 3D virtual tools to mimic the real situation. Within a short period of time following the COVID-19 pandemic, many researchers have shared their work on teaching and learning in a variety of ways. Several schools, colleges and universities have stopped face-to-face classes. There is a fear of losing the academic year of 2020 or even more in the coming future. The need of the hour is to innovate and implement alternative education systems and assessment strategies. The COVID-19 pandemic has presented us with an opportunity to pave the way for the adoption of digital learning. This article aims to provide a comprehensive report on the impact of the COVID-19 pandemic on online teaching and learning of various papers and show the way forward.

Introduction:

Coronavirus disease 2019 (COVID-19) was first identified as pneumonia of unknown cause in December 2019 in Wuhan City, Hubei Province, China (Zhu *et al.*, 2020). Later, the International Committee on the Taxonomy of Viruses (ICTV) identified the causative agent of COVID-19 as a novel coronavirus, severe acute respiratory syndrome coronavirus 2 (SARSCoV2) (ICTV). The outbreak of COVID-19 is spreading rapidly not only in China but also worldwide, which is why the World Health Organization (WHO) declared it a pandemic on March 12, 2020 (WHO Announces COVID-19 Outbreak a Pandemic. 2020). Several government measures have been taken to counter the risk of disease spread. These measures include travel restrictions, mandatory quarantines for travellers, social distancing, bans on public gatherings, the closure of schools and universities, business closures, self-isolation, asking people to work from home, lockdowns and curfews (Bedford *et al.*, 2020).

Authorities in several countries around the world have declared either lockdowns or curfews as a measure to curb the rapid spread of viral infections. The global outbreak of the COVID-19 pandemic has spread worldwide, affecting almost all countries and territories. Public care strategies included washing hands, wearing face masks, physical distancing and avoiding mass gatherings and gatherings. Lockdown and homestay strategies have been introduced as necessary measures to flatten the curve and control transmission of the disease (Sintema, 2020). These measures are having a negative impact on the economy, education, health and tourism worldwide. The COVID-19 pandemic has affected all levels of the education system. Many universities around the world have either postponed or cancelled all campus activities to minimize gatherings and thus reduce virus transmission. However, these actions lead to higher economic, medical and social impacts on both undergraduate and postgraduate communities (Nicola *et al.*, 2020). Due to the cessation of face-to-face teaching at many colleges and universities, a switch to online teaching for bachelor's and master's students is taking effect. This form of learning offers an alternative way of minimizing contact either between the students themselves or between the students and lecturers. However, many students do not have access to online teaching due to the lack of either the means or the tools due to the economic and digital divide. The research highlights certain shortcomings such as the weakness of online teaching infrastructure, the limited exposure of teachers to online teaching, the information gap, an environment not conducive to home learning, equal opportunity and academic excellence in relation to higher education. This article assesses the impact of the COVID-19 pandemic on teaching and learning processes around the world. The challenges and opportunities of online

and further education during the COVID-19 pandemic are summarized and further action is suggested.

Challenges in Teaching and Learning

With the availability of a variety of platforms and online educational tools, users, both educators and learners, often experience hiccups when using or relating to these tools. Some of the challenges identified and highlighted by many researchers are summarized as follows: Commonly identified challenges in e-learning are accessibility, affordability, flexibility, learning pedagogy, lifelong learning and education policy (Murgatroyd, 2020). Many countries face significant problems with reliable internet connection and access to digital devices. While economically disadvantaged children in many developing countries cannot afford online learning devices, online education carries the risk of exposing the learner to prolonged screen time. Therefore, it has become imperative for students to engage in offline activities and self-exploratory learning. Lack of parental guidance, particularly for young learners, is another challenge as both parents' work. There are practical issues surrounding physical workplaces that are conducive to various learning methods. The naturally motivated learners are relatively unbiased in their learning, needing a minimum of supervision and guidance, while the vulnerable group, made up of slow learners, struggles. Some academically competent learners from economically disadvantaged backgrounds cannot access or afford online learning. The level of students' academic performance is likely to fall in the classes held for both the end-of-year exam and the internal exam, as contact hours for learners are reduced and teachers are not advised on learning/understanding difficulties (Sintema, 2020).

Student assessments are conducted online, with much trial and error, uncertainty and confusion among teachers, students and parents. The approach to conducting online exams varies based on the convenience and expertise of educators and learner compatibility. The lockdown of schools and colleges has affected internal assessments and examinations for key public qualifications such as the general secondary school leaving certificate. Depending on the duration of the lockdown, a postponement or cancellation of the entire examination is conceivable. Due to the COVID-19 outbreak and the nationwide lockdown, various state board exams, recruitment exams, university level exams and entrance exams have been postponed across India. Various entrance exams have also been postponed/ rescheduled.

The education system at schools, colleges and universities across the country is severely impacted due to the ongoing situation. It's also possible that some students' careers could benefit from the disruptions. A study conducted in France shows that the abandonment of the normal

examination procedure in France in 1968 after the student riots resulted in positive long-term labour market consequences for the affected cohort (Maurine and McNally, 2008). Schooling also increases social skills and awareness, apart from the fact that it is fun for children. There are economic, social and psychological impacts on students' lives while they are absent from the normal school schedule. Many of these students have now taken online classes and are spending extra time on virtual platforms, which have children vulnerable to online -Exploited. Increased and unstructured time spent learning online has left children exposed to potentially harmful and violent content, as well as at greater risk of cyberbullying. School closures and strict containment measures mean more families are turning to technology and digital solutions. While regulations are in place to keep children engaged in learning, entertained, and connected to the outside world, not all children have the knowledge, skills, and resources necessary to stay safe online.

Students support parents in agricultural activities such as farming, animal husbandry, and housework. Some students even asked for the exam time to be moved to the afternoon as they had to work in the fields in the morning hours. Some students expressed that they had to take care of their sick parents/grandparents/family members and take them to hospitals. In the evenings, when they return home, they find it difficult to keep up with class. Parents whose children are in lower grades think it would be better to have their children repeat the next school year. The majority of students do not have access to smartphones or televisions at home, in addition to a poor internet connection. Due to the closure of shops and offices, there is little or no income for the large population. The data package (cost) is comparatively high compared to the average income and constant internet access is a costly business for farmers. Online classroom instruction (video) is recommended by most; however, some students (economically disadvantaged) have expressed that online classroom teaching consumes more data packets. Teachers are in a dilemma of who to listen to and what tools to use. Some think pre-recorded videos could help, as this would limit interactions. It is difficult to design an appropriate system that meets the learning needs and convenience of all students.

Opportunities for Teaching and Learning

Though there have been overwhelming challenges for educators, schools, institutes, and government regarding online education from a different angle, the COVID-19 pandemic presents multiple opportunities for the unprepared and distant plans to implement an e-learning system. It has forged a stronger bond between teachers and parents than ever before. Homeschooling requires parents to support students' learning academically and economically. Children with disabilities need additional and special support during this ongoing emergency. The use of online platforms such as Google Classroom, Zoom, virtual learning environments and social media as

well as various group forums such as Telegram, Messenger, WhatsApp and WeChat are explored and tested for teaching and learning for the first time in order to further their education. This can be further explored even after face-to-face classes resume, and these platforms can provide additional resources and coaching for learners.

Teachers are committed to developing creative initiatives that help push the boundaries of virtual teaching. Teachers are actively collaborating locally to improve online teaching practices. There are unparalleled opportunities for collaboration, creative solutions, and a willingness to learn from others and try new tools, as educators, parents, and students share similar experiences (Doucet *et al.*, 2020). Many educational organizations offer their tools and solutions for free to support teaching and learning in a more interactive and engaging environment. Online learning offers the opportunity to teach and learn in innovative ways, as opposed to the teaching and learning experiences in the regular classroom.

Discussion:

The novel COVID-19 disease, identified in Wuhan city, China in December 2019, is spreading rapidly not only in China but worldwide. As a result, governments around the world have either temporarily closed educational institution that impact teaching and learning or implemented local closures. The current study showed that the COVID-19 pandemic lockdown impacted the academic performance of most schools, colleges and institutes. Online education helps students stay connected with the opportunity for self-study. However, the biggest challenge for online education in basic sciences is to provide practical instruction. Since most of the subjects are practical, it is not easy to learn it online. The students think that it is difficult to fulfil the practical knowledge only with the online education system. Online education can be improved by making it more interactive, providing brief information, and providing 3D virtual tools to mimic the real situation.

To improve online education in general it is recommended to provide platforms for online learning, provide students with electronic devices to access the internet, improve the internet speed, provide cheaper or even free internet packages during the pandemic, provide professional training for lecturers, and enhance the interaction between students and teachers. Additionally, to improve online education in science it is recommended to provide virtual resources to mimic the laboratory work, teach practical lessons by interactive tools, such as videos and 3D animation, and provide accessible e-books and instructional videos for practical lessons.

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IMPACT OF COVID-19 ON AGRICULTURE SECTOR AND WATER RESOURCE

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Abstract:

The first noticeable impact of COVID-19 was on the agricultural supply chain. Nationwide complete lockdown restricted the movement of people as well as vehicles between states, districts, and even local areas. India is an agrarian country. Alone, the agriculture sector does not only provide a 14 percent share in the country's economy but also more than 40 percent of total employment-Lockdown-1 adversely affected agricultural operations than further extensions. Complete lockdown restricted the movement of people, including farmers, farm labors, and vehicular traffic, including farm machines, and as a result, negatively affected the farm economy. Although the Indian government tried its best to minimize the adverse effects on agriculture, it could not overrule its implications on agriculture. Farmers' labour, harvesting (which occurred during the peak of the rabi season (March and April), following the Holi festival, in North-India, when crops such as mustard and wheat, chickpea and lentil in irrigated regions, and plantation crops such as pepper, coffee and banana in South-India were either at harvestable stage or almost at maturity stage, were all severely affected by the disease). Unavailability or scarcity of farm labors significantly increased the daily wage-price during harvesting operations). Milk supply chain was interrupted due to less demand on area of production and restrictions on the inter and intra-state movements of transportation. During this outbreak, milk was either processed into ghee-like by-products or consumed by families; in certain areas, residents were spotted discarding their milk on roadways due to traffic limitations imposed by lockdown. Livestock production will be adversely affected by national lockdown by mainly three ways i.e.,

unavailability of inputs such as feed, fodder, medicine and vaccines; labour shortage for carrying out various physical activities and disruption in marketing of livestock products.

Keywords: COVID-19, Lockdown, Agriculture

Corona virus and COVID-19?

Numerous coronaviruses are known to result in respiratory infections in humans ranging from natural cold to much more serious sicknesses namely Severe Acute Respiratory Syndrome (SARS) and Middle East Respiratory Syndrome (MERS). The virus recently discovered is the cause of Coronavirus Disease (COVID-19). In Wuhan, China novel coronavirus was the reason for a respiratory sickness in a group of people, Hubei, confirmed by the World Health Organization (WHO) on 12 January 2020, and submitted to the WHO on 31 December 2019. In India on 30 January 2020, the first Corona case was registered in Kerala. This pandemic affects all the system of the world in many prospects in this chapter we are mainly discussing the impact on agriculture sectors and water resources in the following sections.

Agriculture

Agriculture is a state subject in Indian subcontinent where agricultural policies vary from state to state. India is an agrarian country. Alone, agriculture sector is not only providing 14 percent share in country's economy but also more than 40 percent of total employment. The majority of India's farmers (about 80%) are small and marginal with less than two hectare of land.

The following are the key agricultural industries that have been significantly impacted by disease:

1. Farm labor
2. Crop harvesting
3. Agriculture market
4. Agriculture tools/machines repairing centers
5. Transportation facilities
6. Fisheries sector

Various effects of COVID-19 on the fisheries and aquaculture food systems have been reported; nevertheless, the situation is constantly changing. The Covid-19 lockdown has stranded the country's marine fishery sector, costing the government 224 crores per day, according to a research issued by the Central Institute of Fisheries Technology (CIFT). Although the Indian government adopted prompt comprehensive and effective preventive efforts to contain the pandemic disease, it has a detrimental impact on the livelihoods of migrant workers, farmers,

and, ultimately, Indian agriculture. Thus, this abstract highly emphasized the effect of pandemic COVID-19 on the social and economic condition of farmers in India.



Agricultural and allied activities exempted from lockdown

- i. Veterinary clinics
- ii. Agencies involved in acquisition of agricultural commodities, particularly MSP activities
- iii. 'Mandis' run by the Agriculture Produce Market Committee or as communicated by the State Government
- iv. Agricultural activities by Farmers and farm workers
- v. Custom hiring centers (CHC) related to agricultural machinery (CHC).
- vi. Fertilizer, pesticides and seed production and packaging departments
- vii. Movement of harvesting and sowing machines such as combine harvesters and other agricultural / horticultural equipment and implements within and between states.

The government has launched various mobile based apps to alleviate the problems of farmers in the country (Table-1).

Even once agricultural activities are relaxed, it is anticipated that the decline in food grain output in India during the lockdown time will be as high as 23 percent due to large reverse migration (i.e., labour scarcity) Balwinder-Singh *et al.* (2020). Minimised agricultural activity and supply chains have resulted in a 10% decline in vegetable, fruit, and oil supply in India, but with no effect on prices Mahajan and Tomar (2020). Of India, the ministry of water resources claimed that the average discharge in the Yamuna River during this span of time has grown from 300 to 3,000 cusecs, owing to a reduction in agricultural operations in the country Financial Express (2020).

Table 1: Apps for Indian farmers

Name of Application (Apps)	Importance	Link for download
Kisan Suvidha	Weather of current day and next five days, dealers, market prices, agro-advisories, plant protection, contact KCC, soil health card, cold storage and godowns	https://play.google.com/store/apps/details?id=in.cdac.bharatd.agriapp
Kisan Rath	Connects farmers and traders around the country with transporters to make agri-produce transportation easier.	https://play.google.com/store/apps/details?id=com.velocis.app.kishan.vahan
Mkisan	Experts and government officials can provide advice and information to farmers and other stakeholders through the use of this platform.	https://mkisan.gov.in/mApp/mKisan.apk
AgriMarket	Used to ascertain the market price of crops within a 50-kilometer radius of the device's periphery.	http://mkisan.gov.in/mApp/MarketRates.apk

Horticulture

In spite of the fact that there were no limitation on the sale of fruits and vegetables in the market, other than a restriction on the operation of rural haats, the horticulture industry suffered during the lockdown because it is a perishable crop. With the exception of Gujarat (5%), Rajasthan (2.5%), and Karnataka (1.7%), all states have seen a fall in horticultural production. Himachal Pradesh, Chhattisgarh, and Tamil Nadu saw the biggest declines among the bigger states, at 18 %, 17.9 %, and 13.9 %, respectively NABARD (2020).

Poultry

With significant decreases in production, this industry was the most severely impacted in all states (excluding Arunachal Pradesh, where production was said to have increased by 25%). The largest fall in production occurred in Haryana (37.2 percent), Madhya Pradesh (34.2 percent), and Uttar Pradesh (34.2 percent) (31.9 percent). As a result of widespread concern that the COVID-19 virus could spread through poultry birds, the reduction in chicken production levels can be directly attributed to a decrease in demand for poultry products as a result of decreasing demand for poultry products NABARD (2020).

Employment

As per government data, there are about nine crore farmers, and if not exceed similar number of landless agricultural labour. The COVID-19 disease drastically affected the livelihood of landless farmers and of small and marginal farmers. Those who were engaged in other activities as a part time job such as construction activities, transportation etc. became unemployed and now dependent on Government incentives and benefits. Migrant workers who were indulged in informal sector lost their job and today they are on footpath, and are forced to live meagre life.

Social and cultural activities

There is fear of infection from the neighbours in the society, if someone has other state travel history. These behavioural changes might be due to go out for essential commodities such as purchasing of fruits and vegetables, grocery items, diesel, petrol and for medical emergencies. Due to fear of infection, migrant workers and private sector employees who have returned to their villages are being viewed as disease sources. The concealment of travel history, misbehaviour, and aggressiveness by returned persons fosters distrust between village neighbours. Farmers with their family either postponed or cancelled the marriage ceremony and other social events till this pandemic ends. Although, domestic violence, drinking alcohol (particularly after lockdown 2.0) and card-playing has gradually increased but are to manage all these hurdles by their own ways and means.

Effect on water quality

More than 38,000 million gallons of untreated sewage are dumped into rivers in India every day as a result of inadequate sewage treatment capacity, which can only filter 38 percent of the sewage generated CPCB (2015). Due to the state-wide lockdown imposed during COVID-19, several industries in India, ranging from major to small size, were shuttered from 22-March, 2020 until 30-September, 2020. During this time, the water quality and quantity in many rivers have therefore improved in a short amount of time, particularly in the Ganga, which flows 2,575 km and covers a wide range of landmass Jain (2015); Dutta *et al.* (2020); Shukla *et al.* (2021). In just two months, the dissolved oxygen levels in the Ganga have increased, while the biological oxygen demand and nitrate content have reduced, resulting in an improvement in overall water quality Dutta *et al.* (2020).

Domestic and commercial water sector

COVID-19 had an influence on the household and commercial water sectors during the lockdown, in a similar way to how it had an effect on river water quality. Domestic water

demand grew during the lockdown, whereas non-domestic (i.e., commercial, industrial, and institutional) demand fell.



Air quality around the world

Following the announcement of lockdown in numerous nations, there was clearly less travel by people, whether in their own automobiles or on trains and planes. Even industries that were shuttered due to the epidemic have been reopened, bringing some respite to the air quality. Air pollution has decreased dramatically as a result of the decline in nitrous oxide emissions.

Good effects on wildlife

The lockdown has given a new life to natural wildlife - there were situations where animals were sighted travelling freely where they would never go. Even sea turtles have been found returning to regions to lay their eggs due of the lack of human interaction.

Conclusion:

The COVID-19 crisis has brought to light some of India's long-standing agricultural issues. Despite significant progress toward greater access to institutional credit, reliance on informal credit sources remains substantial, particularly among smallholder farmers. The government must intervene to ensure that farmers have access to new finance for the Kharif season. Due to mobility restrictions, diminished purchasing power, and a disproportionate impact on the most vulnerable demographic groups, food demand and hence food security are significantly impacted. As cases of contagion rise, nations adopt more harsh steps to halt the virus's spread, affecting the global food system as well. However, other governments take the opposite stance, prioritising economic expansion over public health and food security. In the end, we conclude on the basis of personal opinion and experience of the COVID-19 pandemic not only affected a single sector it affected the complete chain of human, and animal survival. But in spite of its adverse effects, it also popped up with some good effects also in aspects of River water quality, wildlife, sea life, air quality etc.

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EDUCATION BEFORE AND AFTER PANDEMIC

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Impact of Covid 19 on education:

The onslaught of Covid 19 pandemic was unprecedented and unimagined. It brought classroom teaching to a sudden standstill. In India, at the onset of lockdown in March 2020, many schools closed down affecting around 250 million students (<https://assets.kpmg>). The disadvantaged section of society suffered the most. Children from weaker section of society were less opportuneto get remote learning than their peers often due to lack of electricity, connectivity and devices. Girls were facing greater learning losses and were at an increased risk of facing child labor, gender-based violence, early marriage, and pregnancy due to gender discrimination (<https://www.unicef.org>). Among all age groups, pre-school age children were more prone to learning losses due to no previous exposure of classroom activities. The peer-to-peer impact in the school environment motivates individuals to work hard and learn social skills, which was not possible in an online setting. Moreover, increased screen time and lack of personal engagement have more long-term consequences than obvious. It also contributes to mental stress of children disturbing their sleeping habits, daily fitness routines and social interactions. Children at different developmental stages had different challenges. Compared to adults; this pandemic had more adverse consequences on children and adolescents. The nature and extent of impact on this age group depend on many susceptibility factors such as the developmental age, current educational status, physical challenges, pre-existing mental health condition, being economically under privileged and child/ family being quarantined due to infection or fear of infection. Older adolescents and youth were anxious regarding cancellation of examinations, exchange programs and academic events. Due to this situation, many students suffered from stress, anxiety, and depression, so it is necessary to provide emotional support to students.

Challenges of adopting digital teaching tools and technologies werenot only limited to learners but for educators as well. Educators who had many years of experience of traditional teaching but were not so well versed with new technologies had to struggle a lot in using evolving technologies. Education during pandemic was experiencing a transformation from developing technologies to being dependent on it. But everything has a positive side, during prolonged lockdown the educational institutions upgraded digitally to enhance value to the

existing system. Our digital infrastructure improved and our education system realized the power of online teaching learning tools in classroom settings.

Use of online tools during lockdown:

Many efforts were made by Government, social organizations, teachers and students to digitalize the learning process and resume it. Digital tools provided platform for teachers and students bringing them together to minimize learning loss. Various initiatives were launched by Central government to recover education sector. A comprehensive initiative PM e-VIDYA (<https://pib.gov.in>) was initiated as part of Atma Nirbhar Bharat Abhiyan on 17th May, 2020, which amalgamated all efforts related to online/on-air education to enable multi-mode access to education. The initiative included:

- DIKSHA (one nation, one digital platform): Nation's digital infrastructure for providing quality e-content for school education.
- One allotted Swayam Prabha TV channel for each class from 1 to 12 (one class, one channel).
- Extensive use of Radio, Community radio and CBSE Podcast- Shiksha Vani.
- Special e-content for visually and hearing impaired developed on Digitally Accessible Information System (DAISY) and in sign language on NIOS website/ YouTube.

Besides this a proactive initiative, named, 'MANODARPAN' was taken by Ministry of education to cover a wide range of activities and providing psychosocial support to students, teachers and families for Mental Health and Emotional Wellbeing during the COVID outbreak and beyond (<https://pib.gov.in>).

Blending of online and offline tools during unlock:

During lockdown we had an opportunity to learn a lot about online tools. Both teachers and students got themselves acquainted with emerging technologies to provide an easy and interactive environment where students get to learn to minimize learning losses. After a lockdown of about 18 months, when schools reopened things were still not certain. The COVID-19 pandemic exposed the need for pioneering methods to effectively continue education in times of crisis and uncertainty. We need a perfect blend of Online and Offline learning approach that caters to the needs of students and teachers in the post-COVID-19 age.

By having a mix of online and offline tools, we can manage between reopening and any future lockdowns owed to covid waves. While traditional classroom activities were confined to a fixed place [5] and were implemented by teachers facing the student groups in a classroom, emergence of smart classrooms have provided us an opportunity to use a live-broadcasting classroom for multi-campus teaching, urban and rural teaching, giving full play to the role of

outstanding teachers and enabling the share of outstanding teaching resources. This also solves the problem of unbalanced resource distribution and unreasonable allocation. However, when the design of an online learning environment is ultimately separated from learners' real-life environments, it is inevitably challenging to make online learning authentic. To take the advantages of a blended mode of learning (Zhu, 2016), students' learning interest and informal learning behaviour could be encouraged by a mobile social network APP. However, considering practical situations like in open-education courses, some students feel that it would be hard to ensure students' engagement in learning when just heavily relying on online (Lee 2018, Yang *et al.*, 2018). That points to a gap between accepted theoretical ideas of effective online learning and actual pedagogical practices in most of higher-education institutions that are trying to provide online/blended courses.

Blended learning:

Blended learning is an environment where teaching and learning are mainly conducted online but the interaction and activities are conducted in classrooms. It can provide us the most required solution of our looming problems. Blended learning utilizes a hybrid infrastructure that combines Open Educational Practices and real-time learning spaces, both online and offline.

Blended learning is a combination of offline and online instruction where students not only interact with the instructor but also with the material. Interaction among students is enabled through both physical classroom and an online platform. This semi-presential education is a type of fusion between traditional education and modern methodology that uses technology. It is important to highlight its hybrid concept. It is a methodology that adequately aggregates teaching by technological means, without replacing, but integrating with the traditional format. The key of bringing this concept to reality is Flipped learning. Among many blended learning models flipped learning is the most convenient.

Blending online and offline teaching (<https://blog.coursify.me>) gives us the opportunity to take advantage of both methodologies, among which the following are prominent:

- Better time flexibility;
- Reduces the need for movement;
- Decreases costs;
- Promotes integration among participants, with a consequent exchange of experiences;
- Facilitates student assessment;
- Enables field work and visits to places of interest;
- Better learning results through the use of more diverse means of information.

Flipped learning: Evolution in education

Flipped learning is a teaching methodology that makes the education student-centric. Student leads his own learning, promoting an active, investigative and collaborative learning. In this model, the concept is introduced through pre-recorded video lecturers or with the help of some other technology and students then comes to the classroom prepared to debate and discuss his doubts, contribute with ideas and thus plays an active role in the classroom, being a transmitter of knowledge, not just a receiver. Students have been advocating that their position be as a protagonist of the class rather than follower to make learning more autonomous. We don't have to end school but rather to change it. Many debates have been made around the advantages and disadvantages of this method, and whether it is better or not than classroom teaching.

It should always be remembered that not all students learn in the same way, some are more visual and auditory, while others are more practical, needing to interact and perform activities to be able to assimilate the content.

In a flipped classroom (Mehrotra *et al.*, 2021), 'content delivery' may take a variety of forms such as video lessons prepared by the teacher or third parties can be used to deliver content. Other tools available to introduce a topic may involve digital research and text readings. Although the length of video or the content are advised to be kept short and specific to keep students focused and encourage self-learning, as long texts and videos may result in a student losing interest to go through the material at all. In a flipped classroom, students join class with basic understanding of concepts and doubts which are then answered through a variety of activities such as group discussions, problem solving, text document analysis, debate, peer-reviewing, project-based knowledge, in-depth laboratory experiments, etc.

Advantages of flipped classroom

- encourages student-centric learning and collaboration to provide control to students
- Resources are easily accessible making it convenient for parents also to keep track of students learning

Salient features of blended learning environment:

Many studies have been conducted on blended learning environment and teachers and students mentioned several crucial elements for successful blending of online and offline tools. Some of the items discussed included the classroom infrastructure—including interactive boards, internet and cameras. Based on the studies conducted, it is evident that the overall infrastructure is vital to both teachers and students. Sufficient infrastructure support can facilitate communication for offline and online students at the same time, nurturing collaborative learning

tasks and discussions, and previewing and reviewing the learning materials. Some of the key features of a blended learning environment (Huang *et al.*, 2021) are as follows:

- For successful blended learning, both students and teachers require ICT skills, which is the capability of utilizing technological devices to conduct teaching and learning activities.
- Both teachers and students need to “utilize digital resources”.
- Pedagogical skills are required to design class activities that balances online and offline interaction between students. Teacher acquisition of the skills needed to operate ICT and design pedagogical content is a major priority in this new learning space.
- In order to build a modality that facilitates learning and teaching, technologies that complement the space design should be taken into consideration as well. Technology for ensuring health safety, supporting connectivity, offering flexibility and facilitating communication are few of them.
- For both students and teachers, communication technologies are pivotal in teaching and learning.
- Openness and flexibility are two of the most recognized features of blended learning. Students can revisit the recorded lectures online, under an open license, to learn again at their own pace. The students can also contribute to the teaching materials that are stored on the cloud.

Opening of new dimensions due to blending:

The pandemic has not only presented us with challenges but has added a new dimension to class room education. With reopening of schools and imminent concern of Covid waves, it has become vitally important to transform traditional classroom teaching and make online teaching tools a regular part of teaching to withstand any future shocks to the system.

The National Education Policy NEP, National Digital Education Architecture NDEAR, National Initiative for Proficiency in reading with understanding and Numeracy, NIPUN Bharat are expected to bring a new era to education system in India[1].

Conclusion - challenges presenting opportunities:

Pandemic has not only presented us with challenges but also presented us with opportunity to bring a new dimension to education. Before pandemic, use of online teaching learning tools in classrooms was in debate but pandemic forced us to use it and a lot of academicians have found it very useful and want to keep online tools as part of regular classroom teaching. Although online tools cannot replace classroom teaching due to its holistic effect on students' personality and psychology but it has now become an important part of classroom teaching as well.

During pandemic, education has witnessed major challenges and changes and has emerged in a blended form where educator has a vast variety of resources available online for various teaching activities. Students are not dependent on classrooms for basic teaching anymore but role of classrooms has evolved and have become yet more important as a place to provide holistic development to the students. We need to redesign our classrooms in such a way that it provides an interactive, stress-free environment to the students which also caters the emotional need of students and provide them mental support.

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RISE OF MAKE IN INDIA - POST COVID-19

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Abstract:

Make in India is a global campaign coined by the Prime Minister of India, Narendra Modi to attract organizations from around the world to make investment and manufacture in India. The mission has been concentrated to fulfil the purpose of Job Creation, Enforcement to Secondary and Tertiary area, Boosting public economy, making India Atmanirbhar, and to give the Indian economy worldwide acknowledgment. This article shows how Make in India initiative will have an effect on an underpenetrated Indian medtech area. Close by will be talked about Covid-19 epidemic that has sparked a rush of innovation in the electronic manufacturing sector, which bodes well for businesses such as smart gadgets, consumer electronics, healthcare, and information technology services, among others along with couple of concerns which may emerge during effective execution of this activity and their plausible arrangements.

Keywords: Make in India, Medical gadget, Clinical gadget

Introduction:

The Indian medical care industry has been developing at twofold digit rates and has developed fundamentally somewhat recently. Notwithstanding, various provokes need to be tended to in giving admittance to quality, moderate medical care in the country. The Indian medical services framework proceeds to be affected by parts of accessibility, moderateness what's more, nature of wellbeing administrations. Given these, India slacks behind midpoints of BRIC Countries. A critical area of worry for India is the extent of non-transferable sicknesses which is relied upon to rise in the following decade (Dang and Sharma, 2019) .

The medical care expenditure in India was 3.9% of GDP, contrasted with 8.9% for Brazil, 6.2% for Russia and 5.2% for China. Cash based use is just about as high as 61%, with just 25% of the populace being covered by medical coverage (WHO Health Statistics).

While the public authority and worth chain members have attempted a few stages to address the issues of medical care access, quality and moderateness, these have been executed in storehouses. In particular, while clinical gadget organizations have zeroed in to a great extent on

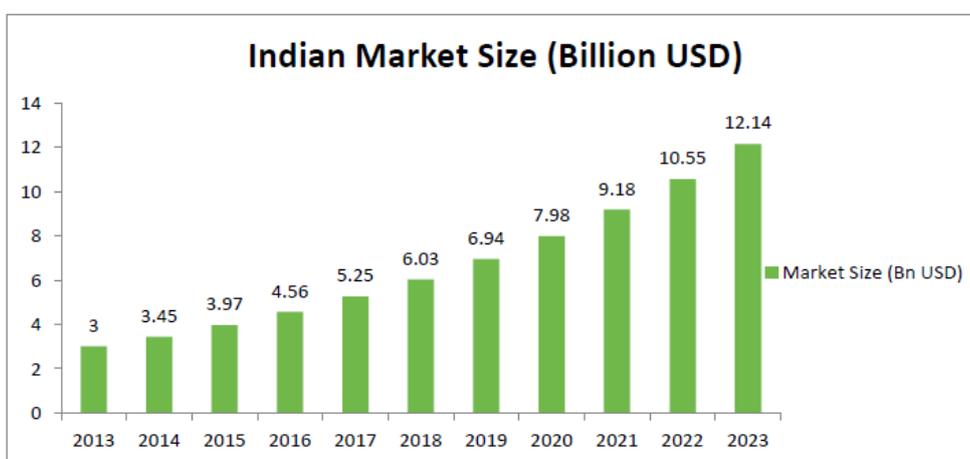
broadening future and improving nature of care, there is a need to expand moderateness for a far reaching sway. The test hence for organizations in India is to produce clinical gadgets that are both expense cutthroat furthermore, powerful to build infiltration and use. It is in this setting that the Make in India initiative becomes critical for the clinical gadgets industry. Medical gadgets assume a part not just in screening, diagnosing and treating patients yet in addition in reestablishing patients to ordinary lives and in consistently checking wellbeing markers to forestall sicknesses (Indian Brand Equity Foundation (IBEF) report). With mechanical progressions, the part of clinical gadgets is presently extending to improve nature of care across each phase of the medical services continuum:

- **Screening and finding:** Both precision and intricacy of screening and finding are expanding. Place of-care/compact analytic gadgets give care at home coming about in improved results, patient fulfillment and, expanded admittance to mind in under-entered and far off areas, while working with treatment outside wellbeing offices
- **Treatment/Care:** Latest medical equipments aren't just empowering specialists treat exceptionally complex cases and likewise diminishing length of emergency clinic stays.
- **Restoration:** Emergency clinics and physiotherapy-rehabilitative focuses are presently empowering patients to reestablish their wellbeing quicker what's more, recover to ordinary profitable lives through the utilization of cutting edge assistive and rehabilitative gadgets
- **Monitoring:** Wellbeing screening gadgets are empowering patients to take charge of their wellbeing at home and routinely screen wellbeing pointers. Further, gadgets are being utilized to screen patients distantly for early determination accordingly limiting emergency clinic visits and diminishing tension on the nation's over-troubled clinical assets. Clinical innovation contributes altogether to medical services conveyance costs. An expected 30-40% of capital expenses of setting up a tertiary consideration emergency clinic is inferable from clinical innovation. Furthermore, contingent upon the emergency clinic type, cost of clinical gadgets what's more, diagnostics contribute around 20%-25% to the expense of clinical benefits

Make in India and medical gadget industry:

The Prime Minister of India as of late declared 'Make in India' initiative that permits 100% FDI in the clinical gadgets industry. The mission was dispatched all together fortify the Indian clinical gadgets producing area (Indian Brand Equity Foundation (IBEF) report). The Indian government through this activity will give 100% FDI to Greenfield tasks (setting up new assembling office) under programmed course and 100% FDI for Brownfield activities (acquisitions) by means of the Foreign Investment Promotion Board (FIPB). For the Medtech

organizations, the activity imply that they would at this point don't have to go through the drawn-out cycle of FIPB for mixture of assets in this area for setting up another plant. The mission is relied upon to draw in worldwide organizations to set up assembling base in India which will thusly develop the parts environment and improve the fabricating capacities. Because of the PM's declaration for Make in India, the effect of this mission was so immediate and quick that portions of Opto circuits (India) rose to almost 16% while Siemens India rose by 2.2%. Internationally Medical gadget industry is fixed at 330 Billion USD (2013) which is developing at a CAGR of 6%P.A while Indian market is presently roughly 4 Billion USD and liable to arrive at 12 Billion USD by 2023 gave it gets sufficient support from the public authority and more prominent lucidity regarding arrangements and guidelines.



Source: Indian Brand Equity Foundation (IBEF) report

As indicated by late reports, worldwide medical services spending as a level of GDP is 10.3% in 2013 (unaltered in 2014) while for India it is 5% which is half of worldwide spending. Regardless of whether it is medical care protection which is simply 25% inclusion of the populace or specialist thickness which is 0.7 for 1000 patients, medical services area is generally underpenetrated.

Category	Total market in Cr.	Import %age
Disposable	10,000	45
Consumable	5250	40
Surgical Instruments	400	50
Medical electronics	10,000	90
Hospital Equipment	2500	85
Implants	1250	85
Diagnostic	600	70

Source: Times of India

Source: Indian Brand Equity Foundation (IBEF) report

This table shows how Indian market is equipped for assembling less innovation situated consumables or careful instruments while for clinical gadgets or inserts India still vigorously subject to imports. As demonstrated in the table these import reliance is fundamentally our chances which Indian makers can take advantage of. India has gotten 693 Million USD of FDI in medtech area from 2000 to 2014, which is less when contrasted with Pharma area. So to expand this number, government needs to present a few approaches and scale up our homegrown capacities for better execution of Make In India activity (Indian Medical Devices Industry Report August, 2021).

The activity of Make In India is a since a long time ago idea choice which is yet not full confirmation from execution perspective. There are not many worries to investigate which this article will feature.

Concerns:

- The FDI conveys with it the danger of allowing worldwide organizations to consume the area in the end finishing all freedoms to create native innovation. This result isn't in direct struggle with PM's 'Make in India' initiative of advancing homegrown assembling yet some result repercussion may happen like native brand weakening and decrement in native innovation advancement.
- We realize that Make In India is focused to help the homegrown makers, however the mark of dread is do they truly have quality principles or limit. India's MSME area adds to almost 8% of GDP and 45% of fabricated yield while there are not really 50 maker with 50 Crore turnover in Indian Medtech Industry. So in request to snatch open doors in coming future more MSMEs with quality norms must be set up.
- Difficulty in executing make In India Initiative is altered import obligations. Import obligations on completed products are lesser than on segments. This urges producer to import more completed merchandise and less motivating force to create furthermore, make the items. Indeed numerous homegrown players have diverted into merchants from constructing agent because of the equivalent.

Possible solutions:

The issue of Indian organizations being gained can be tackled by setting up a board or an affiliation who's board will comprise delegates from Indian Medtech area. This board will investigate acquisitions intently all together to guarantee that whether the acquisitions are

agreeable to Indian organization and Indian economy or it is simply to clear out the rivalry. Adding to that,, portion of assets and their sensible execution by the public authority holds the key for victory. This is significant for homegrown players to fill in India, in any case acquisitions are continuous by large players. From 2008-14 there has been 16 acquisitions by unfamiliar parts in India and a portion of the prominent ones are Smith and nephew securing of Adler Mediequip and Hospira's obtaining of Orchid compound and Pharmaceuticals. To tackle the issue of value principles neighborhood players need to increase their plants and for this administration help furthermore, direction can prove to be useful as a device to set up the country MII prepared. For instance to get ISO 13485, they need to benchmark there assembling rehearses, get review certificates which requires reserve inflow as well as specialized support that as of now needs the nation's biological system. This affirmation validates the producer's capacity, furthermore, cost completely can't be managed by neighborhood players. Presently once they are equipped for making quality items, all hardware which nearby players were reluctant of bringing in as a result of higher imports would now be able to be sourced from India.

Likewise for this situation arrangements like particular approaches for obtainment can be small bunch as there would be no explanation of getting completed merchandise from China or Taiwan, as quality items can be made in India. For instance China has a acquirement particular strategy in which they lean toward their MSME area for the acquisition.

Furthermore, to tackle issue of reversed obligations govt. needs to make genuine strides to diminish the assessment of segments utilized in clinical gadgets when contrasted with completed products. Presently the obligation on completed products is 0-5% of fundamental obligation with nil exceptional extra obligation (SAD) while 10% of fundamental obligation with 4% SAD on segments. Along these lines, Government needs to consider an self-assured methodology. Presently what's the significance here?? Notwithstanding being the diabetes capital of the world, India does not have the capacity to fabricate Glucose meters. India imports almost 95% of glucose meters from organizations like J&J, Bayer, Roche furthermore, Abbott. Presently to amass this item we need terminals, hardware, and programming, metal and so on These all will have their individual import obligations which will thus expand the cost. While, these items can be imported as a wrapped up great at a much lower cost.

These activities will energize homegrown makers and homegrown assembling of Global players to open their offices. By and by India has the ability of making expendable, careful hardware and consumable(50-60% of deals by Indian Cos.) however with increasing of assembling plant and having aggregate import obligation approach India can consider itself to be a high final results (as of now 10-15% of deals by Indian Cos.) maker in coming years.

Conclusion:

FDI in clinical gadgets won't simply build the inventory yet additionally urge advancements to meet homegrown conditions. This is additionally expected to drastically upgrade the general nature of conveyance of medical care administrations. Expanded FDI will additionally upgrade the complete capital stream in the medical services area, making it a reasonable area and further draw in speculations. Maybe the best result of this mission is that India would now be able to zero in on and have some expertise in the plan, advancement and assembling of cutting edge clinical gadgets without relying upon imports. The public authority of

India now needs to set rules and laws to guarantee that a chance to develop isn't lost. This is without a doubt, history really taking shape, in any event for the Indian medical care industry.

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CRISIS MANAGEMENT AND PREPAREDNESS DURING COVID-19

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Abstract:

During the Covid-19 pandemic situation, it was a tough time to take the decision for the financial institutions on their operational activities. The information on daily changes of financial policies helped the financial institutions and market to respond quickly and according to the situations. The financial stability board worked closely in order to cope up the bad situations encountered during the time of pandemic and to support the global financial systems. Keeping this view in mind, the researchers try to analyse the implications of crisis management and preparedness on financial institutions and market during the Covid-19 pandemic.

Keywords: Crisis Management, Preparedness, Covid-19, Financial institutions

Introduction:

The policies and regulations were implemented during the covid-19 was without having any standard set. The financial system is entirely interconnected as a whole and pandemic experienced the importance of timely crisis management and its impact on the market reactions and regulations and policies. The sudden decision with respect to system development was very much useful and adequate. The time to time analysing the data and analytical tools were helped the financial systems to upgrade themselves and to react on the global system. The crisis management played a very important role to manage the financial system effectively and efficiently on the pandemic time.

The authority's effective and efficient cooperation and communicating the information to the colleagues of official sector

The timely and effective sharing of information and collaboration within the authorities were facilitated because of establishment of cross-border arrangements. The mechanisms like crisis management groups and administrative colleges for worldwide systematically important

banks. The physical meetings and trust establishment of these different groups have already been existed. This establishment helped during the period of pandemic and there was a boundary for travelling and meeting in person. As they had previously established the strong trust relationship, the authorities were in position to pass the different materials through different means of digital and emails. As there was an enhancement of Multilateral Memorandum of understanding and meeting and assistance, securities regulators could custom IOSCO.

In order to enhance the information sharing there were ample of further opportunities. During the pandemic situation the coordination became more challenging as the different authorities were relying on physical documentation. The several measures have been introduced by the authorities to share the information within the counterparts. To share the information across the border, there were enduring safety concerns. The collaboration and sharing the information functioned really good to manage administrative colleges and Crisis Management Groups for important banks. To share the information and access the information, there is always a further improvised timelines and scope.

The authorities have learnt each other as authorities were sharing the information on developments and policy responses by the Financial Security Board and State Security Board. The different development policies were taken by the IOSCO, FSB, BCBS and IAIS and the members of these authorities were given the responsibilities to manage the crisis in order to share the information within the memberships. The different authorities have helped tremendously to manage with the international level on monitoring the efficiency and effectiveness of measures of policies and also to determine the factors when and how to extend the different measures which were taken previously.

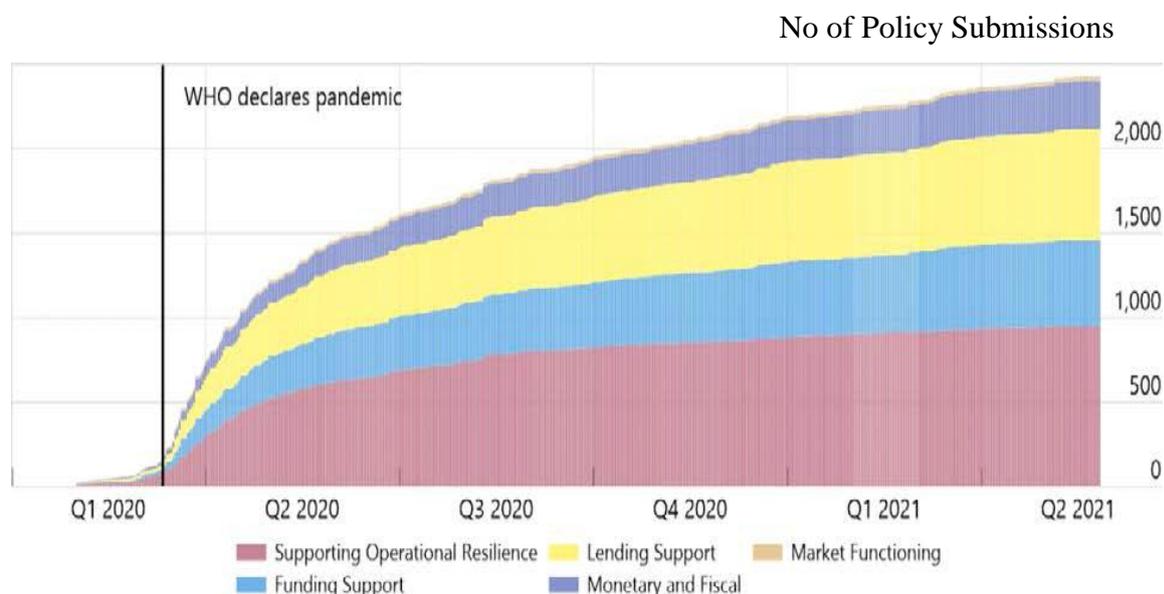
The support which was received from the Financial Security board for the coordination of Global policy has been responsive. The daily information sharing with relate to financial policies and regulations on financial systems helped prominently to take the immediate actions on Covid-19 by the authorities. To keep market open and operative and to increase the financial stability, the FSB members have worked hard. About the policy formation and collaborations the authorities like Financial Security Board, State Security Board and international organizations worked together and also the members of Financial Security Board joined together to face the difficulties and in formation of different policies during Covid-19. The Financial Security Board has given utmost importance in the policy formation and extension or amendment as there was continuous pandemic worldwide.

The lessons for financial institutions and authorities with respect to crisis management and Supervision

The adequate administrative force is possible only when the authorities are flexible and able to adapt a supervisory priority. It was a more challenging to the financial institutions to observe certain regulatory frameworks as pandemic made remote environment of working which made financial institutions to relax the regulatory frameworks temporarily.

The short term and long term attentions results from the effective adoptions of regulatory and supervisory policies. As there was changing surroundings, growing wealth risks and changing duties and assessments, the supervisors and authorities have to be flexible enough to adjust the response. To manage the stress and resolution, the situation made to have continuous efforts on liquidity arrangements.

New measures on supervision and crisis management



Conclusion:

The effective crisis management is fully depending on the information which is unswerving and available timely in a speedily evolving atmosphere. In order to monitor the effective regulatory frameworks, the different authorities should be able to collect the data from time to time and incorporate the changes needed during pandemic. The market intelligence plays a very important role to obtain the information with regard to the effects of policy measures in a suitable means. The sudden change in the pandemic surroundings emphasized there is a requirement of data availability from time to time for authorities to evaluate the implications to the economic developments for the financial system and also for the coordination among the

system. Though there was a lock down during the Covid-19 initially all the operations with perspective of financial market and institutions were forced to suspend and once pandemic stabilized as there was a consistent policy measures were taken by the Financial Security Board.

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CORONA IS FATAL FOR HUMANS BUT A BOON-BENEFITS FOR NATURE: NARRATIVE REVIEW

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Abstract:

The current pandemic COVID-19, known as the twenty-first century's most pandemic disease, This COVID-19 has not only killed hundreds of thousands of people but also has adversely damaged the economic progress throughout the world and humanity as a whole. At the same time, there is such a world that is blooming and considering itself to be free. That world is not anywhere else but on this earth, in which apart from only one species of humans, millions of species of animals and plants are experiencing freedom. It seems that the nature of the earth is getting liberated by being imprisoned in the homes of humans. The objective of this study is to describe the impact of coronavirus on humans as well as nature. For this, the published reports and research papers available through electronic medium have been studied. The transparency of the Nainital lake has increased three times and the people of Jalandhar have started seeing the snowy hills of Dhauladhar, about 213 km away, for the first time. According to a different report, during the period of lockdown, air pollution in the world has reached the lowest aerosol level in the last 20 years, as well as emissions of greenhouse gases.

Keywords: Coronavirus; Covid-19; Covid crises; Environment; Pollution; Lockdown

Introduction:

The world has changed completely in the last two years and millions of people lost their lives. Millions of people are lying ill (Bozack *et al.*, 2022). A new coronavirus has wreaked havoc on all of them. And, the living conditions of those who have survived the outbreak of this virus have also changed completely. This virus first appeared in December 2019 in Wuhan city of China. Since then everything has turned upside down in the world (Xiong *et al.*, 2020).

It started from Wuhan itself, where the entire city was locked down. Such a large number of people died of the virus in Italy that for the first time since the Second World War, strict restrictions had to be imposed on the movement of people (Rawat *et al.*, 2021). Pubs, bars, and theaters are closed in the UK capital London. People are locked in their homes. Flights have been canceled around the world and many relationships have become victims of social distancing. All

these steps have been taken so that the new coronavirus infection can be prevented from spreading and the series of deaths due to this can be stopped (Palem *et al.*, 2020).

Similar pictures are being seen in all other cities of the world as well. There is no doubt that the new coronavirus has come as a time for the world (Daly and Black, 2020). With this little virus, thousands of people have become their morsels (Kumar and Gautam, 2022). The condition of a superpower like America has worsened. During these challenges, one thing is 100% true this lockdown of the world has proved to be very favorable for nature. The atmosphere has been washed away and cleared. However, all these measures are to prevent the spread of coronavirus infection (Van and Jaarsveld, 2020)

Some researchers reported that this epidemic should not be seen as a change in the environment. Everything is closed now, so carbon emissions have stopped. But when the world starts running again, will these carbon emissions not increase again? The changes we are seeing in the environment today will be permanent forever. Today we have progressed a lot in terms of medical science as well (Kumar and Gautam, 2021). Therefore, the hope is that there will not be as many deaths due to the new coronavirus as there have been epidemics in previous centuries. That is why not much change in the environment is possible. This change will be only similar to what was seen during the recession of 2008-9 (Ali and Islam, 2020). Due to the closure of factories, there was a reduction in carbon emissions even at that time. The factories, labor, and construction sectors account for 18.4 percent of carbon emissions. During the recession of 2008-9, these emissions were 1.3 percent, which increased rapidly after the situation improved in 2010 (Agnihotri, 2022).

Methods:

The above title has been discussed by studied of various reports and research papers published in the lockdown. Research papers and reports available only electronically were studied in January 2022. The illustrative thought narrative review method was attempted to summarize or synthesize data that has been written on the topic. In the study, the impact of the lockdown on the environment, especially the status of greenhouse gas emissions, was assessed.

Result and Discussion:

If this happens then the current environmental conditions can last for a long time with little change. According to Chadi *et al.*, (2022), the purpose of life is to come to the office every day and work diligently. These days he would not like to sit in the house at all. They must be looking at this lockdown like a prison. Maybe they are just planning that as soon as the lockdown

is removed, they will go out for a walk again. Will go on a long drive. If this happens, then very soon the poison will start dissolving in the air of the world (Alexander *et al.*, 2022).

Huge reduction in pollution:

A result of these restrictions has also come out, which no one expected. If you leave the capital Delhi for the neighboring city of Noida, then the whole scene seems to have changed. In the morning, sleep is often not awakened by the alarm, but by the noise of birds (Kumar & Gautam, 2022) whose voice we had also forgotten. According to a NASA report, during this period of lockdown, air pollution in North India has reached the lowest aerosol level in the last 20 years, increasing visibility from the sky (Misra *et al.*, 2021).

All the factories are closed due to the lockdown. All modes of transport are closed. The economy is facing a huge blow at the international level. Millions of people have become unemployed. The stock market has come down completely (Albayati *et al.*, 2021). But the good thing is that carbon emissions have stopped. Talking about the New York City of America, this year the pollution has reduced by 50 percent compared to last year.

Just as saving lives remains the priority of the people at present, in the same way, it is necessary to make people concerned about the environment. Take it as a mission, like environmental activist Greta Thunberg (Amnuaylojaroen and Parasin, 2021). Greta is taking forward her mission from the digital platform even in this difficult time. The COP26 meeting on the environment is going to be held in Glasgow, Scotland in November this year. In which 30 thousand delegates from all over the world will participate.

To save the environment, people have to change their habits. If they do not change themselves, they will have to be forcibly changed, as happened in the city of Kyoto, Japan. In 2001, motorized roads were closed here and people were forced to use public transport (Travaglio *et al.*, 2021). Gradually it became a habit of the people. Even when the roads opened again, most of the people were using public transport only. But for this, governments will have to improve the condition of public transport.

Record drop in greenhouse gas emissions:

Earth's greenhouse gases trap heat in the atmosphere and warm the planet. The main gases responsible for the greenhouse effect **include carbon dioxide, methane, nitrous oxide, water vapor** (which all occur naturally), and fluorinated gases (which are synthetic).

It has been told in research that the main reason for this was the closure of transport. It is the biggest source of climate pollution in the country. The study was conducted by researchers from the University of East Anglia, University Exeter, and the Global Carbon Project. The study has been published in the journal Earth System Science Data.

According to this, in December 2020, global emissions due to road transport were 10 percent lower than last year and aviation pollution 40% less. Emissions in the US were down 12% and the EU27 recorded an 11 percent drop. However, restrictions were already lifted in China. Due to this, emissions continued to increase here and were reduced by only 1.7.% (Comunian *et al.*, 2021)

Reduction in carbon emissions:

Similarly, in China, there has been a reduction of 25 percent in carbon emissions. In China's 6 big powerhouses, the use of coal has decreased by 40 percent since the last months of 2019. Compared to the same day last year, the air quality of 337 cities in China improved by 11.4 percent (Valk and Veen, 2021). These figures have been released by the Ministry of Environment of China itself. Satellite photos of Europe show that nitrogen dioxide emissions from northern Italy are decreasing. Britain and Spain have a similar story.

According to a Swedish expert and researcher, Kimberley Nichols, 23 percent of the world's total carbon emissions come from transportation. Out of these, 72 percent of carbon emissions worldwide are due to private vehicles and airplanes (Albayati *et al.*, 2021). Right now people are locked in their homes also doing office work from home. You can give time to family and friends. Nicholas says that in this difficult time, people may understand its importance and avoid leaving the house unnecessarily.

This is not the first time that the level of carbon dioxide has decreased due to an epidemic. There are many examples of this in history. Even before the Industrial Revolution, this change was seen. Julia Pongratz, an expert in Germany, says that the Black Death occurred in Europe in the fourteenth century, or smallpox spread in South America (Moreno *et al.*, 2021).

After all the epidemics, the level of carbon dioxide in the atmosphere was recorded as low. At that time the means of transport were also very limited. And when many people died due to epidemics, farming land also became vacant and some wild plants and grasses produced quality carbon (Agnihotri *et al.*, 2020).

German researcher, Julia Pongratz says that if the coronavirus epidemic continues till the end of this year, then obviously due to lack of money, demand will decrease and its effect will be on carbon emissions (Kumar *et al.*, 2020). At the same time, another researcher from the Norwegian capital Oslo says that even if the economic situation improves in 2020, there will be a 0.3 percent reduction in carbon emissions provided that the production companies use clean fuel.

Nitrogen oxides:

Nitrogen oxides (NO_x) in the presence of sunlight can react with other atmospheric compounds to create ozone, a danger to human, animal, and plant health. That's by no means

their only reaction, however (Zhang *et al.*, 2022). “NO_x chemistry is this incredibly complicated ball of yarn, where you tug on one part and five other parts change,” said Laughner.

As reported earlier, COVID-related drops in NO_x quickly led to a global reduction in ozone. The new study used satellite measurements of a variety of pollutants to uncover a less-positive effect of limiting NO_x. That pollutant reacts to form a short-lived molecule called the hydroxyl radical, which plays an important role in breaking down long-lived gases in the atmosphere (Agnihotri, 2020). By reducing NO_x emissions – as beneficial as that was in cleaning up air pollution – the pandemic also limited the atmosphere's ability to cleanse itself of another important greenhouse gas: methane (Valk & Veen, 2021).

Methane:

According to the United Nations Intergovernmental Panel on Climate Change, the concentration of methane in the atmosphere has been the highest for humans in at least 8 million years. Scientists have said that by 2040 AD, the temperature of the earth will increase by 1.5 degrees Celsius and the biggest contributor to this is methane gas. Scientists say that there is a need to reduce methane emissions rapidly (Rees *et al.*, 2022). Charles Cowen, the lead author of the IPCC report, said that this methane gas is incredibly heating the Earth's atmosphere. At the same time, some scientists have said that hundreds of people have died due to heat in America and Canada this year and methane gas is responsible for this heat.

Molecule for molecule, methane is far more effective than CO₂ at trapping heat in the atmosphere (Zhang *et al.*, 2022). Estimates of how much methane emissions dropped during the pandemic are uncertain because some human causes, such as poor maintenance of oilfield infrastructure, are not well documented, but one study calculated that the reduction was 10% (Misra *et al.*, 2021; Agnihotri and Singh, 2021).

Conclusion:

The coronavirus epidemic has separated their loved ones forever. It is having a very negative effect on physical and mental health. Don't know how many have lost their jobs. It is also difficult to say when the economy will be back on track. But this epidemic made one thing clear in difficult times the whole world is ready to stand together and support each other. Then can we not express the same passion and willpower to save the environment. We hope that we will remove the darkness of this time with a clean and green environment. During the period of lockdown, air pollution in the world has reached the lowest aerosol level in the last 20 years, as well as emissions of greenhouse gases. Some researchers reported that this epidemic should not be seen as a change in the environment. Everything is closed now, so carbon emissions have stopped. But when the world starts running again, will these carbon emissions not increase again.

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This study was reviewed based so the human subject was not involved. The first author scrutinized the data while the CO-Tarner worked to improve the quality of the paper. I would like to thank Dr. Indresh Kumar who helped me find the research article. There was no contradiction between the authors.

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कोरोना काळातील २०२२ मधील पंजाब विधानसभा निवडणुकीचे तुलनात्मक अभ्यास

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कोरोनाच्यात काळात देशात कडक निर्बंध लागू असताना निवडणूक आयोगाने पाच राज्यांच्याप निवडणूका कोरोनाच्या नियमांचे पालन करून घेण्याची घोषणा केली. या पाच राज्यात उत्तर प्रदेश, पंजाब, उत्तराखंड, गोवा व मणिपूर या राज्यांचा समावेश आहे. पंजाब राज्यातील ११७ जागांसाठी निवडणूक झाली. कोरोनाच्या पहिल्या व दुसऱ्या लाटेत पंजाबमध्ये कोरोनाचा वेगाने प्रसार झाला होता. अनेकांना आपले जीव गमवावे लागले होते. देशात व पंजाबात कोरोना वाढत असताना या राज्यात निवडणूकांची तयारी सुरु झाली. निवडणूक आयोगाच्या कोरोनाविषयक नियमांचे पालन करून व आभासी पध्दतीने प्रचार कार्य येथे सुरु झाले. कोरोना नियमामुळे जमावबंदी व रॅली काढण्यावर बंदी घालण्यात आली होती. पंजाबमध्ये भाजपा, काँग्रेस, आप, अकाली दल व इतर पक्षांनी कोरोना नियम पाळून प्रचार केला. २० फेब्रुवारीला पंजाबमध्ये मतदान झाले. पंजाबसह देशात कोरोनाची तिसरी लाट ओसरू लागली होती आणि निवडणूक आयोगाने कोरोनाच्या तिसऱ्या लाटेतील कमी तीव्रता लक्षात घेऊन निवडणूकीत निर्बंध शिथिल केले. कोरोना काळात पंजाबमध्ये झालेल्या या निवडणूकीचे विश्लेषण प्रस्तुत शोधनिबंधात करण्यात आले आहे.

पंजाबसु

पंजाब विधानसभेसाठी २० फेब्रुवारी २०२२ ला ११७ जागांसाठी मतदान झाले. या निवडणुकीत विधानसभेसाठी ७२ टक्के मतदान झाले. पंजाबच्या मतदारांनी विक्रमी मतदान केले. लोकांचा उत्साह कोणाच्या बाजूने होता हे १० मार्च च्या निकालाने स्पष्ट केले. २०१७ पासून पंजाब मध्ये काँग्रेसची सत्ता होती ती २०२२ च्या निवडणुकीत पंजाबच्या जनतेने उलथून टाकली. दोन्ही राष्ट्रीय पक्षांना नाकारत आम आदमी पक्षावर विश्वास दाखवून त्यांना एक हाती बहुमत दिले आणि हेच पंजाबच्या २०२२ च्या निवडणुकीचे वैशिष्ट्य ठरले आहे. पंजाबच्या २०१७ विधानसभा निवडणुकीत व २०२२ च्या पंजाबच्या विधानसभा निवडणुकीचा तुलनात्मक अभ्यास पुढीलप्रमाणे करण्यात आला आहे.

पंजाब विधानसभा निवडणूक २०१७:

एकूण जागा – ११७ बहुमतासाठी आकडा – ५९

अ.क्र.	पक्ष	पक्षनेता	मिळालेल्या जागा	टक्केवारी	-	+
१	काँग्रेस	अमरिंदरसिंह	७७	३८.५ %		+ ३१
२	आप		२०	२३.७ %		+ २०
३	अकाली शिरोमणी दल	प्रकाशसिंह बादल	१५	२५.२ %		- ४१
४	भाजपा		०३	५.४ %		- ९

सौजन्य - विकिपीडिया

फेब्रुवारी मार्च २०२२ मध्ये उत्तर प्रदेश विधानसभेप्रमाणे पंजाब, गोवा, मणिपूर, उत्तराखंड या चार राज्यांच्या निवडणुका झाल्या. प्रस्तुत शोधनिबंधात पंजाब, या राज्यातील निवडणुकीचे २०१७ च्या निवडणुकी सोबत तुलनात्मक अभ्यास करण्यात आला आहे. या चार राज्यांपैकी पंजाब हे राज्य मोठे आहे. कारण या राज्याच्या विधानसभेचे संख्या ११७ आहे. गोवा ४०, उत्तराखंड ७०, मणिपूर ६० अशी ही संख्या आहे. प्रस्तुत शोध निबंध पंजाब राज्यातील निवडणुकीचे तुलनात्मक विश्लेषण हा अभ्यास विषयांचा शोध घेण्यासाठी प्रिंट मीडिया, इलेक्ट्रॉनिक मीडिया, वेबसाईट व सोशल मीडियाचा आधार घेऊन व काही गृहीतके मांडून हा शोधनिबंध लिहिण्यात आला आहे.

ग्रहीतके:

- १) पंजाब या राज्याच्या विधानसभा निवडणुकीचा तुलनात्मक अभ्यास करणे.
- २) २०१७ व २०२२ च्या निवडणुकीची पक्ष निहाय आकडेवारी व मतदान टक्केवारी ची मांडणी करणे.

वरील गृहीतकांची मांडणी करून शोधकर्त्यांनी शोधनिबंध पूर्ण केला आहे. या शोधनिबंधात चार राज्यातील निवडणुकीचे विश्लेषण क्रमवार पद्धतीने व तुलनात्मक पद्धतीने करण्यात आले आहे. पंजाब निवडणूक २०१७ व २०२२ च्या निवडणुकीचे तुलनात्मक अभ्यास करत असताना टेबल एक व टेबल दोन चा अभ्यास करून फरक स्पष्ट करण्यात आला आहे.

अ.क्र.	पक्ष	पक्षनेता	मिळालेल्या जागा	टक्केवारी	-	+
१	काँग्रेस		१८	२२.९८ %	-	५९
२	आप	भगवत मान	९२	४२.०१ %	+	७२
३	अकाली शिरोमणी दल	प्रकाशसिंह बादल	०३	१८.३८ %	-	१२
४	भाजपा		०२	६.६ %	-	१

सौजन्य: न्यूज १८

पंजाब निवडणूक २०१७ व २०२२ च्या निवडणुकीचे तुलनात्मक अभ्यास करत असताना टेबल १ व टेबल २ चा अभ्यास करून फरक स्पष्ट करण्यात आला आहे. २०१७ मध्ये काँग्रेसला ७७ जागा मिळाल्या होत्या व ३८.५ टक्के मते होती तर २०२२ मध्ये त्यांना १८ जागा सह २२.९८% मते मिळाली. काँग्रेसचे २०२२ च्या निवडणुकीत मोठे नुकसान झाले तर आम आदमी पक्षाला २०१७ च्या पंजाब विधानसभा निवडणुकीत २० जागा मिळाल्या होत्या तर २३.७% मते त्यांना होती तर २०२२ च्या निवडणुकीत आपला ९२ जागा ४२.०१% मते मिळाली. मतांच्या टक्केवारीत व जास्त जागा मिळवून आपले आपला प्रभाव पंजाब मध्ये दाखवला. शिरोमणी अकाली दलाला फारसा प्रभाव २०२२ च्या निवडणुकीत दाखवता आला नाही. २०१७ मध्ये अकाली दलाला १५ जागा व २५.०२% मते मिळाली होती. पण २०२२ च्या निवडणुकीत त्यांना ३ जागा व १८.३८% मते मिळाली याही पक्षाला मोठे नुकसान आपल्या प्रभावामुळे सहन करावे लागले. भाजपाला या निवडणुकीत पंजाब मध्ये चमत्कार घडवत आला नाही. भाजपाला शेतकरी आंदोलनाचा मोठा फटका बसला. २०१७ मध्ये भाजपाला पंजाब विधानसभेत तीन जागा मिळाल्या होत्या तर ५.४% मते त्यांना मिळाली होती तर २०२२ मध्ये भाजपाला दोन जागा मिळाल्या तर २०१७ च्याद निवडणुकीच्या तुलनेत त्यांना ६.६% फायदा झाला तरी एका जागेचे नुकसान झाले.

पंजाब विधानसभा निवडणूक २०१७ व २०२२ च्या निवडणुकीचे तुलनात्मक अध्ययन करत असताना कोणत्या पक्षाला फायदा झाला तर कोणाला किती नुकसान सहन करावे लागले याची आकडेवारी देऊन तुलनात्मक अभ्यास करण्यात आला आहे. २०१७ च्या तुलनेत सर्वाधिक फायदा आप पक्षाचा झाला इतर सर्व राजकीय पक्षांना खूप मोठे नुकसान सहन करावे लागले आहे. २०२२ मध्ये आपने ११७ जागांपैकी ९२ जागा व ४२.०१% मते घेऊन क्रमांक एकचा पक्ष म्हणून पंजाब ची सत्ता मिळवली आहे. काँग्रेसने २०१७ च्या निवडणुकीत ७७ जागासह ३८.५% जागा सत्तेवर होती पण या निवडणुकीत त्यांना फक्त १८ जागा मिळाल्या त्यांना ५९ जागांची ९.१५% मतांचे नुकसान झाले आहे आप व काँग्रेस यांच्यातच २०१७ व २०२२ मध्ये लढत दिसून आली. भाजपा, अकाली दल व इतर पक्षांना फारशी चमक व प्रभाव या निवडणुकीत दाखवता आला नाही.

निष्कर्ष:

२०१७ व २०२२ च्या पंजाब विधानसभा निवडणुकीचा तुलनात्मक अभ्यास प्रस्तुत शोधनिबंधात करण्यात आला आहे. प्रस्तुत शोधनिबंधाचे अभ्यास करत असताना संशोधकांच्या हाती काही निष्कर्ष आले आहेत ते पुढीलप्रमाणे.

- १) आम आदमी पक्षाचा भारताच्या राजकारणात प्रभाव वाढला आहे.
- २) भाजपाला शेतकरी आंदोलनाचा मोठा फटका बसला आहे.
- ३) काँग्रेसला अंतर्गत बंडखोरीचा व अमरिंदर सिंह यांच्या पक्ष त्यागामुळे खूप मोठे नुकसान सहन करावे लागले आहे.
- ४) अकाली दलाच्या प्रभाव पंजाब मध्ये कमी झाला आहे.
- ५) आम आदमी पक्ष सर्वसामान्यांचा पक्ष म्हणून नावारूपाला येत आहे.
- ६) काँग्रेस पक्षाचे मुख्यमंत्री व प्रदेशाध्यक्ष या निवडणुकीत पराभूत झाले आहेत.
- ७) भाजपाला या निवडणुकीत पंजाब मध्ये योग्य चेहरा देता आला नाही.
- ८) पंजाब मध्ये ध्रुवीकरण यासह इतर मुद्दे प्रभावी ठरले नाहीत.
- ९) आम आदमी पक्षाचा दिल्लीत केलेला विकास पंजाबच्या मतदारांनी मान्य केला आहे.
- १०) पंजाबचा विकास हा मुद्दा या निवडणुकीत प्रभावी ठरला आहे.
- ११) भारतीय राजकारणात राष्ट्रीय पक्ष म्हणून आम आदमी पक्ष व केजरीवाल यांचा उदय होत आहे.

संदर्भ:

- १) Wikipedia
- २) News 18
- ३) लोकसत्ता दि. ११.०३.२०२२
- ४) लोकमत दि. ११.०३.२०२२
- ५) सकाळ दि. ११.०३.२०२२

IMPACT OF COVID 19 PANDEMIC ON INDIAN ECONOMY

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Introduction:

COVID-19 is a disease caused by a new strain of Coronavirus. The first confirmed case in India was on January 30, 2020. India witnessed an explosion of COVID-19 or SARS-CoV-2 in late January 2020. Since then, there has been a consistent rise in the number of cases within the country. Corona virus outbreaks across the country are affecting India on a large scale in terms of economic activity as well as human casualties. There are some notable exceptions to domestic demand and exports which have seen high growth, adversely affecting almost all sectors.

Considering the extent of the disruption caused by the epidemic, it appears that the current recession is fundamentally different from the recession. Demand and rising unemployment are set to change the business landscape. It is a demand of time to adopt new principles such as diversion to localization; cash conservation; supply chain flexibility and innovation which will help businesses take a new path in this uncertain environment.

COVID19 has engulfed the Indian economy. The corona virus-induced lockdown has hurt the country's GDP growth, causing significant disruptions in multiple sectors. Highly automated manufacturing can save infrastructure resources and increase quality while reducing production costs. The resulting reduction in human working hours will benefit us and enable companies to continue uninterrupted in the event of another crisis.

Consumer behaviour is also drastically changing from traditional methods due to increasing confidence in technology, technical efficiency and online payment areas. This forces us to adapt to emerging developments such as work from home, video-conferencing technology, and other relevant aspects.

Impact of COVID 19 on various sectors of economy:

1. Food and Agriculture

As agriculture is the backbone of the country and a part of the government has declared it an essential category. Food and agriculture have always been in a competitive advantage due to the free movement of fruits, vegetables, milk, etc. as compared to other sectors. Many agricultural workers are unable to lift themselves out of poverty and food insecurity. During this pandemic, the continuous work of food supply chains is important to prevent food crisis and reduce the negative impact on the global economy. The policy response from government is very essential to support agribusiness and working conditions of agriculture workers.

2. Trade and Industries

Sudden closures of majority production units have damaged the supply chain and it resulted in a heavy increase in raw material prices. In some sectors, there are price increases which are gold, masks, sanitizers, smart phones, medicines, consumer durables, and so on. The aviation and automobile industries have been affected very badly. The aviation and transport industries have come to a halt due to the lack of aero plane landings and take-offs around the world, as well as prohibition on travelling.

3. Transportation Sector

In COVID 19, Government has provided several guidelines, including physical separation and the wearing of masks. Along with this, Government proposed several guidelines for transportation sector also, such as, people movement in public transportation in official and commercial complexes, including physical separation inside public transportation, transit service curtailment, and metro service halting. This norms includes the physical separation norms that limit the number of passengers per train, and other public transport. During the COVID-19 period, people's perceptions of public transportation safety varied greatly. In transportation sector, all the stakeholders employers, workers and the government become supportive at their levels.

4. Tourism and Hospitality Sector

Tourism is a main sector of jobs and growth of economy. In the COVID 19 pandemic, this industry has been suffering from a slowdown from the outbreak of this virus. Not only the hotels and restaurants but also the tourism industry are affecting due to this pandemic. In the next one or two years, social distancing protocol, constraints, and people's anxiety will leave this sector untouched. There is precarious impact of COVID 19 on tourism enterprises and workers. For overcoming this situation timely, large-scale and coordinated policy efforts are required at international and national levels.

5. Electronics and Automobile

Due to COVID 19, the electronics and automobile sector has been facing great difficulties and this sector is under a great deal of stress. Some major obstacles are factory closures, supply chain disruption, and a collapse in demand. India depends on foreign countries for raw material. India imports 70-80 % of intermediate goods from China (Wuhan), with the automotive sector accounting for 40-50 % of the total. India imports electronic component parts from all over the world. Due to this pandemic, there is a lack of raw material, so production would be more expensive. Small and medium companies are affected by job losses of the workers working in this sector.

6. Stock Market

Due to the outbreak of pandemic, the stock market has taken a dive. In less than a month, the Sensex has plunged nearly 8,000 points. Investors in the stock market had lost their Rs. 33 lakh crore in the month of March, 2020. This could be the beginning of a recession in the Indian market. Investment in such a collapsed market is a wise decision for the new entrants in stock market. Some good sectors for investment in stock market are the pharmaceuticals, healthcare and fast-moving consumer goods market.

7. Health Sector

The COVID-19 crisis had affected adversely on health sector. It has created many challenges in all over the world like challenges of recruiting, deploying, retaining and protecting adequately trained, supportive and motivated health workers. It focuses on the need for sustainable investment in the healthcare system. There is a high time to give facilities and support to health workers and provide strong work conditions, training and equipment, personal protective equipment and occupational safety. Social interaction is essential to building a protective health system, and therefore both have an important role to play in responding to crises and shaping the future created for health emergencies.

8. Education Sector

Due to outbreak of COVID 19, all teaching fraternity has turned towards online teaching compulsorily as all the educational institutions like schools and colleges have closed. Many teachers and their organizations in India have accepted these challenges and overcome it successfully though there are various difficulties in online teaching. Government has framed the policies for schools and colleges for handling this situation successfully.

9. Construction Sector

Covid-19 pandemic has affected the construction sector which is sensitive to the economic sector. Construction has the potential to stimulate recovery of economy by creating jobs in economy. Construction sector helps for transforming the territories towards sustainability and digitization. There is requirement cooperation and social dialogue with international labour standards to promote human-centered recovery of the construction sector from this pandemic.

10. Textile, Clothing, Leather and Footwear Industries

The global supply chain of the textile, clothing, leather and footwear industries are jammed because these industries are closed and workers are staying at home. The cancellation of the order has affected thousands of companies and millions of workers. There is an urgent need of supportive action for improving the supply chains of industries. The ILO is committed to safeguarding the health and economic interests of workers and subsidiaries in the textile, textile, leather and footwear industries.

Opportunities for Indian economy:

The pandemic has been worsening the situation across the country. The foreign companies working in China are thinking to move out of China as various nations have blamed China for the COVID 19. Japanese companies operating in China have been ordered by the Japanese government to cancel operations in China. Most of the other companies like Apple are also planning to close their ventures from China.

So, this is a great opportunity for India. India can attract those companies to come and start their business ventures in India which will be beneficial for India as the companies will bring investment, jobs as well as technology transfer. The country was in an economic downturn, and the epidemic could get worse. If India uses this opportunity, it will help end the recession. India will come out from these crises within short period.

Challenges:

There are multiple remedies that the government can do from overcoming this disaster for the people and the country with the economic and health crisis. Government should make payments to farmerson priority basis which will help them in performing operations in rural areas. For the improvements in the agriculture sector, Government must allow e-commerce to work with high precautions.

The government could also set alternate days for trade and use a debt restructuring plans that the government should launch to get the loan extended during this critical period. There is the need of urgent measures for empowering the micro, small and medium enterprises.

The investment and self-reliance schemes launched by the government should re-strengthen the capital base of the companies, which will only promote the products manufactured in India and facilitate the dissemination of money for our country.

The idea of sustainable development can be considered for long-term gains and also for the most vulnerable sections of the society on the daily wage of those who have lost their jobs. Better facilities will give them a better life and an economy that reflects crisis situations.

Therefore, long-term decisions have been made by the government due to the budget allocated for health emergencies that have caused substantial damage and loss to the economy. A strong society must be built for a strong economy in the future.

Conclusion:

COVID 19 pandemic created slowdown in economy. This slowdown in domestic demand and job losses resulted in a decline in domestic and international trade. This research paper focuses on impact of the outbreak of pandemic Covid-19 on Indian Economy. Covid-19 makes adverse impact on many sectors of Indian Economy. This paper depicts the impact of Covid-19 on different sectors of Indian Economy. This paper also furnishes the policy framework of government in this regard.

COVID 19 pandemic created a worldwide crisis. This closed trade between economic development and people's lives. It has been changing the various sectors of economy; the priorities of each country are changing. Citizens of the country changed their usage, savings and investment preferences. This change affects the structure of the Indian economy.

There is need to strong long term planning for the development of economy and the substance of human society. Fear of a new recession and economic collapse requires flexible and strong leadership in health, business, government and society at large. Aid measures need to be implemented immediately and adjustments need to be made immediately so that they can be disrupted. Medium and long term planning is needed to figure out how to balance the economy and regain energy after this crisis.

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GLOBAL REVIEW ON COVID: A PANDEMIC

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Abstract:

Corona virus causes respiratory illnesses in people such as colds, pneumonia, sneezing, and coughing, as well as upper respiratory diseases and diarrhea. Corona virus can be spread between person to person or through animal to animal via air borne droplets. It penetrates human cells from the ACE-2 exopeptidase membrane receptors. Corona virus came in December 2019 from the Wuhan market in China for the first time. A new public health hazard poses a global threat of dissemination and emergence. There were roughly 96, 0000 recorded cases of COVID-19 and about 33000 documented deaths were also recorded. The disease is spread through inhalation or contact with filthy droplets, with a 2 to the 14-day incubation period. Fever, cough, sore throat, dyspnea, weariness, and malaise are among the most common symptoms. In most people, the conditions are moderate it can progress to Pneumonia, Acute Respiratory Distress Syndrome (ARDS), and multi-organ failure in some people (typically the elderly and those with comorbidities). A large number of persons were found to be asymptomatic. The fatality rate was expected to be between 5 and 9%. The virus can be noticed in respiratory emissions using explicit molecular assays. Normal/low white cell counts and high C-reactive protein are some common test results. Even in persons with asymptomatic or moderate disease, a computed tomographic chest scan is generally uncharacteristic. The treatment is primarily supportive and the role of antiviral drugs has yet to be determined. Home isolation was assumed cases and those with mild illnesses as well as tight infection control. Recently total three waves hits all over the worlds due to mutation in viral gene called as delta strain i.e. deadly stain, the omicron strain also affected the population having less deadly effects. The worldwide significances of this new disease are still unidentified.

Keywords: Coronavirus, Health hazards, symptoms, acute respiratory distress syndrome, Middle East respiratory sickness.

Introduction:

Novel Corona viruses (CoVs) belong to an enormous family of virus that can cause illness which ranges from the mutual cold to later additional unembellished diseases like Middle

East Respiratory Syndrome Coronavirus (MERS-CoVs) and Severe Acute Respiratory Syndrome (SARS-CoVs). A recently formed Corona virus (nCoV) with a newly discovered strain that takes never been previously found in individuals.

In the past two decades, the world was hit by a host of infectious diseases whose outbreaks, such as Ebola, Influenza (H1N1), SARS, MERS, and Zika, wreaked havoc on the global economy and put a strain on local and global public health. It was only recently. COVID-19, a newly discovered Coronavirus family virus that originated in Wuhan, China, and was known to represent a serious threat to communal well-being care systems, was discovered as a result of the widespread occurrences of the novel Coronavirus 2019(SARS-CoV-2) outbreak [1]. Severe Acute Respiratory Syndrome Corona Virus-2 contamination is at present-day developing world wide community health crisis. Angiotensin-Converting Enzyme2(ACE 2) and trans membrane Protease Serine 2 (TMPRSS 2) are the two chief host factors that contribute to the virulence of SARS-CoV-2 and pathogenesis of coronavirus disease-19(COVID-19). Broadcast of SARS-CoV-2 though animal to human was considered an occasional event that unavoidably involves strong evolutionary adaptation.

Antivirals and therapy for Corona virus-related comorbidities are among the medications being researched for COVID-19's behaviour. Experimental signs of Coronavirus infection range from moderate fever, coughing, and dyspnea in the early stages of infection to severe repercussions such as Acute Respiratory Distress Syndrome, Systemic Hyper inflammation, and Septic shock [2].

Virology and immune system:

Based on the number of ill people who stayed exposed to the drizzly animal shop in Wuhan city, where aware animals are usually exchanged, it was suggested that this is the likely zoonotic source of the Corona Virus [3]. Experiments had been performed to look for a host in which the adulteration might feast on people.

Based on preliminary intelligence, two types of snakes have been identified as potential COVID-19 pools. Until now, there was no reliable indication of COVID-19 pools other than mammals and birds [4,5]. The genomic order research of COVID-19 revealed that it is 88 percent identical to SARS-like corona viruses [9], showing that mammals are the most likely link between corona virus and mankind. Numerous data have been recommended that individual-to-individual contact is a likely path for dispersion COVID-19 contamination. This is reinforced by belongings that happened among families and people who fixed not visits the wet animal market in Wuhan city [6]. Individual-to-Individual transmission occurs chiefly via straight contact or

through droplets passed by coughing from a diseased individual. In a slight training showed on women in their third trimester who were established to be diseased with the COVID-19 there was no evidence regarding the transmission via mother to foetus.

SARS-Cov-2 is a Fresh Beta corona virus that is connected to but separate from SARS-CoVs and (MERS-CoVs) [7].

SARS-CoVs-2 has been connected to bats and pangolin corona virus, and it has been speculated that those bats are the virus's natural reservoir, and that species, who are endangered and frequently transported mammals, may have functioned as an intermediary host [8].

SARS-CoV-2 was anticipated to have a lifecycle similar to that of other SARS-CoVs and corona viruses. The Angiotensin-Converting Enzyme - 2(ACE 2) receptor on host cells binds to the spear protein on the virion surface. The virus is frequently adopted by people who have endocytosis, which is assisted by Serine Protease Trans membrane Serine Proteases 2 cleaving the spear protein. A polyprotein that is cleaved by both host and viral protease interprets the viral genome. The genome is amplified by a viral RNA-dependent RNA polymerase, and virions are accumulated and unconfined. Notably, the ACE 2 receptor has its broad tissue circulation which includes lungs, superior airway and vascular endothelial cells in most tissues. [9].

The protected system is thought to be the first line of defense against pathogens, particularly CoVs, which have a known pattern on receptors such as Toll-like Receptors (TLRs), specifically TLR3, TLR4, and TLR7, and Retinoic Acid-Inducible Gene1(RIG-1)-like receptors, which induce pro-inflammatory cytokines that spread via antiviral responses. There was insufficient specific data of Corona Virus in patients with recognizable Innate System immune deficiencies from studies. Three young children under the age of two were discovered to have innate immune system deficiencies, ranging from a symptomless youngster with STAT1 gains-of-functions to a one-year-old man with Interferon Gamma Receptor 2 deficiency that required ICU [10].

Cellular problems that are required for SARS-CoV-2 entry provide indications of viral transmission. As a result, the proteases required for SARS-CoV-2 entry was chosen with care.

For SARS-CoV-2 and S protein primer coat in cells, endosome cysteine proteases Cathepsin B/L(Cat/L) and TMPRSS2 protease activity were used. TMPRSS2 priming is required for viral entrance and propagation in the afflicted host, while Cat/L activity is not required. Numerous investigations have revealed that TMPRSS2 proteolytic activity affects the proportion of SARS-CoV-2 infections, raising doubts about the remaining S protein priming seen by Cat/L.

Furin-mediated pre-cleavage at the S1/S2 site in virally sick cells, similar to MER-CoVs, is thought to allow proteases dependant on entrance into these compartments.[11]

Clinical pharmacology:

Impurity native by coronavirus SARS-CoV-2 consumes brushed the globally within a time period of few months. It had been created as an overwhelming consequence on civilization with community and financial depression [12].

Coronavirus is a single-stranded RNA virus that causes respiratory, digestive, and circulatory problems in humans and biota. Various corona viruses, such as NL63,229E, and OC43, have been modified for human consumption. In China, a variety of corona viruses have emerged from distinct bat species. The majority of these SARS-CoV families are direct SARS-CoVs. SARS-CoVs were first developed from Chinese bats, *Rhinolophus*, which were originally converted to the wild Himalayan prairie civet cat, and spread widely in humans. Through SARS-CoVs, the new beta coronavirus (SARS-CoV-2) that causes COVID-19 has 79.5 percent nucleotide uniqueness. Each period of Corona Virus presents single medical Materia medica considerations for emerging corona virus therapeutically.

The first phase of primary contamination occurs proximately alter immunizations and is considered by slight, generic indications such as fever and coughing. These stages of patients are usually preserved on a case basis with sympathetic care. Antiviral treatment strength is greatest useful during this phase to reduce the obligation on viral duplication. No precise antiviral has been accepted for Corona virus however, Remdesivir established an emergency use approval (EUA) by FDA aimed at the treatment of Corona virus in adults and kids are hospitalized with unembellished illnesses.

As virus-related load in the body rises, respiratory symptoms deteriorate and viral Pneumonia matures at stage second stage reasonable diseases severity can be recognized by an upsurge in respiratory irritation and typically consequences in hospitalization [13].

Stage 3rd is the most severe form of COVID-19& is noticeable by systemic hyper inflammation and often the promotion of inflammatory cytokines. Probable difficulty includes cytokines storm, septic shock, acute kidney injury, and multi-organ failure.

Both sepsis and septic shockwave result into a complex set of functional fluctuations that can influence on ADME of medications. Mostly repurposed tentative medications that target complications related with the plain phases of diseases, such as hyper inflammation take not previously been assessed in persistent populations that regularly are septicemia or censoriously ill.

The major step of viral infection is the binding of a receptor seen by congregation cells, which is followed by mixing with the cell membrane. It makes perfect sense that the virus's main platform is made up of pulmonary respiratory epithelium. Individual-to-Individual

communications of SARS-CoV are said to occur due to a need between the receptor-binding region of virus spikes and the cellular receptor known as the Angiotensin-Converting Enzyme 2 receptor [15]. COVID-19 spikes' receptor-binding province does have a sequence that is similar to that of SARS-CoVs [16].

Epidemiology:

Chronic infection illnesses such as a Middle East Respiratory Syndrome (MERS) recognized as Camel Outlet, TB, and Severe Acute Respiratory Syndrome Corona virus 2(SARS-CoV-2) harmfully influence human health, and person from such communicable diseases knowledge several psychological problems [17]. Although the properties of COVID-19 on expressive disorders and deteriorating psychological health consume not been extensively examined however well-being specialized predicts that COVID-19 leave enormous belongings and social care is obliging in the crisis mostly based on the immediate community response and backgrounds.

According to the WHO control panel related to the COVID-19 infection illness based on national and global well-being experts' establishment universal, there were more than 103,307 million long-established cases around extra than 2.2332 million deaths were attributed to the deadly transmissible disease. As of January 31, 2021, more than 74,938 million individuals recovered from the contamination of COVID-19 everywhere the world. The pandemic COVID-19 has exaggerated communities worldwide [18].

However elderly individuals are at superior risk of this deadly illness. As of April 21, 2020, there were 24,90,427 recognized cases with 1,74,319 deaths in the US. However, 6,27,386 persons also successfully improved from these lethal diseases universal.

This is in stark difference to the clinical performance come across in impurities with supposed “novel corona viruses”, SARS-CoVs, MERS-CoVs, besides SARS-CoV2 which are related to illness and case-fatality proportions that distant surpass the unities in CoVs.

The subsequent level chief suggests that implementing frequent original methods directly, however the added level approvals separation with inaugural transmission or loneliness of hypothetical cases and suitable diagnoses of pretentious persons:

- a) The outlining of the communication.
- b) Congregation of clinical database.
- c) Specialist care besides collections of body fluid trials from affected role and strong individuals.

The World Health Organization realized well-being presences for (2019-nCoV) Pneumonia as alike to the 2003 epidemic of deep Acute Respiratory Syndrome (A.R.S.).

The infection of novel corona virus is still distributing universally with more than 104 million long-established affected people and 2.25 million death tolls to this communicable disease among 200 countries, as of February 3, 2021[19]. The second wave of the novel corona virus is additional effective and deadly which consumes a progressive quantity of deaths globally. The COVID-19 being has flooded transversely the world and very insufficient states and territories are positive concluded precaution to avoid the program of the SARS CoV-2. Among the three top countries with positive reports of the corona virus epidemic are: - U S have 26,436,594 positive infections, India has 10,777,284 COVID-19 patients, and Brazil have 9,238,418 cases.

Diagnosis:

The emergence and spread of SARS-CoV-2 has sparked widespread concern, highlighting the need for risky, complicated, and accurate technologies to screen the infectious agent. SARS-CoV2 was tested analytically using Real-Time Measurable Polymerase Chain Reaction (RT-qPCR). There are numerous problems associated with the examination of the current SARS-CoV-2 outbreak [20]. Initially, the rapid development of cases is outpaced by the number of diagnostic tests in many nations. Secondly, it was assumed that SARS-CoV2 is exactly associated to other COVID-19. Some of the presently available nucleic acid credit assays can outcome in untrue positives.

The poor sympathy specified for RT-qPCR assays and serologic assessments, particularly in the early phases of dirtiness, is a significant uneasiness for molecular recognition. Furthermore, the most life-threatening of the available RT-qPCR tests necessitates the use of specialized release and apparatus that can only be found in analytical and/or research laboratories.

The most common COVID-19 tests taking a swab from a patient's snout and gullet and testing it for the virus's genetic fingerprint. RT-qPCR tests are what they're called. Within two weeks of the illness being predictable, the first PCR test for corona virus was established. Even though the majority of the existing treatments depend on RTPCR, there are other alternatives such as microarray or capillary knowledges, CRISPR to separate gene sections for diagnostics, serological and whole hereditary sequencing. It's worth noting that the FDA has only given Emergency Use Authorization (EUA) to roughly PCR-based tests thus far. COVID-19 Pneumonia displays a scientific picture that differs from other viral pneumonias, as previously described [21]. Any viruses that cause pneumonia must be considered in the COVID-19 differential diagnosis. Influenza, parainfluenza, adenovirus, respiratory syncytial virus, rhinovirus, human meta pneumovirus, SARS-CoVs, and other viruses fall under this category. Mycoplasma and Chlamydia are the bacteriological infectious causes of corona virus, as determined by clinical and radiographic examinations. Autoimmune illnesses with lung

involvement, such as Vasculitis, Dermatomyositis, and various pneumonias, are the etiological cause of non-infectious lung lesions with comparable symptoms.

The presence of a small amount of COVID 19 in the patient's role is the main contributor to false-negative outcomes. As a result, it is preferable to pre-concentrate the disease from a large capacity perspective, such as prior nucleic acid elimination.

Several researchers proposed a microfluidic Pre-concentration and Nucleic Amplification System (FPNAS), in which anti-H1N1, Antibody-Conjugated, Magnetic Nanoparticles pre-concentrated the H1N1 virus from a large volume of saliva and subsequently detected the virus using RT-PCR. This method boosts the LOD by ten magnitude guidelines compared to non-treated models and industrialized a hydrogel flow for the pre-concentration of virus-related units, followed by current lysis and gel-electrophoretic nucleic acid abstraction [22]

Negatively stimulated viral units drift in the direction of the terminal during the pre-concentration step and accumulate at the departure gel (the blue stroke amongst the perfect cavity and the elution compartment, when a Direct Current (DC) voltage is functional between the Anode (red) and the Cathode (black) with a Custom-made Power Supply (120 V) planned an Integrated, it is in the center of the mark.

Micro fluidic In beaker micro-channels, fictional nano porous membranes were used as a biosensor for viral concentration.

Several other ways of diagnosis:

- a) Lateral Flow Assay (LFA).
- b) Electrochemical biosensors.
- c) Chip-Based Nucleic acid Detection.
- d) Pre concentration of virus particles.
- e) Nucleic acid detection in micro fluidic systems.

Complications resulting from corona virus describe aunadorned illness that necessitates organization in an Intensive Care Unit (ICU) in about 5% of proven infections.

Communal problems comprise:

Acute Kidney Damage, Respiratory Failure, Circulatory Dysfunction, Myocardopathy
The average time between the onset of the indication and the onset of dysponea and ICU hospitalization was assessed to be 7 and 10 days, accordingly.

This indicates that most suitcases are falling steadily. Older patients (about 60 years old) appear to be the most vulnerable to serious complications. Because the risk of patient-to-patient transmission in the ICU is currently unknown, adherence to infection control precautions is critical.

The most common and deadly complication of contamination is advanced deterioration of respiratory function. Hypoxic respiratory failure affects roughly 19 percent of corona virus patients, and it can progress to acute respiratory distress syndrome (ARDS) due to the requirement of mechanical breathing delivery 10.50 times on average. According to one study, between 10% and 32% of hospitalized patients require admission to the Integrated Control Unit (ICU) due to various respiratory complications [23].

Clinical manifestation:

SARS-CoV2 infection is symptomless in 40 to 45 percent of cases. Around 80% of the outstanding affected roles with typical infection are minor, and 5% are critical. COVID-19 affects almost all of the organ functions. Infections and symptoms begin in 5 days, which is the intermediate gestation phase. Often, the patient does not show obvious signs and symptoms of an uncomplicated sickness until the second calendar week of the illness. Clinical manifestations of the associated virus are as follows:

- SARS: -SARS has a gestation period of about 5 days. Fever (99.1 percent -100 percent), chills (15.5 percent -73.2 percent), cough (62.1 percent -100 percent), tininess of breath (40.2 percent -42.3 percent), annoyance (20.2 percent -56.3 percent), and myalgia are the most prevalent awarding signs (31.2 percent -61.2 percent). G.I.T symptoms such as nausea, vomiting, and diarrhoea affect only around a third of patients. Contamination without symptoms is prevalent [24].
- MERS:MERS incubation takes roughly 5 to 7 days on average. Severe pneumonia and Acute Respiratory Suffering Syndrome in Adults are the most common scientific results. Fever and coughing were found in the majority of MERS-CoVs infected patients in Saudi Arabia, who numbered 47.
- Myalgia, Diarrhoea, and Sore Throat are fewer common symptoms. Although all of the patients exhibited abnormal chest imaging, there were no distinguishing laboratory abnormalities. With a peak incidence of 60.1 proportion, almost 89 percent of patients required intensive care and 72 percent required mechanical ventilation [25].

The following are examples of coronavirus manifestations in other bodily systems:

1. Systemic and respiratory Sign and Symptoms.
2. The appearance of G.I.T.
3. Cardiac Exhibition's.
4. Manifestations of the head and neck
5. Neuronal Signs and Symptoms
6. Hematological Signs and Symptoms
7. Nephrological Manifestations
8. Dermatological Signs and Symptoms

9. Inflammatory symptoms.
10. Patients having primary immunodeficiency.
11. Allergy and atopy patients.

Factors:

COVID-19 has a rapid impact on mortality over the world. These were unprecedented levels of determination to figure out who is at risk of serious consequences, necessitating a novel strategy to time investigation of big datasets. [26].

Age and Gender are deep-seated at-risk influences for unembellished corona virus outcomes. Numerous pre-existing illnesses have also been connected with an increased risk of death. Patient maintenance is typically talented complete electrical well-being documentations which are frequently castoff in research. However, Traditional methods to the investigation of electrical health records trust on irregular extracts of a small sample of historic data.

The novel COVID-19 which was later named as Severe Acute Syndrome Coronavirus-2 (SARS-CoV-2) by the International Committee on Taxonomy of Virus (ICTV) is the instrumental agent of the corona virus pandemic. SARS-CoV2 was initiated in the Wuhan city situated in China and walkover all over the world frequently due to individual-to-individual interactions. While the beginning, Natural Reservoir, and transitional host of the virus are still arguable[27].

Contamination caused by Corona virus especially by SARS-CoV-2 takes cleared the ecosphere within a time of partial months. It has an overwhelming consequence on civilization with communal and financial unhappiness. However, the contamination and mortality rate per million and the case casualty ratio in India remained significantly inferior to in numerous advanced nations.

Numerous influences had been anticipated including genetics. One of the significant facts is that a huge part of the Indian population has no symptoms of the SARS-CoV-2.

Most individuals diseased through the corona virus will experience mild to reasonable respirational illness and improve without needful superior treatment like older people, and individuals with fundamental medicinal complications like circulatory disease, diabetes, long-lasting respiratory illness, and malignance are supplementary probable to mature serious infection. [28].

Furthermore, the success rate of RT-PCR RNA detection varies depending on the sample type, with differences between broncho alveolar lavage liquid (93 percent), fibro bronchoscope brush biopsy (46 percent), phlegm (72 percent), slurred swabs (63 percent), pharyngeal consonant swabs (32 percent), faeces (29 percent), and blood (1 percent).

Around investigations have suggested that corona virus has a significant relationship with ecological parameters, claiming that the survival duration of COVID-19 on surfaces is impacted by temperature changes. As a result, temperature may have an impact on the risk of virus transmission. This has led to some studies in non-tropical countries finding a link between lower temperatures and rising numbers of inveterate cases, despite the fact that a study in Brazil's steamy high temperatures found a negative rectilinear relationship between temperature and the number of established cases.

The outbreak was influenced by the density of the population. The higher the density of the residents, the more quickly problems can occur. The density of residents is conceivably simply one of many critical elements that alter a specific location's vulnerability to the infection. COVID-19 has taken root and thrived in a variety of environments around the world [29].

Impenetrable, icon cities such as New York and London, a large number of visitors and travelers, a diverse population of universal citizens, and condensed housing zones characterize the single type.

Another category included industrial hubs like Wuhan, Detroit, and Northern Italy, which are linked by supply chains.

A third category includes international tourist destinations such as the cross-country slants of Italy, Switzerland, and France, as well as their Colorado Rockies counterparts. The virus devours dilapidated nursing homes and cremation parlors in diminished civilizations, as well as, of course, cruise ships, which are like compressed miniature cities at sea. Air pollution is a type of conservational contamination in which destructive units and gases, such as CO₂, poison the air. Already, by 2020, the corona virus outbreak will have increased carbon dioxide emissions by nearly 1% each year over the previous era. Daily global carbon dioxide emissions were lowered by 17 percent (11 - 25 percent) by April 2020 compared to unfavorable 2019 levels, with only about half of this reduction attributed to changes in surface mobility.

The regular discharges in different country states weakened by 26% on the date of extreme decline. Individuals who live at sea level, like those who live at higher elevations, have a greater exposure to sunlight, which is the primary source of vitamin D. Vitamin D has an important role in calcium and bone homeostasis, as well as modulation of the innate and adaptive immunological responses.

Additionally, as the elevation upsurges, atmospheric pressure declines, thus dropping the oxygen nearby. The time off of oxygen above 2,400 m can source increased severity of respirational infectious diseases [30].

Mechanism of action:

Corona virus is the seventh human-infecting member of the coronavirus family, and it belongs to the ortho Coronaviridae subfamily [31]. Corona virus is sufficiently unique from

SARS-CoV that, based on its congenital preparation and phylogenetic cognitive skills, it may be classed as a novel beta coronavirus that contaminates components. [32] Corona virus sickness affects humans since it is one of the viruses that cause the common cold. The primary foundations of pathological adulteration are coughing, sneezing, and contacting contaminated skin. Pathological adulteration can be transferred by the air or through the integration of viral precipitations as a result of respiratory secretions. The coronavirus genomes are controlled by (Approximately 30000) nucleotides. It has four structural proteins, Nucleocapsid (N) protein, Membranes (M) protein, Spike (S) protein, Envelope (E) protein, and plentiful Non-Structural Proteins (NSP). The capsid is the protein shell, nearby it is the nuclear capsid or N-protein which is destined to the virus at positive-strand of RNA that documents the virus to capture human cells and turns them into virus factories. The N protein hides the viral RNA genome which consumes an energetic character in its duplication and transcript. The N-terminal of the N proteins is obligatory to genomic and sub genomic RNAs in MHV and IBV virions and developments the virus-related replication and transcript [33].

The SARS outbreak in 2003 exposed unadulterated health issues, and the awareness of SARS and its implications for universal mental health are useful impediments in achieving the obligations of the health-care system to manage the COVID -19 client function.

The literature suggests that rashes develop disadvantageous properties on the affected population's mental health. A meta-analysis recognized that ranges from 33% to 42% of patients listed with the hospital for action against the Middle East Respiratory Syndrome (MERS) and Severe Acute Respiratory (SARS-CoV) showed anxiety, unhappy mood, and sleeplessness [34].

Corona virus progression is controlled by a complicated interplay of various pathophysiological mechanisms, including the ones listed below:

- a) SARS-CoV-2 has a direct cytopathic interaction.
- b) Bradykinin deactivation due to downregulation of angiotensin-converting enzyme 2 (ACE 2), resulting in an imbalance in (RAAS).
- c) An "interleukin flood" in a dysregulated resistance account.
- d) Thrombotic microangiopathy is induced by prothrombotic exocytosis, which can be caused by prion endothelium damage, cytokine effects, and uncontrolled local and/or systemic "immunothrombosis."
- e) A self-generated problems like auto-immune disorders.

Corona virus is a member of the enclose dunite-stranded RNA virus that causes respirational and circulatory illnesses in humans and animals [35].

According to prior SARS outbreak investigations, SARS-CoV was discovered in Pneumocytes in a postmortem series using culture techniques, viral isolation, and in situ. Communication electron microscopy has also revealed the actuality of COVID-19-like units and viral subdivisions in pneumocytes. ACE 2 alveolar consonant pneumocytes have also been identified as a probable entry site for SARS-CoV in the lungs, according to new findings. Category I and II pneumocytes showed a strong ACE2 discolorations, whereas respiratory epithelial cells showed a minimal stain.

It comprises:

- a) ACE2 mutations that aren't linked to SARS-CoV-2.
- b) The appearance of ACE2 in people of various ethnicities.
- c) ACE2 expression is linked to age and SARS-CoV infection.
- d) Serine 2 of the Trans Membrane Protease.
- e) Variants of the TMPRSS2 gene.
- f) DPP-4 (dipeptidyl peptidase 4).

Decade genome arrangements of corona virus gained from a total of nine patients displayed about 99.98% sequence individuality. Additional study showed about 99.8–99.9% base uniqueness in quarantines from five patient role and the arrangement results exposed the occurrence of a new beta-CoV strain. The genetic arrangement of the corona virus presented about more than 80% distinctiveness to SARS-CoV and 50% to the MERS-CoV [40,41], and together SARS-CoV and MERS-CoV create in bats.

As a result of the phylogenetic analysis, the corona virus is classified as belonging to the genus beta coronavirus, which contains SARS-CoV-2, which infects humans, bats, and wild animals.

The gene-encoded two polyproteins with molecular weights of roughly 450 and 750 KD are used to propagate the corona virus. As a result, these polyproteins are required for viral replication and transcription. The intentional polypeptide spikes sheath cover nucleoprotein duplicates in the proteolytic method, and polymerase is unconfined following polyprotein. The technique was carried out by chief protease, a chymotrypsin-fold protease.

Corona virus E-protein is a tiny membrane protein with 76-109 amino acids, a size range of 8.4 to 12 kDa, and around 35 alpha helices and 40 twists. A hydrophilic amino terminus of 7-12 amino acids precedes a substantial hydrophobic membrane - spanning of around 25 amino acids and a lengthy aqueous C-terminal domain. The hydrophobic region can cause oligomerization and produces an ion-conductive channel in the membrane, which is important for the viral genome to meet. The protein ion channel undertaking is found in the protein's transmembrane portion and is involved in various aspects of the virus's life cycle, including

assembly, budding, covering expansion, and virulence. E-protein has planned the membrane possible by monitoring the ion flow between the intracellular and extracellular atmosphere.

Corona virus is a disease that affects a variety of organ systems. The most commonly impacted organ system's principal uncontrolled modification is explained in the following manner.

1. The respiratory system is the first thing that comes to mind.
2. The circulatory system.
3. The nervous system.
4. Kidneys.
5. The G.I.T. system
6. Biliary and hepatic system.
7. Pregnancy and the reproductive organs.
8. The integumentary system is a system that protects cells from the elements.

Treatment:

The primary aim is to switch, withstand and manage the rapid supper of the epidemic COVID-19. The severe involvement mixture is valuable in declining the swift communication progression till immunization is obtainable to treat this transmittable, lethal disease. The health professional has not recommended relaxing destruction approaches as spread may rise over if establishments do not instrumentally.

The life-threatening components to respond affectively commends the importance of outlining practical transmitters, strict importance on care, and home presumption for a wide range of challenging respondents on a large scale, as well as outlining of practical transmitters, strict importance on care, and home assumption. Besides, there is a prodigious need for health attention, therapeutic professionals, and other medical assistant staff care and protection as they are aggressive at the front in contrast to this lethal communicable disease.

The ending of pandemic and to come out of the series of classified lockdown is instantaneous and worldwide vaccination. Proportionate with the amount of the epidemic, numerous preparations have been established and developed existing at an augmented speed. These inoculations have demonstrated efficiency ranging between 60%-95%.

The immunization method should be thoughtful on the facts of the civilization for which the investigation is meant:

Vaccine availability: The two types of vaccine willingly available in India as COVISHIELD (manufactured by **AstraZeneca-Oxford** (adenoviral vector vaccine, efficacy of about 70.4 percent).COVAXIN manufactured by **Bharat Biotech** mutually these vaccines are established

for their safety. The earlier studies had exposed productivity of 67% in dropping infections and about 70% in dropping the transmission.

- a) Corona virus incidence: Flu-like infection spreads quickly in winter. In the winter of 2020, India continued in an “Unlock” phase with negligible NPIs and so far, COVID-19 contagions were controlled. The swelling pattern looks to equivalent the development of contagions in the spring and summer of 2020.
- b) Age Demographics: The stage abandoned population data were attained from the 2011 census. To estimation population delivery in 2021, the population in each bin was multiplied by 1.125 to struggle with the general 12.5% increase in the Indian population during 2011-2021.
- c) Nowadays, the medication is used as adapt for use in a different purpose that consumes been used to recognize effectiveness of remedies against coronavirus. Massive efforts had been paid for the capacity to reuse FDA-approved or preclinical trials medications candidate targeted to multiple virus proteins.
- d) The WHO had given medical physicians and scientist’s permission to conduct an exploratory test for COVID-19 boldness using a combination of FDA-approved drugs. Given the pressing need to reduce the charge, time, besides risk of the medication expansion procedure, scientists are tasked with recycling previously approved drug candidates for study in COVID-19. The scientific community's response is such that it comprises massive attempts to mature a novel therapy and behaviour in a short period of time [36].
- e) The competition in the inconsistency of corona virus initiated a global endeavor to progress a safe besides active inoculation. This has triggered extra than 230 inoculation applicants presently undergrowth of about 63 of which are stretched phase1-3 clinical evaluations of 26 January 2021. Numerous injections have previously been official and used in immunization curricula crossways the world. In an unprecedentedly rapid response to the mature creation of an anti-SARS-CoV2 inoculation, more than 40 companies and theoretical organizations are discovering the aforementioned techniques. Moderna, a biopharmaceutical company, was the first to begin Phase 1 clinical trials for a prospective corona disease vaccine, highlighting the community's quick response to the SARS 2.

Currently, some of the most promising vaccine candidates are:

- Pfizer-BioNTech (mRNA vaccine, efficacy of about 95.0 percent).
- Modernism (mRNA vaccine, efficacy of about 94.1 percent).
- V Sputnik (adenoviral vector vaccine, efficacy of about 91.6 percent).
- Novax (Protein Subunit Vaccine with an Efficacy of 89.3%).

- Sinopharm is a Chinese pharmaceutical company (Inactivated vaccine, efficacy of about 79.3 percent).
- Johnson & Johnson (Vector Vaccine against Adenovirus, effectiveness of 65-66 percent).

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IMPACT OF PLASTIC USAGE IN COVID-19

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Abstract:

In covid-19 people use different plastic product for protection. Single use mask, aprons, sanitizers, gloves; PPE etc. have been added to terrestrial environment, pond, river and seabed. The amount of plastic waste worldwide is estimated at 1.6 million tons/day. There is an opportunity to rebuild new industries that can innovate new reusable or non-plastic product. To attempt raise awareness of waste management strategies targeted to reducing plastic waste generated during covid-19. This paper attempts impact of plastic waste pollution generated during covid-19.

Keywords: Plastic Usage management; covid-19

Introduction:

During covid -19 pandemic (PPE) made from plastic play important role as protective equipment. Single use plastic including masks, gloves, sanitizer bottles, aprons, medical test kits growing concern in coronavirus pandemic. Plastic arising from PPE which wrecked global health care system and disrupted the economies of nations. Essential to collect plastic waste for treatment but covid-19 virus is highly contagious and could remain viable on plastic waste for several days.

Here we discuss on the impact of plastic usage covid-19 pandemic on the consumptions and disposability of single use plastics generated from healthcare facilities, quarantine facilities, home and hotel isolation facilities,

Single use surgical and face masks gloves, Sanitizers bottle which are seen in parking lots, dumpsites, street, roads, gutters, beaches, shopping moles and supper markets.

To control covid-19 virus most countries has given lockdown directives and social distancing. For healthy and safety reasons plastic pollution problem through single use products. Preventing the spread of covid-19, not to resume their personal protective plastic product generated daily, World Health Organization (WHO), Centers for Disease control, European center for Disease Prevention and Control have recommended physical distancing, hand

washing, mass gatherings, almost all countries recommended use of face masks to control covid-19 so daily millions of facemasks have been discarded . These plastic products made from polypropylene chloromethane polymers, neoprene and vinyl. This plastic products discharge in to terrestrial and marine ecosystems.

Results and Discussion:

Single use plastic products surgical masks, medical gowns, face shields, protective aprons, sanitizer bottle, plastic shoes, gloves are not properly managed they create plastic pollution problems. Major challenges to management of plastic product covid -19 improperly discarded plastic based products are capable of floating around in the environment. Due to covid-19 recycling programs are being suspended this plastic product increases. Therefore, covid-19 pandemic create the global plastic product problem. This medical plastic usages originating from home isolation, quarantine facilities, health care facilities where infected patients are receiving treatment may be possible and could be source of infection. There is need of effective management, strategies including proper identification, collection, segregation, stroge, treatment and disposal as well as adequate and training program.

Conclusions:

There is need, consumption and release of single use plastic product since the coronavirus outbreak. This single used plastic product is not only effect on environment but also on marine organisms. Not only there a potential environmental risk but also human health risk through consumption of seafood's which is source of protein. Marine organisms such as turtles, sea turtles, fishes, whales which could lead to severe injuries and death.

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