Covid 19 and Its Impact by Lockdown

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PREFACE

The Corona virus (Covid-19) pandemic was a severe global health emergency and psychosocial shock event. All humans were affected by this natural experiment, if only via the prolonged social mitigation measures, which triggered the biggest economic meltdown in a century, and secondary stressors (a disaster chain), next to emotional and health responses (cf. SARS, MERS, Ebola, Chernobyl, Fukushima, 9/11). The global social mitigation measures influenced every aspect of our lives, accelerated societal transformations, and changed our societal values, politics, and resources. The covid-19 pandemic represents a node in time to compare contexts and cultures and the unprecedented media coverage shows differences in subjective understanding and psychosocial and health responses. The pandemic impact differed by age, socioeconomic, and personality gradients (e.g., threat/control), and across gender, cultures, and nations, as evident in our emotions (anxiety, anger versus calm) and behaviors (e.g., mobility data, internet use). The key role of individual action in Covid-19 infections binds the pandemic to emotional, social and personality theory (e.g., differences in what we feel, think, want, need, and do), including interpersonal theory and the behavioral immune system. People are most infectious when they

show symptoms (even mild or non-specific symptoms), but may be infectious for up to two days before symptoms appear (pre-symptomatic transmission). They remain infectious an estimated seven to twelve days in moderate cases and an average of two weeks in severe cases.

When the contaminated droplets fall to floors or surfaces they can, though less commonly, remain infectious if people touch contaminated surfaces and then their eyes, nose or mouth with unwashed hands.

Over the next years we shall witness how individuals and societies managed and whether the predicted psychosocial and health responses can be observed.

We have been warned that life will not go back to normal after the COVID-19 pandemic has been contained. But what will the ―new normal‖ be and how best can we shape it to be humane while economically sound? To that end, this book aims to provide a realistic picture of the impact of COVID-19 on India and what is needed to rebuild a dynamic country. In this spirit, the book seeks to provide a platform for diverse opinions and ideas.

IMPACT OF COVID-19 ON EDUCATION

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Maximum governments around the world have temporarily locked educational institutions in an effort to contain the spread of the COVID-19 pandemic.

These countrywide closings are impacting over 91% of the world's student population. Quite a few other countries have executed localized closures impacting millions of other learners.

UNESCO also supporting the work to mitigate the impact of school and colleges closures, principally for further vulnerable and deprived communities, and to facilitate the continuity of education for all through inaccessible learning.

As of 12 April 2020, around 1.716 billion learners have been affected due to school and colleges closures in response to the pandemic. According to UNESCO, 188 countries have instigated nationwide closures and 5 have implemented local closures, impacting about 99.4 percent of the world's student population.[1] School and colleges and college closures has impact not only among the students, teachers, and families, but have far-reaching economic and societal consequences.[4][5] School and colleges closures in response to COVID-19 have shed light on innumerable social and economic problems, including student debt,[6] digital learning, [7] [8] food insecurity,[9] and homelessness, [10] [11] as well as access to Child care, health care housing, internet and disability services.

The impact was more severe for disadvantaged children and their families, causing interrupted learning, compromised

nutrition, childcare problems, and consequent economic cost to families who could not work. [17] [18] In response to school and colleges closures, UNESCO recommended the use of distance learning programme sand open educational applications and platforms that school and colleges and teachers can use to reach learners remotely and limit the distraction of education. [19]

Consequences of school and colleges closures:

COVID-19 pandemic have shed a light on abundant issues affecting access to education, as well as broader socio-economic issues. [20] As of March 12, more than 370 million children and youth are not attending school and colleges because of temporary or indefinite country wide school and colleges closures mandated by governments in an attempt to slow the spread of COVID-19.As of 29 March, nearly 90% of the world's students were jammed by closures.

Even the closings are temporary, it takes high social and economic costs. The commotions may disturb people across communities, but their impact is more severe for underprivileged children and their families including interrupted learning, compromised diet, childcare complications and consequent economic cost to families who cannot work.[20] Working paternities are more likely to miss work when school and colleges close in order to take care of their children, incurring wage cut in many instances and undesirably impacting productivity.[4] Localised school and colleges closures place burdens on school and colleges as parents and officials redirect children to school and colleges that are open.[4]

Unintended strain on health-care system

Women often represent a large share of health-care workers and often cannot attend work because of childcare requirements that result from school and colleges closures. This means that many

medical professionals are not at the amenities where they are most needed during a health crisis.[4]

Distance learning

Lack of access to technology or fast, reliable internet access can stop students in rural areas and from deprived families. Deficiency of access to technology or upright internet connectivity is an hindrance to continue their learning, especially for students from deprived families.[4] In response to school and colleges closures caused by COVID-19, UNESCO recommends the use of distance learning programmes and open educational applications and platforms that school and colleges and teachers can practice to reach learners remotely and limit the disruption of education.[20]

To support in slowing the transmission of COVID-19, hundreds of libraries have temporarily closed. In India, numerous major cities announced public library closures. For students without internet at home, this rises the difficulty of keeping up with distance learning.

Childcare:

School and colleges closures puts a tension on parents and guardians to deliver childcare and manage distance learning while children are out of school and colleges.[5] In the absence of alternative options, working parents often leave children alone when school and colleges close and this can lead to risky behaviours, including increased influence of peer pressure and substance abuse.[4]

Nutrition and food insecurity

Many children worldwide rely on free or discounted meals at school and colleges. When school and colleges close, nutrition is compromised.[20]Nutrition plays a critical role in cognitive

development and academic performance for children.[22]With a view to enhancing enrolment, retention and attendance and simultaneously improving nutritional levels among children, the National Programme of Nutritional Support to Primary Education (NP-NSPE) was launched as a Centrally Sponsored Scheme on 15th August 1995.

Number of Children covered under Noon meal scheme in India

State	2018-2019	State	2018-2019
Andhra Pradesh	3079772	Madhya Pradesh	4865379
Bihar	10704608	Maharashtra	8990150
Jharkhand	2759668	Tamil Nadu	4362725
Karnataka	4281055	Uttar Pradesh	559172
Kerala	2600154		

Source: MHRD Survey

In India, around 45% of the states 50 Lack students enrolled for subsidised school meals. At least 52,00,000 students and their families may be affected by food insecurity as a result of school and colleges closures.

Noon meal programmes are the biggest anti-hunger initiative in India. State-wise schools and colleges closures as of 18 March have affected lacks and lacks of students.

Student learning outcomes

Schools and colleges closures has an negative impact on student learning outcomes.[4] Schools and colleges provides essential learning and when the educational institution closed, children and youth are not getting the opportunities for growth and development. The disadvantages are disproportionate for under-privileged learners who tend to have fewer educational opportunities beyond school and colleges.[21]

Student drop-out rates tend to increase as an effect of schools and colleges closures due to the challenge of ensuring all students

return to schools and colleges once school and colleges closures ends. This is especially true of prolonged closures.[4]
School and colleges are hubs of social activity and human interaction. When school and colleges are closed, many children and youth miss out of on social contact that is essential to learning and development.[4]

When educational institution close parents are repeatedly asked to help the learning of children at home and can struggle to perform this task. This is particularly true for parents with partial education and resources.[4]

Special education services
Possible impacts of closures and belief on distance learning are not spoken in federal acts of legislation at this time.[23] in has an high impact on formal education.

Formal education defined as opposed to *informal education* or *non-formal education*. It tends to refer to school and colleges, universities and training institutions.[6][7] A 1974 report by the World Bank well-defined formal education.
Formal education: the hierarchically structured, chronologically graded 'education system', running from primary school and colleges through the university and including, in addition to general academic studies, a variety of specialised programmes and institutions for full-time technical and professional training.[7]

Recommendations:

1. **Examine the readiness and choose the most relevant tools:** Decide on the use high-technology and low-technology solutions based on the reliability of local power supplies, internet connectivity, and digital skills of teachers and students. This could range through integrated

digital learning platforms, video lessons, MOOCs, to broadcasting through radios and TVs.

2. **Ensure inclusion of the distance learning programmes:** Implement measures to ensure that students including those with disabilities or from low-income backgrounds have access to distance learning programmes, if only a limited number of them have access to digital devices. Consider temporarily decentralising such devices from computer labs to families and support them with internet connectivity.
3. **Protect data privacy and data security:** Assess data safety when uploading data or educational resources to web spaces, as well as when sharing with other organisations or individuals. Confirm that the use of applications and platforms does not violate students' data privacy.
4. **Prioritize solutions to address psychosocial challenges before teaching:** Activate available tools to link school and colleges, parents, teachers, and students with each other. Form communities to confirmconsistent human interactions, enable social caring measures, and address possible psychosocial challenges that students may face when they are isolated.
5. **Plan the study schedule of the distance learning programmes:** Organise discussions with stakeholders to study the probable duration of school and colleges closures and choose whether the distance learning programme should stress on teaching novel knowledge or boost students' knowledge of prior lessons. Design the agenda depending on the state of affairs of the affected regions, level of studies, need of student needs, and availability of parents.

6. **Choose the appropriate learning** methodologies based on the position of school and colleges closures and home-based quarantines. Avoid learning methodologies that require face-to-face communication during this period.
7. **Provide support to teachers and parents on the use of digital tools:** Organise short-lived training or orientation sessions for teachers and parents as well, if monitoring and facilitation are needed. Support the teachers to prepare the basic settings such as solutions to the use of internet data if they are required to provide live streaming of lessons.
8. **Blend appropriate approaches and limit the number of applications and platforms:** Mixture of tools or media that are available for most students, both for synchronous communication and lessons, and for asynchronous learning. Avoid overloading students and parents by asking them to download and test too many applications or platforms.
9. **Develop distance learning rules and monitor students' learning process:** Explain the rules with parents and students on distance learning. Design formative questions, tests, or exercises to monitor closely students' knowledge process. Try to practice tools to support submission of students' feedback and avoid overloading parents by requesting them to scan and send students' feedback
10. **Define the duration of distance learning units based on students' self-regulation skills:** Keep a intelligible timing according to the level of the students' self-regulation and met cognitive abilities especially for classes. Preferably, the unit for primary school and colleges students should not be more than 20 minutes, and no extensive than 40 minutes for secondary school and colleges students.

11. **Create communities and enhance connection:** Form communities of teachers, parents, and school and colleges managers to address sense of loneliness or helplessness, help sharing of experience and dialog on coping strategies when facing learning problems.[14]

Exam

With the end of the academic year fast approaching in many countries, one question is on the mind of every student, parent, teacher and minister: what about exams as school and colleges closures are prolonged?

The fourth UNESCO COVID-19 Education Webinar, organized on 9 April 2020, shed light on the coping strategies that countries have adopted or are considering to manage high-stake exams – these include school and colleges leaving and university entrance exams as well as gateways for jobs.UGC and AICTE said, "All universities and affiliated colleges should postpone exams. Further schedule should be decided following a review of the situation," the commission said in an order. He coronavirus outbreak has impacted people from all quarters of life. Among all sectors, education sector is also badly hit. Schools and colleges have been shut and even the boards exams were postponed due to the lockdown imposed to contain the spread of the virus.

Now, the University administration has decided to postponed all its exams -- practical and written -- for regular and correspondence students, till further notice, due to the lockdown.

Opening the webinar that attracted more than 230 participants, Mr Borhene Chakroun, Director of the Division of Policies and Lifelong Learning Systems at UNESCO, recalled that prolonged school and colleges closures have major implications for learning, assessments, and credentials. “These considerations are among top priorities for all policymakers. The interruption of exams is delaying decisions on student progression and graduation, and in

the case of technical and vocational training and higher education, affecting their access to labor markets, carrying individual and broader socio-economic impact."

Feasibility of alternative assessments

Referring to UNESCO's recent rapid global analysis, Mr Gwang-Chol Chang, Chief of Section of Education Policy, indicated that 58 out of 84 surveyed countries had postponed or rescheduled exams, 23countries introduced alternative methods such as online or home-based testing, 22 maintained exams while in 11 countries, they were cancelled altogether. There is a common challenge emerging, including issues of fairness and the feasibility of alternative assessments. Noting a distinct trend towards online testing, he noted that "not all subjects and competencies can be assessed online or by phone." Looking beyond school and colleges closures, he advised that "we need to assess learners' progress to identify learning gaps, and offer remedial and accelerated learning and assessment when school and colleges reopen."

In India - The decision to postpone or cancel exams is never taken lightly as in many countries, they largely determine future study choices. "Exam results are one of most important criteria for university admissions and employment requirements for many companies 24. "It was a very difficult decision as there are so many possible options," experts said Probably there is no perfect solution but our key strategy was to consult as many stakeholders as possible, including students, parents, teachers and medical experts." To organise the exams for 10^{th} standard some precautionary measures have been taken in exam venues, including distancing and compulsory wearing of masks. Due to concerns about equity, validity, and transparency, online testing was not retained as an option.

High stake exams may be considered by the government as an "ultimate outcome" of the education system. "It's a very fragile situation. Parents and students are worried." To adapt, the Government is reviewing the curriculum and moving towards formative assessments. Some institutions emphasized self-assessments and home-based assessment, so that at the end of the day, when they come back to school and colleges, they have not lost too much.

The pressure is lighter in the certain hemisphere, where the school and colleges year is just getting underway, drawing attention to the cultural aspects of evaluation, many parts of the country, there is a long tradition of classroom-based assessments rather than standardized high-stake exams. The fairness and quality of such assessments to ensure the same standards across the country is in itself a challenge. While online assessments are being explored, there is concern they could increase inequalities due to lack of Internet access, in addition to their cost. "The strategy is to help teachers deliver classes to their students, receive their course works and assess this at school and colleges level".

Country has to consider the equity issues were the foremost concern in India with many regions without electricity and internet. Various options are under study, from extending the calendar year, using online assessments or condensing the curriculum.

The vocational education and training field poses a specific set of challenges. "There is a greater risk in vocational education and training that school and colleges closures will increase inequalities and drop-out rates." Also, drawing attention to the higher share of low-income students in this category and their lower access to devices and connectivity. For most institutions, final exams have been replaced by an assessment based on the

record of the last training year, school marks and other factors. Given the challenge to assess practical skills online and without access to materials and equipment, government stressed the importance to prepare for school and colleges reopening's by setting up additional support and personalized monitoring for students.

Turning to universities in India AICTE and UGC, explained in a written communication that all face-to-face teaching and traditional examinations are suspended. In the case of students in their final year, universities are working to ensure they can graduate on time with a quality assured degree. They are making maximum use of assessments and completed coursework. Many are offering students the opportunity to undertake on-line assessment on a 'help not hinder' basis. College Students must write their exams after the this issue.

Conclusion: education department emphasized that all decisions are being made in a context of uncertainty, based on numerous factors, from the overriding concern over health and safety to ensuring equity and equal opportunity in exams and assessments. "We have been imposed, globally, an experiment in remote learning.

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COVID-19 LOCKDOWN AND SMARTPHONE USAGE, EDUCATION OR ENTERTAINMENT, AMONG MEDICAL, ENGINEERING AND ARTS STUDENTS

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ABSTRACT:
With coronavirus rapidly spreading across the world, the Covid-19 cases are progressively increasing and Governments across the globe have imposed lockdown to ensure social distancing, apart from maintaining personal hygiene, as the only way to curtail the spread. An unprecedented experience, where people have had to stop abruptly from their routine and busy lifestyles, with a lot of time at their disposal, confined to homes, as most of them work from home while the others have closed down. Smartphone technology has revolutionised people's life and lifestyle in all affairs of self and social development, and has offered innumerable features to enhance and enjoy life.Even with the widespread usage of smartphone among college students, implications and considerations of education, for learning purposes, being benefitted by these devices remains a big question, given the Covid-19 lockdown setting. Focus group interviews with semi-structured questions were conducted among fifteen college students, five each, from medical, engineering and arts colleges. The purpose of this study was to find out if medical, engineering and arts college students are using smartphones for education - goal-oriented, to learn, gain knowledge and/or acquire

skills - or entertainment - engage in not goal-oriented activities for pleasure and delight.

Keywords: *College Students, Smartphone Usage, Education, Entertainment, Covid-19, Coronavirus, Lockdown, Mobile phone*

INTRODUCTION:

The Coronavirus Disease 2019 (Covid-19) felt like it was far away when it was heard of in early January 2020, but the reality hit when the number of infected and dead started counting and progressively increasing all over the world. Alarmingly, washing hands and social distancing as the only preventive measures, the coronavirus gained a footing in many countries and started quickly infecting in communities (Kai Kupferschmidt & Jon Cohen, 2020). The World Health Organization (WHO) declared the coronavirus outbreak, the Covid-19 pandemic as a Public Health Emergency of International Concern (PHEIC). In response to Covid-19 pandemic, many countries including the Central Government of India have been forced to impose lockdown orders. With the country closed down till April 14, India is in the midst of a 21-day lockdown with uncertainty towards extension. People are allowed to step out for nothing but medicines or groceries only. A crisis can bring out the best in almost everyone as well as the worst in some.

Suddenly, it has become challenging for people to be confined to their homes with the uncertainties surrounding the confinement. People only have to stay home to save lives. Many companies, banks, organisations and educational institutions issued 'work-from-home' (WFH) orders and operate with minimum staffing to enhance social distancing. People's schedules suddenly changed, they had plenty of time, but eventually missed the commuting, interactions with colleagues, chitchats with friends and their daily

routines. People increasingly turned to their mobile phones with internet for various purposes like work, education, entertainment, information, etc. besides to get in touch with each other, to eradicate the ill-effects of social distancing like anxiety, depression, etc., theresultants of lockdown. Smartphones are mobile phones with different technical specifications, used for a number of purposes – like voice calling, video chatting, texting or SMS, photography, multimedia messaging, internet browsing, email, video games, and social networking. In spite of smartphone usage known to inordinately disrupt work life and social activities, peoplestarted using it for calls, WhatsApp, Facebook, Amazon Prime, Netflix, etc. increasingly over this time period. Social media, gaming sites, OTTs and app stores are proving to be common lifelines besides television for people to combat the boredom and stress, while they adapt to being at home full-time. This is, however, a blessing for mobile gaming and app stores as people stay home and spend more time on their smartphones.Smartphone technology has become an integral part of life, and people feel incomplete without it (Jung, 2019).

With the colleges closed down all over the country, the students are spending much of their time online for academic activities, entertainment and contact with friends among various other activities. The college students were initially excited about the unexpected extra holidays until the colleges eventually started online classes with a lot of uncertainty related to syllabus completion and exam schedules. With the hopes for things to get better and back to normal soon for everyone around the world, the researchers through this study have attempted to find out the purpose of smartphone usage among medical, engineering and arts college students, to be broadly classified under education and entertainment purposes.

INFORMATION & COMMUNICATION TECHNOLOGY:

The Internet has increasingly become an indispensable tool in today's information society of new media era. Information and communication technology (ICT) have become the commonplace bodies in all aspects of our daily lives (Ron Oliver, 2002).ICT is basically an electronic medium to create, store, communicate, transmit and manage information. It is faster, convenient and easier to access, understand and interpret. It coheres the internet with mobile powered by wireless networks, also includes outdated technologies, like landline telephones, radio and television, encompasses the cutting-edge artificial intelligence and robotics, and continues to grow. While computers and telephones have existed for several decades, smartphones, digital TVs and robots are the recent ones.ICT as a significant source of transformation plays in the improvement of efficiency for different sectors across the globe (Wael Sh. Basri, Jehan A. Alandejani & Feras M. Almadani, 2018). In particular, the application of ICT in the education sector has become a crucial part of the learning process for students inside as well as outside the classroom setting (J. E. Lawrence, 2015) (Boobalan and Jayaseelan, 2019). Technology aids interaction of college students with peers and teachers (Nasser Mohamedhoesein, 2017).

Information and communication technology have changed the outlook of managing information during a crisis with regard to warning, preparedness, impact and response. It helps recording and preserving information and experiences from disaster and emergency situations, and supports easy distribution of such information to massive audiencewithin a short span of time. In such situations, when the free flow of information is suppressed, social media allow users to mobilise, share and spread the messages.

ICT has boosted the learning process by making it cheaper, faster and easily accessible, which were not possible before. The collaborative learning atmosphere provided by ICT produces better result. ICT enabled activities have to be fortified among the students and teachers in the institution (Boobalakrishnan & Pichandy, 2016). Technology use for interactions is positively correlated with students formal and informal peer interactions, with their sense of belonging in the college environment (Nasser Mohamedhoesein, 2017). Speed and accessibility of the internet enable students to share study material anytime anywhere. (Al-Rahmi et al., 2015; Kirkup, 2010, Tiene, 2000). As the fastest growing industry of the 21st century, ICTs offer scope for young people to learn, develop skills and knowledge, and are increasingly becoming the commonplace where e-learning, e-commerce, e-banking, etc. are frequently mentioned.
use.

OBJECTIVE OF THE STUDY:

The objective of the study is to find out the purpose of smartphone usage during the Covid-19 lockdown by medical, engineering and arts college students, broadly under education and entertainment classifications.

REVIEW OF LITERATURE:

INTERNET AND SMARTPHONES:

Smartphones are progressively becoming the basic necessity for a person's life (Yu-Kang Lee, Chun-Tuan Chang, You Lin, Zhao-Hong Cheng, 2014). The mobile phone technology has made the whole world seem only a short distance apart, in terms of space and time. It has become a way among people to engage with family and friends as well as communicate conveniently, with features like internet, camera,e-mails, gaming, social networking like Facebook, music, radio, books, and dictionary,to name some.

Smartphones are also used by people to overcome loneliness, whereas excessive usage could lead to addiction, social distancing and depression. Through these, instant contacts and relationships are established, while face-to-face communicationis reduced. These are used everywhere, even where their use has been banned or limited, like hospitals, schools, colleges, judicial courts, petrol stations, etc.

Even though smartphone usage has been related to various personality traits, like extraversion, neuroticism, psychoticism, etc., they have become the most pervasive communicative device that people carry to connect anytime, anywhere with anybody, with the added benefit of mobility and portability (Park W.K, 2005) (Boobalan, Jayaseelan and Pichandy, 2020). Access to mobile phones with internet is increasingly availableeven in the most underdeveloped regions.Today's smartphones have replaced various other devices from our daily lives. Smartphones connected to internet can run several internet-based services, like emails, social media, geo location, videostreaming, etc. and provide great user experience (Kenny M, Pon B, 2011).It is a personal assistant, navigator, educator, schedule planner, entertainer, source of information, news, etc.and has increasingly become a broader source of communication, information and education at a global scale, needless to talk about its usage when people are bound to their homes in the current scenario of Covid-19 lockdown.

COLLEGE STUDENTS AND SMARTPHONE USAGE:

Smartphones are a global phenomenon, and have become an integral part of the younger generation (Campbell, 2005). Among various technological gadgets, smartphones as the new generation devices offer various functions like communication, entertainment, education, information,beyond their fundamental

functions of making and receiving calls. Smartphones act as a quickest communication tool that aids contact with loved ones easily, entertainer to listen music & play games and also help in academics (Hongnguyen, 2015)(Boobalan and Pichandy, 2016). They help play games, build and maintain relationshipsin social settings, use online social media platforms to express feelings and help release anger and stress. Smartphone has changed the dynamics of family and society by helping users do their tasks easily. It has both, positive and negative impacts on lifestyles, especially of the younger generation. Smartphones can equally play an educational tool to instruct, educate, inform, remind andentertain college students on one side and distract them with irrelevant notifications, health issues, addiction issues, social distancing, privacy threats, cyber bullying, etc. on the other.The popularity of smartphones among younger generation has increased incredibly, as a means to remain in contact with each other and track all that they can (Lenord, 2015)(Boobalan, Jayaseelan and Pichandy, 2020).

Smartphones bring print, broadcast and new media to our hands. Anybody can access it anytime from anywhere. Social media access through smartphones helps identify disease outbreaks through social posts, keyword searches, etc. Due to development in technology, 74% of the population of India has smartphones and hence become beneficial in various ways like: Saves time, Millions of Apps, Go hands free, Free calls, messaging, Wi-fi, etc, (Tavasalker, 2014). Besides common functionalities, students commonly use smartphone to study, prepare notes, assignments and presentations for academic purposes. All these can be done between anyone from anywhere at any time right from the comfort of a single device. Moreover, it is helpful during emergency and difficult situations, to come out safe and it can

actually augment the people's ability to deal with emergency situations.

Mobile phones are great and a wonderful technology where everyone should enjoy its benefits in a useful manner; otherwise it can lead to multiple health hazards such as back problem, nerve pain, anxiety, depression, teen tendonitis (pain in the hands, back and neck due to poor posture), distraction, digital amnesia, sleep loss, addiction, anxiety, stress, etc.

Without a smartphone, one feels incomplete and it has become need of the hour, especially with the Covid-19 pandemic quarantine. The social distancing that stemmed as a result of Covid-19 has spiked smartphone usage among various categories of people, especially the college students who are attached to their smartphones even otherwise. Smartphones can offer a plethora of information resources within the palm of a person's hand and also bridge the communication gap via social networking sites (Shabir, 2019), especially in the current setting. People can remain in touch and get updates on every development in all walks of life during the pandemic, within no time.This technology has a great impact on college students. They usually spend a lot of their valuable time chatting and calling their friends, on social networking sites, playing games and others.

As per the Indian Ministry of Home Affairs, guidelines were issued for all Central and State Government offices, hospitals, commercial and industrial establishments, transport services, educational institutions and many others to operate limitedly or close down. As a measure to fundamentally restrict movement of people, a 21-lockdown was imposed to enhance social distancing as a preventive measure against Covid-19 pandemic in the

country.With orders to close the colleges, teachers have been urged to engagestudents productively via online teaching methods, as there is little time to spare between the lockdown release and semester exams,with the academic year nearing completion.

Wael Basri, Jehan (2018) a college student's typical day is majorly occupied by activities involving a smartphone. Studentsbound to their homes,with online classes to attend, assignments to complete, and exams to prepare for, will need to use their mobile phones for activities much beyond their regular frontiers. With mobile learning becoming the norm as part of the digital transformations, students have all the more reasons to be glued to their phones;however, the usage is more affected by motivations founded on influential and objective use rather than formal and less-goal oriented use.

The following research questions were used in the study:
RQ1: Why and how do you use your smartphonefor education, to seek information, gain knowledge and/or acquire skills, during the current Covid-19 lockdown?
RQ2: Why and how do you use your smartphone for entertainment, to seek pleasure and/or enjoyment, during the current Covid-19 lockdown?

METHODOLOGY:
The researchers through this study tried to find out whether medical, engineering and arts college students used smartphones for education or entertainment given the Covid-19 confinement setting. Smartphones uses were broadly classified under education - goal-oriented, to learn, gain knowledge and/or acquire skills - or entertainment - not goal-oriented, engage in activities for pleasure and delight. Education comprises of goal-oriented and

information seeking activities through which they obtained knowledge and/or acquired/enhanced skills, related or unrelated to academics, using different sites, platforms and apps on a smartphone. Entertainment included all other non-goal-oriented activities,merely for pleasure and enjoyment, and encompassed a wide range of activities like socializing with friends and relatives on calls and chats, taking pictures, recording videos, creating and/or sharing content, watch shows, movies & videos, listen to music, play games, write blogs, merely to engage and wade away time.

Focus group interviewswere conducted with two semi-structured questions. Five students each, from medical, engineering and arts colleges were chosen. All the students are pursuing their under-graduation, aged between 18 and 21, tech savvy, owning latest smartphones, well-versed in a variety of third-party applications and frequently used it for various purposes.

COLLEGE STUDENTS AND COVID-19 LOCKDOWN – EDUCATION ON SMARTPHONES

The concept of education is the wise, respectful and systematic cultivation of learning to acquire beliefs and skills in order to share and socialise in life. The concept of academicsrelates to social integration involving student interaction with teachers and peers (Meeuwisse, Severiens, & Born, 2010; Severiens & Wolff, 2008; Tinto, 1975, 1993).

Most of the universities and institutes across the country officially urged faculty members to engage students with online teaching, owing to the confinement. Classes and discussions are scheduled and materials are shared via Skype, Zoom, Google Classroom, WhatsApp, Google Hangouts for the ongoing courses. Video lectures could also be recorded and shared online with the

students. Only four of the respondents were familiar with m-learning (mobile learning - facilitates learning and access to educative materials via wireless medium on mobile phones) and employed the same on a regular basis. It helps them to share and collaborate ideas and from the examination point of view, it gives them an informal space to clarify doubts (Boopalakrishnan and Jayaseelan, 2019).

The medical students referred to online text, videos, learning applications and e-books on their smartphones, besides books from college libraries on normal working days. With regard to corona restraint and classes being conducted online, four medical and three engineering students attended online classes conducted by their faculty members, regularly, while the other medical student would use smartphone and books to learn by himself, as always. They simultaneously used online materials for extensive or related study and reference. Two of the engineering college students attended online sessions, that they were interested in or had difficulty with. Arts students least used smartphones for studying and typically used the notes from regular classes. Arts students were more into peer learning and mentoring. Students who attended online classes taught the others, on phone. Most of the respondents submitted assignments online and got their doubts clarified. One of them had been actively attending free online photography workshops. All of the respondents except one engineering student constantly checked for updates related to the pandemic and related restraint.

The medical students researched for everything about coronavirus for details. They also referred books and e-books for related information. All of the medical students, one engineering and one arts student searched for verified and credible information and easily identified any misinformation or disinformation related to

it. The others checked for updates regarding the prevailing situation, while they did not go into scientific details or check for credibility. One of the arts college students conducted weekly art, craft and storytelling classes for school kids free of cost on social media. All the students are aware of and 12 of them have enrolled in free online courses to follow their passion, related or unrelated to their academics. They used social media pages and apps to learn or develop skills that they were interested in, like yoga, painting, arts, crafts, home decors, cookery, and sought related information to learn online.

COLLEGE STUDENTS AND COVID-19 LOCKDOWN – ENTERTAINMENT ON SMARTPHONES

Smartphone is one thing that a college student never lets beyond sight; it is either in one's hand or within a couple of feet. The Covid-19 lockdown has given all the more a valid reason for college students to be locked on to their phones. All the respondents use smartphones more for entertainment purposes. They called friends, chatted with friends, were active on various social media platforms, used different third-party apps to engage themselves. They regularly used social media to socialise with friends and relatives across the globe. They spent quality time with family, as everyone was working from home. They watched movies, videos, web series, teleseries, listened to music and occasionally tuned on to radio, played games a lot. Most commonly used apps included Facebook, Instagram, WhatsApp, YouTube, Snapchat, Wynk Music, Gaana and OTT platforms like Amazon Prime, Hotstar, Netflix and Voot (Boobalan, Jayaseelan, 2020). With remote ownership governed by parents, some of the respondents watched TV shows on mobile apps. They were unusually active on social media platforms. They shared memes and trolls related to coronavirus and celebrities found on social media, to their family, friends and relatives. Two arts and two

engineering students created memes and shared them on their social media pages. Conference calls on phone and WhatsApp, with close friends and cousins, were made on a regular basis. Two arts students revived their blog sites and were writing positively, sharing their thoughts and experiences during the isolation. All the students except one were in a relationship and their only source of communication was through their mobile phone. Six respondents used apps like TikTok, Helo, Smule, etc. Nine of the respondents watched pornography on their phones, frequently at night, as privacy was at stake during the daywith everyone at home. Three of the respondents, as part of social media groups, helped and served food to the needy in their locality and shared their contributions on Facebook and Instagram, more to obtain donations. The respondents had scope for entertainment dominating enough to distract them from their academics. With regard to the Covid-19 lockdown, they were confined to smartphones, rather more than to their homes.

DISCUSSION AND CONCLUSION:

With coronavirus rapidly spreading across the world, the Covid-19 cases are progressively increasing and Governments across the globe have imposed confinement to ensure social distancing as the only way to curtail the spread, apart from maintaining personal hygiene. An unprecedented experience, where people have had to stop abruptly from their routine and busy lifestyles, with a lot of time at their disposal, restricted to homes, as most of them work from home while the others have closed down. Traditionally, education has been a social activity associated with the personal contact, care and guidance of teachers with learners. The usage of ICT in education extends itself to a more student-centered learning framework (Ron Oliver, 2002). While educational institutions have been closed, students are stuck indoors, away from their systematic learning environment. Online

classes have been planned by the institutions, so that the students can get their regular lessons and prepare for their exams.

Smartphone technology has revolutionised people's life and lifestyle in all affairs of self and social development, and has offered innumerable features to enhance and enjoy life. As an integral part of people's daily lives, especially the younger generation, it plays a very essential role in bridging the gap, given the current Covid-19 lockdown scenario.

College students used smartphones as learning aids in e-learning and web-based learning viasocialmedia platforms, websites, e-books and apps to communicate and collaborate course contents. It can expose users to learn things, offer ways to develop personality and provide ideas (Mojaheren, 2017). Students attended classes and discussions online, submitted assignments online, regularly, but most of them preferred their regular class environment to study. Smartphones also aided peer learning. Smartphones enable students to develop, share and present ideas and views, disseminate information to fellow students and teachers, and also enhance their group discussions (Salvation &Adzharuddin, 2014)(Boobalan, Jayaseelan and Pichandy, 2020). The speed and the accessibility of internet on smartphones enable students to share study material with anyone, anytime and anywhere (Al-Rahmi et al., 2015; Kirkup, 2010, Tiene, 2000).

MOOC online courses are offered with time flexibility and adds credits to the student's profile. Students are aware of and keen on doing these courses that enhance their academics or their passion. They are also attending free online courses to procure or enhance skills of interest like yoga, painting, arts, crafts, home decors, cookery, and so on. All the respondents searched for coronavirus and restraint related updates regularly, on their smartphones as

sources of information. Online classes and discussions were conducted on WhatsApp, Zoom, Google Hangouts, and Google Classrooms. The attention span of college students being limited to less than 15 minutes, smartphones offered countless options and activities right into their hands, distracting them from academics.The prevailing uncertainty with regard to release or extension of restraint, reopening of colleges and commencement of exams add to their lethargy to engage in academics, especially in an online setting. They are using it more for entertainment activities rather than for education.

They call and chat with friends and relatives, build relationships, socialise through various social media platforms, and usea variety of third-party apps for music, videos, series, TV shows, movies, radio, games, created and shared memes and troll videos, watched porn.A smartphone has maximum benefits pertinent to education, social life, entertainment, etc. (Gothami & Kumar, 2016). Smartphones save time, offer a number of apps, are hands-free, access e-mails, calls, chats, wi-fi, (Tavasalker, 2014), provide access to internet, social networking cites and allows multi-tasking simultaneously (Felecia, 2019), provide latest news updates and sports (Anderson, 2019) besides take photos, offer directions (GPS), track appointments and contacts. To be comprehensive, students spend more time in social media activities — like check updates, changing profile picture, updating status — than intended and are becoming addictive (Oye, Mahamat and Rahim, 2012). All these leisure activities occupied their ample time and they sought pleasure through these. They commonly used apps like Facebook, Instagram, WhatsApp, YouTube, Snapchat, Wynk Music, Gaana,TikTok, Helo, Smule, and OTT platforms like Amazon Prime, Hotstar, Netflix, Voot, etc.

Considering this setting, the students will have to be sensitised to use internet and technology, as major sources of information, for academics to compete in the new media era, which unlike traditional systems, offer countless opportunities for education and career. Since its inception, technology has equally been sources of distraction, as they were designed to engage rather than educate the users. Smartphonemakes learning cheaper, faster and easily accessible, with flexibility to time and place, eliminating the hesitancy of students to raise doubts in a group setting, and thus boost the learning process as additional and supporting teaching aids.As any technology, mobile phone also has its pros and cons.The volatile use of smartphone for entertainment purpose is,unfortunately,accompanied by impetuous consequences related to security and health problems.It has negatively affected life too, like it can develop compulsive behavior, addiction issues and also create problems like security risks, hacks or even of being spied upon (Mudasir Khazer & Shabir Ahmad Rather, 2019) (Boobalan and Pichandy, 2016). Smartphone usage has badly affected social, psychological as well as physical life of people, especially the younger generation (Bhalla, 2017) and disturb one's social life. The excessive smartphone usage during the coronavirus crisis accompanies the heightened risks of sexual abuse, cybercrime and bullying in the last month. The contributing factors are basically lack of education, training, and awareness.

Mobile technologies are a boon, when articulated rightly. Cocooned in isolation, chances of the caterpillars to grow wings and emerge as butterflies are subjective. Similarly, students using smartphones in the isolation period beneficially, to educate and enhance themselves or wade away the treasure of time, engaged in entertainment activities is subject to their personal intentions and efforts as well as that of their teacher's and institution's.

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M-LEARNING AMONG MEDICAL STUDENTS, BEFORE AND DURING COVID-19 LOCKDOWN

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INTRODUCTION:

With coronavirus rapidly spreading across the world, the Covid-19 cases are progressively increasing and Governments across the globe have imposed lockdown to ensure social distancing, apart from maintaining personal hygiene, as the only way to curtail the spread.Alarmingly, washing hands and social distancing as the only preventive measures, the coronavirus gained a footing in many countries and started quickly infecting in communities (Kai Kupferschmidt& Jon Cohen, 2020). People can only save lives and themselves by staying home. Governments across the globe have imposed lockdown to curtail the spread. People had to stop and step off their accustomed and busy lifestyle sall of a sudden, and depend on their mobile phones with internet, progressively, for work, education, entertainment, information, etc. besides to get in touch with each other, with regard to the Covid-19 lockdown (Brindha, Jayaseelan and Kadeswaran; 2020).

Most of the universities and institutes across the country officially called on their faculty members to engage students with online teaching, owing to the confinement. Until a few weeks back, mobile phone had restrictions to be used in classrooms and colleges, and now suddenly, colleges and classrooms are restricted to mobile phones. This scenario has paved way for this research, as an attempt to examine how medical college students

learn through mobile phones before and during the Covid-19 lockdown.

M-LEARNING:

Mobile learning (m-learning) is a subset of technology enhanced learning that primarily includes mobile phones for enhanced personal learning across multiple contexts, through social and content interactions. As technology-bound creatures, humans use mobile devices for learning in formal and informal settings. Mobile phones are influencing the panorama of medical education with contributions transforming the healthcare industry. M-learning offers a perspective to adopt learning with in-depth inclination towards a personal level understanding that draws a deeper sense as well as an active learning set-up to result in better outcomes when compared to the superficial approaches in traditional learning like content memorisation, reproduction of the same, altogether lacking personal involvement (Ramsden, 1992; Prosser &Trigwell, 1999; Marton& Booth, 1997). Mobile technologies can help overcome limited real world context, limitations in access to learning resources, low student engagement in classes, and lack of practical experience in learning about technologies (Andrew Litchfield, Laurel Evelyn Dyson and Elaine Lawrence, AgnieszkaZmijewska, 2007). M-learning offers the preference of accessing non-linear information receivedswiftly with the integrated ability to process quickly, leading to heavy reliance on mobile phones, for information access as well as communication, with the outcome of active involvement in learning when compared to passive learning in lectures.

OBJECTIVE OF THE STUDY: The objective of the study is to examine the use of m-learning by medical college students for

academic purposes before and during the Covid-19 pandemic lockdown.

M-LEARNING AND MEDICALSTUDENTS:

Learning and teaching strategies are needed to provide opportunities for learner adaption and reflection (Laurillard, 1993), with a priority to design m-learning and teaching strategies that involve active learning, that is experiential, replications, plays and role plays (Leigh, 2004), thereby uplifts critical thinking and aids professional enhancement with wide chances for self and/or peer assessment, review, evaluation and feedback (Raban and Litchfield, 2007). Over the last few years, m-learning has gained swift entry into the field of medical education. Mobile learning enables easy access to a wide range of resources and materials to support student learning. M-learning can be as effective as traditional teaching, for students can quickly and easily access information. M-learning amongst medical students has, over the years, been linked with improved performance and better outcomes in exams (Baumgart DC, Wende I, Grittner U, 2017). Low cost, easy and high access, more established and circumstantial learning, convenience, communicative, instructive, and interactive are the features characteristic advantages to it. M-learning tools increase opportunities to use clinical experiences as learning opportunities (Green BL, et al., 2015), allow medical students to best utilize the downtime between clinical activities (Twiss-Brooks AB, et al., 2017) and has been associated with better exam outcomes (Smeds MR, Thrush CR, Mizell JS, Berry KS, Bentley FR, 2016). The learners are also able to self-assess while learning. Until the Covid-19 lockdown, mobile learning has been perceived to play an appropriate complementary role to traditional learning, wherein its unique features have enhanced learning outcomes.

The chosen medical college students were asked the following research questions:
RQ1: How medical students used mobile phone for academic purposes before the Covid-19 lockdown, while attending regular classes?
RQ2: How are medical students using mobile phone for academic purposes during the Covid-19 lockdown?

METHODOLOGY:

The researchers, through this study, attempted to examine the use of m-learning by medical college students for academic purposes before and during the Covid-19 pandemic lockdown. Focus group interviews were conducted with semi-structured questions. Sixteen medical students, aged between 18 and 22, tech savvy, familiar with the functionalities of latest mobile phones and applications, pursuing their undergraduate medical degrees in renowned colleges were chosen for the study.

M-LEARNING AMONG MEDICALSTUDENTS– BEFORE COVID-19 LOCKDOWN

The medical students referred to online text, videos, learning applications and e-books on their mobile phones, besides books from college libraries on normal working days. The respondents used m-learning to access a wide range of e-books, which would be expensive and impossible considering the affordability. They gained easy and quickacce**ss to a wide range of resources and study materials from anywhere anytime and share the same with anyone.** The respondents used them as a platform to communicate among peers and/or tutors. They took periodic assessments to self-evaluate and improve, and also accessed various mobile applications to extract banks of question papers to work on when off line (Boobalan, Jayaseelan and Pichandy 2020). They usually take up these assessments as short learning

techniques to monitor their progress and competency, and avoided spending long hours. They also collected in-depth data in multimedia formats, including photos, videos, interviews, animation, etc. and subsequently made efficient classroom presentations otherwise impossible in a traditional landscape. Two respondents were more comfortable with traditional classroom teaching methods and book references rather than m-learning. M-learning offered them contextual materials from their educator to support fieldworks, to prepare for working in real-life situations and sometimes captured field observations captured from the actual field. The respondents said that unlike the traditional classroom interaction of asking questions, raising hands, volunteering answers, where they find it hard to engage with their teacher and actively participate in a classroom, m-learning offers them the scope of interaction, active participation, sharing ideas, apply their knowledge, in due course learning was more enjoyable and engaging. They also watched live streaming or recorded videos of surgeries. Few commonly used apps and sites included geeky medics, student bmj, medrevisions, medcram, and osmosis for learning, reference, enhancement, revision and assessments. They also downloaded free books from sites like freebooks4doctors, freebookcentre, medicalbooknew, freemedebooks, and medicostimes for pdf of books. The students were offered a plethora of activities on their hands to engage them in learning as well as equally distract them. Few of the respondents got carried away while most of the students were more composed and in control over their learning time. Mobile devices can enable students to learn in any time or location, however and wherever it suits them (Ellaway RH, et al., 2014).Smartphone technology has revolutionised people's life and lifestyle in all affairs of self and social development, and has offered innumerable features to enhance and enjoy learning with a multipurpose device that could also be distracting sometimes.

M-LEARNING AMONG MEDICALSTUDENTS– DURING COVID-19 LOCKDOWN

Mobile phone is one thing that a college student never lets beyond sight; it is either in one's hand or within a couple of feet. The Covid-19 lockdown has given all the more a valid reason for college students to be locked on to their phones, and for the teachers to continue the communication with learners by delivering virtual live lessons. Classes and discussions are scheduled on Skype, Zoom, Google Handouts, materials and assignments are shared and submitted via Google Classroom, WhatsApp groups for the ongoing courses. Video lectures are also recorded and shared online by the teachers. All the respondents attended online classes conducted by their faculty members regularly, including the ones who preferred physical classroom environment and hardcopy books. Their regular theory classes were handled online, though the practical sessions were skipped, given the study from home setting, and this evoked the fear about practical trials in the subsequent academic year among the students and faculty members. They simultaneously used online materials for extensive or related study and reference. The respondents extensively searched for information and updates on coronavirus and the Covid-19 pandemic, in the current scenario. M-learning offers them an informal space to share, collaborate and integrate ideas as well as clarify doubts from the examination point of view. The students find themselves more engaged to the online classes without any hesitancy unlike the regular classroom setting (Boopalakrishnan and Jayaseelan, 2019). Mobile learning enhances sharing and peer learning among medical students, offers them a wide range of online and offline resource materials,on their hands and bridgesany communication gap, especially in the current confinement setting. The respondents took periodical assessments on mobile devices, where they could click on their answer and verify with the correct answers. They

also referred books and e-books for related information. One of the respondent felt that with development of ICT in education, online video-based micro-courses, e-books, simulations, models, graphics, animations, quizzes, games, and e-notes are making learning more accessible, engaging, and contextualized. The speed and the accessibility of internet on smartphones enable the respondents to share study material with anyone, anytime and anywhere.

The respondents attended 2-4 hours of online classes each day based on the theory classes in their year of study. With nothing much to do during the day, they often found solace in their mobile phones, for education or entertainment. A wide range of mobile applications enabled access of content, even when userswere off-line. Learning is happening everywhere from anywhere between anybody and everybody. Mobile learning contributes greatly to enable access to resources and materials as the fundamental first step in the learning process.

DISCUSSION AND CONCLUSION:

Mobile phones, originally meant for communication purposes, has changed the dynamics of family and society over the years and have become an integral part of human life. A person without a mobile phone feels incomplete and it has become a necessity during the Covid-19 pandemic lockdown. Mobile phones not only replaced various devices from our daily lives, but also instructs, educates, evaluates, informs, directs, reminds, entertains college students, as an educational tool on one side, and distracts them with irrelevant notifications, health issues, addiction issues, social distancing, privacy threats, cyber bullying, etc. on the other. They offer incomparable benefits but also have some negative effects (Prasad M, Patthi B, Singla A, et al, 2017).The traditional concept of education was considered the wise, respectful and systematic

cultivation of learning to acquire beliefs and skills in order to share and socialise in life while m-learning (mobile learning) facilitates learning and access to educative materials via wireless medium on mobile phones, and employed on a regular basis.With mobile learning having become the norm as part of the digital transformations, students have all the more reasons to be glued to their phones, with classes being conducted only online related to the Covid-19 confinement.

Among various technological gadgets, smartphones, as the new generation devices, offer various functions like communication, entertainment, education, information, beyond their fundamental functions of making and receiving calls and the medical students commonly use m-learning tools to learn, study, refer, compare, prepare notes, assignments, presentations, for academic purposes besides the online classes conducted during the lockdown. Anybody can do these from anywhere at any time with anyone, right from the comfort of a single device. M-learning devices definitely have positive influence on students' efficiency and the respondents'experiences in m-learning only confirmed the pre-existing positive notions about the devices.

M-learning has some disadvantages like lack of access to technology and internet, technical failures, speed, connectivity, memory and file format support issues, risk of distraction and ill-effects of mobile phone usage towards physical and mental health. M-learning devices can have a positive impact on the learning experiences of medical students (Alegría DAH, Boscardin C, Poncelet A, Mayfield C, Wamsley M, 2014), provided these issues are taken care of, controlled or eliminated, when necessary.

However, the Covid-19 lockdown has provided a fillip to augment technology adoption, and thereby experiment online learning to measure its success for implementation with futuristic perspectives. Given the lockdown scenario, the teachers and students have been driven into virtual learning, with no other options on hand, providing them with space to experiment, learn, improve and implement the same in a regular setting, thereby shifting the landscape of education to m-learning from traditional learning. Education will be digital for now and m-learning could be lucratively collaborated into medical education strategies and practices, and this could be helped by better understanding its efficiency, effectiveness, limitations, impact and outcomes. Mobile technology has changed the way we live, and eventually the way we learn and will continue to do so.

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A STUDY ON ENVIRONMENTAL CONSEQUENCES OF COVID 19

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Abstract
The public health and environmental concerns are a matter of political choices. The health and economic crises are considered to be a vicious combination. The rich industrial nations have announced several packages for dealing with the impact of Coronavirus. The economic rescue packages for dealing with the impact of coronavirus must also be green. The government has to spend large amount of money to sustain jobs and livelihood. This should be done keeping in view green concept. The year 2020 seems to be more remarkable and transformational in recent history. There have been demand and supply shocks across the global economy as a result of emergence of COVID 19. Many European economies faced dislocations as a result of virus spread. COVID 19 is an infectious disease caused by the newly invented coronavirus. They were first discovered in the late 1960s. The study covered the various ways in which coronavirus is bringing changes in the environment. Some of them are positive and the others have a negative impact on the environment. The impact of COVID 19 on International Environmental law was also examined. The environmental consequences of COVID 19 in various countries were also analysed. Italy and China were the countries selected for identifying environmental impact. The various ways in which virus is bringing changes in the

environment are air quality improvement, greenhouse gas emission, waste, metro, airline emissions and climate. The interconnections between COVID 19 pandemic and international environmental law at three stages of crisis was made.

Keywords: Corona Virus – Environment - Environmental Consequence

1. Introduction

Many oil companies have committed to new environmental targets and technologies from the beginning of this year. They have replaced from clean power to hydrogen fuel. Banks have withdrawn from coal financing. Automakers have introduced new electric cars on to the market. Renewable energy and storage will continue. The next decade is very crucial in the way the business defines its relationship with the environment and the steps to be taken by the government to secure the future against adverse impact of climate change and degradation of human capital. The fossil fuel companies have to manage new reputation risks. The company's entire environmental performance coming under the scrutiny from both shareholders and customers. Companies have to justify the impact of their operations and supply chain. They should work out how to tackle with operational and reputation risks. It is very difficult for the companies to survive in the world of global emissions and environmental degradation and consumer demand. Environmental regulations are rolled back and it places a great responsibility on business to ensure that standards are met. If they are not followed, the company's creditworthiness and cost of disclosure and financial penalty will be more.

2. Statement of the Problem

The pollution and greenhouse gas emissions have reduced as countries try to minimize the spread of coronavirus. Within a

matter of months, the world has been transformed. Thousands of people died and hundreds of thousands have fallen ill. For those who have not caught the disease, their entire life style changed. So this global pandemic is also bringing about environmental change. When the travel has been reduced, the emissions will be reduced. But when the people are planning to take long trips later, the condition will be adverse. The demand for oil products steel and other metals has reduced .At the same time their stock has increased so it will help to pick production faster. Thus it can be seen that corona virus have a long term impact on sustainability. The efforts to contain the virus have a remarkable environmental impact. In addition to loss of lives, the virus had disrupted society and demobilized the global economy. The present study deals with the environmental consequences in the wake of COVID 19.

3. Objectives of the Study

- To study the ways in which coronavirus is bringing changes to the environment
- To study the impact of COVID 19 on International environmental law
- To explain the concept of trade off paradigm in explaining relationship between human and nature
- To study the environmental consequences of COVID 19

4. Significance of the Study

Human beings have unlimited wants. The entire continent has limited capacity to satisfy these wants. COVID 19 has contributed to human interferences such as deforestation, encroachment on animal habitats and biodiversity loss. The main aim is to control the spread of Covid 19 and reduce the death toll. But all these changes have led to unexpected consequences. As industries, transport networks and businesses have closed down, there has been a sudden drop in carbon emissions. This crisis shows the

urgency to promote necessary transformations for the society to survive in 21st century. In any break down there is always a chance to break through. So there is a need to study the impact of Covid 19 on environment.

5. Scope of the study

The study covers the major environmental consequences a result of Covid 19 Lockdown from March 20th to April 13, 2020.The consequences mainly occurred in China and Italy has been covered.

6. Research Methodology

The present study is descriptive in nature and is based on secondary data. Information has been derived from BBC, Business line and UN environment websites.

7. Discussion and Findings

7.1 The following are the ways Coronavirus is changing the Environment

The COVID 19 has a big impact on environment. Some are positive (drop in CO2 emissions as factories shutter) while others negative (growing of infected waste like tissues and old face masks).

7.1.i Improvements in Air Quality

- Drop in air pollution when virus outbreak in December 2019
- There was around 14 percent drop in rush –hour traffic
- Due to reduction of air pollution, lives of persons could be saved
- European Commission limits on air pollution designed to protect people's health.

7.1.ii Greenhouse gas emissions

- Economic activity slowed down

- The countries order the close down of schools, shops and factories
- CO2 emissions fallen by around 25 percent
- Demand of oil reduced
- It is expected that there will be a decline on oil demand globally
- Energy markets is also affected
- Demand for transport fuels fallen
- There has been a rise in internet traffic
- People go on spending a long time on internet searching information, playing games, what's app etc.

7.1.iii. Mountains of Waste

- Coffee chain Starbucks decided to stop accepting reusable cups from customers
- Serve drinks in disposable single use cups
- Single use cups cannot be recycled
- Very difficult to dispose medical waste produced by hospitals including face masks
- Single use medical items in contact with infected patients should be burned to prevent further contamination

7.1.iv More room on the metro

- Peak hour travel avoided
- Working from home resulted in loss of service of cleaner forms of transport
- Riders were not allowed to take tickets on board to reduce the spread of virus

7.1.v Stalled airline emissions

- Airlines canceling increasing number of flights
- Countries introduce travel restrictions
- Airline industry lose up to $113 billion
- There has been a dip in carbon emissions

7.1.vi Climate is no longer the crisis

- Meetings were canceled
- Virus cannot be allowed to slow down actions to tackle climate and ecological crisis.

7.2 Covid 19 and the limits of International Environmental Law

The pandemic gives emphasis on weaknesses of international environmental law

7.2.i Disconnection between human and nature

Human health is linked with that of animals and environment. This fact has been exacerbated by increased rate of environmental degradation and high levels of urbanization. The pandemic originated due to inability of international community to protect forests and its wildlife. If virus originated in a live animal market confirmed, it will be a painful demonstration of the failure of existing legal regimes to protect the wildlife.

7.2.ii Analyzing responses through climate lens

Both global health and climatic change are collective action problems. They rely heavily on scientific knowledge and require individual actions that will not be linked to a collective outcome. The measures taken by government to limit the spread of the disease have resulted in reduction in greenhouse gas emissions. The government did not have the budget to finance the energy transition in countries. It was believed that economic growth would be prioritized over environmental protection. The pandemic shows that when threat is there, all becomes possible at a great speed and scale.

7.2.iii. Impact of pandemic for environmental protection

In the short term pandemic has a positive impact on environment with emission of air pollutants and greenhouse gases decreasing. In the areas attacked by virus. Existing environmental obligations met more easily. But it has adverse effects on environment like

large scale repeated spraying of disinfectants in cities to eradicate virus. Plastic bags are promoted to reduce the risk of spreading virus through reusable bags. The schedule of intergovernmental meetings was postponed. The pandemic resulted in delaying action and losing momentum. The pandemic has given chance to create green jobs and catalyse structural investment.

7.3 Trade off Analysis of Covid 19

This analysis considers both positive and negative impacts of human interventions on nature.

7.3.i Positive impacts

- Good air quality in 337 cities
- Decline in nitrogen dioxide
- Reduction in pollution

7.3.ii Negative impacts

- Society disruptions
- Demobilisation of global economy
- Deforestation
- Biodiversity loss

7.4 Trade off analysis

This involves identifying the stakeholders in making specific choices and estimating potential gains or losses for various stakeholder groups. The role of private and public stakeholders are determined and the influence of outcomes on existing national and global governance structure is analysed.

7.5 Unexpected Environmental consequences of Covid 19

7.5.i China

- Reduction of smog
- Increase in medical waste-personal protective equipment of healthcare professionals worn only once
- Reduction of climate change

- Unemployment

7.5.ii Italy

- Unpolluted canals
- Banning infected residents from sorting their waste
- Disposable bags banned
- Use of plastics promoted
- Increasing number of online purchases
- More fossil fuels to be burned for the individual transportation and distribution of goods

7.5.iii United States

- Wild animals started roaming in the streets
- Abandonment of environment sustainability programs
- Smaller municipalities halted recycling programs due to the risk associated with spread of virus

8. Conclusion

Covid 19 is upon every person and this too shall pass. All persons should remain careful and take precautionary measures. Covid 19 pandemic offers a plenty of lessons on personal, regional and planetary level. This crisis shows the urgency to promote necessary transformations for society to survive in the 21st century. It can be a good reminder that in any break down, there is always a chance for breakthrough. Community quarantine helped to value ingredients and materials produced locally by neighbors and friends. It is a sign that all persons unite their actions to solve global problems and respond quickly in spite of many obstacles. The virus has given a good lesson-If we reduce our impact on nature, it will return the favour with fresh air, clean water and bounteous eco-system services.

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PUBLIC POLICIES SHAPING TO THE COVID - 19 PANDEMIC WORLD

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Corona Virus Disease or COVID 19 is a new virus disease that originated in 2019. To date, Corona virus disease 2019 (COVID-19) has already affected more than 11.8 Million people with almost 544K deaths worldwide. Evidence suggests that human-to-human transmission of SARS-CoV-2 can occur through droplets, contacts and tears. This has led several countries to adopt a series of confinement measures that aim to reduce the spread of the contagion and the number of simultaneous active, "serious" COVID-19 cases that risk overcharging hospitals and intensive care units. The measures taken by the government consisted in recommending social distancing, while forbidding any form of assembly or crowd; furthermore, restaurant, cafes, and most of the shops were closed besides food stores and pharmacies. Hospitals and health care providers are trying to adjust to the current situation developing and/or ameliorating telemedicine services and privileging urgent/emergency care over routine practice. The impact of the COVID-19 lockdown on the world of research is also inevitably heavy. Direct consequences of the lockdown measures are the slowdown of all research activities (in particular non – COVID-19 - related) and the cancellation/postponing of national and international conferences. Research institutions are often left autonomous in deciding how to face the lockdown, deciding whether to shut down completely or continuing their research activities while ensuring the safety of their employees.

The 2020 corona virus disease 2019 (COVID-19) pandemic poses an unprecedented challenge to established democracies. Governments face an apparent trade-off between a large number of deaths and an economic shutdown. In response, most countries have enforced strict social confinement measures unthinkable outside war times, and usually referred to as 'lockdowns'. Although there seems to be a consensus that such policies are the most effective means to reduce the incidence of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), which causes COVID-19, they also strongly reduce civil liberties, erode social capital and bring about economic insecurity (COVID-19 has spawned a surge in the number of public policies adopted, the forms in which they are adopted within and across governments, and with the range of their designs and contents.

Most countries have closed or restricted their borders and restricted travel within borders. One-third of the world's population has been subjected to some social restrictions (from school closures to stay-at-home orders). These policy decisions exist across levels of government. For example, some occur at the national level, such as the world's largest lock down targeting India's 1.3 billion people, or at the sub national or local level. In examining this surge of policy change through the lens of the literature on policymaking, a few lessons emerge.

While we are experiencing a surge of policy change aimed at reducing immediate societal threats, there remains great uncertainty regarding which of these changes will remain permanent and which will be terminated. This includes questions about how they will be terminated (phased or immediate) and the political consequences of reversing decisions that increased welfare benefits to cope with the immediate crisis. Alongside the

decision to take policy action is the choice to not act or delay action.

Global policy processes refer to "a set of overlapping but disjointed processes of public–private deliberation and cooperation among both official state-based and international organizations and non-state individuals around establishing common norms and policy agenda for securing the delivery of global public goods or ameliorating transnational problems" Transnational administration is directly related and concerns "the regulation, management and implementation of global policies of a public nature by both private and public individuals operating beyond the boundaries and jurisdictions of the state, but often in areas beneath the global level" . Self-evidently, the spread of COVID-19 presents a global policy problem but arguably has not (yet) become subject to transnational administration.

Space for self-isolation is unaffordable in slums. Individuals have different possibilities to return home when business shut down, as illustrated by the situation in India, where thousands of migrant workers were stranded in wake of the lockdown. The pandemic also compounds inequalities between the so-called Global North and Global South, where "basic handwashing facilities are not available for 40% of the world population, let alone soap or hand sanitizers"

The policy communities that form around global health policy or the pandemic response include experts, bureaucrats, diplomats, consultants, and other professionals highly experienced in their policy sectors and international cooperation. However, the idea that public administration and decision making rests in the hands of professionals who work through international arrangements outside or beyond the accountability structures of established

nation-state institutions is deeply disconcerting for those who believe such dynamics are anti-democratic and lead to unaccountable "global elites" let, overcoming COVID-19 rests with these professionals, illustrating the tension between effectiveness and accountability in transnational relations.

The pandemic illustrates intra-crisis learning, including how experts and decision-makers continuously review and update policy responses as new knowledge becomes available. The time lag between countries' experience with COVID-19—particularly in societies that were affected early, including China and Italy—provides other countries an opportunity to monitor the pandemic and evaluate policy responses, as a basis for their own responses. We also see evidence of learning in a variety of domains and scales of policymaking: from local leaders who learn from public health agencies on the extent and impact of the virus in their communities, to parents learning from each other how to co-produce their children's education from schools

Learning can take various forms: as updates to our understanding of instrumental or technical aspects of a policy problem, as changes to our underlying policy beliefs or values about societal priorities in responding to problems, and as fundamental alterations to the institutions that target these problems. Instrumental learning around COVID-19, for instance, has occurred regarding how long the virus can linger on surfaces, leading to closures of many public and private buildings. Influencing our value orientations, the COVID-19 crisis has brought attention to underlying social dilemmas that make people either more vulnerable to the virus, or vulnerable to the efforts to stop it. We also see evidence of learning about the strength and vulnerabilities of the institutional rules structuring our governments and their efforts to tame the pandemic.

In the case of the COVID-19 pandemic, learning is potentially constrained by several issues: the immediacy and urgency of the crisis, popular demands for forceful action, limitations in technical knowledge, and politicization. This raises questions as to whether we are learning the right things and whether the right people are learning. Many of our policy choices reflect a "muscle memory" from the past to guide us through the crisis until we can pause and reflect, allowing for deeper forms of learning. With COVID-19, we have some experiences to draw on,

Public policy is not self-enacting; rather, administrative actions bridge a government's intent to do something (policy) and the real-world impacts of that intent. Crises such as the COVID-19 pandemic demand swift and coordinated action that adapts fluidly to conditions. Such coordination generally spans different agencies and across levels of government. Furthermore, as devolution and privatization of public services have shifted critical administrative functions to disparate entities both within and outside of government, policy responses to even simple emergencies call for joint action between government organizations, nonprofits, for-profit enterprises, and individuals. Every aspect of implementation shapes how public policy takes place "on the ground"—from how administrators interpret policy directives to the way front-line personnel operationalize them.

We may judge outcomes leaning toward the success end of the spectrum even when there have been shortfalls, such as when initial delays in ordering testing kits still lead to perceived success overall once testing kits arrive and high-volume laboratory processing occurs. Correspondingly, outcomes may also be judged as leaning toward failure, despite small gains and comforts, such as Italy's collapsing emergency healthcare, despite

some lives being saved. In the middle of this spectrum is a mix of successes and failures, akin to a tug-of-war over perceptions of the outcomes related to crisis decisions, processes, and politics.
The pandemic poses unprecedented challenges in its immediate need for action, global span, and magnitude of impacts. We write this at a time when the pandemic has not yet reached its peak; hence, we draw on early observations in a concerted effort to offer insights into the ways in which scientific and technical expertise, emotions, and narratives and messaging legitimize policy decisions and shape relationships among citizens, organizations, and governments. We demonstrate the varied processes of adaptation and change, including learning, surges in policy responses, shifts in networks locally and globally, implementing and administering policies in response to transboundary issues, and assessing policy success and failure.

There are also understudied aspects of the policy sciences that deserve more attention in the aftermath of the COVID-19 pandemic. The global response to the pandemic has heightened the need for renewed research not only on the surge of new policy decisions, but also on the effects of non-decisions and policy terminations. The pandemic has further exposed economic and political inequalities in global policy responses, yet questions remain about how to mitigate these inequalities to support the world's most vulnerable. The political response to the pandemic has altered priorities and, thus, the focus and intensities of policy conflicts, but the characteristics and permanency of these changes remain unknown. The increased reliance on scientific and technical expertise in making policy decisions raises questions about political accountability in policymaking. While much of our focus has been on the use of scientific and technical expertise in supporting policy decisions, we have not focused enough on the role of emotions and their effects on legitimizing decisions and

achieving desirable outcomes. Even though narratives and messaging are important, we still know little about how to construct and deliver them effectively to influence public behavior. The pandemic has renewed attention to the importance of, and how little we know about, learning under stress and urgency in the middle of a crisis. Given the necessity of linking mass responses and policy decisions, the pandemic reinforces the need to foster understanding in both public policy co-creation and co-production. While we know base values and other orientations drive policy success and failure, questions remain about how to deal with the tradeoffs between them.

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REVIVING OF INDIAN TOURISM BACK AFTER THE CORONA PANDEMIC: CHALLENGES AHEAD

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Abstract: The recent Covid-19 virus attack, which started from China has turned down normal life of people all over the world and killed several thousand people around the globe. India has also seen around 353 deaths as on date with around 10815 people affected in the country. Government has invoked curfew all over the country initially for one week and then extended for 21 days. All establishments, schools, colleges, malls, theatres, resorts, hotels have been closed, besides all modes of transport from flights, trains, buses and taxis are shut. The employees have returned to their native places. The normal life has come to a standstill situation. Since the situation has not come to normal yet, this study examines what is the extent of damages caused to the tourism industry in India and what are the challenges faced by the government, private sector which includes hotels, flights, tour operators, travel agents etc and the challenges ahead. Many employees have lost their jobs and suffering without income. The biggest problem with this Corona attack is, so far no medicine or vaccination has been found for this virus. Though research is being carried out all over the world to find a medicine for the virus, still it is expected to take minimum 1 year for the medicine to come to market. Only alternative medicines are now being used. The damages caused to tourism sector in India are analyzed and challenges ahead for reviving the tourism business back is explored.

Keywords: Tourism after pandemic, tourism after corona, Indian tourism revival, pandemic effect, tourism in 2020.

Introduction: Various contagious diseases have spread around the world in the past, like swine flu, cholera, yellow fever, chicken pox, SARS and chicken kuniya in India in which had severely affected tourism worldwide. But now the present Covid-19 virus attack on humans has become pandemic started from China and spread across 204 countries around the globe which should be the largest known pandemic in the world history. In India the spread of virus is comparatively less and also death so far found around 353 and spread of virus around 10815.People have also got cured. As a precautionary measure our Prime minister announced curfew initially as a trial for one day and then for one week and later announced 21 days curfew up to April 14th, 2020 and today PM has announced curfew until May 3rd 2020. All organizations, schools, colleges, hotels, restaurants, resorts have been shut all over the country and all modes of transport from bus, rail and flights have been closed. Regarding Covid-19 virus attack now, the good news is that most people recover from the disease and develop antibodies that can protect them from getting infected again (natural vaccination). Those cured might become the key element for the post-virus recovery strategies of tourism organizations. People with the acquired immunity to the virus would be capable of travelling freely without spreading the disease. The fatality rate is around 9.6% and comparatively less than SARS. The problem of this Covid-19 virus is the incubation period is long and it leaves the infected people without any symptoms of the disease, which makes it more difficult to track and contain.

Tourism studies have consistently found five critical tourism risk factors: (1) War and political instability (Gartner & Shen, 1992) (2) Health concerns (Miller & Ritchie, 2003; McKercher& Chon, 2004) (3) Crime (Brunt, Mawby & Hambly,2000 (4) Terrorism (Sönmez, 1998). (5) Natural disaster (Faulkner, 2001; Amstrong & Ritchie, 2007. In this diseases are the only one which spreads fast to others and even other countries and can create huge number of deaths compared to other risks which may be mostly regional. Covid-19 Virus has elongated soft surfaces all around like a ball as shown in the fugure.no.1 and it passes through 4 cycles as shown in Figure.no.2

i.e. 1.Imported cases 2.Local transmission 3.Community transmission and 4. Epidemics. In India the virus is still in the second stage only that's the problem and government is trying the best to control the spread of disease further by asking people to stay at home.

Figure no.1 – Covid-19 Virus

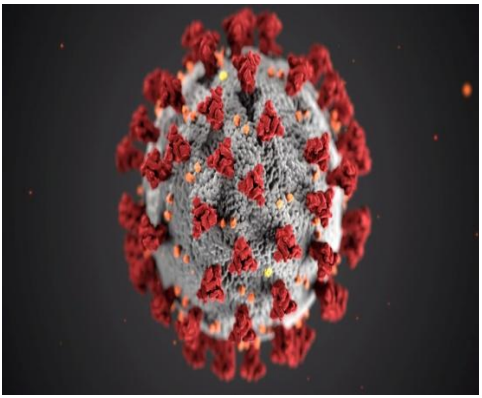
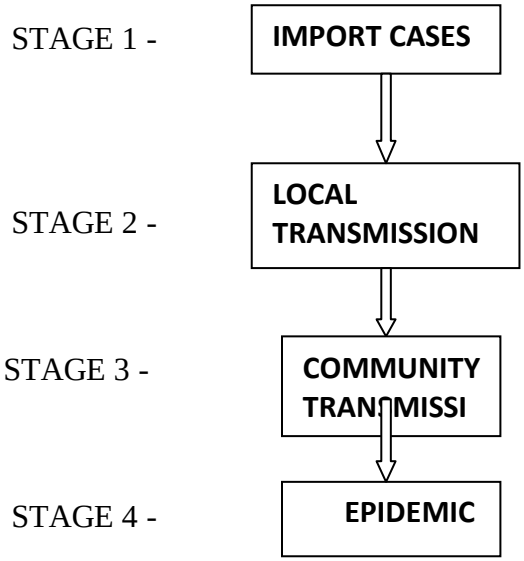


Figure no.2 The Four stages of Covid-19



Review of literature of past epidemics.

SARS (Severe Acute respiratory syndrome) first started in 2002 and infected 8000 people causing 774 deaths in 26 countries (Wilder-Smith, 2006). According to the World Travel and Tourism Council (2003), the outbreak of the SARS disease led to the collapse of the tourism industry in the most severely affected Asian countries, namely China, Hong Kong, Singapore and Vietnam.

Chikungunya virus, an alpha virus first isolated in Africa in 1952, is a mosquito-transmitted virus that was carried by travelers to geographically disparate regions on different continents. The outbreaks of chicken gunya virus infection originated in Kenya in 2004, and major outbreaks followed in the Indian Ocean Island

countries like Reunion, Mauritius, Comoros, Seychelles, India, Indonesia and Madagascar in 2005 to 2006 (Charrel et al., 2007).

Dengue fever, a flavivirus, is endemic in Southeast Asia, South Asia, the Pacific, Caribbean,and Central and South America, and its history illustrates the intricate interactions of travel, movement of goods, and translocation of infectious disease, (Gubler, 2002). Dengue fever spread across India also between 2015-2018. It has caused some deaths also due to high fever.

Ebola Virus disease(EVD) known as Ebola haemorrhagic fever (EHF) is one of the viral haemorrhagic fever which affects the person`s blood system. It's a severe virus often fatal illness in humans and primates often monkeys, gorillas).The Ebola virus is an RNA filovirus that has wiped out several nonhuman primate populations over the past 20 years (Bermejo et al. 2006). The virus appears to be restricted to the rainforests of central and western Africa and Southeast Asia (Monath 1999). According to the UN and WHO, the first reported case in the Ebola outbreak that has ravaged west Africa dates back to December 2013.
Mckercher and Chou, 2004 have stated in their research notes that two diseases with their origin in Asia, namely the Severe Acute Respiratory Syndrome (SARS) epidemic, which received worldwide attention in 2003, and the H5N1 Avian Influenza (hereafter Avian Flu) epidemic, which has received worldwide attention since 2004, have significantly damaged the image of international tourism to Asia as a safe tourist destination.

1.0 Objective of the Study

This research is done with the following objectives:

(i) To study the nature of various contagious diseases.
(ii) To study the impact of Covis-19 virus attack on tourism Industry In India.

(iii)To access the challenges faced by Indian tourism industry to revive tourism business.

4.0 Impact of Corona virus on Tourism Industry

4.1 Impact of Corona virus shut down on Hotels & resorts:

Since curfew imposed all resorts in tourist places were shut as per government order and all tourists told to vacate and go back to their homes. Hence all hotels and resorts have closed their operations. Government cancelled all tourist visas and international and domestic flights resulting in nil foreign tourist arrivals and no out bound tours also. This has resulted in a big blow for tourism sector with nil income during this period. First for government, huge loss of foreign exchange revenue, taxes, etc. The problem for the hoteliers is loss of revenue and paying of fixed costs like salaries, taxes and electricity bills and maintenance expenses. Several employees are out of work and in the present situation most of the temporary workers may lose their jobs, since hotel industry will take at least 6 months to stabilize and till then most hoteliers may keep only minimum staff. In case of resorts properties, it will be worst affected since people will be in no mood to go for any tour since they haven't gone for job for many days, their main priority will be to work and earn money.

4.2 Impact on flight sector

All international and domestic flight operations have been cancelled indefinitely and this has resulted in huge loss of revenue to the government as well as to the International and domestic flight companies. Without operations, providing salaries to their staff and maintaining the air craft's is a big task. The other related sector is flight cargo, which is also severely affected.

4.3 Impact on taxi and auto service

Since there is no flight, train and bus services the taxis and autos are badly hit since most taxi and auto wala`s do not own the vehicle and they pay rent and ride vehicle and many drive Ola and Uber type taxis and they are paid according to the trips. They suffer without any income for more than a month as of now.

4.4 Impact on tour operators and travel agents

The Inbound, out bound and domestic tour operators are very badly affected, since all modes of transport are banned totally they have to shut down their business. The tourism Industry loss during this period will be 10 % of the GDP. It will take at least 1 year for tourism business to pick up. Only it can start with business trips, MICE tours and family tours to resume operations.

4.5 Impact on allied tourism sectors

Many allied tourism sectors like restaurants, theme parks, souvenir shops, beauty parlor, money changers, guides etc, are also severely affected, because they are fully dependent on tourist arrival and business from guests.

Table No.1 Corona virus affected status in India as on April 14th , 2020

S.No	STATE	AFFECTED	CURED	DEATH
1	Andhra Pradesh	473	14	9
2	Andaman and Nicobar Islands	11	10	0
3	Arunachal Pradesh	1	0	0
4	Assam	31	0	1
5	Bihar	66	26	1
6	Chandigarh	21	7	0
7	Chhattisgarh	31	10	0

8	Delhi	1510	30	28
9	Goa	7	5	0
10	Gujarat	617	55	26
11	Haryana	185	29	3
12	Himachal Pradesh	32	13	1
13	Jammu and Kashmir	27	16	4
14	Jharkhand	24	0	2
15	Karnataka	258	65	9
16	Kerala	379	198	3
17	Ladakh	15	10	0
18	Madhya Pradesh	730	51	50
19	Maharashtra	2337	229	160
20	Manipur	2	1	0
21	Mizoram	1	0	0
22	Nagaland	1	0	0
23	Odisha	55	18	1
24	Puducherry	7	1	0
25	Punjab	176	14	12
26	Rajasthan	879	133	3
27	Tamil Nadu	1173	58	11
28	Telengana	623	100	17
29	Tripura	2	0	0
30	Uttarakhand	35	7	0
31	Uttar Pradesh	657	49	5
32	West Bengal	190	36	7
	TOTAL	10,815	1190	353

Source: Ministry of health & Family welfare, Govt of India report as on 14-4-2020.

5.0 Hotel Industry`s readiness to tackle the present situation

Radisson Hotels Group and HVS SOP`s for star hotels how to handle the operations for various departments which need to be trained by the department heads. How to handle guests is also explained and also employees dining, locker room all departments are covered.

6.0 Challenges ahead for Indian tourism Industry revival

6.1 Challenges for Hotel and resorts

The first challenge for hotel and resort Industry is to start the operations fully, because most of the staff have gone to their native place and hence they have to call them back and start cleaning and sanitizing all departments and make it fit for guest occupancy. If SOP`s are created the same need to be trained to the staff. Resorts will be most affected and they cannot employ all employees, but at least in a phased manner employees can be taken.

6.2 Challenges for Tour operators and Travel Agents

In Tour operators first only domestic tours operator will be in a position to get business from clients because of business tours. So the tour operator has to first collect details of the hotels under full operation and also about the guest and their medical history, hence the tour operator has to be more responsible than before now. Domestic travel and inbound travelers can be expected. Travel agents also should be careful with bulk booking, passengers medical history to be known before booking. Travel to most affected places should be avoided.

6.3 Challenges for hospitality professionals

It’s going to be a difficult task for getting employment in the tourism sector for some months until the business gets picked up.

Hospitality professionals need to pick up any related job and keep working looking for better opportunities when the time comes.

Conclusion

The corona virus pandemic has definitely caused a stand still position almost all over the globe and affected the overall living of human beings. The total lock down situation has affected all business including all sectors of tourism industry. Hotels and resorts need to come with a new revival plan which should have reduction in tariff, offers for the guest. Since the total economy will be weak Government should also give some tax concessions and bank loans should be offered to meet maintenance expenses. In India corona virus is still in the 2nd stage only and let's hope the industry with the support of customers, the government and bank sector will overcome and revive back its business as before in a period of one year.

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IMPINGEMENT OF COVID-19 ON GENERATION Z & ALPHA

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Introduction:

Coronavirus disease 2019 (COVID-19) is an acute infectious respiratory disease caused by a newly discovered virus that is Coronavirus (SARS-CoV-2). These are a group of related single stranded RNA viruses that cause diseases in mammals and birds.
In humans, these viruses cause respiratory tract infections that can range from mild to lethal. Mild illnesses include some cases of the common cold (which is also caused by other viruses, predominantly rhinoviruses), while more lethal varieties can cause SARS, MERS, and COVID-19. Most people infected with the COVID-19 virus experience mild to moderate respiratory illness along with some other symptoms and recover without requiring special treatment, the disease presentation is more likely to be severe in older people, and those with underlying medical problems like cardiovascular disease, diabetes, chronic respiratory disease, etc. Symptoms in other species vary as in chickens; they cause an upper respiratory tract disease, while in cows and pigs they cause diarrhoea.

Classification of Coronavirus

Division: ***Riboviria***
Kingdom: ***Orthornavirae***
Phylum:***Pisuviricota***
Class: ***Pisoniviricetes***
Order: ***Nidovirales***
Family: ***Coronaviridae***
Subfamily: ***Orthocoronavirinae***

Structure:

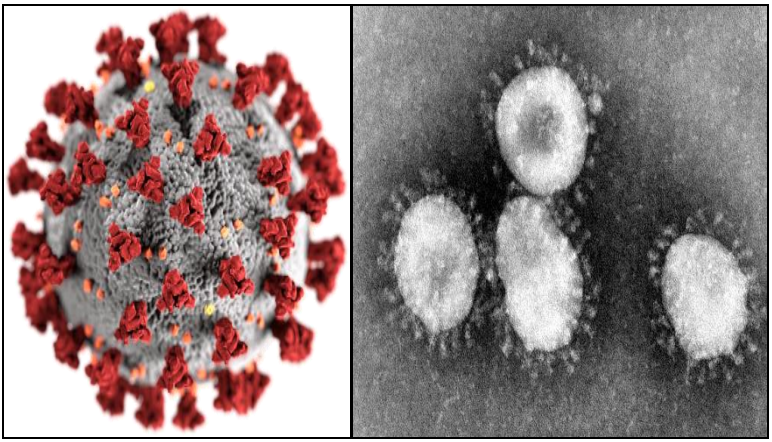

Fig. 1: Structure of Coronavirus

Coronaviruses are large and spherical particles with bulging out surface projections. The approximate diameter of the virus particles is around 125 nm. The diameter of the envelope is 85 nm and the spikes are 20 nm in length. It is an enveloped virus with

a positive-sense single-stranded RNA genome and a nucleocapsid of helical symmetry. The genome size of Coronaviruses ranges from approximately 26 to 32 kb, one of the largest among RNA viruses.

Types of human Coronaviruses

- Common human Coronaviruses

1. 229E (alpha Coronavirus)
2. NL63 (alpha Coronavirus)
3. OC43 (beta Coronavirus)
4. HKU1 (beta Coronavirus)

- Other human Coronaviruses

5. MERS-CoV (the beta Coronavirus that causes Middle East Respiratory Syndrome, or MERS)
6. SARS-CoV (the beta Coronavirus that causes severe acute respiratory syndrome, or SARS)
7. SARS-CoV-2 (the novel Coronavirus that causes Coronavirus disease 2019, or COVID-19)

Symptoms of COVID-19

The main symptoms include:

- Fever,
- Coughing,
- Shortness of breath,
- Trouble breathing,
- Fatigue,
- Chills,
- Body aches,
- Headache,
- Sore throat,
- Loss of smell or taste,
- Nausea and

- Diarrhoea.

Precautions against COVID-19

- Clean your hands often. Use soap and water, or alcohol-based hand sanitizers.
- Maintain a safe distance from others.
- Wear a mask when social distancing is not possible.
- Don't touch your eyes, nose and mouth by unwashed hands.
- Stay home and isolated if you feel sick or unwell.
- If noticing symptoms then seek medical attention.

Impacts of COVID-19

As there are no vaccines or antiviral drugs to prevent the treatment so it has various impacts. It is not only affecting the livelihood of the people but has various other impacts which are listed below:
Impact on economy,
Impact on business,
Impact on society,
Impact on students,
Socio-economic impact,
Global impact,
Impact on livelihood and many more.

Negative impact on developing youth

Developing youth that is the students among all are affected the most. The Covid-19 pandemic has had a major impact on education. By the end of March 2020, the epidemic had spread to over 185 countries and resulted in the closure of over 90 percent of all schools, colleges and universities impacting close to 1.38 billion students.

Fig. 2: Developing youth fighting covid-19

This closure of schools and universities created a pressure on the students in managing their studies. Teachers and other authorities found the solution by online classes. These online classes have affected many students badly.
The major problems faced by the students are listed below:

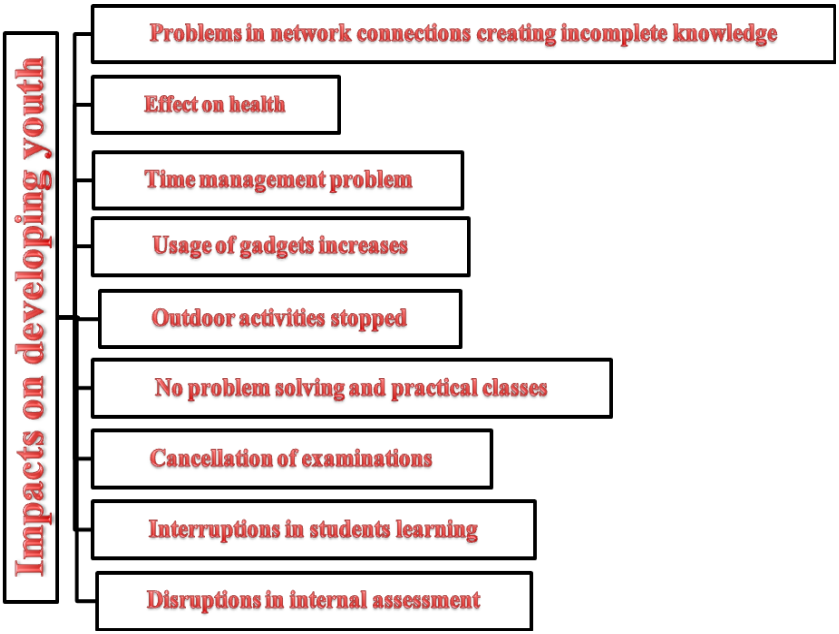

Fig. 3: Impacts of covid-19 on developing youth

Problems in network connections creating incomplete knowledge

Not everyone have good internet connectivity. Students and teachers living in villages have to face this problem. If teacher is taking class and in between interruptions are occurring then every student will have to suffer because either the voice is not audible or video is paused.

Effect on health

Long sitting hours in front of laptop or mobile phone is creating health issues among students. They have to attend back to back classes with proper concentration which results in headache or eyesight problems. Many students have faces backache problem as well. Many issues on health at this developing age can make them suffer more. Drastic brain developments, damaged eyesight, sleeping problems are some major health related issues which can affect the children health.

Fig. 4: Back related problems and eye sight problems

Time management problem

Online classes have no proper timings and intervals. Students get disturbed a lot by all this and no time is left for self-study and proper rest. Hence time managing is a big problem for them. The six to seven hours timings of school had made a proper schedule for the students with all aspects but now no school, no proper schedule hence no time management.

Usage of gadgets increases

All the classes and notes are on smart phones and laptops, hence students all the time uses these gadgets. These gadgets emit radiations which are not good for the eyes and health.

Fig. 5: Use of gadgets increases

And moreover these electronic gadgets have many other impacts on children such as radiation exposure, reduced interaction, sleep deprivation, no exposure to nature, damaged eyesight and addiction.

Outdoor activities stopped

Parents don't allow their children for the outdoor activities. They all get trapped in the homes along with these gadgets. Playing games is an essential part for the life for children but in this pandemic they can't move out and hence faces health related issues. Outdoor activities have several benefits such as a reduced risk of myopia, or near-sightedness; greater exposure to bright light, which enhances health and mental performance; increased activity levels, and greater freedom to run, jump, and climb; opportunities for hands-on learning about physical forces and concepts; reduced stress levels, better moods, and improved concentration, more naturally-attuned sleep rhythms; and enhanced opportunities to learn social skills, overcome fears, and

develop a lifelong connection with nature. Without these activities they will be facing many problems.

No problem solving and practical classes

In schools students learn practically a lot of things but on online procedure they can't learn it.

Moreover there are no problem solving classes being conducted which can solve their prior problems related to the individual subject and hence students have piled up all of them in their minds with no answers.

Cancellation of examination

Schools and universities have cancelled the examinations which is really a big issue for the student's evaluation. Their hard work has now no use left. This type of evaluation without examination is really not expectable to many. Due to this students will not be able to get the grades that they deserve and hence might face further competition in opportunities.

Interruptions in students learning

It is a human nature that if we have burden then only we can do the work properly, same is with the many of students if they have a pressure of teachers on them then only they perform well. Due to this pandemic students have a totally changed and disturbed learning pattern which will surely affect them in their achievements.

Fig. 6: Students learning pattern changed

Disruptions in internal assessment

No internal assessments are being held due to closure of schools. Students are not being evaluated properly hence they might face variations in their results.

Effect on children dependent on midday meal for food

Nutrition plays a critical role in cognitive development and academic performance for children. Many children worldwide rely on free or discounted meals at schools. When schools close, nutrition is especially compromised for children in schools where food is provided. In the United States, school lunch programmes are the second-biggest anti-hunger initiative after food stamps. Every year, nearly 30 million children rely on schools to provide free or low-cost meals including breakfast, lunch, snacks, and even dinner.

Fig. 7: Students taking midday meal

Major Negative Impacts on Overall Aspect of Education

1. Sluggish cross-border movement of students

Universities in many countries such as Australia, UK, New Zealand, and Canada are highly dependent on the movement of students from China and India. It is becoming clearer that this cross-border movement of students will take a beating at least for the next two to three years and will lead to a major financial risk for universities in these countries who are already under financial pressure. Many parents will avoid sending students abroad for higher education due to high risk from the pandemic.

2. Passive learning by students

The sudden shift to online learning without any planning -- especially in countries like India where the backbone for online learning was not ready and the curriculum was not designed for such a format -- has created the risk of most of our students becoming passive learners and they seem to be losing interest due to low levels of attention span. Added to this is that we may be leaving a large proportion of the student population untouched due to the digital divide that is part of many developing nations

including India. We are now beginning to realize that online learning could be dull as it is creating a new set of passive learners which can pose new challenges.

3. Unprepared teachers for online education

Online learning is a special kind of methodology and not all teachers are good at it or at least not all of them were ready for this sudden transition from face to face learning to online learning. Thus, most of the teachers are just conducting lectures on video platforms such as Zoom which may not be real online learning in the absence of a dedicated online platform specifically designed for the purpose. There is a risk that in such a situation, learning outcomes may not be achieved and it may be only resulting in engaging the students.

4. Changing format of student recruitment

Universities and colleges worldwide are facing a major risk in the area of student recruitment and retention. The risk of losing students is so high that they will need to re-look at their admission practices, admission criteria and the overall recruitment process itself which will include new methods of outreach and application process itself.

Major positive impacts on overall aspect of education

1. Rise in Blended Learning

Institutions will shift to a model of blended learning where both face to face deliveries along with an online model will become a norm. This will require all teachers to become more technology savvy and go through some training to bring them to the level that would be required. New ways of delivery and assessments of learning outcomes will have to be adopted which opens immense

opportunities for a major transformation in the area of curriculum development and pedagogy.

2. Learning management systems to be the new norm

A great opportunity will open up for those companies that have been developing and strengthening learning management systems for use by universities and colleges. This has the potential to grow at a very fast pace but will have to be priced appropriately for use by all institutions.

3. Improvement in learning material

There is a great opportunity for institutions to start improving the quality of the learning material that is used in the teaching and learning process. Since blended learning will be the new format of learning there will be a push to find new ways to design and deliver quality content especially due to the fact that the use of learning management systems will bring about more openness and transparency in academics.

4. Rise in collaborative work

The teaching community to a large extent has been much insulated and more so in a country like India. There is a new opportunity where collaborative teaching and learning can take on new forms and can even be monetized. Faculty members/ teachers can deliver online courses to even students from competing institutions. Collaborations can also happen among faculty/teachers across the nation to benefit from each other. Finally, it is expected that there will be a massive rise in teleconferencing opportunities which can also have a negative impact on the travel. A large number of academic meetings, seminars and conferences will move online and there is a possibility that some new form of an online conferencing platform will emerge as a business model.

Conclusion

Coronavirus disease 2019 is a pandemic disease which has a great impact on number of factors such has environment, education, journalism, hospitals, students, sports, religion, politics, society, tourism, economy, etc. and as a result most of them show negative impacts. Though it have some positive effects also. Following the guidelines given by the government can only make us fight against this disease.

There are as yet no vaccines or antiviral drugs to prevent or treat human Coronavirus infections. The new disease is unfamiliar in its nature and no inference can be made about its result. Also it is imperceptible or invisible. All its features make it a source of serious concern. It is clear that infectious disease have a profound psychological effect on all people – even those who are not affected by the virus.

Summary

COVID-19 is affecting all lives in one or the other way. The numbers of cases of affected people are increasing day by day at a greater extent. But this time we all have to fight against the disease and have to overcome all these impacts to affect our lives until the conditions normalised.

The fear of corona virus has started to affect people's mental health. Meanwhile, there has been an atmosphere of worry, fear, loneliness and uncertainty and people are struggling with it day and night.

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COVID 19 – THE JUSTICE OF NATURE: FOR THE NATURE BY THE NATURE

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Introduction:

The corona virus infectious diseases originated in 2019 (COVID 19) was declared as pandemic by The World Health Organization (WHO). A global coordinated effort is required to reduce the rate of infection caused by virus by stopping the further spread of virus. A disease is declared as pandemic when it occurs over a wide range of geographic area and affects an exceptionally high proportion of population. The world faced last pandemic in 2009 named as H1N1 flu.

31 December 2019, the day when a considerable number of cases of pneumonia of unknown cause were reported to the hospitals in the city of Wuhan, Hubei province in china, this was then reported to the World Health Organisation. In January 2020, the virus was identified which later found to be previously known and was named the 2019 novel coronavirus. After analyzing the samples collected from infected people the viral genetics indicated that this was actually the cause of outbreak.

Coronavirus?

They belong to a family of viruses causing illness related to respiratory and gastrointestinal infection which are supposed to be deadly infections for human.

Example:

Middle East Respiratory Syndrome (MERS-CoV)
Severe Acute Respiratory Syndrome (SARS-CoV)

Previously the novel corona virus (nCov) was not identified in humans. Once scientists determined exactly what coronavirus is, it was named (as in the case of COVID-19, the virus causing it is SARS-CoV-2).

Corona is a word derived from a dead language Latin which means crown, when the structure of corona virus was observed under microscope it looked like a crown, hence named coronavirus. This crown like structure consists of core of genetic material surrounded by spikes of protein giving it an appearance of crown as the name corona virus. These are zoonotic viruses that are they are transmitted from animals to humans.

It was supposed that MERS-CoV was transmitted from dromedary camels to humans and SARS-CoV from civet cats to humans. The source of the SARS-CoV-2 (COVID-19) is not yet to be determined; scientists are working to identify the zoonotic source to the outbreak. The indirect impact of the virus on the environment has been little analyzed. The first studies estimated a positive indirect impact on the environment. On the one hand, climate experts predict that greenhouse gas (GHG) emissions could drop to proportions never before seen since World War II. This outcome is mainly due to the social distancing policies adopted by the governments following the appearance of the pandemic. (Global Carbon Project, 2020)

COVID-19 and nature are linked. So should be the recovery.

A focus on nature can help us better understand from where pandemics come and how the socioeconomic is effected by the crisis could be mitigated.

The COVID-19 pandemic arrived as a sharp reminder of our dysfunctional relationship with nature.

Deforestation and loss of wildlife have become a major cause of infectious diseases according to recent studies.
Out of the total GDP of the world, half is highly or reasonably dependent on nature.
The economic stability is interconnected with nature and health. Nature's health is determined by the health of its components and thus the stability of nature.
This cannot be denied that the unfolding covid19 pandemic has greatly affected the life of human. More than 5 lakh deaths have been reported to date caused by corona virus worldwide, millions of job losses and stock markets suffered a great loss. This pandemic is a result of great pressure of current economic system put on the natural environment. The unfolding pandemic has shown a light on the domino effect that is triggered when one element in this interconnected system is destabilized. Theintact nature acts a buffer between humans and diseases and the emerging diseases are usually the result of intrusion into natural ecosystems and changes in human activity.In Amazon deforestation increases the rates of malaria, since deforested land provides an ideal habitat to mosquitoes. The outbreaks of diseases like Ebola and Lyme are also linked to deforested land, as humans come in the contact of previously undisturbed wildlife. A recent study about deforestation in Uganda confirmed that deforestation is increasing the emergence of animal to human diseases and focuses that the main cause of this is human behavior.
Experimenting with nature in order to manipulate its identity in the wrong way can have devastating implications on human.
The origin of COVID19 has established that origins of 60% of infectious diseases are animals and 70% of them are originating from wildlife. The origin of AIDS was reported from chimpanzees and SARS was thought to be transmitted from an animal still unknown to date. The number of infectious diseases has quadrupled in last 6 decades and major cause behind this that

we have actually lost 60% of wildlife in last 5 decades. It can be deduced that the destruction of ecosystems has coincided with a drastic increase in infectious diseases.

Due to loss of natural habitat species have to live in closure quarters than ever to one another and humans. A lot of business projects are launched in forests and wild landscapes which leads to invasion of humans in natural habitat of wildlife this results in destruction of ecosystem increasing risk of infection from virus to animals including humans.

The pandemics are actually the result of overstepping behavior of humans which can no longer be ignored by the nature and it's actually the way of balancing the nature. Hence, it is not the nature that causes pandemics instead these are the result of human activities. Nature has to be the part of the solution.

This coronavirus crisis has demonstrated our socioeconomic system's inherent vulnerability to shocks. As businesses assess how to emerge from this crisis and governments devise stimulus packages to rebuild the economy, such actions need to be carefully determined. The decisions made on how to stimulate growth and respond to the COVID-19 pandemic will determine the future health, wellbeing and stability of people and the planet.

Ecosystem restoration as an outcome of lockdown:

Aquatic ecosystem:

The marine life which is an integral part of aquatic ecosystem comprising the flora and fauna starting from very minute planktons to large massive whales are now able to enjoy freely in their native place without any disturbance. Lockdown resulted in less anthropogenic activities which led to much cleaner water bodies as the amount of litter is decreasing. Our holy rivers like Ganga, Yamuna seeming cleaner now. During lockdown the amount of industrial waste has also decreased drastically, which was the major cause of water pollution. Activities like fishing are

also suspended during lockdown which led to increase in population of fishes in the ecosystem, maintaining the food chain over there. Hence, the aquatic ecosystem is restoring.

Terrestial ecosystem

Restoring Wildlife:

The main reason behind the loss of biodiversity is anthropogenic activities like hunting, poaching, overexploitation and habitat loss of the wildlife. Due to lockdown the human interference has decreased as people are not allowed to move out of their house, this led the animals to move freely in anywhere without the fear of being harmed. Some species of sea turtles are spotted returning to areas they once avoided to lay their eggs.The suspended fishing activities have resulted in increased fish population.The public places are lying deserted due to reduced human interference giving the urban wildlife an opportunity to venture beyond their usual territory.

Enriching vegetation:

The reduced anthropogenic activities had a great positive impact on vegetation on the planet, the more fresh air due to less pollution the vegetation is flourishing day by day. People starting making their own gardens at home during this period, they are concerned more about their health and started planting vegetables to avoid infection of virus. Less litter led to lesser clogging of river systems which in long run is also good for environment.

During rainy season the nature is at the peak of its beauty, due to reduced human interference everywhere, unwanted plants also grow and as a result the planet is enriched with vegetation.

More fresh air to breathe in:

The air quality is improving continuously during lockdown as people are not travelling that much, they are not using their

personal vehicles like which emit a lot of carbon, making the air toxic. During lockdown all the public transports like buses, airplanes are also suspended and hence there is very less carbon emission, the air quality index is improving rapidly. The industries and factories are also suspended resulting in less carbon and nitrous oxide emission.

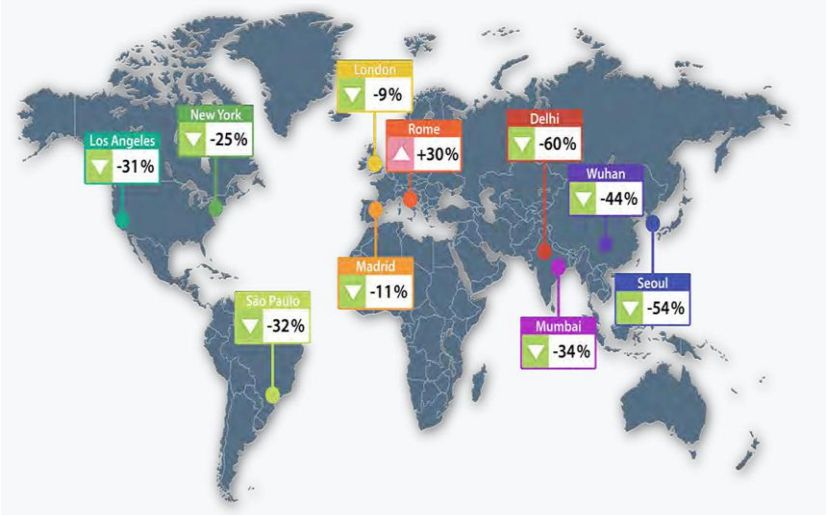

Figure 1. This map shows the per cent reduction in $PM_{2.5}$ levels when comparing the 2020 shutdown period to the same period in 2019.

Redcution in CO2 emmisions

It's been reported that if economic and transport shutdowns continue, it will lead to the first decrease in global emissions since the 2008 global financial crisis.

An analysis by Carbon Brief suggests that the COVID-19 pandemic could reduce CO_2 emissions by 1600 million tonnes this year, which is around 5.5 per cent of total global emissions in 2019. To put that into perspective, that's equivalent to taking 3.46 billion passenger vehicles off the roads for one year, as calculated

using the Environmental Protection Agency's Greenhouse Gas Equivalencies Calculator.

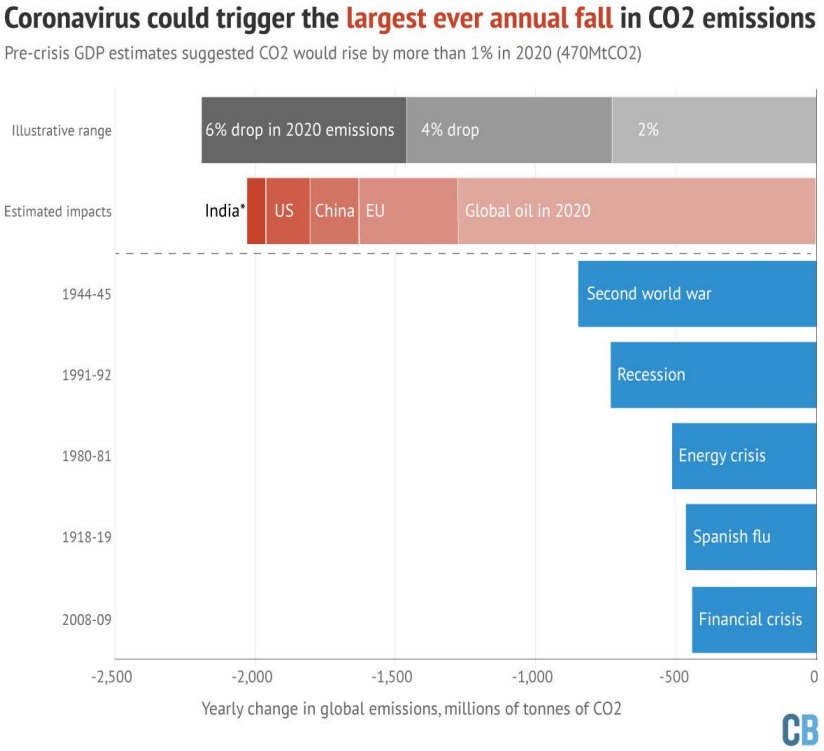

Figure 2. In this graph, the grey bars illustrate how far CO_2 emissions would fall in 2020 under a 2%, 4% or 6% reduction compared to 2019 levels. The red bars show estimated emissions impacts of COVID-19 in 2020 on the global oil sector, the EU carbon market, China, the US and India (*power sector only). The five largest falls in annual global CO_2 emissions ever recorded are shown in blue bars, in millions of tones of CO_2.

Ozone layer healing

Ozone as a natural protectant of earth from the ultraviolet radiation of sun is finally healing which indicates the restoration of ecosystem.

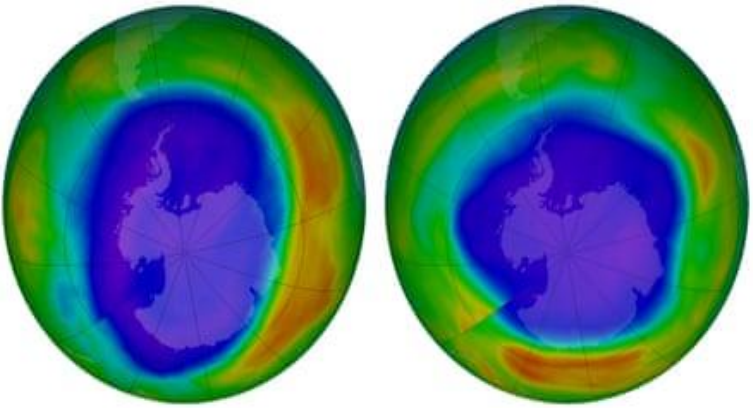

Figure 3. Areas of low ozone above Arctic on March 2019 and March 2020.

Ecosystem destruction as an outcome of COVID 19

It is well said that every coin has two sides, if something has positive impacts then necessarily there are negative impacts too. For example, in the Countries, some cities have suspended recycling programs because authorities have been concerned about the risk of spreading the virus in recycling centers. On the other hand, in the European nations particularly affected, sustainable waste management has been restricted. For example, Italy has prohibited infected residents from sorting their waste.

On the other hand, some industries have seized the opportunity to repeal disposable bag bans. Companies that once encouraged consumers to bring their bags have increasingly switched to single-use packaging. For example, a popular coffee company announced a temporary ban on the use of reusable cups. Finally,

online food ordering has increased. These growths are resulting in the increase of domestic waste, both organic and inorganic.

Increased waste

The generation of organic and inorganic waste is indirectly accompanied by a wide range of environmental issues, such as soil erosion, deforestation, air, and water pollution (Mourad, 2016; Schanes*et al*., 2018).

The quarantine policies, established in most countries, have led consumers to increase their demand for online shopping for home delivery. Consequently, organic waste generated by households has increased. Also, food purchased online is shipped packed, so inorganic waste has also increased.

Medical waste is also on the rise. Hospitals in Wuhan produced an average of 240 metric tons of medical waste per day during the outbreak, compared to their previous average of fewer than 50 tons. In other countries such as the USA, there has been an increase in garbage from personal protective equipment such as masks and gloves (Calma, 2020).

Reduction in waste recycling

Waste recycling has always been a major environmental problem of interest to all countries (Liu *et al*., 2020). Recycling is a common and effective way to prevent pollution, save energy, and conserve natural resources (Varotto and Spagnolli, 2017; Ma *et al*., 2019). As a result of the pandemic, countries such as the USA have stopped recycling programs in some of their cities, as authorities have been concerned about the risk of COVID-19 spreading in recycling centers. In particularly affected European countries, waste management has been restricted. For example, Italy has prohibited infected residents from sorting their waste.

Also, the industry has seized the opportunity to repeal disposable bag bans, even though single-use plastic can still harbor viruses and bacteria (Bir, 2020).

Other indirect effects on the environment

China has asked wastewater treatment plants to strengthen their disinfection routines (mainly through increased use of chlorine) to prevent the new coronavirus from spreading through the wastewater. However, there is no evidence on the survival of the SARS-CoV2 virus in drinking water or wastewater (WHO, 2020b). On the contrary, the excess of chlorine in the water could generate harmful effects on people's health (Koivusalo and Vartiainen, 1997).

Conclusion

COVID 19 has become a pandemic today for the creature holding the highest rank in intelligence among all the creatures in the world.

Homo sapiens sapiens, a Latin word meaning 'wise man'. Humans are playing with nature since many decades and according to them they are achieving success as well, the justification for this is seen by the fact that humans have actually shaped their own evolution by decoding the whole genome under a scientific research project, The Human Genome Project. Humans are the only creature who tried to manipulate the nature, rest all have adapted them according to the nature. Covid 19 is actually the way of nature to manifest its role as a master of this planet, which is no one can rule this planet except the Mother Nature. Each and every life existing in this planet has to follow the rules of Mother Nature to survive. Everyone has to adapt according to the need of nature, those who will not will be excluded as explained by Charles Darwin in 18th century, time when applied science was not so advanced in the theory of evolution by Natural Selection

revolving around the concept of adaptation and speciation. Only those will survive who have adapted them according to the nature and have ability to inherit these adaptations, rest all will be excluded from the race. Humans have achieved great success when they manipulated the course of evolution and underestimated the potential of Mother Nature. This overstepping behavior of human, shaken the soul of Mother Nature and now it's time to react before it's too late. Hence Mother Nature created corona virus, a very minute creature having diameter of about 125 nm to show its power. Corona virus decelerated the life of humans drastically, everything stopped suddenly only the well-wishers of Mother Nature are free to enjoy rest all are suffering the worst possible situation. The sky was clear, the air was clean and the morning has the chirping of birds with a beautiful sunshine, revealing the beauty of Mother Nature. It is well said that 'Change is the law of life' and mother has proved it.

Summary

This Coronavirus crisis has disturbed the socioeconomic balance and proved the power of nature. Nature is the only one who can rule this planet, others have to adapt themselves according to nature instead trying to manipulate. The later will result in existential threat of that particular species. This pandemic has set an example for future generations that to maintain their existence they have to co-operate with nature.

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COVID-19 – ECONOMICS OF SUPPLY CHAIN MANAGEMENT—A DILEMMA

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Abstract
The covid-19 has swiped the globe with a small virus. Originating from Wuhan in China, it has spread across more than 213 countries. The impact has been devastating not only in terms of loss of human resource, but also in terms of monetary losses. The health care systems of the advanced nations like that of United states, United Kingdom etc has been exposed to reality; but at the same time posed a big question mark on the supply chain management of ones resources to fight the pandemic. The paper has briefly analysed the socio-economic aspects of covid-19 and stressed on a more effective approach to tackle the virus by taking into account the different stakeholders interest and views amidst a set of various institutional, cultural etc factors. There is a need for the adoption of a balanced and a mutually inclusive approach.

Keywords: Covid-19, Pandemic, GHSI, AI, Health care systems

I. Introduction:

The first human cases of COVID-19 is said to have originated in the city of Wuhan in China on December, 2019. While some of the earliest known cases had a link to a wholesale food market in Wuhan, some did not. Many of the initial patients were either stall owners, market employees, or regular visitors to this market. Environmental samples taken from this market in December 2019

tested positive for SARS-CoV-2, further suggesting that the market in Wuhan City was the source of this outbreak or played a role in the initial amplification of the outbreak. The market was closed on 1 January 2020. SARS-CoV-2 was identified in early January and its genetic sequence shared publicly on 11-12 January. The full genetic sequence of SARS-CoV-2 from the early human cases and the sequences of many other virus isolated from human cases from China and all over the world since then show that SARS-CoV-2 has an ecological origin in bat

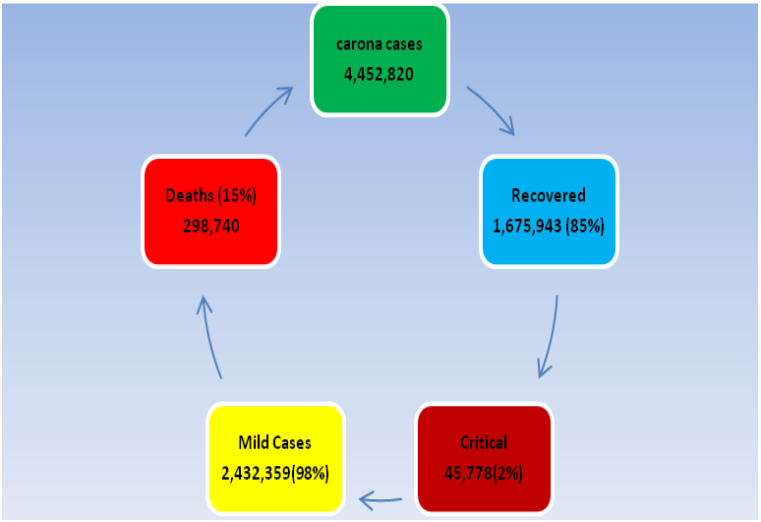

Figure 1 world Carona Update (14th May, 17:22), worldometer

populations. All available evidence to date suggests that the virus has a natural animal origin and is not a manipulated or constructed virus. Many researchers have been able to look at the genomic features of SARS-CoV-2 and have found that evidence does not support that SARS-CoV-2 is a laboratory construct. If it

were a constructed virus, its genomic sequence would show a mix of known elements. This is not the case.

All the published genetic sequences of SARS-CoV-2 isolated from human cases are very similar. This suggests that the start of the outbreak resulted from a single point introduction in the human population around the time that the virus was first reported in humans in Wuhan, China in December 2019. The current update of the covid-19 spread is shown in Figure 1

II. Insight into the Health parameters and its system

The question arises is that even in such an advanced state of technology of AI and the advanced diversified applications of Nanotechnology, etc, the world today has almost become paralysed on account of an invisible virus which has been multiplying the deaths across the globe. The pandemic has brought out the fragile and the weak health system which though had big records on books and papers, but has ultimately failed to materialise. The usages of AI in healthcare have great possibilities in drug discoveries, gene editing, and others. An AI algorithm that mimics human intelligence capabilities and enable machine learning or deep learning machines to obtain information provides many advantages in the diagnostic process. But then it's a matter of time. Though United states and Europe count for its dominance in AI health care markets, but today the pandemic of covid-19 has exposed the reality of the health care system in some of the advanced economies of the world as well. These countries had very high domains in various parameters across the globe. As per the Global Health Security (GHS) Index, a report from the Nuclear Threat Initiative, the Johns Hopkins Centre for Health Security and the Economist Intelligence Unit (2019), no country is fully prepared for epidemics or pandemics. Collectively, international preparedness is weak. The average overall GHS

Index score among all 195 countries assessed is 40.2 of a possible score of 100. The GHS Index is the first comprehensive assessment and benchmarking of health security and related capabilities across the 195 countries that make up the States Parties to the International Health Regulations (IHR, 2005).
The GHS Index assesses countries' health security and capabilities across six categories, 34 indicators, and 85 sub-indicators. The six categories are as follow:

1. Prevention: Prevention of the emergence or release of pathogens.
2. Detection and Reporting: Early detection and reporting for epidemics of potential international concern.
3. Rapid Response: Rapid response to and mitigation of the spread of an epidemic.
4. Health System: Sufficient and robust health system to treat the sick and protect health workers.
5. Compliance with International Norms: Commitments to improving national capacity, financing plans to address gaps, and adhering to global norms.
6. Risk Environment: Overall risk environment and country vulnerability to biological threats.

The index measures countries' capabilities from 0-100, with 100 representing the highest level of preparedness. The GHS Index scoring system includes three tiers.
Low Scores: Countries that score between 0 and 33.3 are in the bottom tier.
Moderate Scores: Countries that score between 33.4 and 66.6 are in the middle tier and
High Scores: Countries that score between 66.7 and 100 are in the upper or "top" tier.
As per the GHS index advanced countries like that of United states, United Kingdom, Netherlands, Spain, Italy are ranked very

high in their ratings. The Table 1 ranked the countries as per their performances in the six parameters of health as institutionalised by the report of the Global Health security Index, 2019.

Table 1 Relative performance of Select countries in GHSI, 2019

Relative performance in GHSI (scale of 0 - 100) on Six Health Parameters--2019								
Countries	1	2	3	4	5	6	Overall	Overall Ranking
United States	83.1(1)	98.2(1)	79.7(3)	73.8(1)	85.3(1)	78.2(19)	83.5	1
United Kingdom	68.3(10)	87.3(6(	91.9(1)	59.8(11)	81.2(2)	74.8(21)	77.9	2
Italy	47.5(45)	78.5(16)	47.5(51)	36.8(54)	61.9(29)	65.5(55)	56.2	31
Spain	52.9(32)	83(11)	61.9(15)	59.6(12)	61.1(32)	77.1(24)	65.9	15
Russia	42.9(62)	34.1(116)	50.1(43)	37.6(50)	52.6(72)	51.4(113)	44.3	63
France	71.2(6)	75.3(21)	62.9(13)	60.9(8)	58.6(44)	83(9)	68.2	11
Germany	66.5(13)	84.6(10)	54.8(28)	48.2(22)	61.9(29)	82.3(11)	66	14
Thailand	75.7(3)	81(15)	78.6(5)	70.5(2)	70.9(12)	56.4(93)	73.2	6
China	45(50)	48.5(64)	48.6(47)	45.7(30)	40.3(50)	64.4(58)	48.2	51
India	34.9(87)	47.4967)	52.4(32)	42.7(36)	47.7(100)	54.4(103)	46.5	57
Australia	68.9(8)	97.3(2)	65.9(10)	63.5(6)	77(3)	79.4(18)	75.5	4
Netherland	75.7(4)	86(2)	79.1(4)	70.2(3)	61.1(32)	81.7(12)	75.6	3
Canada	70(7)	96.4(4)	60.7(17)	67.7(4)	74.7(5)	82.7(10)	75.3	5
Singapore	56.2(230	64.59(40)	64.6(11)	41.4(38)	47.3(101)	80.9(15)	58.7	24
Japan	46.6(40)	70.1(35)	53.6(31)	46.6(25)	70(13)	71.7(34)	65.9	21
North Korea	19(164)	7(185)	11.3(195)	12.2(145)	27.3(191)	35.6(172)	17.5	193
Somalia	15.8(174)	21.5(153)	17.4(193)	0.3(195)	28.5(188)	15.9(195)	16.6	194
Equatorial Guinea	1.9(195)	4.4(189)	17.6(191)	5(193)	33.5(167)	43.6(144)	16.2	195

Source: Global Health Security Index 2019

1. Prevention of the emergence/release of pathogens, 2. Early detection & reporting for epidemics, 3. Rapid response to & mitigation of the spread of epidemic, 4. Sufficient & robust health systems, 5. Commitments to improve national capacity, financing and adherence to norms 6. Overall risk environment & country vulnerability to biological threats.
2. ( ) values indicate relative rankings in respective parameter

III. Inclusive Management of the Health Care

Countries	Overall positions	Total Carona cases	Deaths	Ranking
United States	83.5	1430338	85197	1
United Kingdom	77.9	229705	33186	2
Italy	56.2	222104	31106	31
Spain	65.9	272646	27321	15
Russia	44.3	252245	2305	63
France	68.2	178060	27074	11
Germany	66	174098	7861	14
Thailand	73.2	3018	56	6
China	48.2	82929	4633	51
India	46.5	78810	2564	57
Australia	75.5	6989	98	4
Netherland	75.6	43211	5562	3
Canada	75.3	72278	5302	5
Singapore	58.7	26098	21	24
Japan	65.9	16049	678	21
Equatorial Guinea	16.2	522	6	195

Table 1 shows the performance of the select countries in the various parameters of health as indicated by their values and relative ranking in their respective fields. United States has been ranked at 1 in four health parameters out of 6 parameters. This greatly suggest that United States health care system is one of the best across the globe. The US is the "most prepared" nation (scoring 83.5), with the UK (77.9), the Netherlands (75.6), Australia (75.5) and Canada (75.3) behind it. Thailand is ranked sixth in the Index — the highest ranking for an Asian country. Further in terms of Europe, Russia, the Middle East,

Asia and Central and South America are found to be on moderate performance in these parameters and are therefore described as "more prepared," with scores between 66 and 34.3, while the majority of countries ranked "least prepared" are in Africa. In

case on India, it is ranked 57th with a score of 46.5, falling in the middle tier. Other nations like North Korea (17.5), Somalia (16.6) and Equatorial Guinea (16.2) are listed in the index's bottom three. China which is believed to be the origin of the recent corona virus outbreak stood at 51st place, scoring 48.2. The summary of health parameters however has become a contradictory issue as some of the nations which are ranked the top most countries in health care system have found to be suffering more from the covid-19 and its consequences, thereby adversely affecting the economy of not only the specific countries but also that of the world. Table 2 shows the contradictory picture of the countries topping at both the health care system as well as in the infected cases of covid-19 unfortunately. The leading economic gaint United states today has failed to tap its existing resources in a effective manner. The supply chain management of the United States, United Kingdom, Italy, France etc has failed to deliver in a manner which was expected. It's very much important that all the chains of supply have to be properly managed very fast, but unfortunately, this has never happened in reality. Though to some extent, India has been successful, but the number of tests conducted per million populations has been very less as compared to other countries. It was 1411 as on 14th May, 2020, 22:14 PM. Thus, the dilemma is that are the index values as shown by the GHSI lack reliability or are there other institutional factors which determine the spread of the pandemic and help in mitigating its spread and damage created by the covid-19.

It should be noted that even the WHO has accepted that the health care system of different countries needs to be made mutually

inclusive by taking into account not only the existing care systems, but also other institutional factors. The nations are not dealing with a simple flu or virus, but with such an epidemic where people's active participation is a must to control/combat it. In any given nation, the population consists of people belonging to different ethnicity and cultures. It is very much important that a line of respect along with educational awareness towards the various ethnic groups is very much important. The different stakeholder's views and interest needs to be perfectly balanced so that the pandemic can be negated and its effects can be minimised. There is no doubt that it will have severe negative impacts on the global economy. Estimates so far indicate the virus could trim global economic growth by as much as 2.0% per month if current conditions persist. Global trade could also fall by 13% to 32%, depending on the depth and extent of the global economic downturn.

Many countries started imposing travel restrictions like China, South Korea and Vietnam. There was also a rise in the claims unemployment insurance to the tune 30 million Americans from mid-March to late-April 2020. The data for the first quarter of 2020 indicated that U.S. GDP fell by 4.8% at an annual rate, the largest quarterly decline in GDP since the fourth quarter of 2008 during the global financial crisis when the U.S. economy contracted by 8.4%.4 Foreign investors have pulled an estimated $26 billion out of developing Asian economies and more than $16 billion out of India, increasing concerns of a major economic recession in Asia. Some estimates also indicate that 29 million people in Latin America could fall into poverty, reversing a

decade of efforts to narrow income inequality. In Europe, over 30 million people in Germany, France, the UK, Spain, and Italy have applied for state support of their wages, while first quarter 2020 data indicate that the Euro zone economy contracted by 3.8% at an annual rate, the largest quarterly decline since the series started in 1995. As per the GHSI, 81% of countries score in the bottom tier for indicators related to deliberate risks (biosecurity). 85% show no evidence of having even completed a biological threat–focused on International Health Regulations (IHR) simulation exercise with the World Health Organization (WHO) in the past year. 77% did not demonstrated a capability to collect ongoing or real-time laboratory data and further 89% did not demonstrated a system for dispensing medical countermeasures during a public health emergency. Thus the current situation of the pandemic is the result of the negligence in these parameters.

The pandemic crisis is challenging governments to implement monetary and fiscal policies that support credit markets and sustain economic activity. In doing so, however, these policy approaches are displaying differences between countries that promote nationalism versus those that argue for a coordinated international response. They also are intensifying policy differences between developed and developing economies and in Europe between northern and southern members of the Euro zone. The International Monetary Fund (IMF) has estimated that government spending and revenue measures to sustain economic activity adopted through mid-April 2020 amounted to $3.3 trillion and that loans, equity injections and guarantees totalled an additional $4.5 trillion. As a result, the IMF estimates that the

increase in borrowing by governments globally will rise from 3.7% of global gross domestic product (GDP) in 2019 to 9.9% in 2020. Among developed economies, the fiscal balance to GDP ratio is projected to rise from 3.0% in 2019 to 10.7% in 2020; the ratio for the United States is projected to rise from 5.8% to 15.7%. For developing economies, the fiscal balance to GDP ratio is projected to rise from 4.8% to 9.1%.7 According to the IMF, France, Germany, Italy, Japan, and the United Kingdom have each announced public sector support measures totalling more than 10% of their annual GDP. The RBI also has announced a relief package of 20crores and 10% of GDP. Every nation has been bringing monetary and fiscal changes to bring their economy on track. Even the Organization for Economic Cooperation and Development (OECD) on March 2, 2020, lowered its forecast of global economic growth by 0.5% for 2020 from 2.9% to 2.4%. The manufacturing output in many countries has gone done, which reflects a fall in external demand and growing expectations of a fall in domestic demand There are also variations in the expected growth rates by different financial institutions. It's a fact that the world economy has been moving towards recession. The GDP has started coming down. The unemployment has been on the rise. It will only be a matter of time that the impact will be seen both economically, socially and culturally. These steps will save lives and achieve a safer and more secure world. Some of the recommendations suggested by the Johns Hopkins Centre for Health Security in association with the Economist and the Intelligence Units has given the following recommendations to minimise the severity of Covid-19. They are as follows:

1. Action-oriented frameworks to manage health security risks.
2. Tranparent Health security capacity in every country
3. Effective coordination and between security and public health authorities
4. New financing mechanisms to fill the preparedness gaps, even at the institutional levels.
5. The Office of the United Nations (UN) Secretary-General should designate a permanent facilitator or unit for high-consequence biological events.
6. Annual publication of health security capacities by every country
7. The UN Secretary-General should call a heads-of-state-level summit by 2021 on biological threats including a focus on financing and emergency response.

IV. Conclusion

The WE approach is a must for the minimisation of the effects of covid-19 in the days and months to come till a vaccine comes into the scene. The global leaders and international organizations has a collective responsibility for developing and maintaining a robust global capability to counter infectious disease threats. This capability includes ensuring that financing is available to fill gaps in epidemic and pandemic preparedness. The development of a vaccine will go in a long way to determine the impact of covid-19 and the change of economic order across the countries with an effective management of the supply chain af the resources at its disposal.

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LOCKDOWN DUE TO COVID 19: OUTBREAK MANAGEMENT

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On 31 December 2019, WHO was alerted to a cluster of pneumonia patients in Wuhan City, Hubei Province of China. One week later, on 7 January 2020, Chinese authorities confirmed that they had identified a novel (new) coronavirus as the cause of the pneumonia. The proposed interim name of the virus is 2019-n CoV. Since the first cases were reported, WHO and its partners have been working with Chinese authorities and global experts to learn more about the virus, including how it is transmitted, the populations most at risk, the spectrum of clinical disease, and the most effective ways to detect, interrupt, and contain human-to-human transmission.

Corona is a single stranded RNA virus that had its roots into the world. Earlier, the allied viruses of the same family like the Severe acute respiratory syndrome corona virus SARS-CoV in 2003, Human corona virus HCoV NL63 in 2004, HKU1 in 2005. Middle east respiratory (MERS) in 2012, have shown their outbreaks and now the novel version of this virus has presented a threat of unmatched severity. According to the classification of International Taxonomy of Viruses (ICTV) has referred this novel pathogen as SARS-CoV-2 (formerly known as 2019-nCoV) in 2019. The first case was identified in the city of Wuhan, a Chinese seafood market and since then it has been exponentially increasing with an evident human to human contact via respiratory droplets while sneezing and coughing. The mode and

transmission and other related details about the virus continue to be updated in every few weeks, leading to enhanced uncertainty. During this period most of the research has been focused on understanding and preventing transmission; exploring treatment options and issues with global governance. However we think that the psychological impact of this pandemic like stress and anxiety among the general population is also a grave concern. A study from China suggesting that more than half of the participants had a significant psychological impact of the COVID-19 pandemic. Another recent study from Denmark reported psychological well-being as negatively affected. In the United States nearly half were found to be anxious as per the survey conducted by the American Psychiatric Association. The same has not been studied in Indian population systematically; except anecdotal discussions and case reports.

In Indian subcontinent, as of 30 March 2020, according to the Ministry of Health & Family Welfare (MoHFW), a total of 1071 COVID-19 positive cases (including 49 foreign nationals) were reported in 27 states/union territories. These include 99 cases that were cured / discharged, one person who has migrated and 29 deaths. Hospital isolation of all confirmed cases, tracing and home quarantine of the contacts is on-going. In India, spread of the initial disease could be traced mainly to the foreign nationals who visited the country as tourists from the disease affected countries and secondly due to the mass immigration of Indian nationals from abroad; due to the fear of infection. As the pandemic outbreak in India was on-going, the Government of India took stringent measures to limit the cases by far in that stage only, by initiating a major lockdown pan-India and also by shifting the immigrants to the special quarantine facilities prepared by the Indian Military directly from the airports and seaports for a minimum of 14 days. Community health teams

were also launched to spread awareness about the chances of spread and precautionary measures that one can use to protect themselves and others.

India's current lockdown will significantly slow the spread of COVID-19 hospitalizations and moderate infections compared to a lack of interventions. The temporary lockdown will buy time for health systems to prepare for the peak of the outbreak by building temporary healthcare facilities and obtaining additional personnel, hospital beds, and equipment. It is vital to build up healthcare infrastructure quickly to prepare for an increase in hospitalized cases. In addition to providing shelter and care for the sick, such an investment may provide a livelihood for workers and reduce the negative impacts of restrictions. The long-term interventions including a 25 percent and 50 percent quarantine of symptomatic cases would further delay and reduce the peak of COVID-19 infections and hospitalizations in India. While the potential impact of an individual policy is unknown, it is clear that a longer-term policy of reducing social contacts can have a large effect.

The results of this analysis suggest that immediate physical distancing will reduce the burden of COVID-19 on the healthcare system and reduce the risk of mortality among high-risk patients. A temporary lockdown allows time to build the capacity of hospitals and health care workers. Long-term impacts can be achieved through a combination of policies that reduce the transmission of the virus including immediate isolation of all individuals demonstrating symptoms of influenza-like illness, physical distancing and universal masking, restrictions on large gatherings and events, improved sanitation and hygiene, and increased testing availability.

The study titled "COVID-19 India: Potential Impact of the Lockdown and Other Longer-Term Policies" by Emily Schueller, Eili Klein, Gary Lin, Katie Tseng, Geetanjali Kapoor, Aditi Sriram, Arindam Nandi, and Ramanan Laxminarayan is online here.

Please note:

- These are non-peer-reviewed results of the analysis of a fast-moving epidemic with many uncertain parameters. Researchers worldwide are producing this type of rapid results in the form of similar unpublished studies and reports. Our findings may change in the future as new insights on the SARS-CoV-2 virus and COVID-19 emerge.
- This research was produced by a team of researchers at CDDEP, John Hopkins University, and Princeton University. As is the standard research practice, this work does not represent the views of these institutions.

The basis of online survey and media reports that emerging studies into Covid-19 together with lessons from past outbreaks suggest that the pandemic could have profound and potentially long-term impacts on psychological health, economic, social and religious life. Rapid and rigorous research accessing the impact of Covid-19 on psychological health of people is needed to limit the impact of the pandemic. The present pandemic is clearly having a major social and psychological impact on the whole population, increasing unemployment, separating families and various other changes which are generally considered as major psychological risk factors for anxiety, depression and selfharm. The recent studies conducted by Bilal et al., (2020) revealed that awareness, attitude and practice of people towards prevention of COVID-19 is important. We can control COVID-19 spread till some treatment is developed by following religious teachings and

advisory of health ministry. Islam stresses on purification and Prophet Muhammad (peace be upon him) said, purification is half of faith.

Epidemiological overview:
A total of 11953 confirmed cases of 2019-nCoV have been reported worldwide; of the total cases reported, 11821 cases have been reported from China;

In China, 60.5% of all cases since the start of the outbreak have been reported from Hubei Province. The remaining 39.5% of cases have been reported from 33 provinces, regions, and cities. After Hubei Province, the second largest number of cases has been reported from Zhejiang Province (599 cases).

Recommendations of the Emergency Committee:
On 30 January 2020, the Director-General of WHO declared the 2019-nCoV outbreak a public health emergency of international concern under the International Health Regulations (IHR) (2005), following advice from the Emergency Committee.

WHO's strategic objectives for this response are to:
• Interrupt human-to-human transmission including reducing secondary infections among close contacts and health care workers, preventing transmission amplification events, and preventing further international spread.
• Identify, isolate and care for patients early, including providing optimized care for infected patients;
• Identify and reduce transmission from the animal source;
• Address crucial unknowns regarding clinical severity, extent of transmission and infection, treatment options, and accelerate the development of diagnostics, therapeutics and vaccines;

• Communicate critical risk and event information to all communities and counter misinformation;
• Minimize social and economic impact through multispectral partnerships. This can be achieved through a combination of public health measures, such as rapid identification, diagnosis and management of the cases, identification and follow up of the contacts, infection prevention and control in health care settings, implementation of health measures for travelers, awareness-raising in the population and risk comm..

Conclusion

The current COVID-19 pandemic is causing unication.

widespread concern, depression and anxiety among the people all over the world. The mental problems caused by COVID-19 lockdown impacted the psychological wellbeing of individuals from the entire community including students, casual labours, healthcare professionals and the general population. The elders, females, students, people living in stress condition, healthcare professionals at front-line, and those who are with underlying chronic conditions are at a higher risk. The respondents under study were following precautionary measures to avoid COVID-19 as per WHO and state guidelines on pandemic that is physical distancing and staying home as the only feasible therapy. A study on impact of COVID-19 lockdown on psychological health, economy and social life of people in Kashmir International Journal of Science and Healthcare Research (www.ijshr.com) 45 Vol.5; Issue: 2; April-June 2020 control the spread of pandemic. The study revealed that majority of people spent maximum time at home checking daily details about COVID-19 spread, worried about their family members and was not satisfied the way Government tackled this problem at the initial stage of COVID-19 spread. The respondents of our study were of the opinion that

Government should facilitate COVID-19 testing for the safety of the people using random selection (68.5%), cluster selection (72.5%) and testing of whole population (35.5%) in red zones at least. The respondents understudy in majority want that people who have travel history (94.5%), who are migrant workers (97.5%), who contact with any corona positive patient (98%), those living in red zones (80.5%) should be tested on priority basis. The respondents understudy in majority were of the opinion that COVID19 lockdown is a temporary solution to control COVID-19 spread and if it continues for a long time may result in many problems like psychological problems, social problems, economic problems and religious problems. The pandemic resulted in income loss due to job loss or reduced income due to COVIC-19 lockdown gave birth to domestic problems. The studies show that fear causes stress and when we are stressed the hormones cortisol and adrenaline increase and they suppress the effectiveness of the immune system. The suppression of immune system leaves the body vulnerable to disease and infection. It is important to aware people that with fear we are at risk of developing a severe disease. CoVID-19 does not see race, religion, caste, creed, language before striking so it is important we fight together with COVID-19. The researchers finally suggested that policy makers, mental care health providers and religious scholars provide mental support as is needed at this time to the vulnerable group. Further, it was suggested that to cope with COVID-19 lockdown stress, people should keep themselves busy in physical activities, religious activities and social work. Kashmir a world famous conflict zone has already seen many disasters so the people understudy in one voice urge India and Pakistan to observe ceasefire and to provide safe space to the people of state until COVID threats get over. The Secretary General of UN amid surging COVID-19 crisis has also appealed for the Global ceasefire. Source of Conflict: All the authors

declare that are no conflict of interests. ACKNOWLEDGEMENT The authors thank all the respondents who participated in this study. The main purpose of writing this paper was to interact with people personally or via electronic media to access the impact of COVID-19 lockdown on their psychological health

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COVID 19 AND IT'S IMPACT ON THE INDIAN ECONOMY

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At this time, there are no specific vaccines or treatments for COVID-19. However, there are many ongoing clinical trials evaluating potential treatments. WHO will continue to provide updated information as soon as clinical findings become available. On 31 December 2019, WHO was alerted to a cluster of pneumonia patients in Wuhan City, Hubei Province of China. One week later, on 7 January 2020, Chinese authorities confirmed that they had identified a novel (new) coronavirus as the cause of the pneumonia. As the pandemic outbreak in India was on-going, the Government of India took stringent measures to limit the cases by far in that stage only, by initiating a major lockdown pan-India and also by shifting the immigrants to the special quarantine facilities prepared by the Indian Military directly from the airports and seaports for a minimum of 14 days.

Most people infected with the COVID-19 virus will experience mild to moderate respiratory illness and recover without requiring special treatment. Older people, and those with underlying medical problems like cardiovascular disease, diabetes, chronic respiratory disease, and cancer are more likely to develop serious illness. In Indian subcontinent, as of 30 March 2020, according to the Ministry of Health & Family Welfare (MoHFW), a total of 1071 COVID-19 positive cases (including 49 foreign nationals) were reported in 27 states/union territories. The COVID-19 virus spreads primarily through droplets of saliva or discharge from the

nose when an infected person coughs or sneezes, so it's important that you also practice respiratory etiquette (for example, by coughing into a flexed elbow). The best way to prevent and slow down transmission is be well informed about the COVID-19 virus, the disease it causes and how it spreads. Protect yourself and others from infection by washing your hands or using an alcohol based rub frequently and not touching your face.

Recommendations of the Emergency Committee:
On 30 January 2020, the Director-General of WHO declared the 2019-nCoV outbreak a public health emergency of international concern under the International Health Regulations (IHR) (2005), following advice from the Emergency Committee.

WHO's strategic objectives for this response are to:
• Interrupt human-to-human transmission including reducing secondary infections among close contacts and health care workers, preventing transmission amplification events, and preventing further international spread. Identify, isolate and care for patients early, including providing optimized care for infected patients; Identify and reduce transmission from the animal source.

IMPACT ON ECONOMY:
An obvious way that pandemics can impact financial systems is through their enormous economic costs. We are all additionally fearful of the eventual economic impact of the crisis, including the impact on financial markets. it is reasonable to expect a great deal of interest in the very near future on the role of pandemics in finance. India's growth in the fourth quarter of the fiscal year 2020 went down to 3.1% according to the Ministry of statistics. The Chief Economic Adviser to the Government of India said that this drop is mainly due to the corona virus pandemic effect on the Indian economy.

Major companies in India such as Larsen & Tpubro, Bharath Forge, Ultra Tech Cement, Grasim Industries, Aditya Bila Group, BHEL and Tata have temporarily suspended or significantly reduced operations. Young startups have been impacted as funding has fallen. Unemployment rose from 6.7% on 15 March to 26% on 19 April and then back down to pre-lockdown levels by mid-June. During the lockdown, an estimated 14 crore (140 million) people lost employment while salaries were cut for many others. More than 45% of households across the nation have reported an income drop as compared to the previous year. The Indian economy was expected to lose over ₹32,000 crore (US$4.5 billion) every day during the first 21 days of complete lockdown which was declared following the corona virus outbreak. Under complete lockdown, less than a quarter of India's $2.8 trillion economic movement was functional. Up to 53% of businesses in the country were projected to be significantly affected. Stock markets in India posted their worst loses in history on 23 March 2020. However, on 25 March, one day after a complete 21-day lockdown was announced by the Prime Minister, SENSEX and NIFTY posted their biggest gains in 11 years.

The Government of India announced a variety of measures to tackle the situation, from food security and extra funds for healthcare and for the states, to sector related incentives and tax deadline extensions. On 26 March a number of economic relief measures for the poor were announced totaling over 170,000 crore (US$24 billion). The next day the Reserve Bank of India also announced a number of measures which would make available 374,000 crore (US$52 billion) to the country's financial system. The World Bank and Asian Development Bank approved support to India to tackle the corona virus pandemic.

In India up to 53% of businesses have specified a certain amount of impact of shutdowns caused due to COVID-19 on operations, as per FICCI survey in March. By 2 April the unemployment rate had increased nearly19% within a month, reaching26% unemployment across India, according to the 'Centre for Monitoring Indian Economy'. Around 140,000,000 (14 crores) Indians lost employment during the lockdown. More than 45% households across the nation reported an income drop as compared to the previous year. Various business such as hotels and airlines cut salaries and laid off employees. Revenue of transport companies such as Ola Cabs went down nearly95% in March-April resulting in 1400 layoffs. It was estimated that the loss to the tourism industry will be 15,000 Crore (US$2.1billion) for March and April alone. CII, ASSOSCHAM and FAITH estimate that a huge hunk of the workforce involved with tourism in the country faces unemployment. Live events industry saw an estimated loss of 3,000 Crores.

Impact of COVID-19 on banking Sector:

Banks of course by their nature are vulnerable in times of economic downturns, because of the likelihood of nonperforming loans and the possibility in extreme cases of bank runs. They attribute this to the need to pay for individual treatments forcing large-scale withdrawals of deposits.

Much of the group lending of microfinance institutions and banks' lending to the poor will be pressured during epidemics because all members of the group will be pressured by the aggregate shock. Rural financial institutions will be subject to bank runs during floods or crop failures. It remains to be seen how COVID-19 will change the practices of financial institutions.

Impact of COVID-19 on governments and publics:
A world-wide downturn in spending and domestic demands will present an enormous challenge for the global economy. A strong role for the public sector is indicated in cases where the private sector is unwilling to insure. There may be less concern for the public sector crowding out private insurance.

CONCLUSION:
Most people infected with the COVID-19 virus will experience mild to moderate respiratory illness and recover without requiring special treatment. Older people, and those with underlying medical problems like cardiovascular disease, diabetes, chronic respiratory disease, and cancer are more likely to develop serious illness.). The best way to prevent and slow down transmission is be well informed about the COVID-19 virus, the disease it causes and how it spreads. Protect yourself and others from infection by washing your hands or using an alcohol based rub frequently and not touching your face. The COVID-19 crisis is informing investors, policy makers and the public at large that natural disasters can inflict economic damage on a previously unprecedented scale. Unlike events such as global nuclear war, which is not survivable and so of no relevant cost, or events such as climate change that are much slower moving, or localized disasters that create spillover and market reactions, the COVID-19 pandemic is causing a direct global destructive economic impact that is present in every area of the globe. All parties must now face what has already been obvious to many that such phenomenon are imminently possible and indeed likely.

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COVID-19 AND ITS IMPACT BY LOCK DOWN

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INTRODUTION

As we all know the viruses not a new word in our vocabulary which is a long term existing for a long time

A Virus is a microscopic organism that is found all over our planet which can affect animals, plants and human beings. A crisis can create a clarity and make us focus on the threat confronting us, we are the species on the planet to solve our own problems which brings the best or the worst or sometimes both of them simultaneously especially for the pandemics like CORONA VIRUS

Definition

Covid 19 is an infectious disease which is highly infectious causing respiratory disorder caused with symptoms like flu, raise in body temperature, severe cough and headache, transmitted form one person to another. However WHO is changing the list of symptoms as the virus is present even in the air, but the virus lasts differently on different places like on surface it remains for minimum two hours, in air it remains three minutes etc

Corona virus:

There are two types of corona virus emerged in china and Saudi Arabia called SARS (SEVERE ACUTE RESPIRATORY SYNDROME) IN 2002 awaited till the end of 2003 and MERS (Middle East respiratory syndrome) in 2012

Present NOVELCORONA VIRUS is highly infectious causing high risk to not only mankind but also to the wild life and aquatics We call corona virus a "PANDAMIC" because pandemic is derived from a Greek word PAN mean ALL, DEMOS mean PEOPLE

When a disease infects a large geographical area such as several countries across the world, affecting a large proportion of the population called pandemic.

Corona virus started as a small outbreak became epidemic now called as pandemic because it is effecting large geographical areas.

Roots of corona virus

- There are many viruses which shook the world before corona, let's have a brief look
- 1958-58: Asian flu (H2N2 virus)
- 1961: cholera
- 1981: ongoing HIV pandemic
- 2002-03: SARS (SARS-COV)
- 2009: swine flu
- 2015-16: Zika virus

I discussed about few viruses in the past because "past teaches the best"

WUHAN: ORIGIN OF CORONA VIRUS

China the world's largest populated country in the world got hit by the deadly virus in Wuhan which has a rich cultural history spanning over 3500years located near Yangtze River which is connected by highways throughout the country's nine provinces, having sound education system with sound science and

technology where china is expecting its lunar new year to be welcomed

Chinese dietary habits include consuming exotic animal meat purchased in wet markets where the Huainan sea food market is famous for slaughtering of live animals, blood floated and very unhygienic creating ideal circumstances infecting not only animals but also human beings.

Finally at mid of the November 2019 the deadly virus spread from animals to humans which spread its wings too fast to dozens of Chinese infecting their respiratory organs and slowly lead to death and transmitted to many tourists visited and spread over the world.

Within three months around the world:

We can say that the roots of the corona virus spread all over the world by travelling one place to another and made the world upside down especially hitting the countries having boundaries with china like Iran, Italy,U.S.A and India which skyrocketing the cases because of its second highest population in the world.

As the production of vaccine process of corona virus is undergoing clinical trials …the world everywhere is under the state of lockdown, which is showing number of negative and positive impacts on the world as a whole.

Positive impacts of lockdown

Impact on environment

Due to the emergence of covid-19 all over the world, there is lockdown going on ,which have a supportive impact on the environment leaving toxic air to breathe ,green house gases, less travel leading to decline of nitrous oxide emission. There is a improved water quality, freedom for aquatics.

Wild life took their freedom to move freely where once they could not dare to go

There is a positive impact on natural vegetation where plants are growing better due to clean air and water.
However if once lockdown closes there is a possibility that everything goes in vain

Negative impacts of lockdown:
Loss to human life:
Covid 19 does not show any difference between rich and poor or gender or any nationality .if once affected there will be a definite irretrievable damage to the society.

Impact on migrants:
In the country like India there are people with many cultures migrating from one place to another to earn their livelihood which got widely affected by this pandemic and left out shelter less and acute hunger lacking in immunity

Impact on employment:
Novel corona virus is showing its impact on not only making people shelter less but also cutting their employment especially the private sector employees are moved out of their jobs because of cost cutting and are left jobless.

Impact on education:
This pandemic adversely affected the whole education system in the world as a whole
According to UNESCO on 25th march, total 1.5 billion students worldwide accounting 87%got affected.

Religious impact: This vigorous pandemic impacted people even religiously like several worshipping places got banned and cancelled off the worship, piligrimage, observances and festivals also.

Psychological impact:
Due to lock down every one sticks to houses which lead to loneliness, depression and many psychological disorders for which on March 2020 W.H.O issued a report related to mental health and psychological issues like suicide and risk preparations

Economical impact: Last but not the least, one of the important one called economical condition of the world gets affected, especially countries like India have a direct impact on its economy. Due to lock down the revenue generating sectors slowed down generating income which impacted the country's GDP.

Conclusion: To conclude my article, vaccine for the pandemic is on its clinical trials till then we should get habituated to live with it carefully by following physical distance, wearing mask, sanitizing etc in our day today life in spite of locking down almost all the sectors which adversely affect and shook the economy which takes much time to cope up the economy.

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THE GOOD AND BAD OF LOCKDOWN

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Let us first start with what is covid 19 and then let's move to lockdown and impact of lockdown, across the world and people which is now a universal issues.

Lockdown has generally effected the economies and people in adverse way but they are positives too like it saved millions of life, people started to learn joy of being at home and some sectors of economy have been unaffected too. All in all lockdown as thrown open some opportunities and ideas which unthought-of earlier.

Covid 19 is a part of Coronaviruses which are a large family of viruses which may cause illness in animals or humans. In humans, several coronaviruses are known to cause respiratory infections ranging from the common cold to more severe diseases, such as Middle East Respiratory Syndrome (MERS) and Severe Acute Respiratory Syndrome (SARS). The most recently discovered coronavirus is infectious diseases is COVID-19 which was unknown before its outbreak in Wuhan, China in December 2019. (WHO)

Lockdown (is a protocol where a person cannot leave the place where they cannot exit or enter the building apart from where they are, only essential items stores are open like grocery, pharmacy, banks etc., are open) when it was declared on 23rd March was aright decision ,it was a must, to prevent the spreading of

pandemicsaved millions of life, the pandemic instead of peaking in April, when we did not have knowledge and medicines to treat our patients like Italy, Spain, or UK and USA as of whom more fatality rate (5%-10%) is higher than India (3%) .Peaking now in July-August is much better, as now we are equipped with more knowledge and newer and effective methods of treatment, **so if one is to be infected with covid 19, let it be later rather in sooner** , as the later you are infected the more chance you have of survival maybe be even vaccine will come by then.

Now coming to impact of Lockdown which has had adverse effect on economy of every country, but here is **a reality check, a country like Sweden which did not go for lockdown still saw its economy slowdown as bad as other countries** economy with lockdown, as people are still not going out and purchasing things. Lockdown will have some far reaching effects on some sectors and short term effects on other sectors, as well as ,will provide new business opportunities and they way business is done will change forever

Some challenges and changes we may encounter or are have already encountered I would like to discuss here which have both negative and positive effect on the system due to lockdown starting with Government loosing revenue from taxes. With dwindling of tax collection both direct and indirect taxes , government is facing a gigantic task of how to revive economy, it has taken steps both monetary and fiscal , from lowering the interest rates to providing relief packages to poor who have lost their livelihood due to lockdown and providing aid to **daily wage earner who are worst hit.**

Another consequence of lockdown is, it has put village economy under stress with farmers not able to get the prices for their

produce with closed markets and transport bans, farmer who are not generally covered byinsurance have found themselves in distress, and may probably approach moneylenders to make their ends meet, which will increase their problem rather than solving.
Public transport system is another sector which will see a fall in demand due its very nature social distancing will be impossible, the system which already incurred losses due to lockdown will find it hard to recover with people not favoring public transport as buying tickets or swiping a card is now a "no no", therefore less and less will use public transport, until we see a vaccine.

Industry will not be able to get back at 100% capacity, the new term is coined as "90% economy", as post lockdown the industries may not have demand to work at full capacity.

Restaurants, hotels, cinemas, clubs, resorts, malls may see footfalls reduce by 30%-40% for long period of time.

More companies may file for bankruptcy, post lockdown due to lack of funds, after paying salaries and rents during lockdown and produce below capacity now and survive will become impossible to them , already we have seen some companies were working on thin margins announcing closures

World may face a prolonged recession as for India its GDP has been furcated to drop by 2%.

Fresh Graduates who passed in the 2020, will have hard time to find jobs in an economy which has already increasing unemployment rate due lockdown, they may require to learn newer skills, as the way business is done will change forever.

Industries when they reopen it will not be same it will be new industry with new values and policies and most likely less output Office Spaces, demand may see a fall , with many employers (IT sector) opting to give employees " work from home" the office space required will be reduced by 2/3rd (a research shows 37% in USA and 45% in Switzerland have jobs which can be done from remote) this will see a fall the value of real estate.

Globalisation, many countries including India and USA are increasingly moving towards being self-reliant like be "VOCAL for LOCAL","Make in India" and "Be American Buy American", these policies will encourage local production, and import and export will be open for raw material, machinery parts, spare parts, technology and other essentials. Globalisation will not stop, but will definitely see it slowing down of it.

Lockdown did and will have some good effects too especially on Electronic Payment companies which will grow in foreseeable future as people will not like to handle cash andusing for either electronic/mobile wallets or E cards, opt online shopping to avoid crowd.

Automobile industry especially two wheeler and small cars will see a rise in production with less people opting for public transport (due to social distancing norms) and may use more of use personal vehicles

Good for climate already we have seen improve in air quality during lockdown due less traffic on road , reduced emission oftonesof carbon dioxide due less flights also has contributed to better air quality, less production (not an ideal situation) is also the reason for less pollution in the air

OTT platforms like Amazon Prime, NetFlix, Zee5, Sony LIV and the content being streaming on them will increase manifold with its international audiences and variety of programs has seen a spike in its growth, with cinema halls and theatres closed and the future also not so bright for other outdoor activities.

China as a country may have more influence in the new world order, where USA has not shown much interest in handling the global response to Covid 19, China on the other has sent supplies to countries and given more time for repayment of loans and is forefront in funding WHO, this may in coming years give china an upper hand especially in south Asian region.

Electronic Vehicles may become more popular and may be manufactured, with diesel going out of favour in many countries, and plummeting petrol prices oil producing countries and companies may look for new opportunities.

Apart from obvious positives of people learning to stay at home and using time to catch up with family member particularly old parents and eating Home food, taking time to work out, getting good sleep, etc.

Like everything else in life, lockdown has its pros and cons, it is a challenge which threw a curve at us, and it is our duty to face the challenge and overcome any hurdle we may face with unity, support and solidarity as nation.

COVID 19 AND ITS IMPACT BY LOCKDOWN

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INTRODUCTION

Coronaviruses belong to the family Coronaviridae which includes four genera,Alphacoronavirus, Betacoronavirus, Deltacoronavirus and Gammacoronavirus, as well as several subgenera and species. Coronaviruses are found in a variety of animals and humans. Human coronaviruses (HCoVs) include HCoV-229E and HCoVNL63 in the genus Alphacoronavirus, and HCoV-OC43 and HCoV-HKU1 in the A lineage (subgenus Embecovirus) of genus Betacoronavirus. HCoVs were first isolated in cell culture in the 1960s from persons with upper respiratory infections. The coronavirus belongs to a family of viruses that may cause various symptoms such as pneumonia, fever, breathing difficulty, and lunginfection.

The World Health Organization (WHO) used the term 2019 novel coronavirus to refer to a coronavirus that affected the lower respiratory tract of patients withpneumonia in Wuhan, China on 29 December 2019. The WHO announced that the official name of the 2019 novel coronavirus is coronavirus disease (COVID-

19). And the current reference name for the virus is severe acute respiratory syndrome coronavirus 2(SARS-CoV-2). It was reported that a cluster of patients with pneumonia of unknown cause was linked to a local Huanan South ChinaSeafood Market in Wuhan, Hubei Province, China in December 2019.

Given the spread of the new coronavirus and its impacts on human health, the research community has responded rapidly to the new virusand many preliminary research articles have already been published about this epidemic.

Fig 1: Lockdown in India

IMPACT OF LOCKDOWN

Positive impacts

Positive impacts on the environment since the coronavirus lockdown began

The world's largest lockdown means all factories, markets, shops, and places of worship are now closed, most public transport suspended and construction work halted, as India asks its citizens to stay home and practice social distancing. So far, India has more than 1,300 confirmed cases of Covid-19, including 35 deaths.
Already, data shows that the main cities are recording much lower levels of harmful microscopic particulate matter known as PM 2.5, and of nitrogen dioxide, which is released by vehicles and power plants.

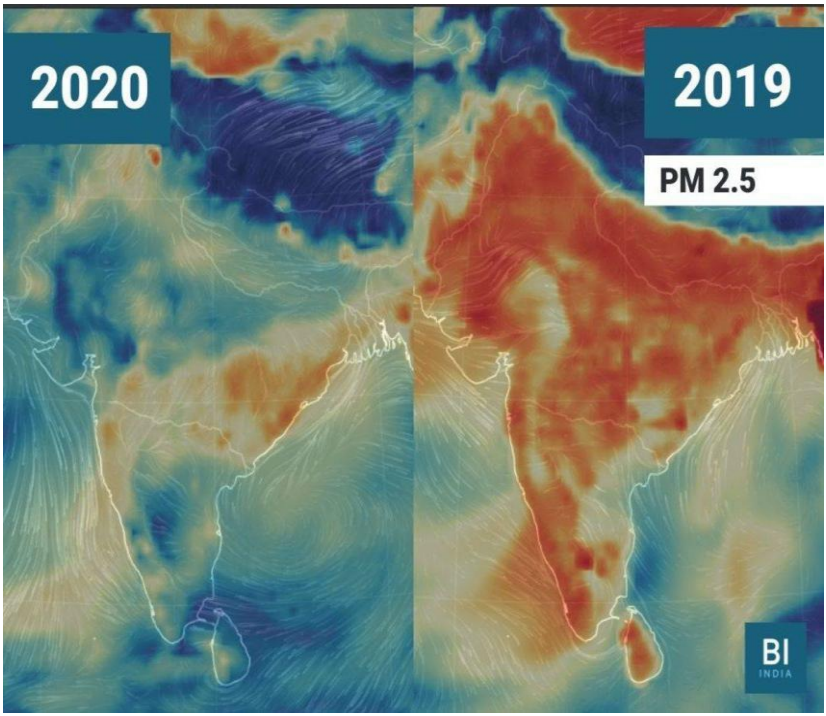

Fig 2: Decline of harmful Particulate matter in 2020 as compared to 2019 in India

PM 2.5, which is smaller than 2.5 micrometers in diameter, is considered particularly dangerous as it can lodge deep into the lungs and pass into other organs and the bloodstream, causing serious health risks.

The sudden fall in pollutants and the subsequent blue skies signal a dramatic shift for India -- which has 21 of the world's 30 most polluted cities, according to the IQAir AirVisual's 2019 World Air Quality Report.

The data from the Central Pollution Control Board (CPCB), part of India's Environment Ministry, was collated by the Centre for Research on Energy and Clean Air (CREA).

Nitrogen dioxide went from 52 per cubic meter to 15 in the same period -- also a 71% fall. Mumbai, Chennai, Kolkata and Bangalore have also recorded a fall in these air pollutants.

Cleaner air and increased visibility

Cleaner air has perhaps been the single greatest positive effect of the lockdowns on the environment. Before the lockdown congested cities have very polluted environment. But now it can be seen in figure given below fig. 2.

Fig 2: Cleaner Environment of India

Citizens in Northern India are seeing the view of the Himalayan mountain range for the first time in their lives, due to the drop in air pollution caused by the country's coronavirus lockdown.

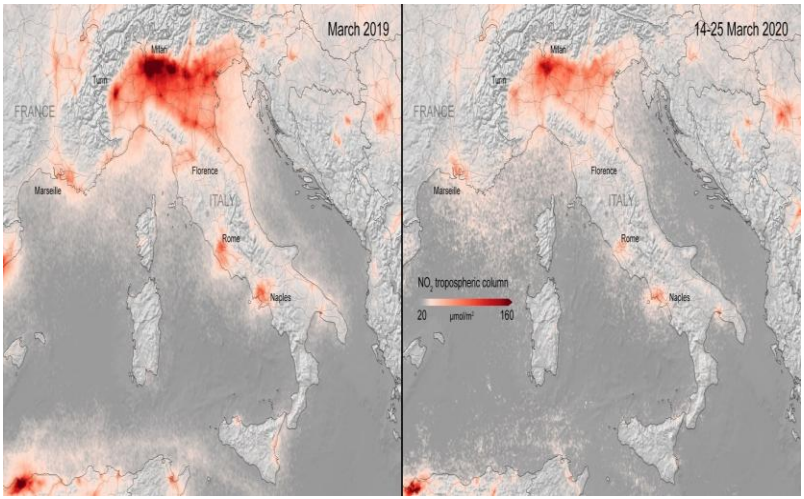

Fig 3:Increased Visibility of Himalayan Mountain Range

Those living in Jalandhar in northern Punjab have shared pictures of the mountains from rooftops and empty streets, amazed by the view which has been hidden by pollution for 30 years.

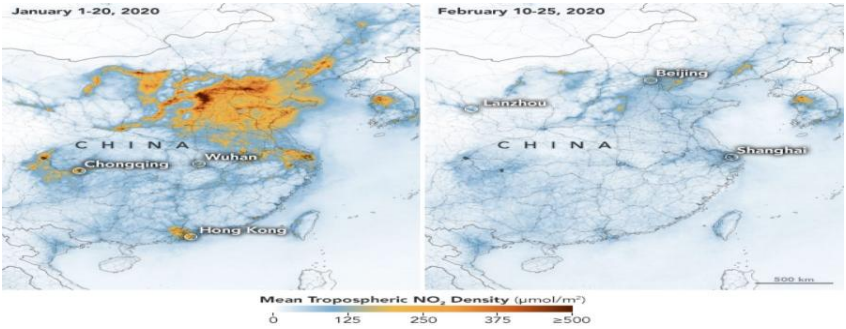

Fig 4: Clarity in Environment of China After Lockdown

Lowest traffic pollution

Even before the national lockdown started on March 25, the phased shutdowns in India were having an impact.

During the first three weeks of March, the average nitrogen dioxide levels declined by 40 50% in the cities of Mumbai, Pune and Ahmedabad, compared with the same period in 2018 and 2019, said Gufran Beig, a scientist with the System of Air Quality and Weather Forecasting And Research (SAFAR) under India's Ministry of Earth Sciences.

"The reduced fossil fuel emissions due to (the) transport sector and slowdown in other emissions-related activity is slowly reducing the air pollutants,".

Clearer water

In Venice, famous for its winding canals, water quality appears to have improved amid Italy's stringent coronavirus lockdown.

Residents in the city have said the waterways are benefiting from the lack of usual boat traffic brought on by the hoards of tourists who visit each year.

Emptied of the usual array of motorboat taxis, transport and tourist boats which clog the canals, there has reportedly been a sharp uptick in the clarity of the water.

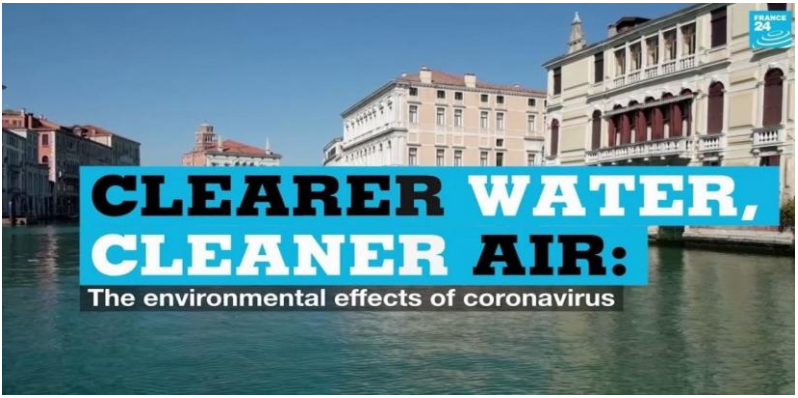

Fig 5: Effect of Lockdown

The improvement is thought to be linked to a reduced amount of sediment clouding the waterways, with the decline in water traffic meaning the muddy canal floors are no longer being churned up.

The change has meanwhile reportedly offered locals clear views of shoals of small fish, crabs and multicoloured plant-life - sights often obscured by busy boating movement in the Lagoon.

Fig 5: Effect of Lockdown on Water

Pollution protest

It's a lesson that is badly needed in India, activists say.

In November 2019, hundreds of Indians took to the streets in New Delhi to protest the levels of air pollution, after the city was blanketed in a dark yellow haze for several days.

Air pollution hit record high levels, forcing schools to close and flights to be diverted. Other cities in northern India also suffered.

Four months later, the skies are now clearing up. But the impact of living in such badly polluted conditions has left a hidden

problem for residents: a potential vulnerability to the coronavirus pandemic- a severe respiratory disease.

India has one of the highest rates of respiratory disease in the world, and the world's highest number of tuberculosis cases. Such widespread lung damage could potentially increase the risks associated with the coronavirus.

"(There are) very high levels of respiratory disease, even among young children, they have asthma, the nebulizer has become a normal thing to have in the house for families who can afford them," said Lavakare from Care for Air.

According to the WHO, older people, and people with pre-existing medical conditions, including asthma, appear to be a higher risk of becoming severely ill with the virus.

Liberated wildlife

As in Venice, wildlife elsewhere has also taken the opportunity presented by our widespread absence from suburban streets and city centres to venture out and explore.

While there have been a host of now debunked fake stories about animals' activities during Covid-19 lockdowns, there have also been plenty of instances of creatures across the world appearing to emboldened, and perhaps a bit bemused, by our ongoing lack of activity.

Fig 6: Effect of Lockdown on Liberated Wildlife

From a herd of marauding goats taking over a Welsh seaside town to deer in a Japanese city roaming the roads in search of food, the shift in behaviours has ranged between the beautiful and the downright bizarre.

Across the world, the lockdowns may just be showing us how quickly the natural world around us can adapt and thrive in our absence when given some space.

Or to put it simply, when we move out, nature can move in.

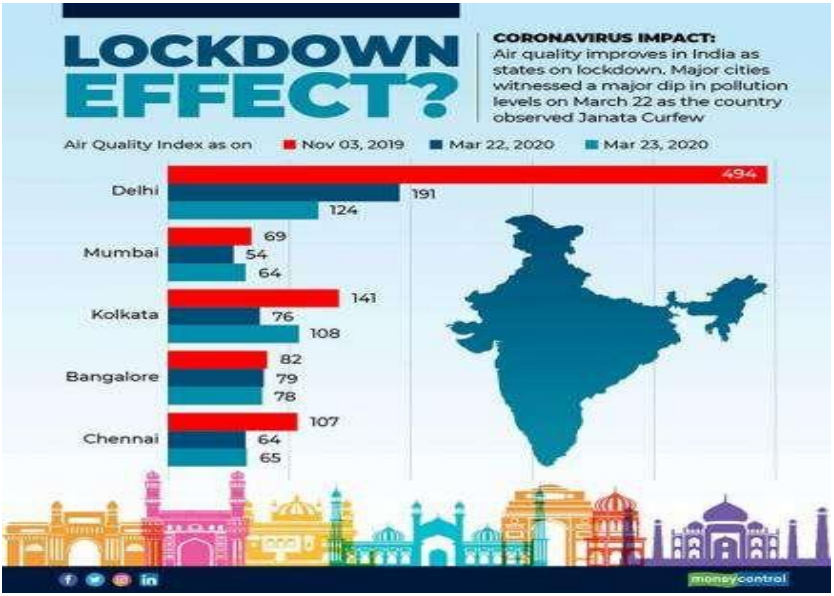

Fig 7: Air Quality Index of India after lockdown

Investing in a cleaner future

Globally, deaths related to exposure to air pollution are of pandemic proportions, with 7 million deaths every year, the World Health Organization (WHO) said.

Care for Air said this should be a wake-up call for India to address the problem.

"Obviously, this is not the most ideal way to bring down air pollution, but it does prove that air pollution is manmade," Lavakare said. "It gives a lot of encouragement and hope that we can bring pollution down."

The coronavirus crisis also presents India with an opportunity to invest in a clean energy future, said Dahiya from CREA.

Negative Impacts

World's biggest lockdown may have cost Rs 7-8 lakh crore to Indian economy

Acute Ratings believes there is a risk of a contraction of April-June (2020-21 fiscal) GDP to the extent of 5-6 per cent, with Q2 (July-September) also likely to post modest growth in a best-case scenario.

New Delhi: The world's biggest lockdown that shut a majority of the factories and businesses, suspended flights, stopped trains and restricted movement of vehicles and people,The world's biggest lockdown may have cost the Indian economy Rs 7-8 lakh crore during the 21-day period, analysts and industry bodies said.

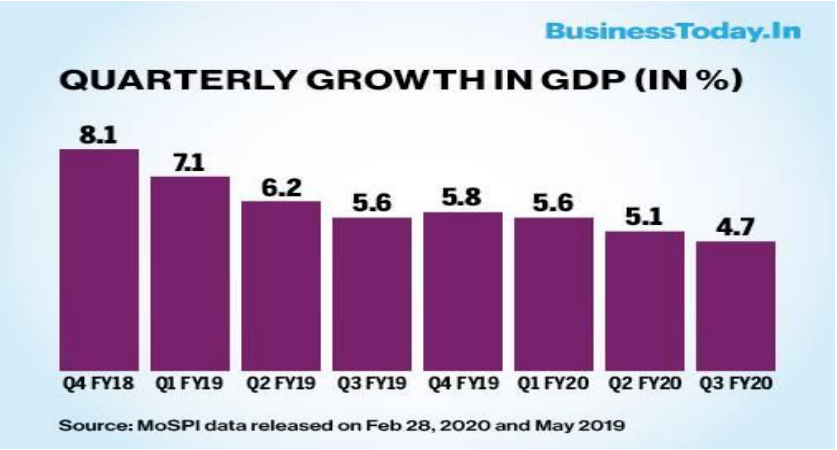

Fig 8: Quarterly Growth in GDP of India (Feb, 2020)

With the intent to contain the spread of COVID-19, Prime Minister Narendra Modi with effect from March 25 announced a nationwide complete lockdown that brought as much as 70 per cent of economic activity, investment, exports and discretionary consumption to a standstill. Only essential goods and services such as agriculture, mining, utility services, some financial and IT services and public services were allowed to operate.

Stating that the pandemic came at the most inopportune time for **India** whose economy was showing signs of recovery after bold fiscal/monetary measures, **Centrum Institutional Research** said the country again stares at the possibility of low single-digit growth for FY2021 (April 2020 to March 2021). "Nationwide complete lockdown is likely to shave off at least Rs 7-8 trillion," it said.

Acute Ratings & Research Ltd earlier this month estimated that the lockdown will cost the Indian economy almost USD 4.64 billion (over Rs 35,000 crore) every day and the entire 21-day lockdown will result in a GDP loss of almost USD 98 billion (about Rs 7.5 lakh crore).

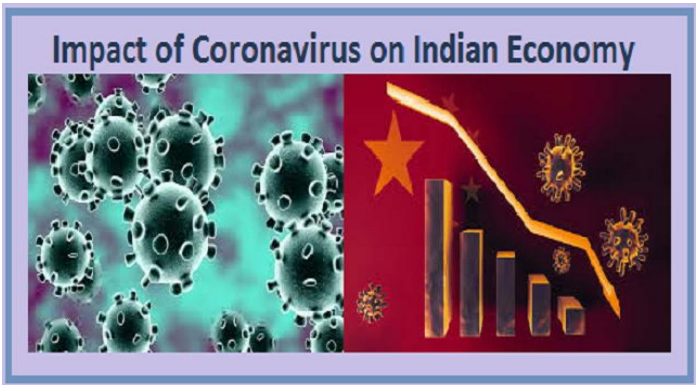

Fig 9: Impact of corona on Indian Economy

The rapid spread of COVID-19 has not only disrupted the global economy but also triggered a partial shutdown in many parts of India from early March and an almost complete shutdown from March 25. "While the countrywide shutdown is scheduled to be lifted from April 15, 2020, the risks of prolonged disruption in economic activities exist depending on the intensity of the outbreak," the credit rating agency said. The sectors that are most severely impacted are transport, hotel, restaurant, and real estate activities. Prime Minister Modi is likely to detail the post-lockdown scenario in an address to the nation on Tuesday morning. All India Motor Transport Congress (AIMTC) secretary-general Naveen Gupta said the accumulated losses to truckers during the first 15 days of lockdown were about Rs 35,200 crore given an average Rs 2,200 loss to per truck per day. "More than 90 per cent of the about one crore trucks in the country are off roads during the lockdown as truckers with only essential commodities are on the move," he said. "Even if the lockdown is lifted, it will take at least 2 to 3 months for truckers to limp to some normal scale as we apprehend consumption of non-essential items to remain hit on the account of lack of purchasing power."

CONCLUSIONS

There has been a rapid rush in research in response to the outbreak of COVID-19. During this early period, published research primarily explored the epidemiology, causes, clinical manifestation and diagnosis, as well as prevention and control of the novel coronavirus. Some data was collected through these published news. Overall impact of lockdown for the environment is good but the economy of world it is very negative.

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THE DIAGNOSIS OF CORONA VIRUS: A CHALLENGE

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Introduction:

The coronavirus belongs to a large family of viruses (7 Strain) that that are common in human beings as well as animals which may cause various symptoms such as pneumonia, fever, breathing difficulty, and lung infection. Very few cases from these viruses have been known to affect humans. These corona viruses cause illnesses ranging from common cold to more severe diseases such as:

- Severe Acute Respiratory Syndrome (SARS)
- Middle East respiratory syndrome (MERS)

Corona viruses are zoonotic i.e transmitted between animal and human being. In 2002-2003, SARS-CoV was transmitted from cats to human who caused a large scale epidemic, which was began from Guangdong, China in November, 2002. During that period of diseases 8096 persons were affected, 774 were dead and 26 countries were affected. While, MERS CoV(2012) was transmitted from dromedary camels to human which was began in Saudi Arabia with approximately 2500 cases and 800 people were dead. Though several other families of corona viruses are not yet infected human beings.

Novel coronavirus is a new strain which was not found in humans earlier. The World Health Organization (WHO) used the term 2019 novel coronavirus to refer to a coronavirus that affected the

lower respiratory tract of patients with pneumonia in Wuhan, China on 31st December 2019. In December, 2019, a report of China linked to a local Huanan South China Seafood Market in Wuhan, Hubei Province reveal that a group of patients with pneumonia was found but the cause behind it was not known yet. In response to the outbreak and to conduct epidemiological and etiological investigations a rapid response team to accompany health authorities was dispatched by Chinese Center for Disease Control and Prevention (China CDC), Hubei province and Wuhan city. The WHO confirmed that the outbreak of the coronavirus epidemic was associated with the Huanan South China Seafood Marketplace, but no specific animal association was identified.

Then on 11th Feb 2020, WHO announced that the official name of the 2019 novel coronavirus is coronavirus disease (COVID-19). While on 30th January, 2020 COVID-19 has now been declared as a Public Health Emergency of International Concern by the WHO. And the current reference name for the virus is severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). In this case susceptibility seems to be associated with age, biological sex, and other health conditions. At the present COVID-19 outbreak situation 4.7 million cases, 3,14000 deaths and 213 countries,areas or territories with affected with COVID-19 cases has been confirmed across the world as per the 93rd situation report released by WHO on 22nd April 2020.

1. Transmission and symptoms of COVID-19

As COVID 19 is an infectious disease it is transmitted by the follows:

1. When a person suffering from the disease and sneezes or cough, then a lot of droplets spread in the air or fall on the ground or adhere to nearby surfaces.

2. If another person is nearby to the infected person, inhales the droplet or touches that surface and then touches his/her face, eyes or mouth, he/she also get infected.

Fig1 : Transmission of COVID-19

3. Now through the social interactions the infected person can further infect many people.

Different people are affected by COVID-19 virus in different ways. In this respiratory disease (COVID-19) mild to moderate symptoms were observed in infected people. Many of them recovered themselves without requiring any special treatment. Higher risk of developing severe disease and death are in elder people or medical historical patients only.

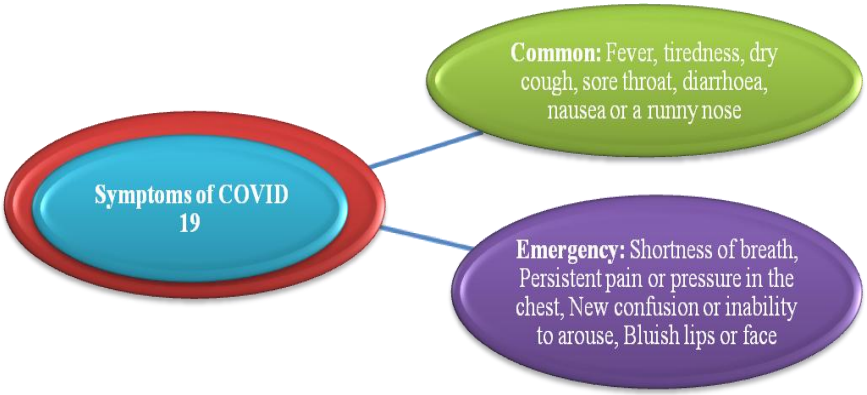

Fig 2: Symptoms of COVID-19

As per the Centre for disease control and prevention, The Symptoms that may appear 2-14 days after exposure are Fever (83%-99%), Cough (59%-82%), Shortness of breath or difficulty breathing (31%-40%), Fatigue (44%-70%) Chills, Repeated shaking with chills, Muscle pain (11%-35%), Headache, Sore throat, new loss of taste or smell.

If someone develop emergency warning signs for COVID-19 then there is need of medical attention immediately. Emergency warning signs include:

- Difficulty breathing or shortness of breath
- Persistent pain or pressure in the chest
- New confusion or inability to arouse
- Bluish lips or face

80% cases of the disease are not required treatment and they recover by their own strong immune system. But 20% cases needs hospitalization. This disease mainly spread in the older people and the person with pre-existing medical history such as high blood pressure, cancer or heart disease, lung disease and diabetes are at a high risk to develop serious illness.

2. Virology of COV-2

SARS-Cov-2 is a smallsize (65-125 nm in diameter) enveloped RNA virus belonging to order Norovidae and familycoronaviridae. The subfamily Coronavirinae contains four genera: Alphacoronavirus, Beta Coronavirus, Gamma and delta. Coronavirus are assigned to a genus with largest known genome among RNA viruses having length (25-32 kbs).The SARS-Cov-2 genomic RNA is a single stranded with positive polarity, which is packaged by associated proteins and enveloped by a lipid raft enriched in sphingolipid and cholesterol to form virion. The genome of coronavirus are polycistronic contain three fourths 5”proximal are dominated by specific gene Open Reading Frames (ORFs). The virus contain a variable number of genes encode

structural and nonstructural protein for viral replication, spike formation and transcription. All currently recognized genera of coronavirus are pathogenic and cause upper or lower respiratory tract infection in either animal or human species.

Coronavirus under electron microscope appears like "a crown" due to its projections on the surface mediates its entry into host cells. Cov-2 is an enveloped virus; binding is mediated by one of protein in envelope. This virus contains four structural proteins in their envelope: M protein, E protein, S protein and nucleocapsid protein(N). The function of M and N protein are a part of viral envelope organization and nucleocapsid interactions. E protein is a virion constituent and largely embedded in virion membrane. Third S protein is spike protein, which mediates the binding of coronavirus to the target cell and attachment of virus and cell membrane during entry. Glycoprotein Spike is made up of three fragments; a large ectodomain contain S1 (receptor binding) and S2 (membrane fusion) subunit, a single transmembrane anchor and a short tail. Genome sequence of HCOV-2 and HCov are found to be similar in amino acid and nucleotide sequence. COV-2 gene is made up of a RNA dependent RNA polymerase gene. This gene shows less mutation as compared to other RNA virus. There are very difference between SARSCov and SARSCov-2 gene. The life cycle of virus begins when it enters the target cellreceptors binding and membrane fusions are mediated by these subunits. Receptors binding domain in SARS-Cov-2 protein binds strongly to Angiotensin Converting enzyme-2 receptors and serine protease for S protein priming. Other coronaviruses receptors such as amino peptidase N and dipeptidyl peptidase are not used by COV-2. Angiotensin converting enzyme is an important part of sympathetic nervous system which constricts blood cells and have hypertension and heart failure in cov-2 patient. Lungs are more susceptible to this cov-2 infection. There are a number of factors which are responsible for target of this

organ. (i) Human alveolar epithelial cell have a large distribution of ACE-2 receptors (ii) lungs have a large surface area for invasion of inhaled virus. Kidney, endothelium, heart and intestine contain expression of ACE-2 receptors.Diarrohea and stomach ache are also symptoms of COV-2 infection due to entry of virus through intestine. Therefore, ACE-2 receptors, virus attachment and interactions, proteins spikes and nucleic acid can serve as a primary target for development of antibodies, virus entry inhibitors, ACE-2 inhibitors and vaccines.

3. Laboratory Diagnosis of COV-2infections:

The purpose of diagnostic test of COV-2 is to identify the infected persons and give proper treatment according to the level of infection. Thus, spreading of virus and disease progression can be prevented by the use of proper Diagnostic test. SARSCov-2 infected persons have clinical symptoms like cold, cough, high fever and difficulty in breathing. Sometimes patients are asymptomatic or have other symptoms such as stomach ache, diarrhea and loss of taste also. Thus, symptoms could not be used as indicators for testing. Some countries test persons on massive scale whereas US test only high risk or limited individuals.Another important aspect for controlling spreading of COV-2 infection is early diagnosis. However, it is very difficult to diagnosis COV-2 infection by symptoms because many of respiratory disease show same symptoms while some patients are without symptoms.Therefore, a rapid and sensitive diagnosis is used to test SARSCOV-2 infection.

(a) Sample

Type of sample collection, collection method and equipment, avoidance of contamination,experience of laboratory staff, handling of sample and time of testing during illness; are several factors which affect accuracy of results of test performed. For detection of coronavirus infection, nasopharyngeal swab (NP),

oropharyngeal (OP) swab and self-collected saliva specimen are often recommended for screening or early detection of infection while Sputum, bronchoalveolar lavage or rectal swab should be used for evaluating high loaded or severe cases of infection. For serological testing, blood sample is required. Freezing and thrawing samples several times may destroy the viral RNA and affect the accuracy of test results. Class II Biosafety cabinet with negative pressure used for processing sample. Sample should be avoid from spillage and directly transfer to testing cartiridge.

(b) Test to detect Cov-2 infection:

According to WHO guideline, there are two approaches available to test Coronavirus infection.

(i) Molecular Assay

Molecular assay available for detecting coronavirus infection include Rapid molecular Assay, Real Time Reverse Transcription Polymerase Chain Reaction (rRT-PCR) and other Nucleic acid amplification test. These tests can detect viral RNA or Nucleic acid in suspected persons with a high specificity or sensitivity. Notably, the detection of viral genome by rRT-PCR is not necessarily indicating viable or active CoVinfection. USFDA recommends The Pixel by LabCorp COVID 19 test kit for self-collection nasal swab at home according to guidelines given by healthcare providers. Laboratory personnel must be trained and expertise in rRT-PCR. It should only be used in FDA emergency use authorization. The patients consider being negative when two successive test are negative on all samples whereas positive result indicates presence of viral infection. rRT-PCR test can detect viral RNA or nucleic acid within 30 min. This test has two platform to detect target molecule; singlex and multiplex. Unlike the singlex, Multiplex PCR can detect multiple target sequence of pathogen in one assay and seems to be good alternative. However, this method is not used in general due to poor sensitivity and specificity. A study proved that Chest CT(Computer

Tomography) scan found to be more efficient and can be used as primary tool to investigate in endemic areas.

(ii) Serological testing

Serological testing is a test to detect presence of antibodies (IgG and IgM) in patient blood, serum or whole blood. Human Immune system makesIgG and IgM (immunoglobulin protein) in response to a disease to fights against specific antigen on virus or bacteria. The production of antibodies starts after some days of infection. Therefore, this test cannot be used to detect disease in early stage. This diagnostic test can detect asymptomatic and previous history of infection. Report said that some people did not develop immunity after the SARSCOV-2 infection and get infected again. The main Question arise with this test "who's antibodies can be used to immune other persons? This question limits the effectiveness of this diagnostic test. CDC has developed two approaches but USFDA not approved this method due to poor sensitivity.

a) **ELISA** (Enzyme Linked Immunosorbent Assay) is an immunological assay developed by Perlmann and Engvall in 1974, to determine antigen, peptide or antibody using microtitre plates. This test is versatile, sensitive and simple; many medical professional perform it easily. An ELISA test involves an antibodies (immunological molecule) against two different molecule of SARSCOV-2 protein, Nucleocapsid (N) and glycoprotein spikes (S) to provide a positive result, or if they don't react, a negative result. The IgG and IgM antibodies are found on late stages of patient. Therefore, it can be used in late stages of infection. This test is used to screen immunity of high risk persons like health workers, not for diagnostic purpose. If a person found to be positive in ELISA test, CDC recommends for microneutralization assay.

b) **Microneutralization Assay** is highly specific and sensitive assay for detecting COV-2 specific neutralizing antibodies. Microneutralization reaction gives more precise answer of question whether a person has specific antibodies against viral infection. An advantage with this technique is that it detect antibodies to the viral haemagglutination protein and thus can identify functional strain specific antibodies in human sera, additionally the neutralization assay is carried out when emergence of novel coronavirus recognized. However, this assay is laborious and slow, yield results within five days but when combined with ELISA, it produces results within two days.

Confirmation of Microneutralization assay and positive result of ELISA test is final determination of confirmed positive serological test which means patient is infected with coronavirus (Fig 3).

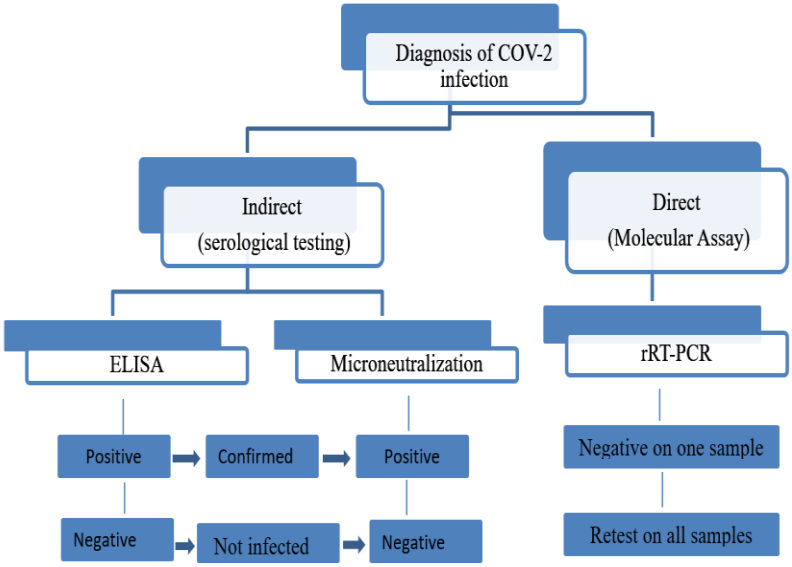

Figure 3: Diagnosis of COV-2 infection

(ii) Cell culture

Isolation of HCoVs in cell culture is not routinely performed for diagnostic purposesdue to the lack of permissive cell lines, time to results, labour and expertiserequirements, and the lack of commercial antisera for culture confirmation. SARS-CoV and MERS-CoV and SARS-CoV-2 will grow in primary monkey cells andcell lines such as Vero and LLC-MK2, but cell culture should not be performed forsuspect cases in routine diagnostic laboratories for biosafety reasons.

(4) Prevention, Control and Treatment

The strategies and methods adopted for the prevention and control of this disease divided on three levels;

1. National level,
2. Case-related population level
3. General population level.

At the national level, on 20th January 2020, The National Health Commission of the People's Republic of China issued some guidelines for the COVID-19 management of class B legal infectious diseases and preventive and control measures to be implemented for class A infectious disease. To prevent and control the spread of the COVID-19 medical institutes can adopt isolation treatment and observation protocols under this policy. Then National Health Commission published national guidelines on 22nd January 2020 for medical institutes to prevent nosocomial infection to prevention and control COVID-19. For rapid prevention and control measures during the Chinese Spring Festival, the National Health Commission issued protocols on 28th January 2020 in order to effectively control the spread of the epidemic over a "big isolation and big disinfection" policy. With targeted measures for rural areas and the elderly population National-level strategies have also been issued.

To prevent or slow down the transmission of the COVID-19 several public health measures were introduced; these include;

- Use of personal protective equipment (PPE)
- Case isolation,
- Identification and follow-up of contacts
- Environmental disinfection

It has been commended to apply appropriate symptomatic treatment and supportive care. Gilead's remdesivir has demonstrated efficacy in treating the coronavirus infection noted by Health officials from WHO. There are some drugs which are used in the treatment of corona virus. For the treatment of COVID-19, limited emergency use of chloroquine and hydroxychloroquine is approved by US Food and Drug Administration (FDA) in March, 2020. An anti-viral drug Favilavir has been also approved by National Medical Products Administration of China for the treatment for coronavirus.

The pharmaceutical companies across the world are developing vaccines or antivirals from the drugs having potential to become major anti for coronavirus. A list of the major coronavirus drugs or vaccines (Table 1) on which pharmaceutical companies are working in the present time and it is expected that by the end of April, 2020 or May, 2020 they will get success for the treatment of contagious coronavirus infection

Table 1:Pharmaceutical companies involved in developing coronavirus drugs/vaccines

S.No.	Drug/Vaccine	Pharmaceutical Company
1	Fusogenix DNA	Entos Pharmaceuticals
2	ChAdOx1 nCoV-19	University of Oxford
3	COVID-19 S-Trimer	GlaxoSmithKline (GSK)
4	Gimsilumab	Roivant Sciences
5	gp96	Heat Biologics

6	AdCOVID	Altimmune
7	INO-4800	Inovio Pharmaceuticals
8	BNT-162	Pfizer
9	AT-100	Airway Therapeutics

With the emergence of this disease in Wuhan,has heightened our awareness of the continuing risk of inter-species transmission of infectious agents, and has permanently altered our approach to the diagnosis, management and infection control of viral infections. Now Clinicians, laboratorians and public health personnel will demand rapid, sensitive and specific for diagnosis of COVID-19. Therefore, with the identification of viral sequence or genome, we can expect new technologies which are less costly and better suited for detecting SARCOV-2 viruses than the current commercially available molecular and serological Assay.

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ROLE OF AYURVEDA IN TREATMENT OF COVID-19

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Introduction

As we are aware about the coronavirus; it is a worldwide epidemic. People are in a panic; schools are closed, roads are closed, cities are closed and everybody has to sit in their home in their house with the family. So this is a very critical time.

- Sat means truth
- Chit means Awareness
- And Ananda means joy

These are not just three words. They are one and the same thing: sat is awareness, chit is awareness, ananda is awareness. Treat these as awareness and there is awareness. So we have to see what is going on in this outer world. Everything that is going on, it will come and it will go; nothing is permanent in this world. Even this coronavirus will come and will leave on its own accord. But we have to keep our integrity, harmony, happiness and balance between body mind and consciousness. This is a great opportunity to be at home and then eat homemade foods.

At this time enjoy basmati rice and mung dal kitchari with sabji vegetables (a style of cooking vegetables with spices). Hot food is good. It is better not to take cold drinks. No iced water; no iced cold beverage. No yogurt, cheese or ice cream. The cold foods will suppress your agni (digestive fire, digestive capacity) and exposure to cold will diminish your natural resistance. For that

reason, try to avoid the cold, but you can have hot water. Sip it throughout the day or while eating food; put a little ginger in the water and make a hot ginger tea that is excellent.

This is the wonderful message from Charaka Samhita from the "Janapada Dvamsa Vyadhi" chapter. This means that during epidemics, they performed doom doomasvanadyay. so as they did during the old days; they would play the drum during epidemics. Doom, Doom, Doom. Even now in India, the prime minister told the people, "You ring a bell or clap just to honor those people who are working to fight this coronavirus."

So even in your home, you can do puja (ritual), you can do arti (offering of light during puja), burn a little camphor and do arti or ghee lamp. The others in your household can clap during the puja. This clapping sound is a kind of marma. It is a marma of the heart, marma of the lungs, marma of the kidneys, and this clapping will strengthen your energy. It will send a message to your internal organs. So this is also doom doomasvaniaydahya. So doom doom is a mantra. You can chant OM. You can chant Hari Om. Or, you can say Jai Ganesh. All these are very creative, positive vibrations of higher Consciousness and they will support our family, will support our friends, will support our neighbors so that we will stand together, walk together, share together the same truth.

Uthistaha (Rise Up)
Jagrataha (Wake Up)
Prapyavaranbodinva [Let us] Achieve the highest supreme knowledge
Let us walk together, share together, stand together -- but not too -- close with a little distance, resistance because too much close. Never shake hands, but do Namaste. Namaste is a very beautiful

gesture. If you see your friend, do Namaste and this is a wonderful greeting, and there is no direct hand-to-hand contact. So this sangatchadvam (Let us go together) -- Let us speak the same truth together. Let us share this wisdom with our friends and be happy and this period will soon go away within couple of weeks. We will see positive vibration and don't be nervous. Don't be unhappy. Don't be sad. Come out. Stand together and you will see the energy will flower into bliss, into peace. Namaste.

For the purpose of Ayurveda interventions during COVID-19 pandemic, people can be segregated into four distinct categories:-

1. Unexposed asymptomatic group :- This group will include persons who currently do not have any related symptom nor have any associated risk factor and co-morbidities. These apparently healthy people may be the most suitable for building of immunity so that infection-related pathogenesis can be countered to keep them healthy. Preventive interventions here can include both pharmacological as well as non-pharmacological strategies. Among the non-pharmacological interventions healthy lifestyles, adequate physical activity, sufficient sleep, care of retainable and non-retainable urges, sadvritta, and avoidance and isolation from infected persons are vital. Fumigation of homes, shelters and living-place by Ayurvedic herbs such as garlic (Allium sativum) peel, turmeric (Curcuma longa) powder, Carom or Ajwain (Trachyspermum ammi) seeds and Loban (resin of Styrax benzoin and Boswellia species) may also be a useful strategy for disinfection. In addition, community based Swarna Prashana and mass prophylaxis through rasayana having the predominant effects upon respiratory tract can be useful. Rasayana may include Brahma Rasayana, Chyavanprasha or Amrit Bhallataka. The rationale for choice of rasayana drugs can be traced back to Samhita classics of Ayurveda as well as in contemporary

research. Rasayana act as antioxidant, anti-stress, anti-inflammatory, anti-microbial, vaccine adjuvant, and confer immunity against diseases. Further, according to Ayurveda classics, rasayana therapy, along with physical and social distancing from infected persons, constitute a core strategy to overcome epidemic and infectious diseases. Building immunity requires time. There may be some asymptomatic carriers who could transmit the virus to other apparently healthy people. Hence, physical and social distancing for all would be essential to avoid any transmission.

2. Exposed asymptomatic (quarantined):- This group comprises of people who are without apparent symptoms, but at risk due to contact history. They need to be quarantined carefully. Specific prophylaxis for this group may include Sanjeevani vati and Chitrakadi vati and combination of Guduchi (Tinospora cordifolia), Shunthi (Zingiber officinale) and Haridra (C. longa). This choice of medicines is aimed at maintenance of agni as well as aam pachana in order to prevent the progression of pathogenesis in its initial sanchaya-prakopa-prasara stage. Sanjivani vati is widely used against communicable diseases, fever due to infection and sannipataj jvara, cold, cough, and indigestion. It also strengthens and rejuvenates the immune system. This group may also be provided with decoction of a combination of Ayurvedic herbs including T. cordifolia, Z. officinale, C. longa, Ocimum sanctum, Glycyrrhiza glabra, Adhatoda vasica, Andrographis paniculata, Swertia chirata, Moringa oleifera, Triphala and Trikatu. These herbs are proposed for the reason that these are known to be broad-spectrum antivirals and protease inhibitors.

3. With mild COVID-19 symptoms:- This category relates to people found positive to SARS-CoV-2 and are having mild URTI

symptoms. They are required to be carefully isolated and monitored for any progression of the disease, along with giving adequate therapy to arrest the symptoms and balancing the vitiated doshas to control disease progression. Formulations like Lakshmi Vilas Rasa, Pippali rasayana, Sanjeevani vati, C. vati, Go jihvaadi Kashaya, Vyaghri haritaki, Kantakaari Avaleha, Dashamul kwath, Sitopaladi, Talishadi, and Yashtimadhu may be the most suitable drugs to be used at this stage in an integrative model. Those patients showing progression of the disease may immediately require shifting to ICU.

4. With moderate to severe COVID-19 symptoms:- This category may be the population where the moderate to severe symptoms are already present and the patients also belong to high risk groups. These patients require tertiary care from the beginning itself but can also be co-prescribed with Ayurveda medicines in order to reduce the impact of the pathology and to buy more time to have intensive management. Recommended formulations here may include P. rasayana, Laghu Vasant Malati, Sanjeevani vati, Tribhuvan keerti rasa, Brihata Vata Chintamni rasa, Mrityunjaya rasa, and Siddha makardhvaja rasa. The key criterion for choosing rasa aushadhi in category 3 and 4 as noted above is the urgency of initiation of therapeutic actions. Rasaaushadi are shown to have better bioavailability and absorption through sublingual and oral route accounting to the nano size of their particles. For example, suvarna bhasma has been found to get absorbed well through sublingual administration when mixed with black pepper powder and ghee.

Along with the above plan, Ayurveda practitioners would require training in screening of the people for associated risk factors. They should also be equipped with modern personal protection equipment and access to diagnostic facilities. Ayurveda hospitals may also be turned as the primary care setups and quarantine for

the people having mild symptoms and requiring a constant monitoring. A good networking of AYUSH healthcare authorities with local health authorities may help effective utilisation of human resources in AYUSH community during the current crisis.
It is also important to mention a caveat here. Ayurveda doctors following the pragmatic action plan presented here should assess the prognosis and advise timely referrals to secondary or tertiary care facilities as per the need of patient. An extra and utmost care should be taken while treating COVID-19 patients/people suspected to have contracted infection of SARS-CoV-2.

This action plan, if implemented, has enormous potentials to provide learning and innovative insights. Thus, a proper documentation is crucial. Therefore, it is suggested that a proper documentation of key variables that are essential should be done on each case. These variables should include age, gender, symptoms, geography, contact history, Ayurvedic diagnosis including a roga and rogi bala examination, improvement or worsening of symptoms, Ayurvedic medicine(s) with dosage, final outcome of the management, referral to secondary/tertiary care, symptoms controlled, cured, and mortality, if any. A follow-up advice upon discharge or stop of medications should also be documented.

There are 3598 AYUSH hospitals available in the country including 2818 Ayurveda hospitals. Similarly, there are 25,723 AYUSH dispensaries including 15,291 Ayurveda dispensaries. There are total 7.73 lakh registered AYUSH practitioners including 4.28 lakh Ayurveda practitioners. There are 8954 AYUSH drug manufacturing units (licensed pharmacies) in the country. Among these, 7718 are Ayurveda pharmacies. With this infrastructure and associated human resources, implementation of the proposed action plan seems highly feasible.

Recommendations and the way forward:- Ayurveda has enough potential and possibilities to be employed both for prevention and treatment of COVID-19. This will provide an important opportunity for learning and generating credible evidence. It is pertinent to reiterate that participation of Ayurveda in addressing the COVID-19 challenge in India should not remain limited and seen as the extension of healthcare services and support to bio-medical system. Indeed, with adequate monitoring and data keeping during the implementation, important lessons and research directions are likely to emerge on the management of increasingly frequent and virulent communicable diseases. Implementation of proposed action is likely to provide evidence-based insights strengthening the scope of Ayurveda beyond preventive health care and care for non-communicable diseases. AYUSH system across the country has been put on alert for being called anytime to serve the nation. AYUSH healthcare facilities are also being readied to be converted into quarantine facilities in times of need. From this perspective, implementing the suggested intervention plan within AYUSH healthcare facilities by Ayurveda workforce may benefit the nation greatly. India is the country where the world's oldest living health care system originated and therefore it is being carefully watched by the world community for how it handles the crisis using its own resources. China has done it. And it is India's turn now to show its traditional healthcare might.

Time to realize the true potential of Ayurveda against COVID-19 :- The coronavirus disease 19 (COVID-19) pandemic is unique and unprecedented in several aspects and has challenged health care systems across the globe. The coronavirus pandemic has turned the world’s attention to the immune system, the body’s defence force against disease-causing bacteria, viruses and other organisms that we touch, ingest and inhale every day. Alongside

investigations into the virology of SARS-CoV-2, understanding the fundamental physiological and immunological processes underlying the clinical manifestations of COVID-19 is vital for the identification and rational design of effective therapies. Our immune systems will need to adapt unaided to COVID-19, until a potential vaccine is available.

Recently, an article highlighted the possible role of Ayurveda in treatment of COVID-19 through psychoneuroimmune pathways.
The COVID-19 crisis has led to high levels of psychological distress and significant impact on mental health, especially in vulnerable groups such as healthcare workers. Such distress is accompanied with alterations in immune function, including an increased risk of viral respiratory tract infections. The immune system plays a critical role in our response against infectious disease. The immune system is the body's multi-level defence network against potentially harmful bacteria, viruses and other organisms. The role of psychosocial factors in increasing susceptibility to viral respiratory tract infection is well documented. Further, Poor mental health conditions, including stress and depression, are associated with increased risk of acute respiratory infections.

Ayurveda, a traditional system of medicine, originated in India more than 3000 years ago. The term Ayurveda is derived from the Sanskrit words ayur (life) and veda (science or knowledge). The classic Ayurveda text Charaka Samhita, mentioned about epidemic management and defines immunity as the ability to preventing and arresting the progression of disease for maintaining homeostasis. The Ayurveda pays larger emphasis on building strength of mind and body to cope with various stressors, including infection. Similar to innate and acquired immunity, the Ayurveda concept of immunity (Bala or strength) is classified as

natural (Sahaja), chronobiologic (Kalaja), and acquired (Yuktikrut).

In Ayurveda several treatment options are available for enhancing immunity against respiratory illnesses, these include certain immunomodulators (known as Rasayana), local and systemic interventions. Local prophylaxis measures such as herbal decoctions, consumptions of hot water, gargling with medicated water, and steam inhalation described in Ayurveda for respiratory illnesses. These interventions can be quickly implemented on large scale with the advantages of simplicity, affordability, and acceptability. This is clearly evident that such traditional measures can positively influence mental health and immune function through modulating psychoneuroimmune pathways. Presently, several allopathic drugs are under investigations for prophylactic use against COVID-19 and it seems current prophylactic measures are insufficient. The prophylactic and therapeutic potential of traditional and complementary medicine systems such as Ayurveda and Yoga can be proven effective prophylaxis and adjuvant therapy of COVID-19.

The Ayurvedic Science has enormous potentials to provide learning and innovative insights and clinical studies with proper documentation is essential. This will help in disseminating findings to researcher and policy makers in scientific manner for drawing lessons on pluralistic knowledge systems available globally.

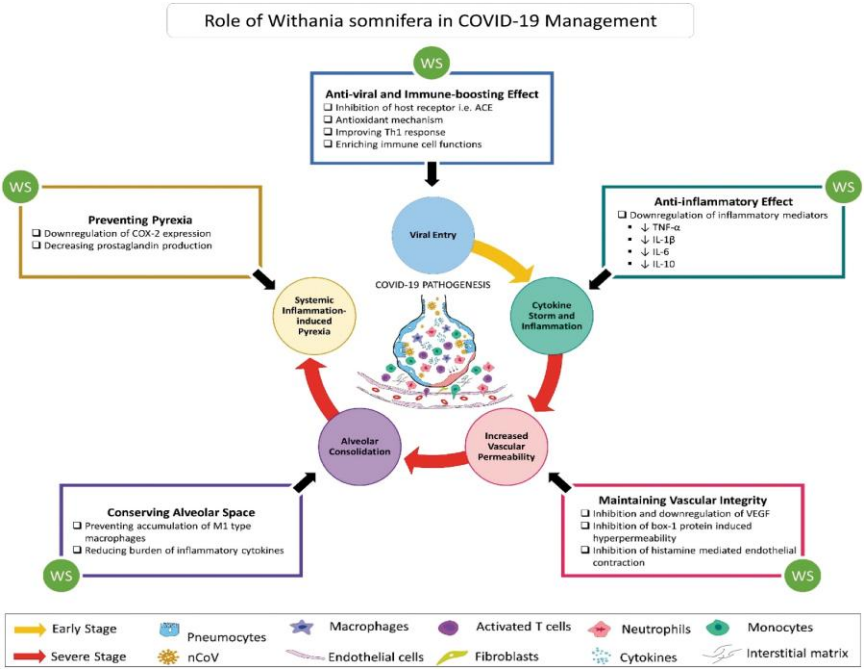
In India, several initiatives have been taken to utilise the vast potential of Ayurveda in this pandemic. The Ministry of Ayush, a nodal Ministry of Complementary and Alternative Medicine, has released a set of guidelines for boosting immunity and measures for self-care by using Ayurvedic principles (Ministry of AYUSH,

Government of India, 2020). Further, the Indian Prime Minister in its address to nation also mentioned about using Ayurveda medicines for improving immunity against COVID-19. This has led to surge in demand of Ayurvedic medicines. AYUSH system across the country has also been put on alert for being called anytime to serve the nation.

Gujarat, one of the western state of India, has also initiated a study, in which Ayush treatment will be administered to asymptomatic patients of COVID-19 and the state government has also distributed the ayurvedic medicines to millions of citizens for boosting their immunity against COVID-19 (Press Trust of India, 2020).

The Kerala, southern Indian state successfully flatten the COVID-19 curve has also started use of Ayurveda in mitigating the spread of COVID-19. The government has categorised the population in seven categories based on the possible spread of the virus, and been advised Ayurvedic treatment accordingly (Medical Dialogues Bureau, 2020). The state has one of the finest Ayurveda system of medicine in the country. Several other Indian states have also started utilising Ayurvedic therapies as a preventative measure against COVID-19. Ayurveda has enough potential and possibilities to be employed both for the prevention and an adjunct treatment option for COVID-19. India has adequate human and service delivery resources for implementing a large scale COVID-19 mitigation plan through prophylactic use of Ayurvedic medicines and also deploying Ayurveda Human Resources and services for asymptomatic cases. There are around 2818 Ayurveda hospitals and 15291 Ayurveda dispensaries available in the country along with 4.28 lakh registered Ayurveda practitioners.

The traditional practices may be useful in improving psychological quality of life, and reducing the risk of infection. Ayurveda has enough potential and possibilities to be employed both for the prevention and an adjunct treatment option for COVID-19. Therefore, it is very important to carry out research studies for understanding the link between effect of Ayurveda on psychological distress and immune responses to COVID-19 infection. This is an opportunity to unearth true potential of Ayurveda systems and adopting integrative approaches for innovating solutions against COVID-19 pandemic. Indeed, this is the time for India to demonstrate the potential of AYUSH systems in addressing this global health crisis. Every possible treatment opportunity needs to be brought before the scientific community, as we don't have any vaccine or medical treatment for this unprecedented crisis.



Potential mechanisms of action of Withania somnifera in prophylaxis (antiviral, immune boosting, vascular integrity) and management (pyrexia, anti-inflammatory, conserving alveoli) related clinical targets of COVID-19. ACE, angiotensin-converting enzyme; COX 2, cyclooxygenase 2; IL, interleukin; TH1, T helper type 1; TNF α, tumor necrosis factor α; VEGF, vascular endothelial growth factor; WS, Withania somnifera.

Covid-19 treatment: 4 Ayurvedic medicines clear for trial

Ashwagandha, Yashtimadhu, Guduchi +Pippali and a poly herbal formulation (AYUSH-64) cleared for trial in battle against Covid-19.

The government will conduct a randomised controlled clinical trial to assess the efficacy of Ayurvedic drug Ashwagandha as a preventive intervention among healthcare professionals and high-risk coronavirus population in comparison with hydroxychloroquine. This will be a joint initiative of the ministries of AYUSH, health, and science and technology through the Council of Scientific and Industrial Research (CSIR) with technical support from the Indian Council of Medical Research (ICMR).

The Interdisciplinary Ayush R&D Task Force has formulated and designed clinical research protocols for prophylactic studies and add-on interventions in Covid-19 positive cases thorough review and consultative process of experts of high repute from different organisations across the country for studying four different interventions viz. Ashwagandha, Yashtimadhu (Mulethi), Guduchi +Pippali (Giloy) and a poly herbal formulation (AYUSH-64).

Population based interventional studies on impact of AYUSH based prophylactic interventions

The ministry of AYUSH is initiating population based studies to study the impact of Ayurvedic interventions in prevention of Covid-19 infection in high risk population. The core objectives comprise of, assessment of preventive potential of AYUSH interventions for Covid-19 and also to assess the improvement in quality of life in high risk population. The study will be carried out in 25 states across the country and several state governments covering approximately 5 lakhs population.

The outcome of the study would certainly pave a new horizon in understanding the preventive potential of AYUSH interventions during pandemics like Covid- 19 through scientific evidence.

Coronavirus | Ayush Ministry lens on Baba Ramdev's COVID-19 cure

Hours after yoga guru Baba Ramdev unveiled an Ayurvedic medicine — 'Coronil and Swasari' — on Tuesday, claiming that clinical trials on COVID-19 affected patients had shown favourable results, the Central government asked Patanjali Ayurved Limited to stop advertising the drug and sought details on its claimed "successful trial and cure".

The Ministry has also requested the concerned State Licensing Authority of the Uttarakhand government to provide copies of the license and product approval details of Ayurvedic medicines being claimed as useful in the treatment of COVID -19.

Clinical trial registry

A check on the clinical trial registry, where all trials must be registered, showed that a wide spectrum of patients were solicited. They were "asymptomatic, mildly symptomatic, moderately symptomatic and those aged 15-80". The original aim of the study was to check the status of patients at day 3, day 7 and day 14, and whether they had improved immunological parameters due to the medicine. The medicine regime involved are the Tablet Swasari Ras (500 mg), Tablet Pure Ashwagandha Extract (500 mg), Tablet Pure Giloy Extract (500 mg), Tablet Pure Tulsi Extract (500 mg) and Anu Taila (nasal drop), according to information on the clinical trial website.

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IMPACT OF COVID-19 ON INDIA'S PHARMA SECTOR AND DIGITAL MEDIA

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Introduction:

The impact of the coronavirus pandemic and thelockdown it triggered is clearly visible in financial markets.But there is still no clarity on the deeper impact that it ishaving across businesses and industrial sectors. Basedon assessments made by different analysts and industry body Ficci, here is an impact analysis on the Pharmasector.

COVID-19 is a very dynamic situation. We believe there would be indirect effects on the continuity of supply of medicines due to lockouts, manpower supply, raw materials supply issue, stoppage of transportation, etc. The Government, however, has done its best in ensuring that pharmaceutical manufacturers do not face any shortage of supply of raw material orlabour or any other directly or indirectly related service. This is to ensure that all types of medicines are always available in the market.

Unemployment rose from 6.7% on 15 March to 26% on 19 April and then back down to pre-lockdown levels by mid-June. During the lockdown, anestimated 14 crore (140 million) people lost employment while salaries were cut for many others. More than 45% of households across the nation have reported an income drop as compared to the previous year. TheIndian economy was expected to lose over32,000 crore (US$4.5 billion)every day

during the first 21-days of complete lockdown, which was declared following the coronavirus outbreak.[5][6] Under complete lockdown, less than a quarter of India's $2.8 trillion economic movement was functional. Up to53% of businesses in the country were projected to be significantly affected. Supply chains have been put under stress with the lockdown restrictions in place; initially, there was a lack of clarity in streamlining whatan "essential" is and what is not. Those in the informal sectors and daily wage groups have been at the most risk.A large number of farmers around the country who grow perishables also faced uncertainty.

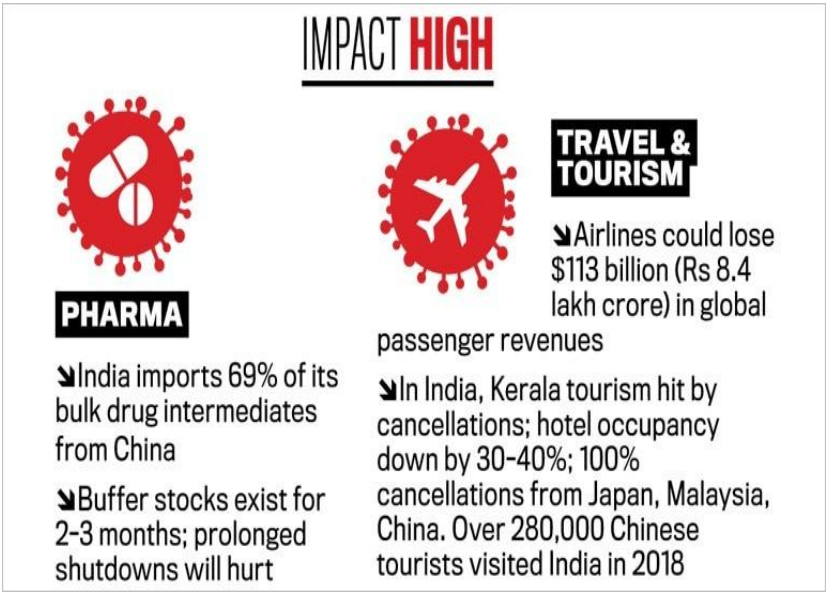
Despite being in the essential services category, the pharmaceutical industry hasyet again raised concerns over the unavailability of labourers, logistics and supply. According to senior government official, "It's only in the state of Goa and Sikkim, where production is at60-70 percent."

The ongoing lockdown has put a lot of strain on the manufacturing industry, which contributes almost 20% of the GDP. Of this, 50% is contributed by the auto industry. Even prior to the lockdown, the auto industry was not in a great shape, with sales down by more than 15% and production cuts of the order of 5 to 10% or more. In the unorganised industry, the situation was much worse, as the uncertainty would impact smaller organisations with lesser retentive power, due to their lower profitability. This is somewhat similar to the 'root beer game' effect in Operations Management parlance, where an event in the market can lead to highly amplified response from the suppliers, leading to short term overproduction and medium term discountsales. Choking of distribution channels due to this effect are not unknown and goods tend to get offloaded at lower prices, providing volume support, but hitting the profit and profitability.

Manufacturing industry has been hit in many ways due to the Corona effect. To begin with, lowerproduction, due to lower offtake. This takes a little longer to manifest itself, as, some distributors, sensing an opportunity to earn profits in a developing shortage situation, tend to carry on with the sales, but with an extended schedule of deferred payments. Longer credit daycare given by the producer, who is keen on continuing with operations, before a complete shutdown. More and more employees stop coming in to work, due to government directives, thereby reducing the scale of operations, with consequent effect on quality, cost and production volumes. Over a period, this adversely affects the turnover, which slows down to a trickle. The uncertainties in the logistics leads to a cascading effect, transporters struggle to not only place vehicles for loading, they also are under pressure to adjust their quotes for carrying goods, as they also face lower attendance, with their operational risks increasing steeply. The slower rate of banking operations, shorter working hours, jammed and overloaded communications lines lead to delayed money transactions, thereby elevating monetary risks. The suppliers to large producers start feeling the pinch, and start to disengage, and play safe, in order to protect their interests, because their capacity to bear risks is much lower than their big customers. Finally, due to all these interruptions, the end user also starts postponing non-essential purchases, and disengages from the consuming processes, by postponing their demands. Those companies which have been operating with excellent operational parameters, like, high quality, high productivity, well trained workmen, well maintained machines, etc., will take off aster than the others. Thus, for well managed companies, the period after lockdown could bean opportunity, while, for others, it could be an uphill struggle. During the lockdown period, good companies must develop recovery plans, while the not so good ones will develop survival plans.

Coming back to the profitability picture, companies will have to work to recover about 3 to 4 % of their PAT/ Sales. Which could be done by three types of strategies, Cost reduction strategy: if a company's labour cost is about 20 % of its sales, then, if employee stake a pay cut for the rest of the year, of say, 10% on an average with senior employees taking a higher percentage, then the cost reduction on this account alone will increase the profitability by0.2% per annum. However, if they take a pay cut of an average 30%, then the 0.2% will go upto0.6% per annum. This is no doubt, a major sacrifice, but the option could be job losses. Higher revenue strategy: Increase in revenues is possible in cases where pent up sales will materialise, provided, companies are able to supply goods. Clearly, those companies which have kept their supply chain pipelines active, will benefit, and they can recover some of their sales. This will also be affected by how the competition is gearing up, and, hence, excellent companies can use this opportunity. This could contribute to another 0.5% to 1% of the PAT/ Sales ratio.

New products strategy: This is a direct outcome of the Corona effect, which will last for at least one more year, if not more. Certain goods, especially related to healthcare, are likely to show high demand, and this could lead to a cascading effect, through stimulating demand in related products, and a psychological effect which leads to a general demand pick-up. This is a niche play, to begin with, it can lead to medium and long term strategic changes in the product mix, and, in the one year term, could help the companies recover about 0.5%.Overall, the balance period of the financial year, of 2020 – 2021, is likely to be difficult, but manufacturing companies can salvage their positions and build For the Future.



Noting these, the pharmaceutical department, under the ministry of chemicals and fertilizers has now decided to take up the matter with ministry of home affairs and various states, to ensure these issues are addressed at the earliest, the official added. Till date, the government has placed Pharmaceutical manufacturing under the essential category and it was exempted, since the nation wide lockdown to combat pandemic was announced. "Pharmaceutical industry highlighted that they will be able to get back to 100 percent manufacturing capacities only if states and Centre assist them toget back labourers, help in smooth logistics for supply of raw materials and finished goods. Industry shared that some states are yet to allow them to move back workers to the factories," the official added.

Raw material supply distribution from China and logistics have also added to the woes of pharmaceutical sector. "Procurement of raw material has also been impacted due to production Pharmaceutical industry highlighted that they will be able to get back to 100 percent manufacturing capacities only if states and Centre assist them toget back labourers, help in smooth logistics for supply of raw materials and finished goods.

Industry shared that some states are yet to allow them to move back workers to the factories," the official added. The central government since March has been assuring that the supply of medicines, raw material to the factories for manufacturing shall be ensured a smooth way. However, industry has time and again shared their hardships, which the government has been ironing out. Experts say that a lot of these hardships are due to several reasons, leading to a slow paced production.

Given that most of India's active pharmaceutical ingredients (API) and key starting materials (KSM)are imported from China, the supplies were disrupted for several weeks due to the situation in China. In fact, in some cases, Indian companies had to organise to lift the materials that were ready but stuck in China. The disruption in some cases led to the companies having to seek alternate suppliers and these last minute contracts were obviously at a higher price.

Some other issues being that the pharmaceutical companies are facing is the shortage of manpower due to the lockdown. Despite it being an essential service, the lack of transport options led to shortage of labour. As with some other essential services, this industry too has faced shortage of supply of ancillary materials including packaging material such as bottles and caps, since these are not categorised as essential services. Disruption in movement

of trucks has also led to finished goods not being moved. All of these have led to drop in production as well as increased cost of production.

Not just the production, even research and development exercises are getting impacted due to the ongoing lockdown. "Strategic acquisitions and transactions which could have enabled technology transfer, increased R&D and increased supply of essential medicine have all come to a grinding halts investors and collaborators are re-looking into valuations or expected commercial/ in tended return. Government approvals necessary tounder take certain category of transactions or businesses in the pharma sector are held up due to lock down related restrictions for some time. Having said that, both the government and the industry are confident that soon pharmaceutical industry will be able to get back to 100 percent capacity utilisation, as both are working towards easing the existing constraints.

The Indian pharmaceutical industry is the world's third largest drug producer by volume and the country's market manufactures 60 percent of vaccines globally. This constitutes 40 to 70 percent of supply to satisfy the World Health Organization's (WHO) demand for Diphtheria, Tetanus and Peruses (DPT) and Bacillus Calmette Guerin (BCG) vaccines and 90 percent of the global demand for the measles vaccine. India supplies affordable and low-cost generic drugs to millions of people around the globe and operates more than 250 US Food and Drug Administration (FDA) and UK Medicine and Healthcare products Regulatory Agency (MHRA) approved plants. Furthermore, its active pharmaceutical ingredients (APIs) market is forecasted to attain a revenue of $6 billion by the end of 2020.

According to a report on the Indian pharmaceutical industry, the source of APIs is a crucial part of the pharma industry's strategic plan to combat theCOVID-19 pandemic. The majority of APIs for generic drug manufacturing across the globe are sourced from India, which also supplies approximately 30percent of the generic APIs used in the US. However, Indian manufacturers rely heavily on APIs from China for the production of their medicine formulations, procuring around 70 percent from China, the top global producer and exporter of APIs by volume. Strategies for promoting Indian API production, In the present situation, the Indian government should take important steps to remove the technical and financial barriers that will spur the pharmaceutical industry to ramp up API production, reducing the dependency of the pharmaceutical industry as a whole on the heavily impacted Chinese market. The Indian government recently undertook applaud able steps by proposing an incentive package of 13.76The Indian pharmaceutical industry maintains great advantages, including the availability of a large labour pool and advanced technologies that enable high regulatory standards of markets like the US and European countries to be met.

The impact of the SARS-CoV-2 coronavirus outbreak, COVID-19, has exposed the dependency of the Indian pharma sector on China for its API procurement. Supply chain disruptions and product exportation restrictions from India resulted from manpower shortages in China's manufacturing plants. This was caused by the quarantine policies adapted and adopted by different provincial governments in China in response to the virus. Supplies were further impacted by the disruption of logistics and transportation systems, restricting access and movement of products to and from ports.

1. **India Pharma's global standing**

The Indian pharma industry has been a world leader in generics both globally and in domestic markets contributing significantly to the global demand for generics in terms of volume. Made-in-India drugs supplied to the developed economies such as the US, EU and Japan are known for their safety and quality. Inrecent years, India has seen increasing competition from
China, which it has been able to leverage due to its inherent cost advantage, manufacturing intermediates and APIs at a cost much lowerthan those in India which has resulted in a gradual increase in API imports from Chinato India and this in turn has led to killing of domestic manufacturing capacity for certainkey APIs and their advanced intermediates.

2. **Risks from India Pharma's China linkages**

India's large import dependence on China (nearly 70% by value) has become asignificant threat to India's healthcare manufacturing and global supply chain. While Indian pharma players over a time period have steadily migrated up the value chain to focus on value-added formulations with higher margins, but this over dependence on China has increased the threat to the nation's health security as some of these critical APIs are crucial to mitigate India's growing disease burden.

3. **Supply chain disruption for India pharma**

Any disruption in supply chain of APIs can result in significant shortages in the supply of essential drugs in India. Some of the critical APIs for high-burden disease categories such as cardiovascular diseases, diabetes and tuberculosis are listed in the National List of Essential Medicines (NLEM). In fact, the current market is largely dependent on process efficiencies and supporting manufacturers in the form of subsidy, low taxes and fiscal incentives. India has significantly lost out on the API

manufacturing owing to the inadequate government support and API focused infrastructure coupled with complexity in getting approvals for setting up a manufacturing plant, delayed pollution clearances, high cost with low availability of utilities, regulatory and price control regime are some of the key challenges faced by the bulk drug industry.

4. **Major earnings cuts ahead for pharma firms**

Coronavirus, or COVID-19, pandemic has caused severe supply-side disruptions in various sectors; earnings will be cut by 10-15%.Pharma as a sector has emerged as a strong contender to drive the next leg of rally, whenever it comes. In anticipation, pharma stocks have seen a huge run up in the last10 days. This is not just true for India, but globally too pharma companies have performed well. While in the short term, most companies will bounce back from the last5 year of underperformance, this time around, the leader will be different.

5. **Relative stability, reasonable valuations**

HDFC Securities says Indian pharma has been relative resilient to the Covid disruption, and is poised to gain from favourable currency tailwinds and stable outlook for India and US business. India growth has picked up (~10% growth for IPM as of MAT Mar'20). Itforecast 11% growth for covered companies over the next two years. US pricing environment continues to remain benign and the regulatory challenges are well understood. The pharma sector is up ~1% YTD and has outperformed the Nifty Indexby 28%. We prefer stocks with high India exposure as it offers greater earnings visibility, supported by reasonable valuations.

6. **Valuation and Risks**

The sector trades at ~23x one year forward, 10% below its 5 year historical average. The sector premium to Nifty is at 35% vs. (5 year avg of 38%). Key risks: a) extended lockdown can impact demand and manufacturing; b) Delay in US FDA plant resolution due to travel advisory; c) EM markets currency risks and subdued demand; d) delay inkey approvals.

A Role of Digital Media in COVID-19

As India grapples with a new way of life, it is impossible to not see the impact on digital media consumption. Consumers have had to change their lifestyles significantly as social distancing, working from home, closed schools and canceled travel/events disrupt daily routines.

The Indian media and entertainment industry, worth INR 1.82 trillion in 2019 (according to FICCI), is now staring at INR 25,000 crore loss (CRISIL). The lockdown has had varied effects on the multiple sectors in the media and entertainment industry. While box offices and event management companies take a huge blow, OTT services are more in vogue than ever before.

This pandemic has revealed the brutal socio-economic divides that exist within one nation. As with other industries, migrant workers and daily wagers have been the worst affected. Since Bollywood movies stopped shooting mid-March, there have been numerous stories of daily wage earners who have nothing but their savings to turn to. Organizations such as CINTAA, TWICE, and the Production Guild of India, actors and other production houses have stepped up their efforts to support these workers. There can be no denying the fact, however, that even when work comes, the maintenance of safety norms will remain in question.

Covid-19 Impact on Media

The media sector is facing deep cutbacks (reduction in expenditure) resulting due to an intense economic slump and a reduction in advertising revenues that many news outlets depend on because of lockdowns. The New York Times has estimated that news outlets have cut 28,000 jobs as a result of the health crisis and subsequent economic impact.

Assistance to Media Sector Google has announced that it would launch an emergency fund to help local news outlets struggling to maintain operations in the face of Covid-19.Earlier Facebook also announced a donation of $100 million to support news organizations globally hurting from the Covid-19 pandemic.

Impact on Advertising Business

Google and Facebook's advertising businesses, which have roughly tripled incombined size over the past five years, may be headed for a rare fallowing to the Covid-19 pandemic.

The prices for Facebook advertisements are at record lows: The prices of Facebook ads have declined 35% to 50% on average inrecent weeks. Wall Street analysts have estimated that annual revenues would decline for the first time in the history of the two companies

The COVID-19 pandemic is changing the way we consume media and entertainment (M&E). With people confined to their homes, our social lives have moved online and entertainment consumption has risen notably within the at-home segments of television, online gaming and over-the-top (OTT). On the other hand, movie theatres, theme parks, museums, and other external consumption models are suffering, as physical distancing norms and lockdowns are enforced.

While the long-term implications are yet to emerge, the following M&E themes will likely come into focus as the post-coronavirus reality becomes clearer: Behavioural changes and habit formation

post COVID-19: Consumer behaviour is rapidly evolving as the world adjusts to a new normal, where social distancing, work from home and virtual meetings are the norm. Demand for at-home digital media is expected to grow significantly, as habit-formation and ease of access emerge as drivers. OTT platforms and digital media have already been attracting new consumers and expanding to new locations and demographics. The virus outbreak will magnify the already apparent shift from laptop/digital devices viewing to large screen TVs—providing a significant fillip to broadband internet/ fiber-to-the-home (FTTH)companies. Challenge of monetisation: While digital media consumption is increasing, monetisation will likely remain achallenge. With the economy already under stress, key ad-spend sectors have seen significant traction. Most media outlets derive a significant percentage of their revenue from advertising, and the current pandemic has brought advertising to a standstill in many sectors including fast-moving consumer goods (FMCG), financial services, automotive, and e-commerce. The recovery of such sectors will play a critical role in helping media outlets leverage the surge in media consumption for monetary gains. Till then, leading advertising spenders will continue to keep a tight lid on expenditures. To attract advetisers, M&E players might need to offer more accuracy in return of investment calculations and greater programmatic advertising options on digital platforms.

Technology leveraged across the supply chain: From content creation through distribution and monetisation, M&E companies can be expected to incease their dependence on technology to create cost efficiencies and revenue enhancement opportunities. For example, the gestation period for content could potentially be lowered with greater technology integration leading to process efficiencies. With greater harnessing of cloud and remote working solutions, companies may look at efficiencies in the way they conduct business, even across revenue generating functions such

as sales. Companies could place an increasing amount of reliance on artificial intelligence (AI)/ machine learning (ML) to predict consumer behaviour in these uncertain times and thereby improve loyalty.

Conclusion: KPMG in India's recently published report 'COVID-19: The many shades of a crisis, a media and entertainment perspective' explores how the current situation might lead to a shift in priorities among consumers and M&E players alike. There is likely to be a near term focus on sustenance at current levels by companies. We may see a drastic fall in the capex/investment cycle by companies, which could constrain supply and the growth of the M&E industry in the near term. There could also be a renewed emphasis on flexibility, as companies look to move to a variable cost model and reduce fixed costs. As this crisis has shown, the ability to remain agile during downturns is a valuable asset. The trend of risk aversion therefore will not just be confined to consumers but alsoorganisations as we return to 'normalcy' from our experience of this crisis.

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