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## **ANTHROPOGEOGRAPHIC ANALYSIS OF COVID-19 AMONG THE EAG STATES AND TOP COVID-19 AFFECTED STATES OF INDIA**

### ***Abstract***

*The spread of COVID-19 outbreak in India is not uniform throughout the states; there is large interstate disparity among states in terms of cases, recovery rates, deaths and number of testing. The paper examines the trend of spread of COVID -19 in eight EAG (empowered action group) states and top eight COVID-19 affected states. These eight EAG states (Bihar, Jharkhand, Uttar Pradesh, Uttarakhand, Madhya Pradesh, Chhattisgarh, Orissa and Rajasthan) accounts for 48 percent of the total population of the country. The EAG states are socio-economically backward, and have the highest fertility and mortality rates in the country. The cases of infection in these states are very low as compared to some of the states of India where health care facilities are much better such as, Maharashtra, Delhi, Tamil Nadu, Gujarat, Haryana, etc. This paper compares the trend of outbreak between both the categories of states and analyzes the reasons behind the impressive performance of these EAG states in dealing with the pandemic despite of poor health facilities as compared with top COVID-19 affected states. The paper also traces the underlying causes for the variations for the same, further evaluates several parameters related to COVID -19 in both the categories of states, such as ,total cases, total deaths, recovery rate and current situation.*

**Keywords:** *Global pandemic, health emergency, socio-economically backward, vulnerable, mitigation, Fertility and Mortality.*

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### **Introduction**

Corona virus is a group of viruses that is commonly found in all animals. Scientists call them zoonotic, which means that they can transmit from animals to humans (CNN, 2020). When a person comes in contact with the infected person, the human to human transmission of the virus occurs. Pandemic COVID-19 is believed to have its origin in Wuhan, China, in December, 2019. Outside the China, the first case was confirmed in Thailand on 13<sup>th</sup> January,

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2020 (WHO, 2020). The outbreak of COVID-19 can be seen in around 216 countries across the world, affecting global population (WHO, 2020). Till date there is no specific treatment for corona virus. However, awareness is key for mitigation (CNN, 2020). COVID-19 has spread almost every inhabited continent. At present, USA has the highest number of cases followed by Brazil and India (Worldometer, 2020). The total number of cases outside the China accounts for more than 98% of the total cases (Worldometer, 2020). The first confirmed case in India came from Kerala through a person having travel history from Wuhan was tested positive on 30<sup>th</sup> January and was declared as the first confirmed case. The global pandemic was declared as an epidemic in Delhi, Maharashtra, Tamil Nadu, Gujarat, Karnataka and Andhra Pradesh. As the World Health Organization categorized COVID-19 under Global Pandemic, Central Government of India started working on policies to contain its spread in the country. A 21 days lockdown was announced first from 25<sup>th</sup> March to 14<sup>th</sup> April (The Hindu, 2020). The educational institutions and commercial establishments were shut down, including suspension of all tourist visas as confirmed cases were linked to foreign lands at an initial phase (The print, 2020). The lockdown was again extended from 1<sup>st</sup> June to 30<sup>th</sup> June in containment zones (also called as unlock-1) with some relaxations to shops, industrial activities of oil and gas, movement of migrant workers, students, etc. National, international passenger flights and Indian railways were banned across the country (The Hindu, 2020). Our system has shown a strong will to tackle the pandemic. The threat posed by the growing pandemic is a challenge for the Government of India. However, the government has been able to contain the spread of virus largely (MoHFW, 2020). India has only 90 beds per 100,000 populations, as against a world average of 270 beds. In terms of doctors, India has just 60 doctors per 100,000 population and 130 nurses per 100,000 populations, as against world averages of 140 and 280 respectively. Public expenditure on healthcare sector has also been less than 1% of GDP since independence. India's healthcare financing mechanisms are poor with 66% of healthcare expenditure being out of pocket (Krishna Kumar, 2011). The accessibility of healthcare service is very important for the well-being of the citizens as the challenges posed by COVID-19 has resulted in the health crisis all over the world. India lies in the list of those countries which invests least in public health. The smaller and lower-income countries like Bhutan, Sri Lanka and Nepal spend 2.5%, 1.6% and 1.1% of their GDP respectively on public health. The Indian government spends only Rs 3 per day per person that is only 1.02 percent of the GDP (National Health Profile, 2018). For better health services to its citizens, India needs to invest at least 5% of the GDP in its health sector. In most of the EAG states the health facilities are very poor as a result people have to go out of pocket in search of better treatment. Almost 7% of population in India lies below poverty line because of indebtedness due to health expenditure (NSS, 1994-2014). Moreover, the lack of treatment facilities resulted in 0.38 million suicides between 2002-2015 in India (National

Crime Records Bureau, 2015). With its weak health infrastructure, India's battle against corona virus began early. Extraordinary decision of nationwide lockdown was taken immediately to combat COVID-19 comprehensively and timely as India understood the seriousness of COVID-19 (Business Standard, 2020). To address the fast spread of the virus, the Department of Science and Technology (DST) advised and mapped various solutions like masks, sanitizers, monitoring systems, etc. to contain the outbreak. All the COVID-19 patients are tested and treated at free of cost including some private hospitals. Central government also restricted export of medicines and other health related equipments like masks, kits, paracetamol and hydroxyl-chloroquine medicines, etc. (MoHFW, 2020). The EAG states have lower percentage of urban population (23.13%) as compared to non EAG states (39.66%) (COI, 2011). The health services in non EAG states are far better than the EAG states. The EAG states contribute the most to the rural population of India and therefore lack modern health services. The health indicators of different states vary widely. The EAG states that are under-developed and have a very high rate of infectious disease, whereas in the more developed states such as Delhi, Mumbai, Goa, Kerala and Karnataka have a high rate of non-communicable diseases (India Speed, 2017). In 1990, 37.9% of the all deaths were due to non-communicable diseases in India, however, in 2016, the death due to non-communicable disease raised to 61%. Communicable diseases are caused due to poor sanitation, poor infrastructure and poor public health. The death from all communicable disease decreased from 53.6% in 1990 to 27.5% in 2016; however, there is a large interstate disparity (Lancet, 2017).

The EAG states have the highest fertility rate, lowest literacy rate, lower life expectancy than other states and shows least economic growth therefore, dealing with the new pandemic COVID-19, is great challenge for these states as for controlling the pandemic and saving lives, the access to health services is a key element (COI, 2011 and UNHCR, 2020). The EAG states are more vulnerable to threats posed by the COVID-19 outbreak as they are socio-economically backward. Among EAG states the Uttarakhand has shown a negative growth in health sector. The state has not done enough to improve health sector (Niti Aayog, 2015). The world is interconnected and global cooperation is must to tackle this effectively as no country can tackle it alone. To assist with finance, Finance Minister, Government of India announced 1.7 lakh crores package for the poor under Pradhan Mantri Garib Kalyan Yojana (PMGKY) in which wheat/rice, pulses and gas cylinders were provided by government for the next three months. After lockdown MGNREGA wages were also increased from Rs.182 to Rs.202 per day and all the health workers were given insurance cover by the government (PRS, MPR, 2020). Another Rs.1500 crores package was sanctioned by the government for emergency situations and to enhance treatment facilities. Prime Minister's Citizen Assistance and Relief in Emergency Situations Fund (PM CARES Fund) was established for emergency situation (PRS, MPR, 2020). The States/UTs governments provided

food and shelter to the poor people and migrant workers. Exempted rent charges from students and daily workers and relocated the migrants who moved out from their hometown. Since the first three cases of corona virus came in southern states, the remaining states became alert and started adopting preventive measures. The global pandemic has affected every sphere of life. Currently, the global cases per lakh population are 120.21 and death/lakh is 6.24 and India stands at 33.39 cases per lakh population and 1.06 deaths per lakh of population (Deccan Chronicle, 2020).

### **Methods and Materials**

This paper is based on the descriptive analysis of COVID-19 outbreak in Empowered Action Group (EAG) of states and the top COVID-19 affected states of India. The outbreak of the pandemic is not uniform throughout the country. The analysis has been done based on several secondary sources, such as international journals, news articles, government data's, and reports etc. On the basis of secondary sources and literature review and specific maps have been prepared for the selected study areas. This paper also analyses the trend of outbreak in the study areas through suitable graphs. The GIS technique has been used for preparing the maps, diagrams and graphs. Paper examines the differences in several parameters (cases, recovery rate, death ratio, mitigation measures, etc.) related to covid-19 in EAG states. With the help of graphs, the comparison between EAG and few non EAG states has been attempted to show temporal variation with several aspect of the pandemic. Further, qualitative analysis and computations have been done to show the spatial-temporal variations and trend analysis of the COVID-19 pandemic among the EAG and top non EAG states. Study area covers the eight EAG states i.e. Bihar, Jharkhand, Uttar Pradesh, Uttarakhand, Madhya Pradesh, Chhattisgarh, Orissa and Rajasthan and top COVID-19 affected states i. e. Maharashtra, Delhi, Tamil Nadu, Gujarat, Haryana, West Bengal, Uttar Pradesh and Rajasthan. The Line of Poverty is taken as base to decide the orders of the EAG states.

### **Results and Discussions**

#### ***Pandemic COVID-19: Social Crisis***

India is facing a global health crisis, the crisis that is threatening peoples' lives, spreading human sufferings, and ending up human lives. However, this is not only the crisis of health; rather it is beyond human suffering. The spread of the virus was so colossal that it was declared as a pandemic by WHO. In order to control and defeat the virus, maintaining social distance as well as avoiding social connections became must. The economic as well as the social life of the people is affected when they are kept quarantined or in isolation. This complete restriction on movement resulted in many crises including

psychological, social, as well as economic crises. The societies are being attacked at core due to the global pandemic. The ongoing outbreak has affected almost population of all segments and is detrimental particularly for those who belong to most vulnerable social groups (United Nations, 2020). It is affecting those who live in poverty situation, young, youth, older population, persons with disabilities and indigenous group of population.

The spread of virus is not equal among all sections of societies rather varies at large scale. The people who are homeless have a very high risk of exposure to the virus as they may not be able to protect and quarantine themselves. At the same time, people with limited or without the access of clean water, migrants and refugees or the persons who have been displaced suffer from the pandemic. Immediately after the lockdown, a large number of migrant populations were dislocated. Thousands of migrants were forced to walk hundreds of miles to reach their home due to shut down of transport system. Many of these migrants lost their lives during the journey. The COVID-19 has caused unprecedented effect on migrant economy. India's 40 million migrant workforces are most vulnerable as they have most insecure jobs and represents lowest paying capacity (BBC, 2020). Majority of these migrants are from EAG states and are vulnerable to exploitation limited employment available for them. The global pandemic has its impact across all the sectors, but it has immense impact on women, children and marginalized sections.

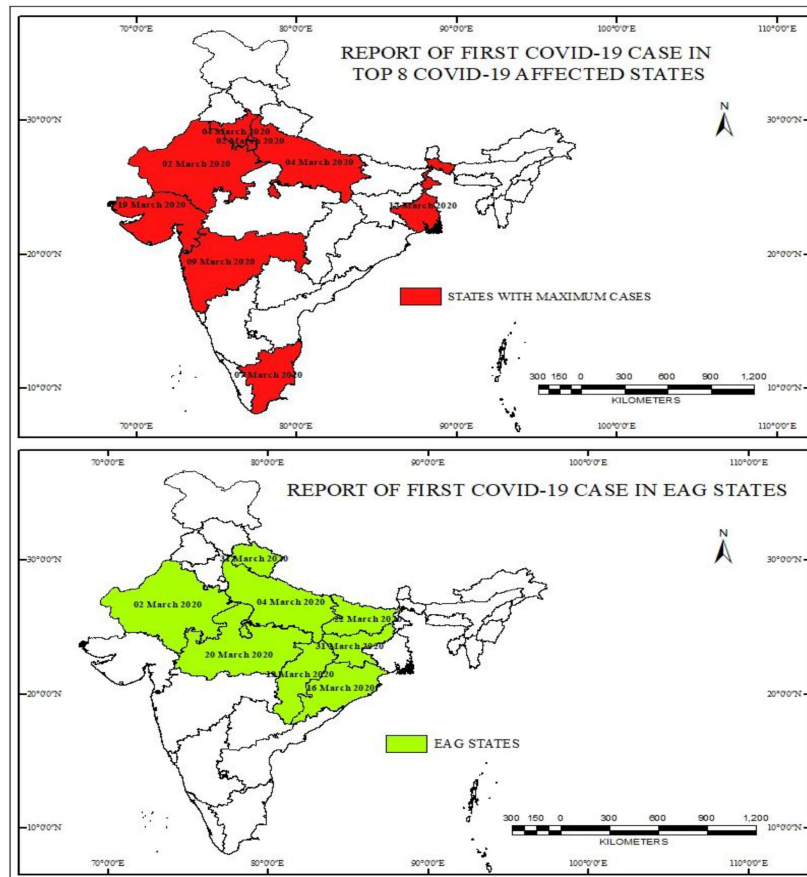
Almost 12.2 crores population of India lost their jobs due to COVID-19 lockdown. Almost 75% of those who became unemployed are small traders and daily wage workers (The Hindu, 2020). Though the loss of employment hit both the rural and urban areas, but urban area has been much affected. The lockdown has put psychological pressure on youths too, around 27 million youths between 20-30 years age group lost their jobs during the ongoing pandemic (Economic Times, 2020). The limited movement, very few employment opportunities and increased fear from an outsider are some reasons for sufferings among the youth migrants.

Those who are economically strong can somehow manage with varying degree of difficulties, but those who belongs to poor economic section becomes almost destitute. A large section of the society is on the verge of starvation and thus, more susceptible to disease (Sakal Times, 2020). The social crisis created by the corona virus needs to be addressed properly otherwise it may lead to an increase in inequality, social exclusion, large scale unemployment and discrimination. Therefore, it is important to evolve comprehensive system for social protection that enhances capacity of people to overcome and manage shocks. The world has changed in many ways due to COVID-19. The health issues, declining economy, shortages of sanitizers, masks, medicines, unemployment and poverty has left a mark on people's lives (National Herald, 2020).

### Information on First Confirmed Case of Covid-19 In EAG States and Top Eight Covid-19 Affected States:

The first case of Corona virus disease in India came on 30<sup>th</sup> January, in Thrissur district of Kerala (MHOFW). After the first case, it was clear that the COVID-19 has entered India and soon can spread at an unprecedented rate if not checked on time. Among the EAG of states, the first confirmed case was reported from Rajasthan, on 2<sup>nd</sup> March, 2020, followed by Uttar Pradesh, on 4<sup>th</sup> March, 2020. These two states also lie in top eight COVID-19 affected states. The remaining EAG states reported their first case between 15<sup>th</sup> to 31<sup>st</sup> March. Among the top pandemic affected states the First case was reported from Delhi, on 2<sup>nd</sup> March, 2020. Most of the states in this category reported their first case before third week of March (fig. 1).

**Figure1: First Reported Case of COVID-19**



Source: Compiled by Authors-based on MoHFW data, GOI.2020.

### **Comparative Temporal Analysis of Three Phases: Pre-Lockdown, Lockdown and Post Lockdown**

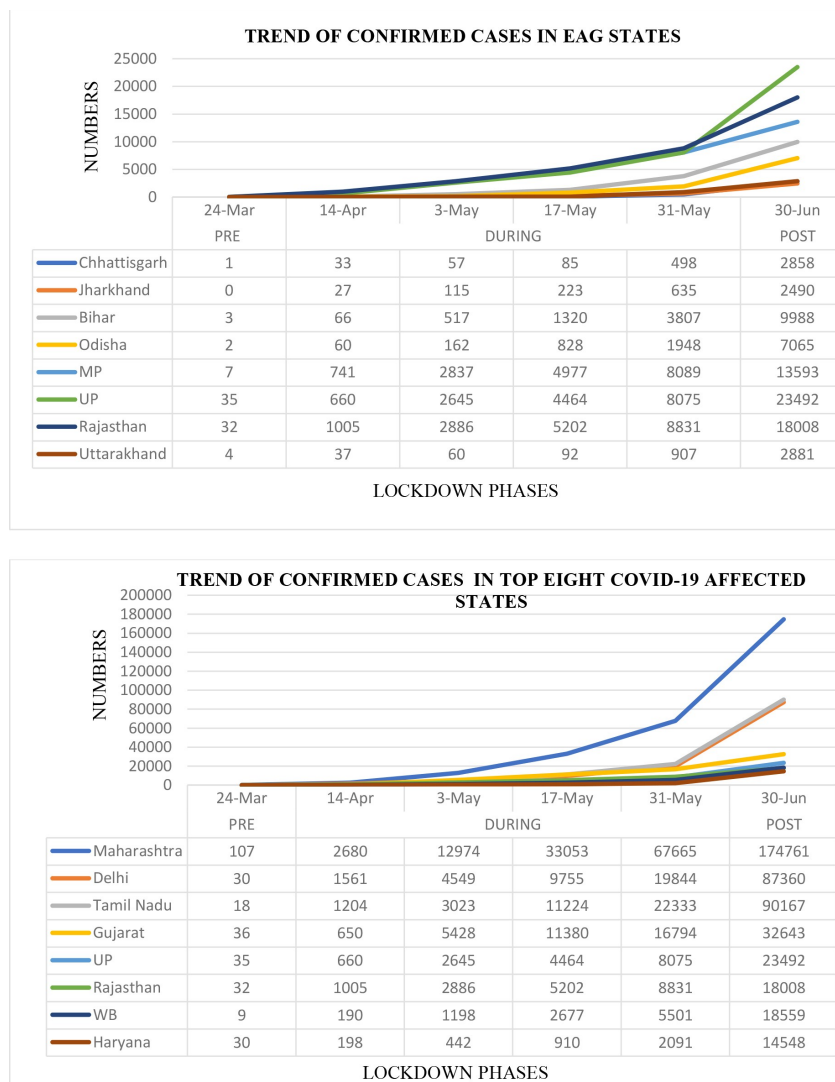
#### ***Total Confirmed Cases***

Immediately after the confirmation of the corona virus disease in India, the mitigation measures were taken by the government to contain the spread of the virus. By the time mitigation strategies were made in India, the outbreak had already affected the western and Middle East countries. However, in India the spread of virus was slow as compared to developed nations. The COVID-19 outbreak in India has huge variations among the states. This variation is more among EAG states and top COVID-19 affected states. Among the eight EAG states, two states (Uttar Pradesh and Rajasthan) are also listed in top eight COVID-19 affected states. Before the lockdown was imposed, there were only 84 confirmed cases in EAG states, as against 230 cases in top affected states, excluding two EAG states Uttar Pradesh and Rajasthan. Among the EAG states, almost 80% of the cases at this time came from Uttar Pradesh and Rajasthan. The remaining states in this category had cases less than 5 in each state. It is interesting to note that Jharkhand recorded zero case till this period. At the same time among the top affected states, Maharashtra was leading with 107 cases in total. The remaining states in this category had cases ranging from 9 to 37 (Covid19India, 2020).

The Union Government on 25<sup>th</sup> March, 2020, imposed lockdown all over the country to combat the spread of virus in the country (MOHFW). The lockdown restricted all movements across the country. The lockdown was imposed in four different phases. During third period the corona virus cases shows considerable disparity among both the categories of the states. Among the EAG states, the total number of cases till first lockdown (25th March- 14 April) reached up to 2629, with highest cases coming from Rajasthan, Madhya Pradesh and Uttar Pradesh, respectively. The cases for remaining states in this category ranged in between 30-70. The similar trend continued in further lockdowns, second, third and fourth, dated till 3<sup>rd</sup> May, 17 May and 31 May, respectively. By end of May, the rate of positive cases across the country begun to steepen as over one lakh testing were done each day. The total cases were 9279, 17141, and 32709 in second, third, and fourth lockdown respectively for the EAG states. Three EAG states, namely, Chhattisgarh, Jharkhand and Uttarakhand had less than thousand cases till fourth lockdown. In comparison with EAG states, the top affected states recorded, 8148, 33145, 78665, and 151134 cases till first, second, third and fourth lockdown respectively (Fig. 2). Among the top eight affected states, only 16906 cases came from Uttar Pradesh and Rajasthan. These two states rank higher in terms of cases in EAG category, and occupy lower ranks when counted in top affected states. The total cases in the EAG states till the end of all the lockdowns summed up to 32707. However, the top eight pandemic affected states at the same time counted up to 151134

cases. Thus, the top affected states recorded 78% more cases by the end of lockdowns as compared with EAG states. The lockdown was opened on 1<sup>st</sup> June, 2020 in non-containment areas. However, the containment zones were still under lockdown condition. Some restrictions on movement were called off and interstate as well as intra state movements were allowed (MOHFW 2020). With some relaxation in this phase, the upsurge in cases was recorded.

**Figure 2: Comparison between number of confirmed cases in EAG states and top eight COVID-19 affected states.**

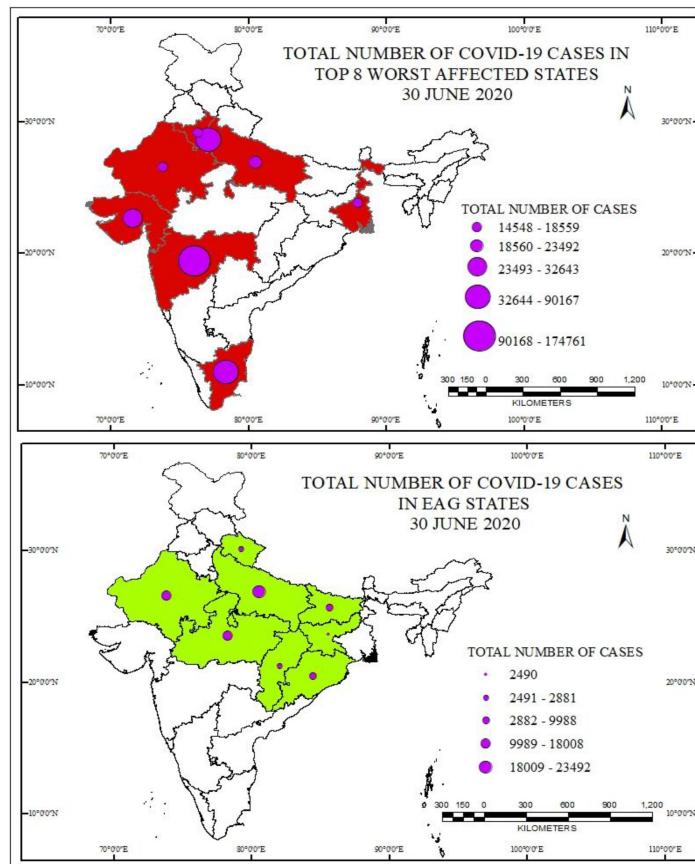


Source: Compiled by Authors based on MoHFW, data Government of India 2020.



The ease or relaxation in lockdown is somewhat responsible for increased number of cases (The Guardian, 2020). During this phase India overtook many top COVID-19 affected nations. The cases in EAG states reached up to 80375 during the unlock phase 1. At the same time the top eight affected states reached up to 459574 cases in total. The top pandemic affected states recorded 83% more cases than EAG states in this time period (Fig. 3). The cases of Maharashtra and Delhi together outnumbers the cases of six remaining states combined altogether in this category These two states make almost 58% of the total case in its group. Among the EAG states almost 70% of cases were contributed by Uttar Pradesh, Rajasthan and Madhya Pradesh. The total cases in the country at this period reached up to 585792. In these confirmed cases, the cases from EAG states accounted only for 13.72% while cases from top eight affected states accounted for 78.45% including Uttar Pradesh and Rajasthan while excluding Uttar Pradesh and Rajasthan it is 71.36%.

**Figure 3: Total Number of Cases.**



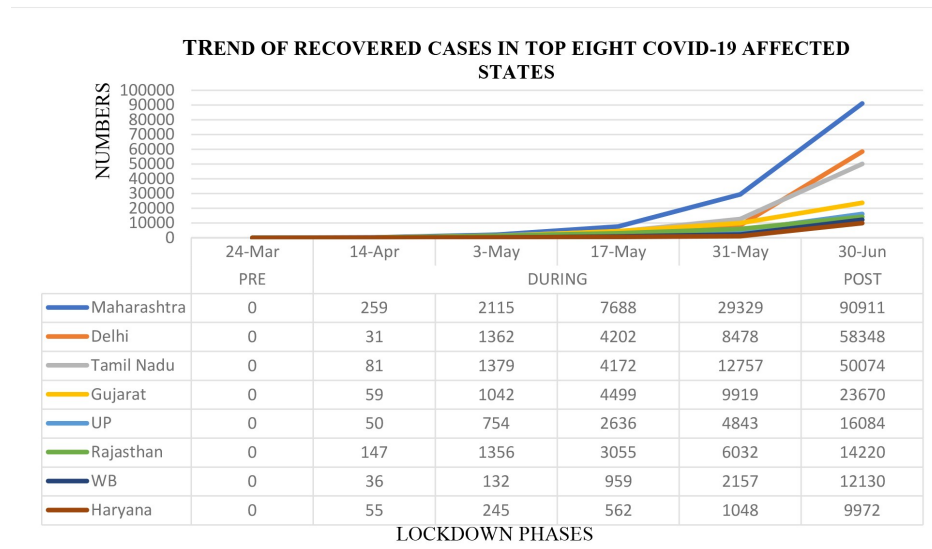
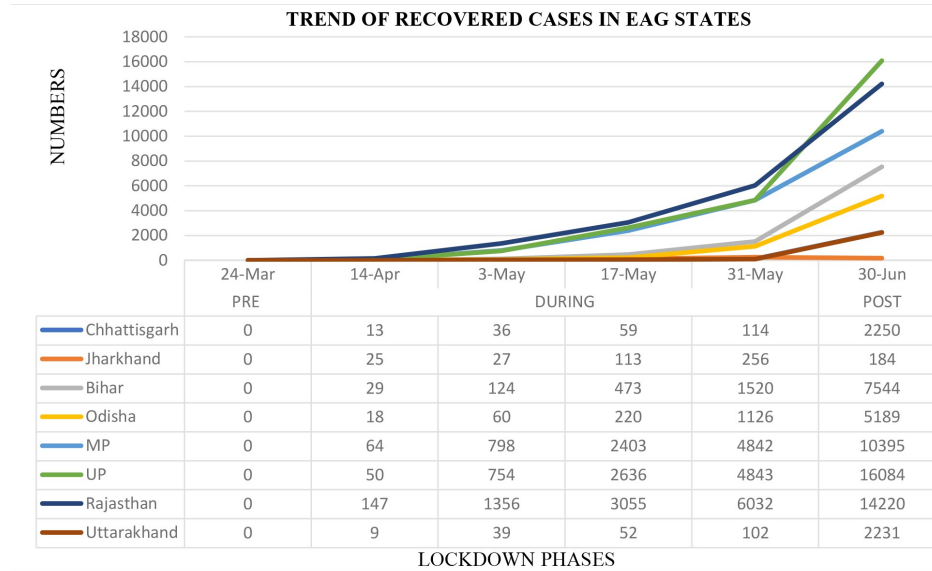
Source: Compiled by Authors- based on MoHFW data, GOI.2020.

***Total Recovered Cases***

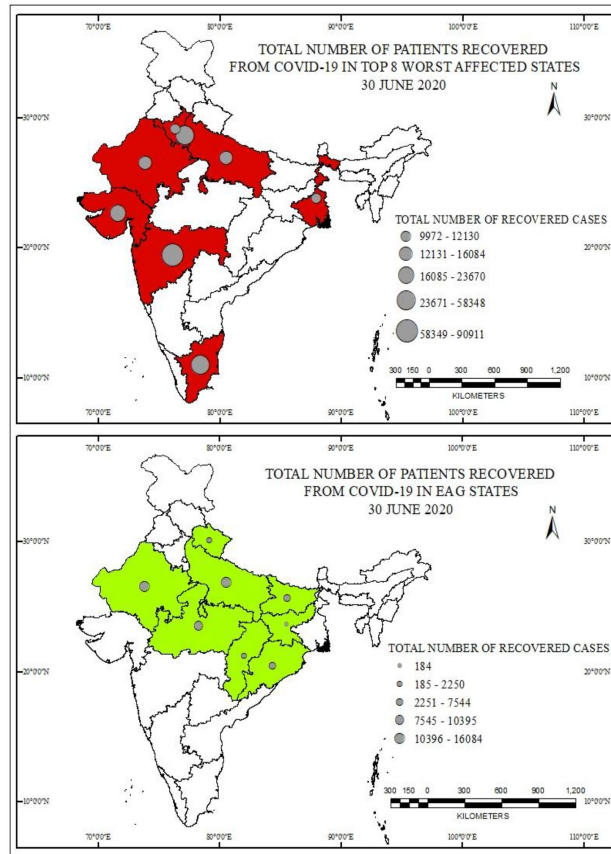
In the EAG states, total 355, out of 2659 people recovered from the pandemic disease in the first phase of lockdown. The figures for the total number of recovered cases in these states were 3194, 9011 and 18835 as against total confirmed cases of 9729, 17141 and 32709 in the second, third and fourth lockdowns, respectively. The recovery rate in EAG states during each lockdown were 13%, 32%, 52% and 58%, respectively. Among the EAG states, the Chhattisgarh and Rajasthan were the leading states having higher recovery rate than other states. Among the top eight COVID-19 affected states, the total number of recovered cases were 718, 8385, 27773 and 74563 as against 8148, 33145, 78665, and 151134 confirmed cases till first, second, third and fourth lockdown, respectively. The recovery rate in this category of states was 9%, 25%, 35% and 50% in each lockdown, respectively.

The recovery rate kept on rising with each phases of lockdown in both the categories of states. However, the recovery rate is higher in EAG states as compared to top eight affected states. By the end of fourth phase of lockdown, both the categories of states reached recovery rate of 50% (Fig. 4). The national figure for recovery rate as on 30<sup>th</sup> June stands at 59%. The total recovered cases in EAG states reached up to 58097, as against 80375 of total confirmed cases during the unlock phase 1. The overall recovery rate in EAG states reached 72.28%. The three socio-economically backward states Chhattisgarh, Bihar and Jharkhand has recovery rate of 78.7%, 77.6% and 76%, respectively (Times of India, 2020). At the same time the top eight affected states also saw boost in recovery rate. The total recovered cases in these states reached upto 275409, as against 459574 confirmed cases. The overall recovery rate in these states was 60% (excluding Uttar Pradesh and Rajasthan it was 53%) till 30<sup>th</sup> June 2020 (Fig. 5). The EAG states, socio-economically weak, are doing well to contain the outbreak. Though, they have weak health services, yet they still outnumber top affected states in recovery rate. Overall, the country's doubling rate of recovery as on 30<sup>th</sup> June, 2020, is 21-22 day (Hindustan Times, 2020).

**Figure 4: Comparison between number of recovered cases in EAG states and top eight COVID-19 affected states.**



Source: Compiled by Authors-based on MoHFW data, GOI, 2020

**Figure 5: Total Recovered Cases.**

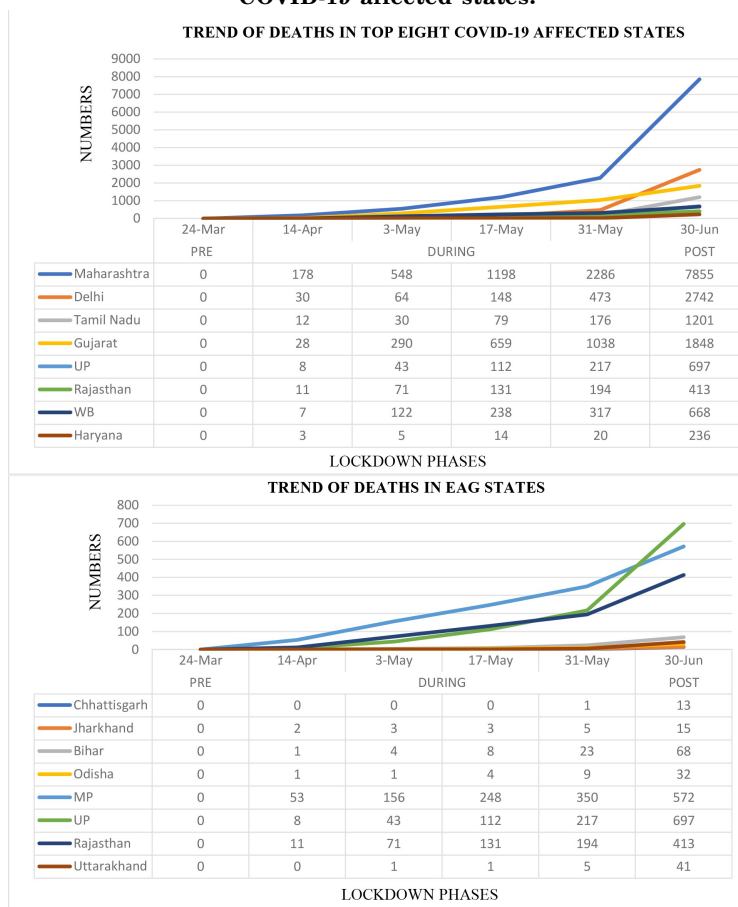
Source: Compiled by Authors-based on MoHFW data, GOI, 2020

### ***Total Death Cases***

It is true that the number of recovery rate is increasing, so is the death toll. Total 10 deaths were reported from all over the country when India went into lockdown. The first death report came from Karnataka, on 12<sup>th</sup> March, 2020 (The Hindu, 2020). The main purpose of the lockdown was to delay the outbreak to put the health services and required systems in place. The lockdown at large extent helped in containing outbreak largely. During the lockdown period, the deaths due to COVID-19 became regular. Almost every day few deaths were reported from many states. Among the EAG category, the total number of deaths during the first, second, third and fourth phases of lockdown were 76, 279, 507 and 804, respectively. The death rate in EAG states varied to 2.89%, 3%, 2.9% and 2.4% during each consequent phase, respectively. It is surprising to see that no death report came from Chhattisgarh till third lockdown. The first death case came from Chhattisgarh, in fourth phase of

lockdown. Three EAG states Madhya Pradesh, Uttar Pradesh and Rajasthan accounted for more than 90% of deaths in this category by the end of fourth phase of lockdown. Among the top affected states, the total number of deaths during the first, second, third and fourth phase of lockdown were 277, 1173, 2579 and 4721, respectively. As compared to Empowered Action Group of states, the top eight COVID-19 affected states experienced a greater number of deaths. The rate of death in this category showed a variation of 3.39%, 3.53%, 3.27%, and 3.12% in each consecutive four lockdowns, respectively (Fig. 6). In both the categories of states the trend in terms of death is similar till the fourth phase of lockdown. The rate of death increased from first to second phase of the lockdown and then decreased from second to third and third to fourth phase of the lockdown.

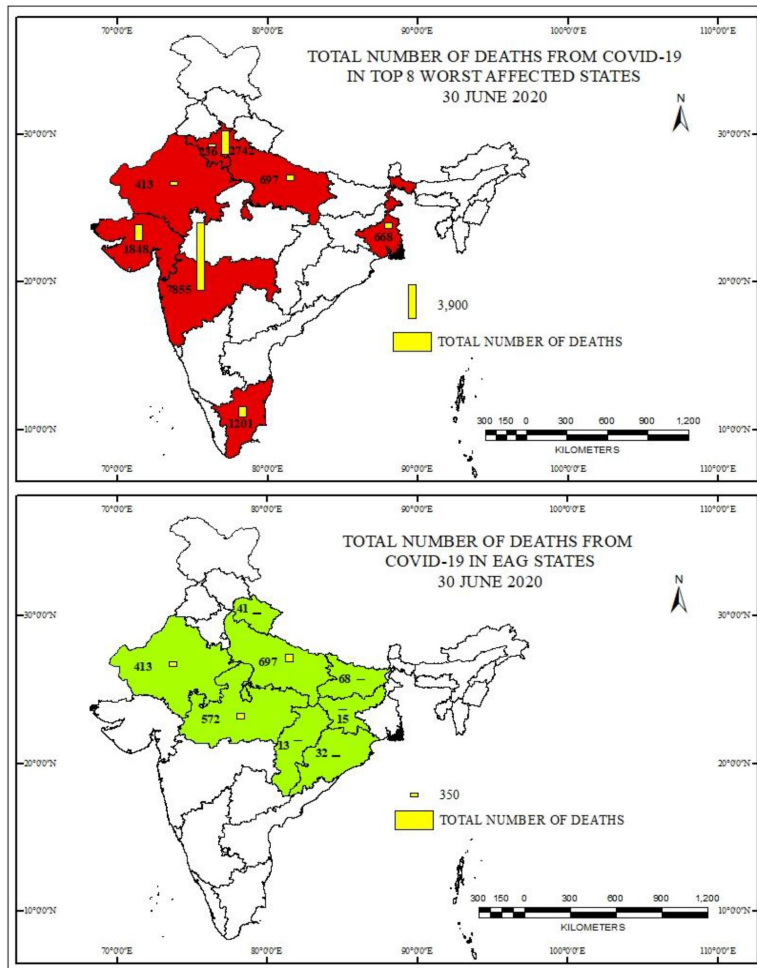
**Figure 6: Comparison between number of deaths in EAG states and top eight COVID-19 affected states.**



Source: Compiled by Authors-based on MoHFW data, GOI, 2020.

After the end of the lockdown due to relaxation in non-containment zones, the death rate has slightly raised in the EAG states 2.30% (1851 deaths), and 3.40% (15660 deaths) in top eight corona virus affected state. The EAG states overall constituted only 10.5% of deaths in the country as compared to 83.57% of deaths by top eight COVID-19 affected states excluding Uttar Pradesh and Rajasthan). India's fatality rate is relatively low compared to developed nations where outbreaks surged rapidly. In general India has death rate of 2.94% lowest in the world (MOHFW). The death count is now increasing fast especially in top affected states which contribute to more than 90% of the total deaths in the country (Fig.7).

**Figure 7: Total Number of Deaths.**



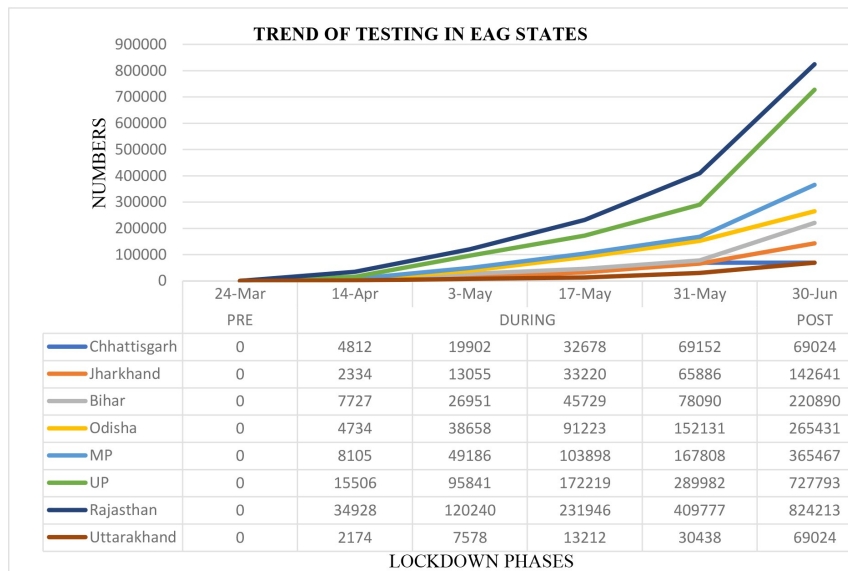
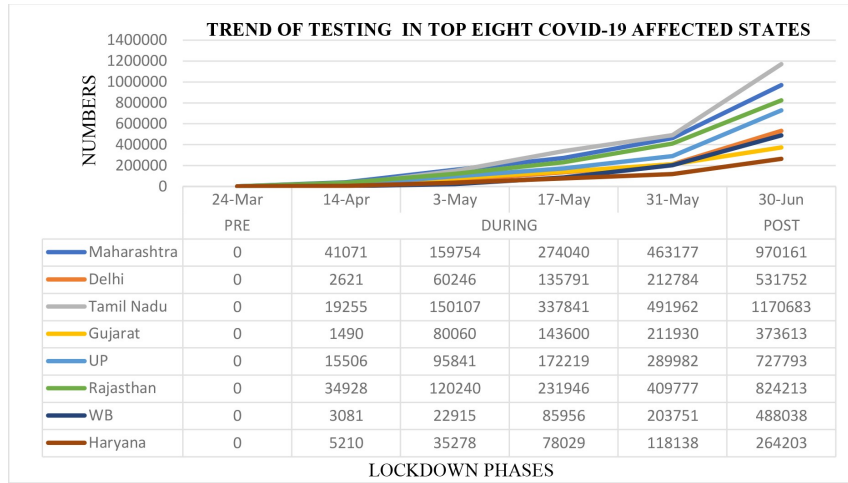
Source: Compiled by Authors, based on MoHFW, data GOI, 2020,

***Total Number of Tests***

The total number of people infected by the disease is known only for those who have been tested. The confirmed cases are counted only when it has been confirmed from lab testing. It means that the numbers or figures of the cases for any country depend on total testing being done. The testing gives an idea of the pandemic and a trend of its spreading. It tells the way the threat is growing and helps to take preventive measures. There is no way to understand pandemic without data as data helps to know the performance of the countries related to planning and control of the pandemic. The interpretation of any data related to COVID-19 is possible only when data on testing is available. Across the country, diagnostic testing network helped in conducting these tests. The testing is possible in both the public and private labs in the country. At present, there are a total 1065 labs all over the country. However, the number of public sector testing labs is more than private labs. There are 768 labs in public sector and 297 in private sector (ICMR, 2020). The daily capacity of testing is rapidly growing across the country. Since the beginning of the pandemic India witnessed an unprecedented growth in the number of confirmed cases while the rate of spreading is slower than many developed nations.

The number of tests varies from one state to another hence the COVID-19 situation varies across the states in India. Some states are experiencing massive outbreak and some states have flattened their curve (ICMR, 2020). The EAG states have had too less tests as compared to top pandemic affected states. The total number of tests in EAG states during the first lockdown was 80320, as against 123162 numbers of tests in top 8 affected states. At this time India was conducting 539 tests per million population. The total number of tests in EAG states were 371141, 724125 and 1263264 in second, third and fourth lockdown, respectively. By this time the top 8 affected states saw massive increase in the number of testing. The total number of tests performed in this category of states were 724441, 1459422 and 2401501 in second, third and fourth lockdown, respectively. (Fig.8). By the end of the second lockdown, 758 tests were performed for per million population. After the end of fourth lockdown, the unlock phase witnessed the growth in the number of tests. The EAG states by the end of this phase conducted 2684483 tests in total and at the same time the number of total tests for top 8 affected states was 5350456. The EAG states conducted 50% less test as compared to top affected states. Two EAG states, Uttarakhand and Chhattisgarh, didn't even cross one lakh tests till 30<sup>th</sup> June.

**Figure 8: Comparison between number of testing in EAG states and top eight COVID-19 affected states.**



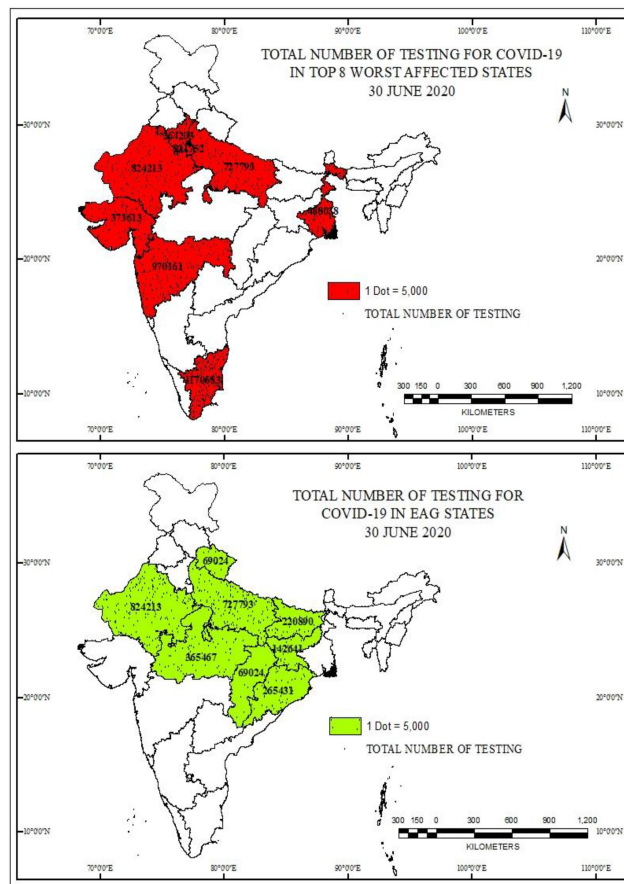
Source: Compiled by Authors-based on MoHFW data, GOI, 2020.

Rajasthan and Uttar Pradesh lead the number of tests among EAG states. At the same time, by the end of unlock phase one, Tamil Nadu outnumbers all the states in terms of total tests. Maharashtra occupies second position in testing cases. There is a large difference in the number of tests among both the categories of the states (Fig. 9). States with higher testing rates have experienced low fatality rates. The states which have shown higher fatality rates have low or moderate testing rates (Livemint, 2020). As the COVID-



19 cases and deaths are rising rapidly, the focus of government is on expansion of testing facilities. The total number of tests conducted in the country as on 30<sup>th</sup> June, is about nine million. As on 30<sup>th</sup> June, the daily capacity of testing has reached up to more than three lakhs per day (Hindustan Times, 2020). Many facilities and types of kits have also increased along with expansion of testing strategies. Rapid antigen tests are being encouraged in containment zones. The top COVID-19 affected states, have procured rapid antigen kits for testing. Apart from these states, all other states are now also preparing for antigen tests. The new types of test kits are being added frequently, but in a large country like India, the access to testing remain a big challenge (The Indian Express, 2020). In order to end the pandemic, the curve of daily cases needs to be brought at zero. The overall comparison of the pandemic COVID-19 related indicators can be seen in table 1.

**Figure 9 : Total Number of Testing.**



Source: Compiled by Authors based on MoHFW data, GOI. 2020.

**Table 1: Comparison of Confirmed Cases, Recovery Cases, Death Cases and Testing in Three Phases between EAG and top COVID-19 Affected States:**

EAG STATES (LOCKDOWN PHASES)						
STATUS	PRE		DURING			POST
	24-Mar	14-Apr	3-May	17-May	31-May	30-Jun
Total Confirmed Cases	84	2629	9279	17141	32709	80375
Total Recovered Cases	NA	355	3194	9011	18835	58097
Total Death Cases	NA	76	279	507	804	1851
Total Testing	NA	80320	371411	724125	1263264	2684563
TOP EIGHT COVID-19 AFFECTED STATES(LOCKDOWN PHASES)						
STATUS	PRE		DURING			POST
	24-Mar	14-Apr	3-May	17-May	31-May	30-Jun
Total Confirmed Cases	230	8148	33145	78665	151134	459574
Total Recovered Cases	NA	718	8385	27773	74563	275409
Total Death Cases	NA	277	1173	2579	4721	15660
Total Testing	NA	123162	724441	1459422	2401501	5350456

Source: Compiled by Authors Based on MoHFW data, GOI. 2020.

## Conclusion

The pandemic COVID-19 has posed a serious health challenge in the country. Apart from health, the social, economic and mental state of the country has also been affected largely. Challenges posed by the pandemic vary disproportionately across the states. It is true that the EAG states are socio-economically backward and they lack access to several required facilities. Comparison between health services shows that Empowered Action Group of states lack in terms of health facilities and are more vulnerable to be affected by several types of diseases. However, it is also true that the threat posed by COVID-19 has made weaker section of the society more vulnerable. The crisis of health due to corona virus among EAG states is comparatively low, as the cases in these states are very low as compared to top COVID-19 affected states. The top four pandemic affected states (Maharashtra, Delhi, Tamil Nadu and Gujarat) contribute 65% of total COVID-19 cases in India. Whereas, the overall percentage of cases in EAG states are only around 13%. The rates of recovery and deaths in EAG states are also far better than top COVID-19 affected states.

The global pandemic has affected all countries of the world and this unprecedented threat is a big challenge to India. The EAG states have done impressive task in containing the outbreak. It may be concluded that the states which are generating more economy and having high per capita income along with good health services are hit hard by the pandemic so far. The major problem for the people in EAG states is means of survival due to loss of livelihood and reversed migration from urban to rural. The urban areas in the past have recorded double-digit unemployment rate, but in rural India it

happened for the first time (Business Today, 2020). Since all the agricultural activities were shut down, the agrarian society became sufferer of unemployment, economic crisis, food crisis and mental trauma. The unemployment rate in rural India reached up to 13.8% for the first time (CMIE, 2020). There are many possible causes for the spread of pandemic disproportionately across these states. First, we know that this disease is not an endemic; it has its origin outside the country in Wuhan, China. At its initial stage, the cases were reported from those states where people have travelled from an outside land hence, the people coming from outside the country were the one who was infected first and the disease further spread from people to people through contact.

It has been found that the disease spread in urban areas at a faster rate due to high density of population as this disease is contagious in nature and highly densely populated areas in cities are more at risk (The Hindu, 2020). The isolation and physical distancing works only when people respect the order and take heed of the scientific facts. Public health cannot be promoted without social solidarity (The Atlantic, 2020). The urban landscape proved more vulnerable than the rural landscape. There is possibility that the virus may take longer time to reach rural areas as the social distancing is easier in rural areas because due to sparsely populated region having few outsiders and away from airports, seaports and often big highways (National Public Radio, 2020). It has also been found that the cases in EAG states were reported only when the labors and migrants returned to their native lands. The return of eight crores migrants from urban to rural areas poses multiple challenges (The Quint, 2020).

Further, there are geographical variations in testing and differences in testing rates and contact tracing may also be a cause for such variation of cases across the states. The EAG states have very low testing rates as against top affected states. The top affected states are doing tests for both the symptomatic and asymptomatic whereas, EAG states are doing tests only for symptomatic persons. Maximum cases are being reported from states that are doing high number of tests (India Speed, 2020). The cases in EAG states are in control at present but, still needs to be prepared for the worst to minimize the extent of pandemic. It may also be concluded that the health problems in urban areas are more than rural areas. The majority of people in urban areas suffer from health problems and therefore, 20% of world's population is at a risk of suffering from corona virus due to lifestyle diseases (Economic Times, 2020). Urban lifestyle is complex and complexity increases vulnerability which covers top affected states as these states are having more urban population as compared to EAG states where 77% of populations is rural in nature and faces less lifestyle problems. Though EAG states at present are less affected by pandemic as against developed states but, these states may see spike in number of cases if not checked properly. However, at present both the categories of

states, the EAG and top affected ones needs to boost its health facilities to manage health crisis. Apart from health crisis the social security of poor's and vulnerable sections also need to be addressed appropriately. In such a crucial period it is not only the duty of government, but it is responsibility of citizens to act more responsibly for self and social solidarity.

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