

Summer Training Report

By

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ACKNOWLEDGMENT

“Gratitude is the fairest blossom which springs from the soul.”

Having gratitude and not expressing it is kin to wasting our blessings, so I would like to take this opportunity to thank all the wonderful people who, in some way or the other, have been there for me throughout the journey of completing this summer training.

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I am also very thankful to our librarians for their kindness and help in completing this report. Last but not the least, I would like to thank **my parents (Mr. Rajkumar Jain & Mrs. Lalita Jain)** and **my friends** for being there with me through thick and thin. I would not have been able to achieve what I have without their support. I thank God for all his blessings and kindness bestowed upon me.

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Yash Jain

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ACRONYMS/ABBREVIATIONS

S. No	Acronym	Meaning
1.	COVID- 19	Coronavirus Disease 2019
2.	OR	Outcome ratio
3.	RR	Recovery ratio
4	MERS	Middle East Respiratory Syndrome
5	SARS	Severe Acute Respiratory Syndrome
6	CB NAAT	Cartridge Based Nucleic Acid Amplification Test
7	True NAT	Nucleic Acid Test

Summer Training Report

Part -1

(Research Work Report)

Comparative Study of the COVID19 Precautionary Measures and Responses of Seven States (Maharashtra, Gujrat, Rajasthan, Delhi, MP, UP, and West Bengal) of India in Lockdown Period”

INTRODUCTION:

Coronavirus infections are group of infections which causes diseases in animals and humans. Few viruses of this family were already known which causes mild illness to severe disease like MERS and SARS. The new virus strain which was found in Wuhan china in 2019 causes coronavirus disease called as COVID-19.

The symptoms of COVID-19 are different to person to person but the common symptoms which are fever, dry cough, sleepiness, and fatigue while the other symptoms of disease are headache, loss of sense and taste, diarrhoea, body pain, nasal congestion and reddening of eye. Sometimes person infected from diseases but do not develop any symptoms which are called as Asymptomatic. In India, there are many cases of COVID-19 which are asymptomatic in nature. In around 1 out of 6 people of COVID-19 infected person develops serious illness and feel difficulty in breathing otherwise people recovered easily without special medical treatment. The peoples who have another disease like diabetes mellitus, hypertension, heart issues and etc are more prone towards the serious illness of this disease. (MOHFW)

The disease is communicable, it will transfer from person to person with the means of small droplets from the nose and mouth when infected person coughs and sneezing. Person get infected also by touching the surfaces and objects of infected person and then touch their eyes, nose, and mouth. The virus can live up to hours on floors and objects. People also infected if they breathe in the droplets of infected person when they sneezed or coughs that's why, the distance of 6 feet or 2 (Gaj ki duri) is advisable. The person transfers the disease 2 days before of their onset of symptoms of first symptoms.

For latest information, the government health bulletin should be checked on regular basis. There is no treatment of COVID-19 in the market, the only treatment which everyone can follow is prevention because Prevention is Better than Cure. Every country made their own strategy to combat with deadly virus. There are some precautionary measures which are as follows.

- Clean your hand for about 20 seconds with soap and alcohol-based sanitizer because it will kill the virus and prevent you from getting infection.
- Maintain a distance of 6 feet or 2 Gaj ki duri among yourself i.e. Maintain social distancing because if a person sneezing or coughing the droplet didn't enter into your body and 6 feet distance is because the virus can only travel upto 6 feet after that it falls down to the surface.
- Wear mask properly, and make sure around people wear mask as well because it will prevent you from infection. Dispose your mask properly. Don't throw the masks to the roads, rivers and ponds. Use of N-95 masks are mandatory in hospitals and containment areas. Make sure about your respiratory hygiene

- Stay at home if you feel tiredness and illness. If you have fever, cough, sore throat, and trouble in breathing, seek medical care and call on helpline no. for help. Because if you seek medical care on time, there are chances of healing early.

- Keep forward-thinking on the most recent COVID-19 hotspots (urban communities or neighbourhoods where COVID-19 is spreading broadly). On the off chance that conceivable, abstain from venturing out to places – particularly if you are a more seasoned individual or have diabetes, heart, or lung infection. Why? You have a higher possibility of getting COVID-19 out of one of these zones.

In India, the first case was detected on 30th January in Kerala. Initially, the case was not increased rapidly and a tally of 100 cases were completed on 15th March 2020. India is a country of different culture and belief, so the pattern of disease of state was also different. Some state had fast recovery rate while some have slow recovery rate. To know more about the state response this study was conducted

The comparison of the different states in countries like India, shows the dynamic pattern of COVID-19 pattern situation, while few states have highest recovery rates, and few are lowest recovery rates and high no in active cases. Maharashtra is the state which have highest no of COVID-19 cases and very much affected by this pandemic while Rajasthan is combating this pandemic in their own way, we conducted this study on seven states which are Maharashtra, Gujarat, Rajasthan, Delhi, Madhya Pradesh, Uttar Pradesh and West Bengal. Let us look at the timelines of the states

TIMELINE OF STATES:

MAHARASHTRA

The principal instance of the coronavirus pandemic in the Indian state of Maharashtra was affirmed on March 9th, 2020. Maharashtra considered one of the greatest hotspots of the country contributing to the 33.33% of the total case in India along with 40% death rate. As of May 31st, the fatality rate of COVID-19 is 4.3%, considered to be much higher amongst the other Indian states but considered much lower globally. With more than 1 lakh cases, Mumbai is the worst hit state. Mumbai Metropolitan Region (MMR) has recorded the highest spike with a figure of 66%.

On March 13th, the state government confirmed nCoV-19 to be an epidemic disease in some parts of Maharashtra such as the Navi Mumbai, Mumbai, Nagpur and Pune, and also implement the Epidemic Disease Act, 1987 which lead to hospitalizing any person who is having such symptoms. Business foundations, for example, film lobbies, shopping centres, pools and exercise centres were closed over the state as a precautionary measure. CM Shri. Uddhav Thackeray, gave a prohibition on every single open assembling and capacities. PMC (Pune Municipal Corporation) considered closing down all the recreational gardens and Rajiv Gandhi Zoological Park, which was quickly tasked and brought into existence from March 14th to contain the spread of the novel coronavirus.

Thackeray reported that the quantity of testing labs and their abilities would be expanded, as will the limit of isolate offices. On March 16th, the state government assigned financial aid of INR 45 Crores to the areas with affirmed cases.

It was observed that many patients fled away from the government quarantine centres and isolation wards within the medical centres. The government taken a step, to stamp the person with permanent ink so it would be easy to identify and trace the person if such incident happens and if happens so that legal actions could be taken.

On March 20th, CM Thackeray declared that all work environments, excluding essential goods and services & public transport, in Mumbai, MMR (Mumbai Metropolitan Region), Pune, Pimpri-Chinchwad and Nagpur will be called off until March 31st. CM asked his citizens not to come out of their house excluding essential goods and services the to stop the spread of disease.

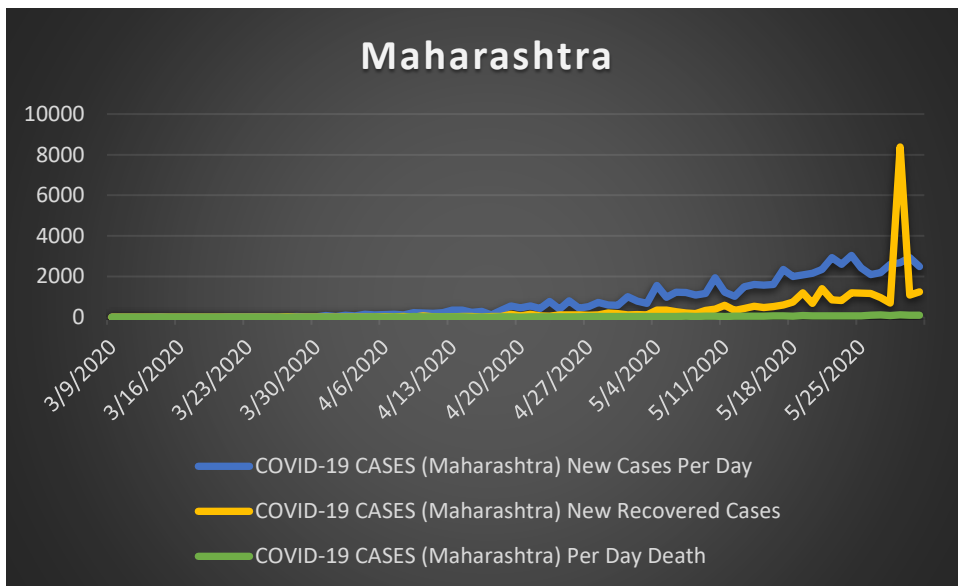
Afterward, CM Thackeray imposed Section 144 of Indian constitution across all the districts of the state sending it into full lockdown to curb the rise of cases. On March 23rd, he declared that all the state borders along with Maharashtra will be closed along with the districts to impose complete lockdown.

On March 26th In order to maintain social-distancing circles were made across all the vegetable market, grocery stores and many other places. This model was first executed in Pune on 24 March.

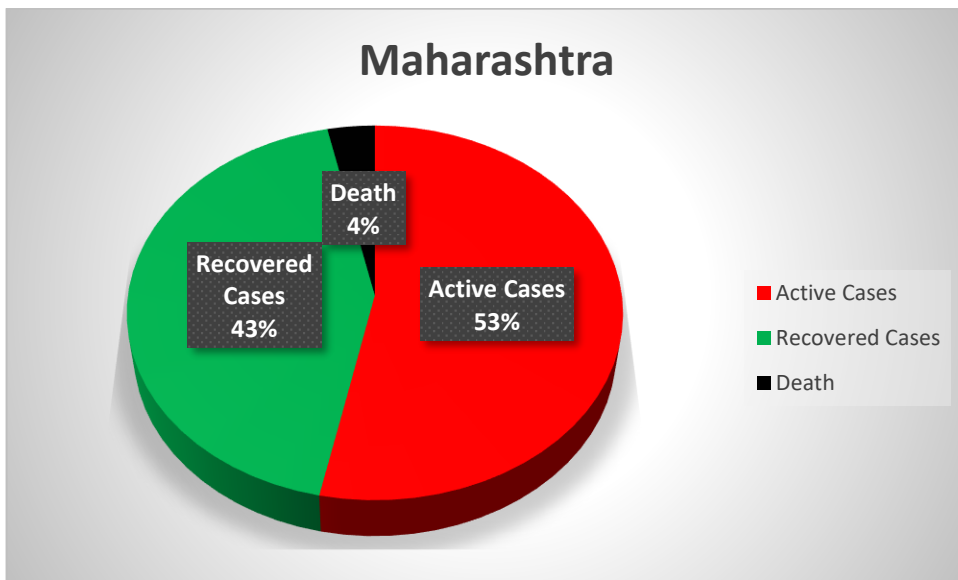
From April 1st, Police began utilizing a system of 5,000 Closed Circuit cameras alongside drones so to screen various pieces of the city and guarantee that the lockdown is maintained. Apart from Mumbai, drones were likewise utilized in thickly populated zones of Thane locale, for example, Mumbra and Bhiwandi for aeronautical reconnaissance and handing-off sound messages and admonitions. Mumbai turned into the principal Indian city to make wearing facemasks openly puts mandatory. On the next day, the state government chose to send State Reserve Police Force in the city for stricter authorization of the lockdown.

On 11 April, Thackeray declared that the lockdown in the state will be reached out until "in any event 30 April". On 14 April, he reported the arrangement of a COVID-19 Task Force, containing driving specialists, to exhort the state government on intends to control the flare-up.

On first May, Govt of India declared lockdown 3.0 till seventeenth may. On seventh June Maharashtra crossed the instances of china. The different parts are straight forwardly influenced by this emergency and the lockdown like Education, the travel industry, transport, and economy of the state.



Graph1: Trend of new cases, recovered cases and death of Maharashtra (till 31st May 2020)



Graph 2: Distribution of Active cases, Recovered cases and deaths of Maharashtra (Till 31st May 2020)

Graph 1 and Graph 2 depicts the trend of the cases and proportion of the cases, Maharashtra have highest number of cases in India and highest number of deaths as well, the outcome ratio (OR) and recovery ratio (RO) are 7.79% and 81.38% respectively.

GUJRAT

In Gujarat, the initial two instances of the COVID-19 were affirmed on 19 March 2020 in Rajkot and Surat. On 15 March, Anil Mukim, Chief Secretary of Gujarat, reported that the closure of schools, universities, instructive foundations, shopping centres, multiplexes, and pools over the state till March 29 as a precautionary measure against COVID-19. Be that as it may, the progressing board assessments for class X and XII could be directed. Additionally, fine of 500 was imposed on open spitting. Shyamal Tikadar, Chief

Wildlife Officer of the state, reported that the state's national parks, havens, and protection centres, will stay shut from March 17 to March 29. Gujarat High Court said it will take up those cases considered urgent till March 31. Statue of Unity shut for voyagers till March 25 and it would further extend if needed. Platform ticket rate hiked from 10 to 50 at 12 railroad stations in Gujarat as a preventive measure against COVID-19 by the Western Railway of India.

Atul Pandya, Director of the Sabarmati Ashram, Ahmedabad said that the Ashram will stay closed for guests from March 19 to March 29 to manage the spread of COVID-19 and to guarantee the security of residents. On March 19, Gujarat reports initial two instances of COVID-19. An elderly person of 32 year from Rajkot, who came back from Saudi Arabia, and a person from Surat 21 year, who came back from UK, were positively tested.

Vijay Rupani, Chief Minister of Gujarat, said no administration transports in the state will be chipping away on March 22 considering the 'Janata Curfew' reported by Prime Minister Narendra Modi. As COVID-19 cases saw an increase in the state, Government of Gujarat partially secures four urban communities - Ahmedabad, Surat, Vadodara, and Rajkot. All general stores selling non-essentials things in the four urban communities will stay shut till March 25 and government workplaces will work at half manpower on rotational manner till March 29. Chief Minister Vijay Rupani sanctioned that the all-new 1,200-bed limit Civil Hospital of Ahmedabad will be kept only for rewarding COVID-19 patients and would fill in as the nodal contamination control hub.

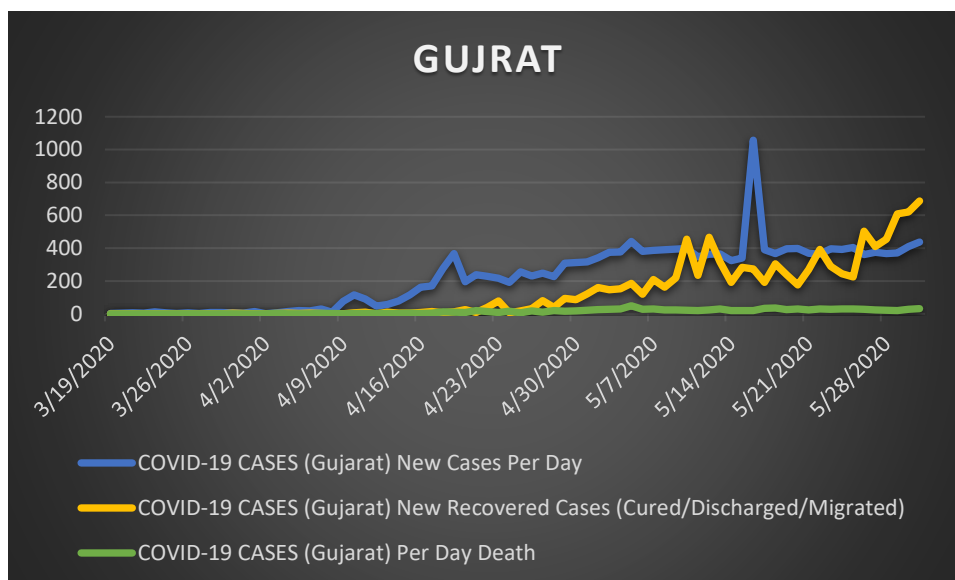
On March 22, Gujarat reports first deceased case of COVID-19. An elderly person of 69-year took last breath in Surat. Administration of Gujarat stretched out the partial lockdown to Gandhinagar. DGP Gujarat Shivanand Jha reported that whole state will be set under full lockdown beginning from 12:00 AM of March 24 till March 31. The Gujarat High Court chose to hear "incredibly pressing issues" through video conferencing, to guarantee social distancing in the midst of the COVID-19 pandemic. Leader Narendra Modi Prime Minister India declared total lockdown in the whole country for 21 days established from the 25th day of march till 14th day of April as a measure to stop the community transmission of Covid-19. The Government of state choose in the field of education to promote all the students of standard I to IX and XI to the next standard without conducting exams. CM Shri. Vijay Rupani declared that Government of state would deliver free food items among the weaker section of the society of that would be 3.25 crores of people from 1st day of April, to those holding ration cards. Administration of Gujarat reported free food doorstep office for old people remaining alone at home during lockdown

CM Shri. Vijay Rupani sanctioned Rs. 650 crore financial aid to 65 lakh groups of financially poor people, workers, sloppy specialists, development laborers of the state. Administration of Gujarat cautioned industrial facilities, organizations, and bosses by stating that legal actions would be taken under the DMA (Disaster

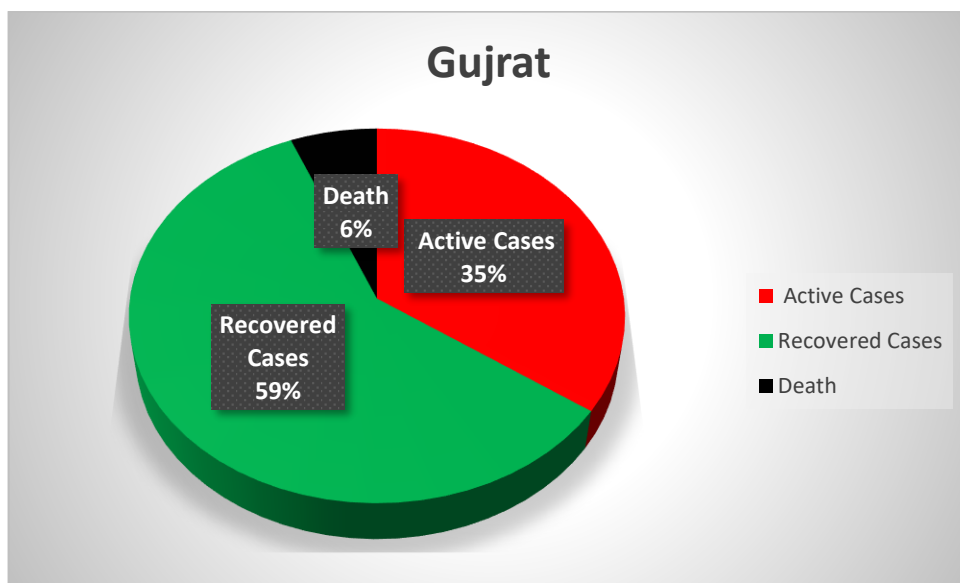
Management Act) against the individuals/organizations, would have taken steps like terminating employees and salary deduction during this crisis.

Ashwani Kumar, Secretary to CM stated that the Government thought of giving 25,000 N95 covers to private specialists in the state so they can give better clinical services to the citizen along with the governmental institutions. Legislature of Gujarat started employing of resigned police work force to send them as extra power to force the lockdown across Gujarat.

Head administrator Narendra Modi reported the augmentation of lockdown in whole nation for 19 days from April 15 to May 3. So as to forestall the spread of COVID-19 in Ahmedabad, Chief Minister Vijay Rupani chose to force time limitation in three hotspot zones - Danilimda, Jamalpur and Dariyapur of Ahmedabad from 6:00 AM of April 15 to 6:00 AM of April 21. Ahmedabad Municipal Commissioner Vijay Nehra said that Ahmedabad Civic Body has prepared the India's biggest COVID-19 Care Center in Ahmedabad with an ability to suit 2000.



Graph1: Trend of new cases, recovered cases and death of Maharashtra
(till 31st May 2020)



Graph 2: Distribution of Active cases, Recovered cases and deaths of Maharashtra (Till 31st May 2020)

Graph 1 and Graph 2 depicts the trend of the cases and proportion of the cases, Gujrat have high case fatality rate, but recovery rate is also good. the outcome ratio (OR) and recovery ratio (RO) are 10.46% and 170.37% respectively.

RAJASTHAN

In Rajasthan, the first case was accounted on 2nd March 2020 in Jaipur. The health department of Rajasthan bulletin affirmed a sum of 8831 cases, including 194 deaths and 6,032 recoveries till 31st May 2020. All regions in the state have revealed affirmed instances of which, Jaipur is the most exceedingly awful influenced.

Section 144 was imposed in Rajasthan on 19th March 2020 which confined the gathering of 5 people to prevent the spread of disease. All the security staffs check the temperature of travellers who are coming by international flights and isolate those who have identified some symptoms for 14 days.

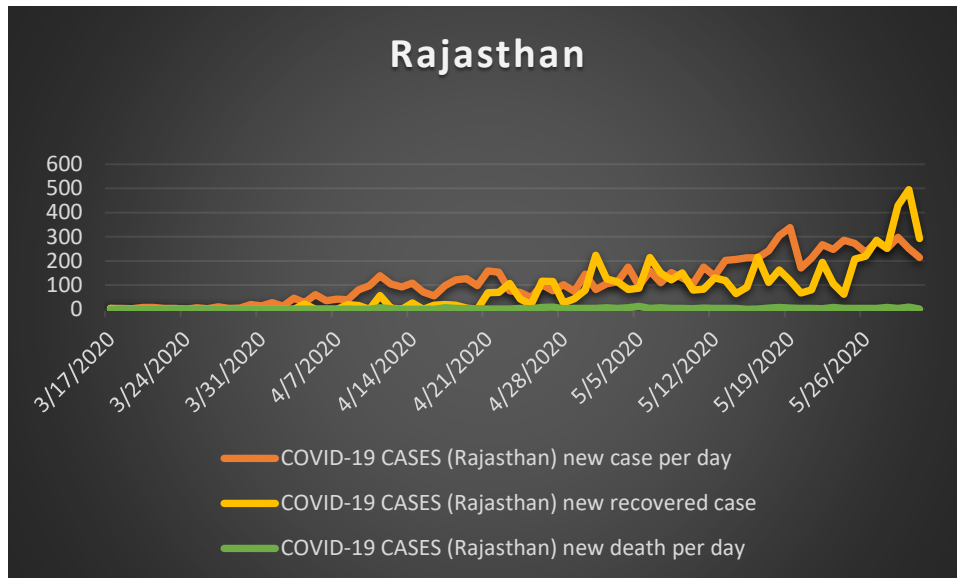
Rajasthan is the first state who announced complete lockdown from 22 March 2020, except essential things. In between 22-24 march, the govt first restricted all the public transports and then private vehicles. They announced two months free ration for beneficiaries under the NFSA. The government decided to give financial assistance of 50 lakhs to COVID-19 worriers i.e. health workers, sanitation workers, policemen and other hospital staffs who died due to COVID-19.

Ministry of Health & Family Welfare were decided to divide the districts in three phases on the basis of the situation, Rajasthan have 8 red zones (Highly containment zone), 19 orange zone (moderate) and 6 green zones (free zone).

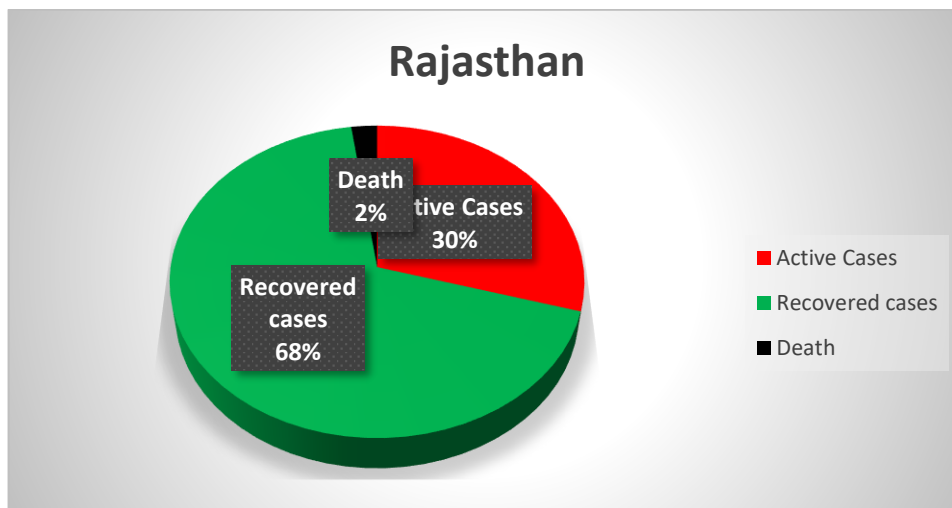
Rajasthan government prepared the guidelines for rules and regulations for lockdown 4.0 in the state. The movement of people were restricted between 7:00 Pm to 7:00 Am for non- essential things. All shops except containment zones could open, with states of social separating and just two to five clients permitted at once.

The cafes, sweet shops and restaurants can open only for home delivery, no one were allowed to dine in the premises. Cabs and taxi were allowed with a rule of 1+2 in orange zone and green zone. 2/3 staffs were allowed to work in shops in orange zone and ½ staffs allowed in red zone.

On 31st May, Government decided to extend the lockdown till 30th June with more relaxations except containment zones.



Graph 5: Trend of new cases, recovered cases and death of Rajasthan
(till 31st May 2020)



Graph 6: Distribution of Active cases, Recovered cases and deaths of Rajasthan (Till 31st May 2020)

Graph 5 and Graph 6 depicts the trend of the cases and proportion of the cases, Rajasthan have highest recovery rate of among states and more than the country, Rajasthan combat this pandemic very well. The outcome ratio (OR) and recovery ratio (RO) are 3.22% and 231.55% respectively.

DELHI

The first case of the Coronavirus pandemic was reported in the national capital region on March 2nd. The approximate calculation of the COVID-19 disease would be infected people reported as of 15 June 2020 is 42,829 consisting of 1,400 deaths and 16,427 recovery.

March 12th, CM Shri. Arvind Kejriwal announced COVID-19 as a pandemic which made the Epidemic Diseases Act, 1897 relevant in this region. Schools, universities, and multiplex were instructed to stop their operations till March 31st. Government instructed all the workplace administrators and shopping malls which must be hourly disinfected to lower the spread of disease. Kejriwal asked the citizen to avoid social and mass gathering.

On 16th March, Delhi Government restricted the crowding of more than 50 peoples including, religious places, political rallies, educational institute, sports and etc. On 21 March, the restriction was on more than 5 individuals.

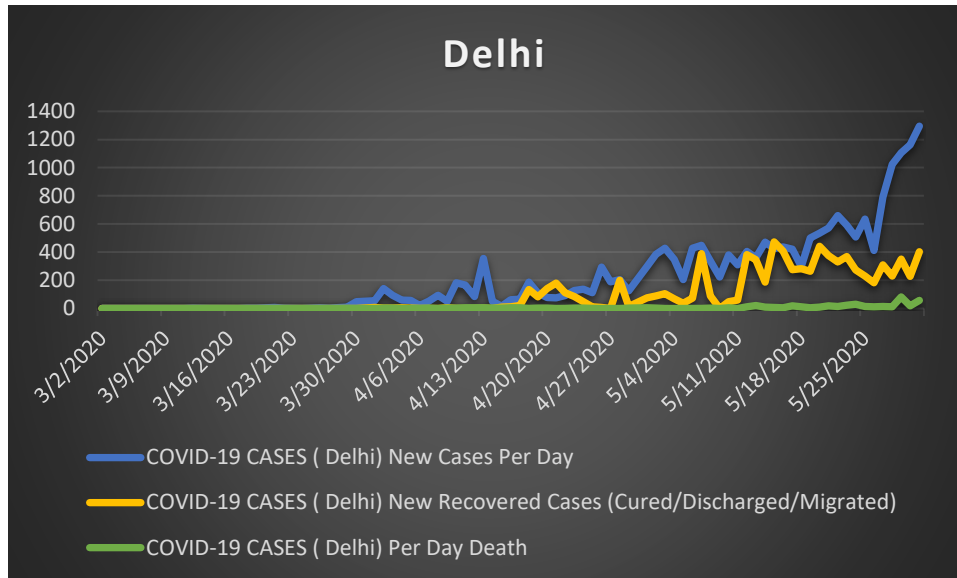
CM Shri. Arvind Kejriwal instructed that from March 23rd to 31st, all household/worldwide flights showing up to Delhi would be suspended.

CM Kejriwal had imposed lockdown from March 23rd to 31st. Only the essential service was kept operational in the national capital region and rest were closed. Adjoining borders with this region were sealed and only allowed trucks of essential goods to enter NCR. CM Kejriwal declared that individuals who do not have ration card can also avail free proportion from reasonable value shops.

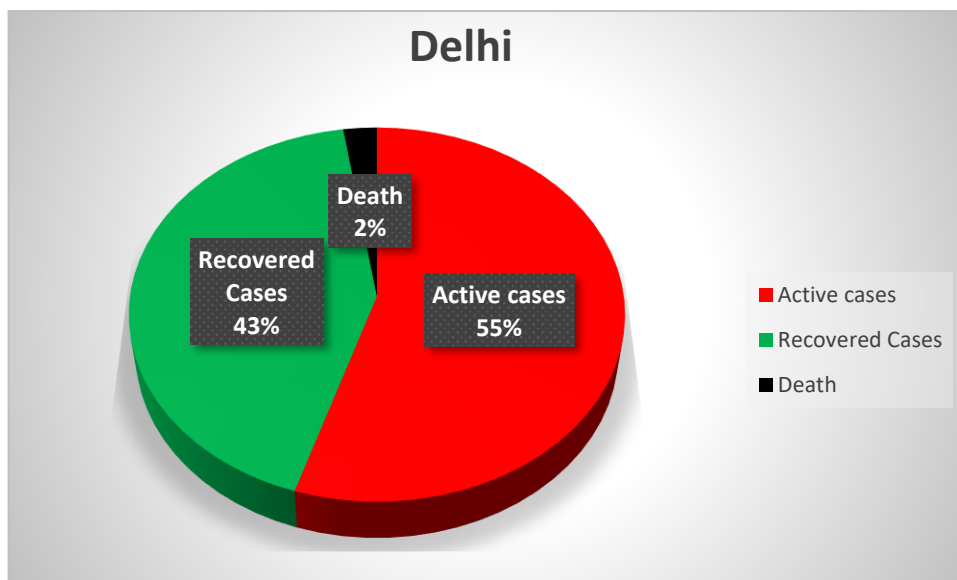
On April 5th out of approximately 71 lakhs ration card holders in Delhi, it was accounted for that 60% had got proportion. As estimated from the government records it has been observed that 50-60 thousand who does not have ration cards have also applied for coupons to avail the service of food items like sugar, rice, and wheat for free of cost. A few people have complained about the mismanagement of the ration service and CM asked all the MLA's to address this issue and help the needy with the daily bread. Issuing of e-coupons for rations was also started. From April 13th the government has started the sanitizing drive across the region. On April 14th, PM expanded lockdown till May 3rd, 2020 after proposal from a few state governments. On 21 April, since 38 lakh individuals who do not have ration card applied for proportion, Govt will give free proportion to 31 lakh individuals. CM announced that all the MLA and MP from the NCR will get food coupons respectively, which could be distributed amongst the citizens of the Union Territory.

Later, Delhi Government had given some unwinding during lockdown period, in following administrations, for example, Health care, Inter and intra state development for social insurance staff including via air if essential, cover homes (for senior residents, down and out, ladies, exceptionally abled), administrations without anyone else utilized individual for family unit need like circuit repairman, handyman and so on, looks for electric fan and textbooks. All these unwinding for the zones which isn't announced as control zone.

As one-time budgetary assistance, Delhi govt had declared to help influenced transport specialist organization like Auto, E-Rickshaw, Rural Vehicle and Gramin Seva of Delhi Rs 5,000/- each to their financial balance who will apply with their present driving permit of Para-Transit vehicles and legitimate identification. Delhi CM had reported a money related help of Rs 1 crore for the group of any perished wellbeing staff who had died while managing coronavirus cases in Delhi. He had referenced them as "at the very least warrior" and this help as tribute to their honourable assistance.



Graph 7: Trend of new cases, recovered cases and death of Delhi (till 31st May 2020)



Graph 8: Distribution of Active cases, Recovered cases and deaths of Delhi (Till 31st May 2020)

Graph 7 and Graph 8 depicts the trends and proportion of the cases, Delhi have higher no of active cases but lower no of deaths which shows lesser fatality rate, the outcome ratio (**OR**) and recovery ratio (**RO**) are 5.5% and 77.8% respectively.

MADHYA PRADESH

The main instances of the COVID-19 pandemic in Madhya Pradesh were affirmed on 20 March 2020. These were the initial four cases in Jabalpur, Madhya Pradesh. Madhya Pradesh has affirmed an aggregate of 8,089 cases, including 350 deaths and 4,842 recoveries, reported as on 31st May 2020.

Lockdown Stage 1 (25 March – 14 April)

There is a restriction of people to come out their home without any essential work. All vehicle administrations – roads, trains and air were restricted with special cases for transportation of basic merchandise, fire, police, and crisis administrations. Instructive organizations, modern foundations and friendliness administrations were likewise suspended. Administrations, for example, food shops, banks and ATMs, petroleum siphons, different basics and their assembling are excluded. The Home Ministry said the any individual who neglects to follow the limitations can look as long as a year in prison.

Stage 2 (15 April – 3 May)

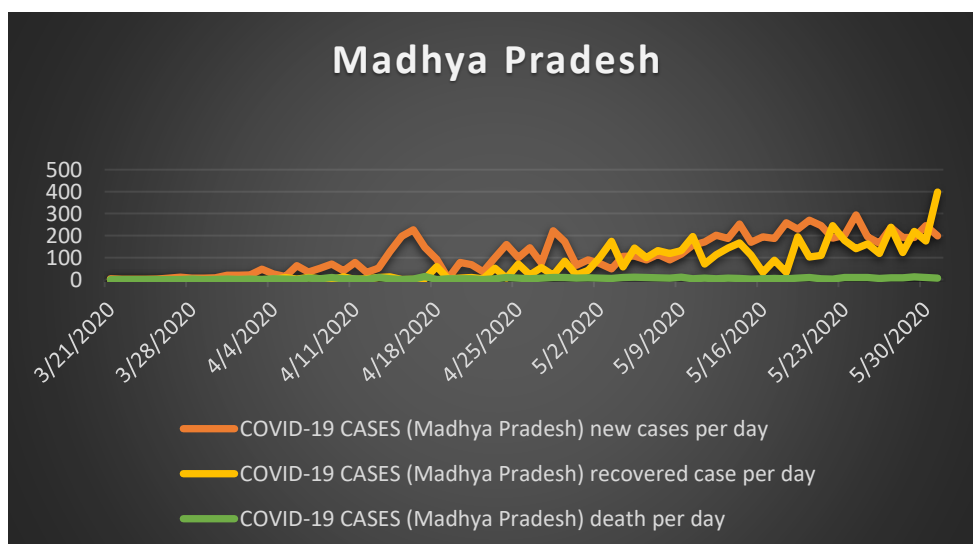
The nation leader, Prime minister while tending to the country, declared that the across the nation Lockdown which should end on 14 April 2020 has now been reached out to 3 May 2020.

Stage 3 (4 May – 17 May)

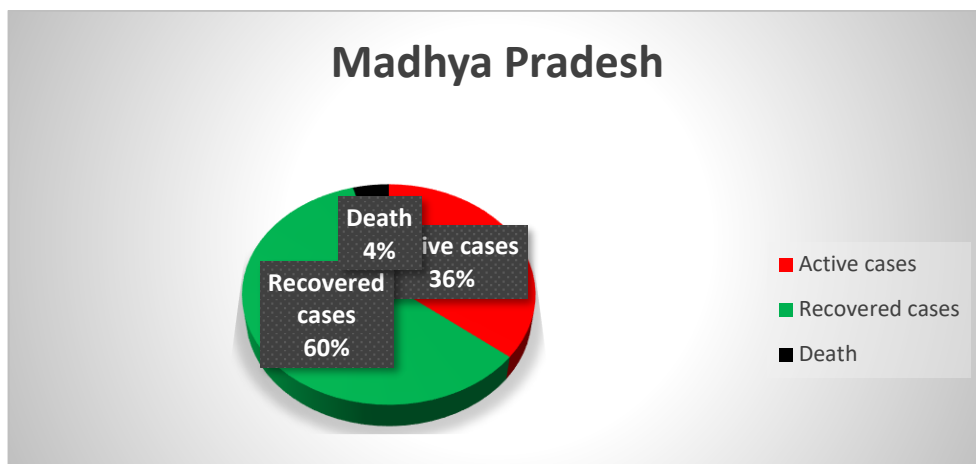
On 1 May, the Ministry of Home Affairs (MHA) and the Government of India (GOI) further stretched out the lockdown time frame to about fourteen days past 4 May, with certain relaxations.

Stage 4 (18 May – 31 May)

On 17 May, the National Disaster Management Authority (NDMA) and the Ministry of Home Affairs (MHA) broadened the lockdown for a period for about fourteen days past 18 May, with extra relaxations.



Graph 9: Trend of new cases, recovered cases and death of Madhya Pradesh (till 31st May 2020)



Graph 10: Distribution of Active cases, Recovered cases and deaths of Madhya Pradesh (Till 31st May 2020)

Graph 9 and **Graph 10** depicts the trends and proportion of the COVID-19 cases in Madhya Pradesh, while Madhya Pradesh have less no of cases and recovery rate is also good, but fatality rate is 4%, the outcome ratio **(OR)** and recovery ratio **(RO)** are 7.22 % and 167.14% respectively.

UTTAR PRADESH

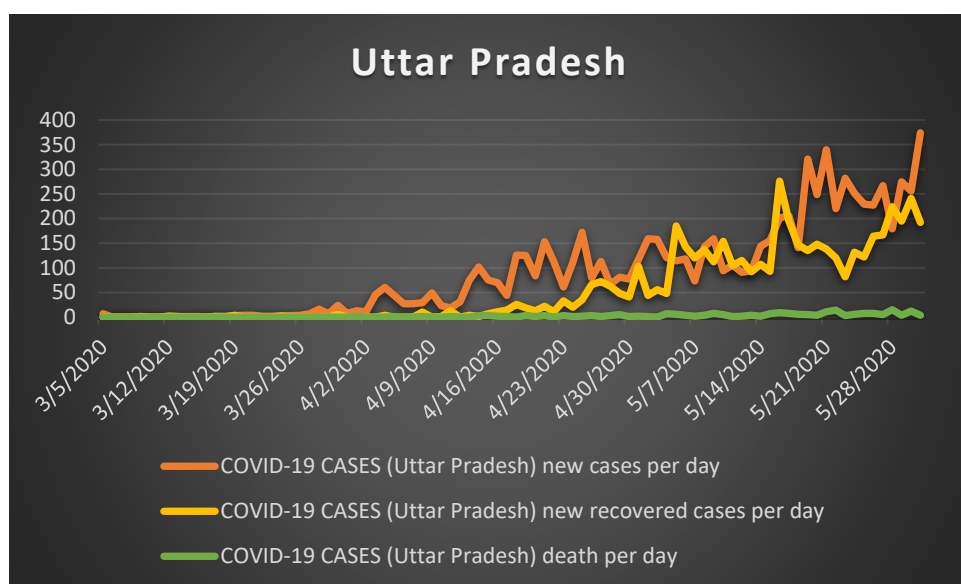
In Uttar Pradesh, the first case was detected in Ghaziabad on 4th March 2020. The state has 8,075 confirmed cases, resulting in 217 deaths and 3,015 recoveries as on 31st May 2020. Case fatality rate in the state stands at 3.05%.

UP government issued a notice for closure of all the college institute, cinemas, malls, pools, gym, and tourist place till 2 April. The authorities in each districts were told to create a strategy to aware the community about viral sickness and restricted the peoples in holy places.

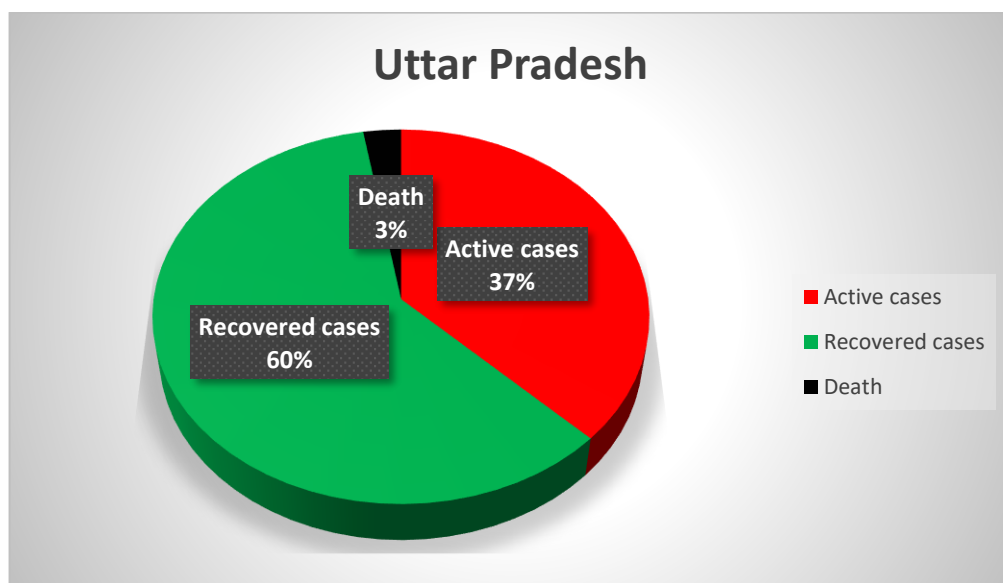
CM Yogi Adityanath declared 1000 rupees help monthly for daily wage worker who were suffered due to pandemic on 21st March 2020. UP government reported the lockdown of fifteen districts from 22-25th March 2020 including Agra, Lucknow, and others. The government official arranged 1000 buses for ferry labourers who were standing out on the borders owing to a country-wise lockdown and absence of food in their shelters on 28th March 2020. After that, the state government also arranged buses for 9000 students who were residing in Kota for their education on 18th April 2020. 250 buses were arranged and only 30 students were allowed to sit in a single bus after thermal screening.

UP Chief minister told their officials to add 52000 beds in the COVID-19 Hospitals in state, which was latterly explained by additional chief secretary, he explained the division of beds into two departments, First 17000 by health department in three type of hospitals i.e. 10,000 beds in level one which are simple isolation beds for mild symptoms patients, and 5000 beds for second level, in which the oxygen kit will be fitted with the beds and lastly 2000 ventilator beds for tertiary care. Secondly, 35000 beds were in the hand of medical educational department in a row of 20,000, 10,000 and 5,000 beds in level one, two and three.

On 1 May, Uttar Pradesh CM Yogi Adityanath coordinated that any specialist or worker of UP who is abandoned in another state because of lockdown, can utilize his/her apportion card number and profit its advantages there. The individuals who do not have an apportion card, at that point under State Disaster Response Fund (SDRF), food bundles are being given. He said that anybody from another state who is abandoned in UP can enrol on 'JANSUNWAI' entryway to look for help. "Individuals from UP abandoned in different states can get themselves enrolled, The chief secretary UP informed that around 23 lakhs migrant worker have been taken back to their native places with the help of shramik trains till 24th May 2020 and around 225.39 crores were sent to Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) recipients through direct bank move. The Uttar Pradesh government has concluded that showing up flight travellers should follow 14-day isolate at their own homes. On 6th day of home isolate, flyers can get themselves tried and end the isolate. Business explorers with return ticket inside 6 days will be excluded yet will not be permitted to enter control zones.



Graph11: Trend of new cases, recovered cases and death of Uttar Pradesh (till 31st May 2020)



Graph 12: Distribution of Active cases, Recovered cases and deaths of Uttar Pradesh (Till 31st May 2020)

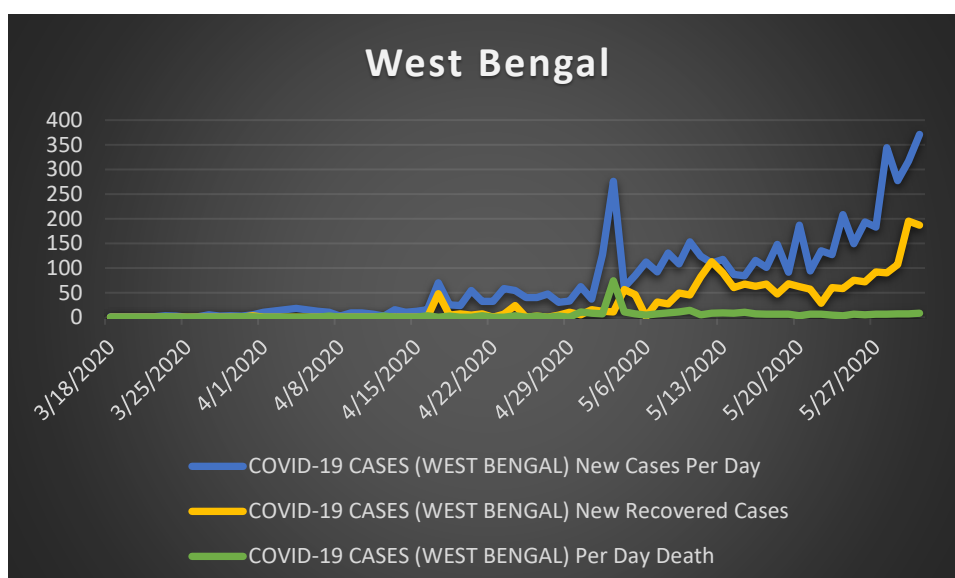
Graph 11 and Graph 12 depicts the trends and proportion of the COVID-19 cases in Uttar Pradesh, while Uttar Pradesh have less no of cases and recovery rate is about to 60 %, and the fatality rate is not as much high (3%), the outcome ratio **(OR)** and recovery ratio **(RO)** are 4.48% and 160.63% respectively.

WEST BENGAL

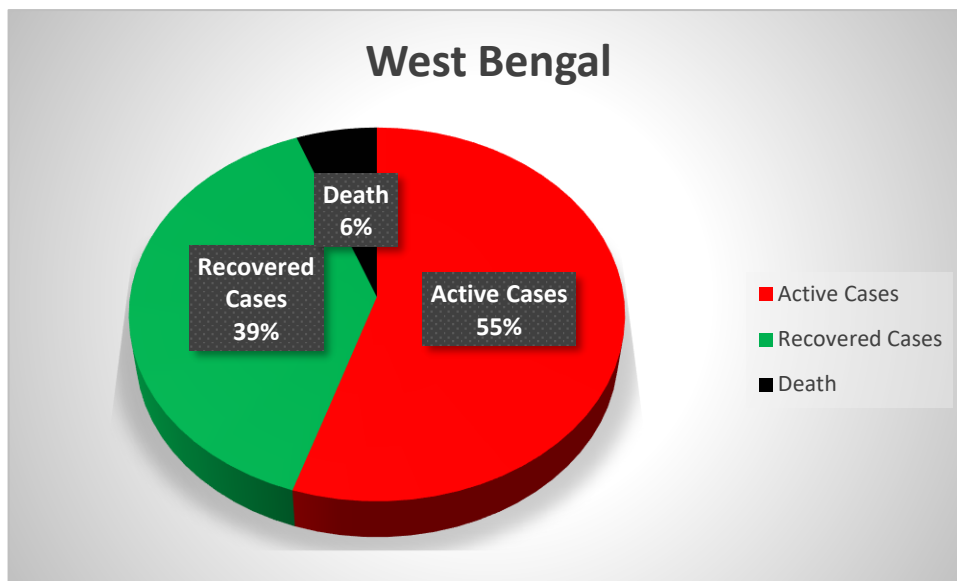
In West Bengal, the first cases were detected in Kolkata on 17th March 2020. The Health and Family Welfare branch of Government of West Bengal has affirmed an aggregate of 5501 COVID-19 positive cases, including 3,027 active cases, 317 Deaths and 2,157 Recoveries, reported as on 31st May 2020

On 14 March, Government of West Bengal declared that all schools, universities, and colleges in the state will stay shut till 31 March, in the perspective on developing circumstance on the spread of COVID-19. State government ventured up its safeguard with boss clergyman Mamata Banerjee reporting the conclusion of instructive organizations till 15 April. She said that even ICDS would be shut till 15 April and two kilograms of rice and potatoes would be sent to the youngsters straightforwardly so the dinners can be cooked at home. The administration has commanded an incomplete work-from-home framework for 7.9 crore individuals who get sponsored proportions. The CM guaranteed that legislature will give free proportion to the poor till September.

West Bengal CM Mamata Banerjee reported Monday that the state government is making a Rs 200 crore reserve to manage the effect of COVID-19. Whole West Bengal was brought under lock down till 31st May. West Bengal Government changes over Medical College and Hospital, Kolkata, for separation of individuals suspected with Coronavirus. West Bengal government issues request to specialists of each locale to set up impermanent courses of action of asylum and food to transients and poor.



Graph 13: Trend of new cases, recovered cases and death of West Bengal (till 31st May 2020)



Graph 14: Distribution of Active cases, Recovered cases and deaths of West Bengal (Till 31st May 2020)

Graph 13 and Graph 14 depicts the trends and proportion of the COVID-19 cases in West Bengal, while West Bengal have less cases, but the recovery rate of the cases is very poor less than the country proportion i.e.39% and the case fatality is more than country rate i.e. 6% the outcome ratio (**OR**) and recovery ratio (**RO**) are 14.69% and 71.25% respectively.

RESEARCH OBJECTIVE: To compare the situation of COVID-19 in seven states (Maharashtra, Gujrat, Rajasthan, Delhi, Madhya Pradesh, Uttar Pradesh, and West Bengal) in lockdown period

RESEARCH QUESTION: What are the precautionary measures taken by the government and compare the situation of covid19 in seven states of India in lockdown period?

RESEARCH DESIGN: Descriptive Study

METHODOLOGY:

Mode of Data Collection: Secondary Sources

Data Source: Websites, Articles and MOHFW website

Study Period: 2 Months

Type of Research: Secondary Research

TOOLS FOR COMPARISON BETWEEN SEVEN STATES:

Comparing these seven states there are some parameters which differentiate the states situation of the COVID-19

1. **Recovery rate:** Recovery rate is defined as the total no of recovered patients COVID-19 to the total no of cases of COVID-19

$$\text{Recovery rate} = \frac{\text{Total no of recovered patients of COVID-19}}{\text{Total no of cases of COVID-19}}$$

2. **Case Fatality rate:** It is defined as the total no of death due to COVID-19 to the total no of cases of COVID-19.

$$\text{Case Fatality rate} = \frac{\text{Total no of recovered cases of COVID-19}}{\text{Total no of cases of COVID-19}}$$

3. **Outcome ratio:** It is defined as the ratio of Total no of Deaths of COVID-19 to the total no of Recovered cases of COVID-19. The lower in number, the better in situation.

$$\text{Outcome ratio} = \frac{\text{Total no deaths of covid-19}}{\text{Total no of recovered cases of COVID-19}}$$

4. **Recovery ratio:** It is defined as the ratio of Total no of Recovered cases of COVID-19 to the total no of Active cases of COVID-19. The more in number, the better in situation.

$$\text{Recovery ratio} = \frac{\text{Total no Recovered cases of covid-19}}{\text{Total no of active cases of COVID-19}}$$

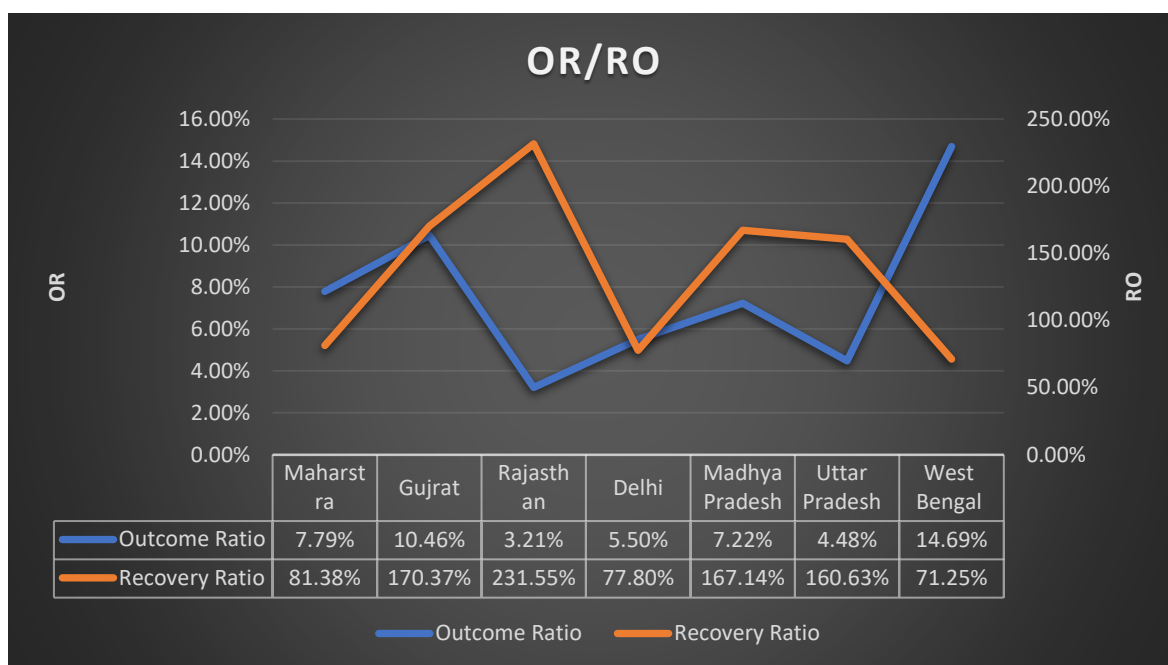
ANALYSIS/ INTERPRETATION

Table 1: Parameters of Seven States

Parameters	Maharashtra	Gujarat	Rajasthan	Delhi	Madhya Pradesh	Uttar Pradesh	West Bengal
Total Population	11.42 crore	6.27 crore	6.89 crore	1.9 crore	7.33 crore	20.42 crore	9.03 crore
Date of First case detected	2 nd March 2020	19 th March 2020	2 nd March 2020	2 nd March 2020	20 th March 2020	5 th March 2020	17 th March 2020
Total COVID-19 Cases Till 31 st May	67655	16779	8831	19844	8089	8075	5501
Total COVID-19 Active cases	36041	5822	2605	10893	2897	3015	3027

Till 31 st May							
Total COVID-19 Recovered cases Till 31 st May	29329	9919	6032	8478	4842	4843	2157
Total COVID-19 Deaths Till 31 st May	2285	1038	194	473	350	217	317
Recovery rate till 31 st May	43.35%	59.11%	68.30%	42.72%	59.86%	59.97%	39.21%
Fatality rate Till 31 st May	3.37%	6.18%	2.19%	2.38%	4.33%	2.68%	5.76%
Recovery ratio (recovered cases to active cases) in %	81.38%	170.37%	231.55%	77.8%	167.14%	160.63%	71.25%
Outcome ratio (deaths to recovered cases) in %	7.79%	10.46%	3.21%	5.5%	7.22%	4.48%	14.69%
Total Affected districts	35-40	33	33	11	41	75	20
Total Red zones	12	9	15	11	9	19	6
Total Orange zones	16	19	12	0	19	36	10
Total Green zones	5	5	4 +2 blue zn	0	24	20	7
Total testing labs (including RT-PCR, True Nat, CB NAAT)	72G 54P	33G 23P	25G 10P	22G 32P	73G 9P	118G 20P	38G 17P

Total test till 31 st May	4.58 Lakhs		2.38 Lakhs		4.96 Lakhs		2.62 Lakhs		1.95 Lakhs		3.71 Lakhs		2.59 Lakhs	
Test per million till 31 st May	4200		3700		8702		14523		2100		1826		3152	
Highly Affected city	Mumbai		Ahmedabad		Jaipur		All Districts		Indore		Agra		Kolkata	
Allocation of funds to this crisis	CM Relief Fund COVID-19		CM Relief Fund (CMRF) COVID-19		CM Relief Fund COVID-19 MITIGATION FUND		Lt. Governor/CM Relief Fund COVID-19		CM Relief Fund COVID-19		CM Distress Relief Fund- COVID CARE FUND		West Bengal State Emergency Relief Fund	
Lockdown 1.0 23 march to 14 April (OR, RO)	OR	RR	OR	R	OR	R	O	R	O	RR	OR	RR	OR	RR
	68.72 %	11.52 %	47.45 %	10.47 %	7.48 %	17.35 %	96.77 %	2.06 %	82.81 %	10.25 %	16 %	8.30 %	233.3 %	2.5 %
Lockdown 2.0 15 April to 3 May (OR, RO)	25.91 %	20.51 %	27.83 %	25.43 %	5.23 %	92.94 %	43.61 %	4.69 %	19.54 %	42.37 %	5.70 %	40.80 %	75.30 %	17.7 %
Lockdown 3.0 4 th May to 17 May (OR, RO)	15.58 %	31.81 %	14.64 %	72.31 %	4.28 %	15.1.53 %	3.5 %	77.74 %	10.32 %	103.33 %	4.24 %	153.61 %	24.81 %	64.79 %
Lockdown 4.0 18 th May to 31 st May (OR, RO)	7.79 %	81.37 %	10.46 %	17.0.37 %	3.21 %	23.1.5 %	5.5 %	77.82 %	7.22 %	167.13 %	4.48 %	160.63 %	14.69 %	71.25 %



Graph 15: Comparison of seven states in respect of Outcome ratio (OR) and Recovery ratio (RR)

Interpretation: In the comparison of the seven states with respect to outcome ratio and recovery ratio, West Bengal is the state which have highest outcome ratio, and Rajasthan is the state which have lowest outcome ratio, while Rajasthan is the state which have highest Recovery ratio and the West Bengal have lowest RR. By this Graph, Rajasthan is the state which combat the COVID-19 situation very excellently because they have less OR that means, the no of deaths in the state is low and high RR which means the recovery of the patients in the state is very high.

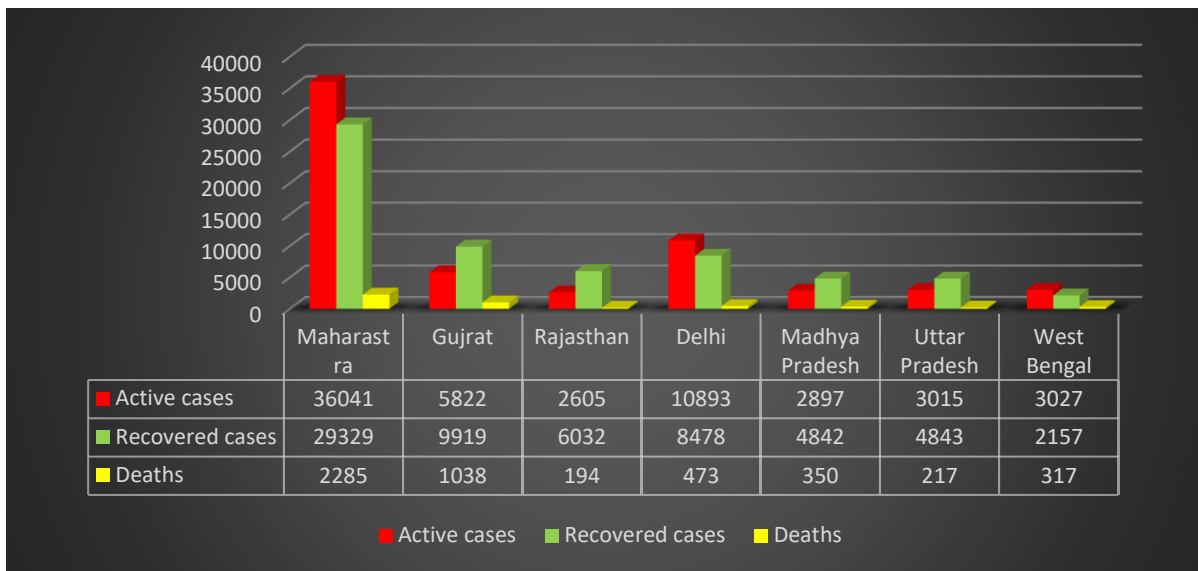
The order of states:

In terms of OR (in increasing order)

Rajasthan < Uttar Pradesh < Delhi < Madhya Pradesh < Maharashtra < Gujarat < West Bengal

In terms of RR (in decreasing order)

Rajasthan > Gujarat > Madhya Pradesh > Uttar Pradesh > Maharashtra > Delhi > West Bengal



Graph 16: Comparison of seven states in respect of Active cases, Recovered cases and Deaths. (till 31st May 2020)

Interpretation: Graph 16, shows the cases of COVID-19 in seven states in respect of Active cases, Recovered cases and Deaths. Maharashtra is highly affected state which have highest no of active cases and also highest no of deaths while Rajasthan is the state which have lowest no of active cases and lower deaths as well.

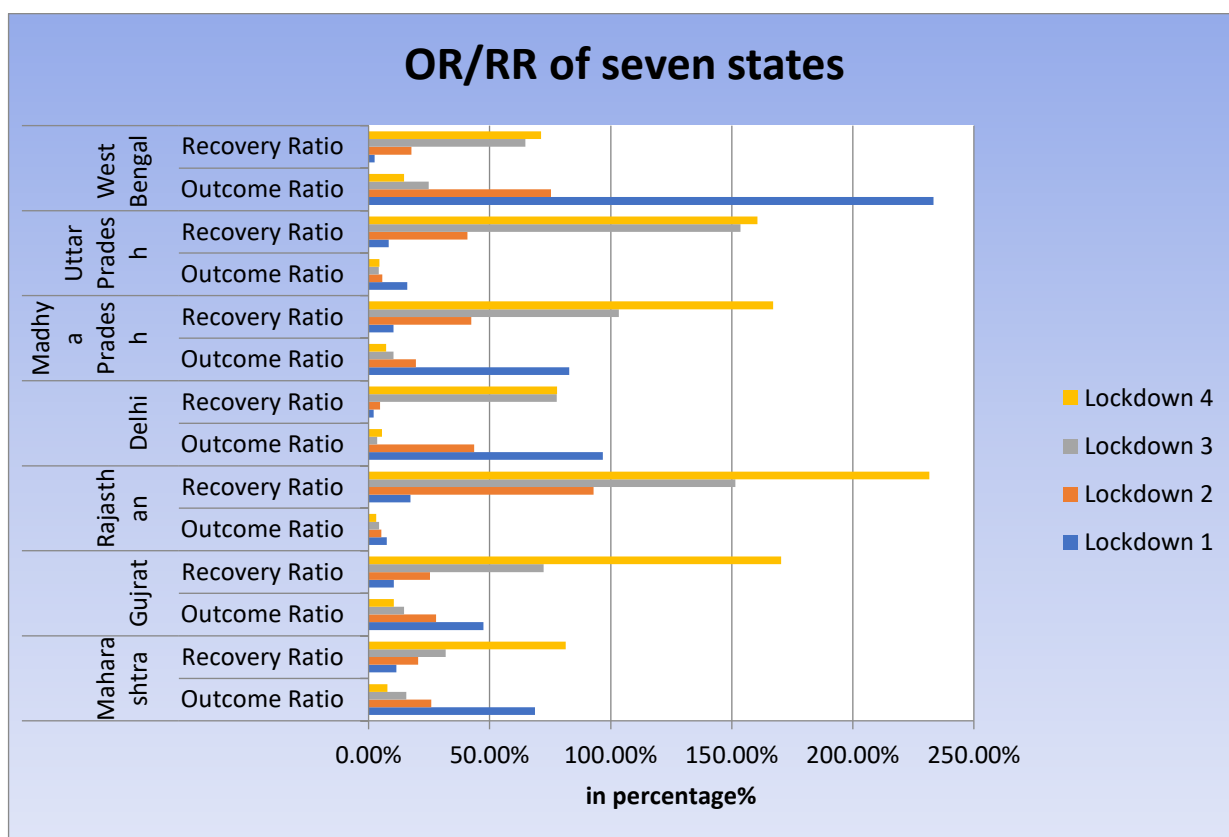
Order of Cases

In terms of Active cases:

Maharashtra > Delhi > Gujarat > West Bengal > Uttar Pradesh > Madhya Pradesh > Rajasthan

In terms of Deaths:

Maharashtra > Gujarat > Delhi > Madhya Pradesh > West Bengal > Uttar Pradesh > Rajasthan



Graph 17: Comparison of seven states with respect of OR and RR in four phases (lockdown 1.0, lockdown 2.0, lockdown3.0, lockdown 4.0).

Interpretation: Graph 17 depicts the outcome ratio and recovery ratio of seven states in four lockdowns, In first lockdown the outcome ratio of every state is high and the recovery ratio is low while in lockdown 4.0, it get reverse the recovery ratio is high and outcome ratio is high. In lockdown 1.0 West Bengal is the state which have highest Outcome ratio and lowest recovery ratio and Rajasthan is the state which have highest recovery ratio and lowest outcome ratio.

Lockdown 1.0

In terms of OR

Highest

Lowest

West Bengal > Delhi > Madhya Pradesh > Maharashtra > Gujrat > Uttar Pradesh > Rajasthan

In terms of RR

Highest

Lowest

Rajasthan > Maharashtra > Gujrat > Madhya Pradesh > Uttar Pradesh > West Bengal > Delhi

Lockdown 2.0

In terms of OR

West Bengal > Delhi > Gujrat > Maharashtra > Madhya Pradesh > Uttar Pradesh > Rajasthan

In terms of RR

Rajasthan > Madhya Pradesh > Uttar Pradesh > Gujrat > Maharashtra > West Bengal > Delhi

Lockdown 3.0

In terms of OR

West Bengal > Maharashtra > Gujrat > Madhya Pradesh > Rajasthan > Uttar Pradesh > Delhi

In terms of RR

Rajasthan > Uttar Pradesh > Madhya Pradesh > Delhi > Gujrat > West Bengal > Maharashtra

Lockdown 4.0

In terms of OR

West Bengal > Gujrat > Maharashtra > Madhya Pradesh > Delhi > Uttar Pradesh > Rajasthan

In terms of RR

Rajasthan > Gujrat > Madhya Pradesh > Uttar Pradesh > Maharashtra > Delhi > West Bengal

CONCLUSION:

Every state combats their COVID-19 fight with their own ways of precautionary measures and rules & regulations. In comparing of these seven states, the finding suggested that, Rajasthan was the pioneer state in recovery ratio and outcome ratio, while West Bengal was weakened in both the ratios. States took all the precautionary measures to be pioneer, but Rajasthan took in a best way like Bhilwara model and also testing rate was also high. As compared to the cases Maharashtra had highest no. of cases with highest mortality rate. In a period of lockdown1 and lockdown2, Delhi had lowest recovery rate and Rajasthan had highest in all the lockdown period. In end of lockdown 3, Maharashtra had lowest recovery rate because the rate of increasing the case in the state were fast and Mumbai was highly affected with Dharavi case. West Bengal was the consistent state in all the lockdown who have highest Outcome ratio i.e. highest death to recovered cases and in lockdown four, the recovery ratio was very low. The main reason of West Bengal poor results was of not following the guidelines of social distancing, lockdown, awareness among citizens and poor health sanitization.

RECOMMENDATION'S:

- All the States should strictly follow guidelines which were set by Ministry of Health and Family Welfare, India and World Health Organisation for precautionary measures and quality of care and implement the guidelines in the state.
- Implement Awareness program in the society by means of IEC and BCC for hand hygiene and precautionary measures for COVID-19.
- Maintain Social distancing in the banks, religious places, parks and crowded places for prevention of further spread.
- Follow the P- process. i.e. Analysis the situation, Design the program, Implement the program, Monitoring of the implemented program and Evaluation of the program.

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Annexure 1

List of Graphs and Table

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Graph - 15	Comparison of seven states in respect of Outcome ratio (OR) and Recovery ratio (RR)
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Table - 1	Parameters of Seven States

Summer Training Report

Part -2

(Online Course Report)

COURSE NAME: QUALITY IMPROVEMENT IN HEALTHCARE ORGANISATIONS

COURSE DESCRIPTION

This course is designed by **Rutgers the State University of New Jersey** with a duration of four weeks, and each week is divided into various segments.

The introductory first week of the course focuses upon the definitions of quality and quality improvement in healthcare organization. Various frameworks are described in the quality improvement programs which are based on six domains of healthcare organizations which can be used to improve the quality of the healthcare delivery system.

The 2nd week focuses on the medical quality measures in healthcare organization for improvement or reporting to external organizations. It also focuses on the quality measures likely for reimbursement or not. It also focuses on dental, pharmacy and health insurance and other healthcare sectors quality improvement categories and parameters.

The 3rd week of course focuses on the types of quality data in healthcare organization and its documentation so that it helps in better understanding of quality improvement programs.

Methodologies involved in the data collection and analysis can be decided on measures and data to be collected. There are seven quality tools which help to visually represent the positive causes for a quality problem situation which helps to focus on improvement. This course also details on the different tools to help visualize the distribution of data set.

The final week of the course provide a real-world simulation on creating a spreadsheet as a healthcare provider and provide information on ways to generate an effective spreadsheet as well as judge the quality of it.

COURSE OBJECTIVES:

- To know more about the Quality improvement in health care organizations.
- To know about the various frameworks of quality improvement in the healthcare organizations.
- To help contribute better to the efficient and effective processes of quality improvement within a healthcare organization.
- To undertake administration and management responsibilities related to quality and quality improvement processes within the organization.

COURSE CONTENTS

- Lesson One: Definition of Quality and Quality Improvement in Healthcare Organizations
- Lesson Two: Quality and Quality Improvement Measures in Healthcare Organizations
- Lesson Three: Data Collection and Analysis Methodologies for Quality and Quality Improvement Measures in Healthcare Organizations
- Lesson Four: Design a Healthcare Organization Quality Improvement Program

LEARNING METHODOLOGY:

Reading Material, Videos and Assignments

COURSE PLATFORM: COURSERA

KEY LEARNINGS OF COURSE:

WEEK 1

TOPIC 1: - DEFINITIONS OF QUALITY IN HEALTHCARE ORGANISATIONS

Health care quality is defined as the degree of health services which enhances the likelihood of desired outcomes and provide the quality of life to the people with consistent accuracy

Healthcare organization quality is the degree to which the health care delivered by the healthcare organization consistently reflects current professional knowledge/standards while meeting the patient/customer personal health outcome expectations/requirements.

Medical error is defined as "an unintended act (either of omission or commission) or one that does not achieve its intended outcome, the failure of a planned action to be completed as intended (an error of execution), the use of a wrong plan to achieve an aim (an error of planning), or a deviation from the process of care that may or may not cause harm to the patient".

Defensive medicine is the medicine which is used by the practioner not for the cure of the disease but to prevent from the legal action.

DEFINITION OF QUALITY IMPROVEMENT IN HEALTHCARE ORGANISATIONS

Quality Improvement in healthcare organizations is the systematic and continuous actions that lead to measurable improvement healthcare organization quality; that is, the degree to which the health care delivered by the healthcare organization consistently reflects current professional knowledge/standards while meeting the patient/customer personal health outcome expectations/requirements.

QI is a slightly different concept than **Quality Assurance (QA)**. QA is the process of ensuring that each and every organizational product and service meets the quality standard set for it; that is, a product/service of consistent quality is delivered each and every time.

TOPIC: - 2 HEALTHCARE ORGANISATION QUALITY IMPROVEMENT FRAMEWORKS / MODELS

Every Quality Improvement (QI) program includes a focus on:

- The operation of the healthcare organization as a system.
- Patient/customer expectations/requirements.
- The need for everyone in the healthcare organization to work as a team.
- Collecting and analysing both qualitative and quantitative data to track quality.

This section discusses some of the quality improvement frameworks/models used in healthcare organizations.

CHRONIC CARE MODEL (CCM): - The Chronic Care Model (CCM) is a QI framework/model to improve the quality of health care delivered to people with chronic illnesses/conditions. This identifies



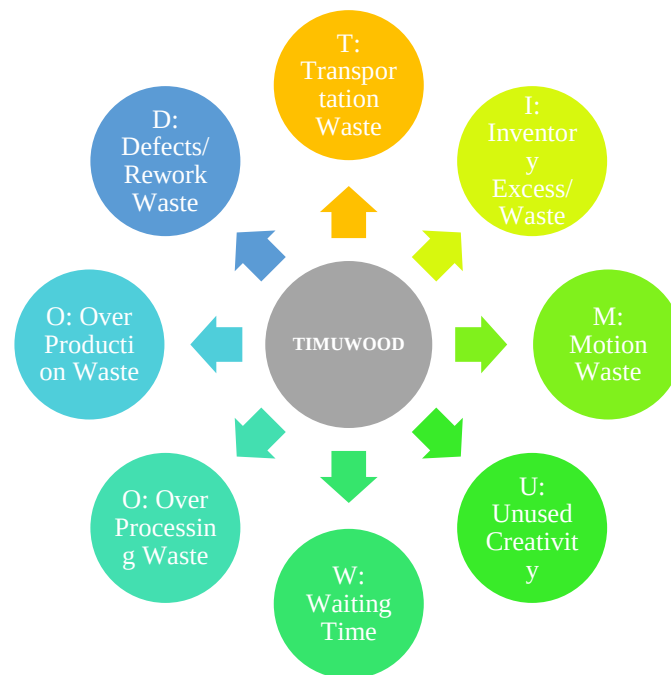
LEAN: - The Lean framework/model is directed toward maximizing what the patient/customer expects/requires in the most cost- effective manner (e.g., eliminating waste).

The key aspects of Lean Health Care are:

- A healthcare organization-wide culture of continuous patient-centred quality improvement
- All healthcare organization processes are patient-centred; add value from the patient's perspective

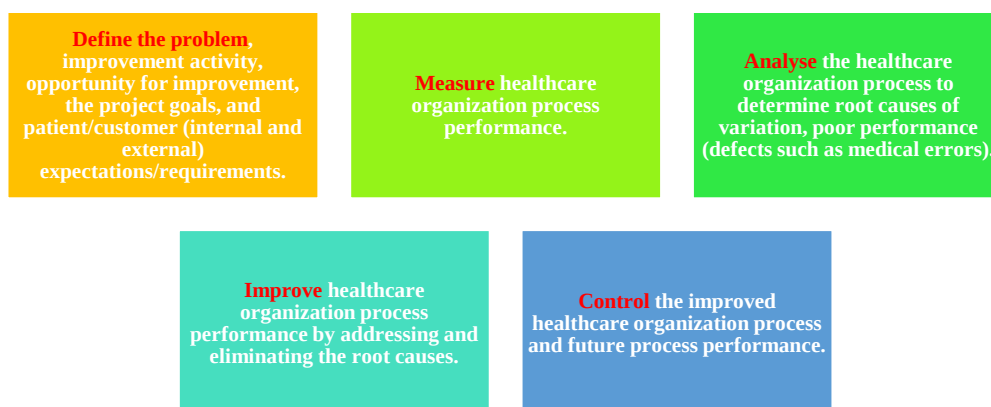
- All healthcare organization personnel have a shared vision of quality improvement
- All healthcare organization personnel are given permission and the ability to initiate quality improvement actions
- The healthcare organization makes any and all indicated changes to improve quality

In the Lean framework/model, cost-effectiveness focus is generally on eliminating waste in eight categories which is denoted by an acronym “**TIMUWOOD**”



SIX SIGMA: - The Six Sigma framework/model is directed toward reducing errors/defects within an organization. An acceptable Six Sigma error rate is no greater than 0.000001, but the error rate in healthcare organizations is estimated to be, overall, the much higher 0.01 (unacceptable error rate).

DMAIC is a strategy which totally based on data and are used to reduce errors/defects by improving existing healthcare organization processes. This is defined in five parts:



DMADV is a data-driven strategy used to reduce errors/defects by developing new healthcare organization processes. In DMADV first three are same as DMAIC and two are different.

- Design alternatives to the current healthcare organization process which addresses and eliminates the root causes.
- Verify that the new alternative meets all healthcare organization expectations/requirements

LEAN SIX SIGMA: - Many quality improvement professionals have merged the Lean and Six Sigma frameworks/models into one unified approach called Lean Six Sigma which is a framework/model which simultaneously focuses on both maximizing what the patient/customer expects/requires in the most cost-effective manner (e.g., eliminating waste) and reducing errors/defects within an organization.

The basic strategy of Lean Six Sigma is to first use the Lean strategy to eliminate waste and make the processes cost effective. Once that is accomplished, the Six Sigma DMAIC or DMADV strategy is used to reduce errors/defects in the Lean streamlined processes by either improving them or replacing them.

IMPROVEMENT MODEL (PLAN – DO –STUDY-ACT): - The Improvement Model is governed by the Institute for Healthcare Improvement (IHI) to guide its quality improvement work. The Model was developed by the Associates in Process Improvement (API) and is "a simple, yet powerful tool for accelerating improvement. This model is not meant to replace change models that organizations may already be using, but rather to accelerate improvement. The changes are tested in real-time in the real work setting concurrent with existing work practices, but in such a way so as not to interfere with existing workflow. In short, changes are tested on a small scale and not implemented on a wide scale until the healthcare organization is sure that the changes are better than the existing situation. It is divided into four stages i.e. Plan, Do, Study and Act. It is also called as PDSA cycle.

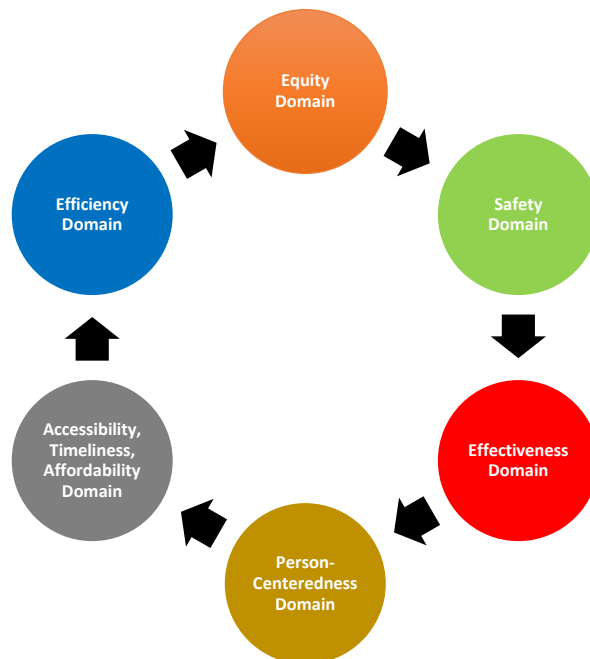
- Plan: Plan the test or observation, including a plan for collecting data
- Do: Try out the test on a small scale
- Study: Set aside time to analyse the data and study the results
- Act: Refine the change, based on what was learned from the test

TOPIC 3: - HEALTHCARE ORGANISATION QUALITY DOMAINS

Quality Improvement frameworks/models in Healthcare organization from which you choose to implement a Quality Improvement (QI) program (e.g., Lean, Six Sigma. Lean Six Sigma). Each framework/model incorporates the four focus areas needed for a successful QI program in a healthcare organization:

- The healthcare organisations operations as a system.
- Patient/customer exceptions/requirements.
- The need for everyone in the healthcare organization to work as a team.
- Collecting and analysing both qualitative and quantitative data to track quality.

Six content area (domains) of healthcare organisation functioning should focus on in order to improve the quality:



SAFETY DOMAIN: - The first step in Safety Domain QI is choosing the framework/model to use (e.g., Lean, Six Sigma). In Six Sigma language, improving patient/customer safety is similar to reducing organizational product defects/errors.

EFFECTIVE DOMAIN: - The domain of effectiveness quality involves ensuring that healthcare organization patients/customers are provided with the optimal care for their situation; that is, they are provided with evidence-based health care which does not underuse appropriate, effective care and does not overuse ineffective, inappropriate care.

PERSON-CENTEREDNESS DOMAIN: - The domain of person-centeredness quality involves ensuring that delivered health care in the healthcare organization is person/patient-centred; that is, each person is treated as an individual and that individual's wishes, preferences, needs, and values are respected and incorporated into health care delivery.

ACCESSIBILITY, TIMELINESS, AFFORDABILITY DOMAIN: -The domain of accessibility, timeliness, affordability quality involves ensuring that: 1) there are no unnecessary barriers to health care access at the healthcare organization; 2) healthcare organization wait times are optimized for both patients/customers and healthcare personnel (e.g., no unnecessary

waiting); and 3) health care at the healthcare organization is as affordable as is possible.

Accessibility (access to care) quality and affordability quality are concerns not only for each individual healthcare organization, but also for the healthcare industry as a whole.

An individual healthcare organization has more control over timeliness quality than either accessibility quality or affordability quality in that healthcare organization. Timeliness references wait times, and the longer the wait time the lower the quality. There are many different types of timeliness (wait times) of concern to a healthcare organization. Some of them are: **Appointment Timeliness, Schedules Appointment Waiting Room Timeliness, Test Result Timeliness, Diagnosis Timeliness, Visit Timeliness, and Unscheduled Appointment Waiting Room Timeliness**

EFFICIENCY DOMAIN

The first step in Efficiency Domain QI is choosing the framework/model to use (e.g., Lean, Six Sigma). The Lean framework/model has as its primary focus the elimination of waste in organizational processes. Regardless of the framework/model chosen, the QI process involves:

- Viewing the healthcare organization as a system within which is a system of processes related to ensuring efficiency quality.
- Understanding and respecting the patient/customer expectations/requirements of efficiency quality when interacting with the healthcare organization.
- Ensuring that all personnel in the healthcare organization work as a team to improve efficiency quality.
- Collecting and analysing both qualitative and quantitative data to track efficiency quality across the entire healthcare organization.

EQUITY DOMAIN: - The domain of equity quality involves ensuring that none of the other quality domains (e.g., safety, person-centeredness, and timeliness) vary in quality because of a patient's/customer's own characteristics (e.g., gender, ethnicity, race, age, disability status, and socioeconomic status). Although individual healthcare organizations can address this issue fully within the organization's functioning, it is a concern of the healthcare industry as a whole.

TOPIC 4: - ORGANISATIONS WHICH ENCOURAGE QUALITY IN HEALTHCARE ORGANISATION

Some focus on Organizational quality and quality improvement in many industries (including healthcare). Some focus on only on the healthcare industry, on healthcare organizations. This section discusses some of these organizations.

- ✓ Organizations which encourage and support quality efforts with a multi-industry focus:

- **NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY**
- **THE AMERICAN SOCIETY OF QUALITY**

- ✓ Organizations which Encourage and Support Quality Efforts with a Healthcare Organization Focus

- **Agency for Healthcare Research and Quality**

This agency works on improving safety and quality of Americans healthcare system. They developed various tools, knowledge and data which are needed to improve the health care system and help American professionals, policy makers and subsequent staffs to make right decision on their own and diminishes the chances of error.

- **Institute for Healthcare Improvement (IHI)**

IHI objective is to “improve health and healthcare worldwide”, It provide resources for the improvement in quality which is as simple and also powerful tool for enhancing the improvement, this model is used with existing model to accelerate the quality improvement of the organisation

- **National association for healthcare organisations (NCQA)**

NCQA "Exists to improve the quality of health care ... better health care, better choices and better health". They provide a number of resources to healthcare organizations interested in quality improvement. These include the Physician and Hospital Quality Certification for hospitals as well as the Quality Talks annual conference.

- **Public health Foundation**

Public Health Foundation (PHF) has as one of its focus area which is Quality Improvement in Public Health which is "the use of a deliberate and defined improvement process, such as Plan-Do-Check-Act, which is focused on activities that are responsive to community needs and improving population health. It refers to a continuous and ongoing effort to achieve measureable improvements in the efficiency, effectiveness, performance, accountability, outcomes, and other indicators of quality in services or processes which achieve equity and improve the health of the community”.

- **Pharmacy Quality Alliance**

(PQA) which aims to advance the "Quality of Medication Use". PQA has developed performance measures and encourages quality improvement in healthcare organizations through its Quality Forum Series and Quality Awards which recognize "prescription drug plans that have high achievement or significant improvement in PQA measures of medication safety and appropriate use".

➤ **The centres for Medicare and Medicaid services**

TOPIC 5: - QUALITY MEASURES TYPES IN HEALTHCARE ORGANISATIONS

This topic involves discussion on general types of quality measures which produce data of quality improvement in health care organisation

OVERVIEW OF QUALITY MEASURES

The Centres for Medicare and Medicaid Services (CMS) defines Quality Measures as “A measurement tool which measures healthcare inputs, process, outcomes, perception of patients and organizational structure which are associated with the ability to provide best and high quality healthcare and one or more quality goals for healthcare.

When speaking of measures of quality in the healthcare industry, most people organize the measures into three categories:

STRUCTURAL QUALITY MEASURES: - Structural Quality Measures are those related to the healthcare organization's structure. They describe the capacity of the healthcare organization's infrastructure. This infrastructure is comprised of physical facilities, personnel, and equipment.

PROCESS QUALITY MEASURES: - These are related to the healthcare organization's processes. They describe what a patient can expect to encounter in the healthcare organization.

OUTCOME QUALITY MEASURES: - Outcome Quality Measures are those related to the outcome (effect) of the healthcare organization's structure and process. The outcome quality is affected by both quality measures either structure or process.

CHARACTERISTICS OF A GOOD QUALITY MEASURES

Regardless of whether a quality measure is structural, process, or outcome, a good healthcare quality measure meets certain criteria (has specific characteristics). The NQF Measure Evaluation Criteria include:



WEEK 2

TOPIC 1: - MEDICAL QUALITY MEASURES IN HEALTHCARE ORGANISATION

Some of the specific measures used in medical healthcare organizations which were mentioned as:

- ✓ National quality forum
- ✓ The Centers for Medicare and Medicaid services
- ✓ CMS and the Office of the National Coordinator for Health IT

Although each of these measures and any other can be used by any medical healthcare organization for internal purposes and improvement, some measures are required or strongly encouraged for use and reporting to external organizations (e.g., reimbursement organizations, ranking organizations).

Medicaid payments (reimbursement) to states requires the reporting of quality measures. In order for a state to receive Medicaid funds the state “must meet numerous requirements regarding the proper and efficient administration of their Medicaid programs ... a managed care quality assessment and improvement strategy (i.e., a state quality strategy) ... an annual external independent review of the quality”.

Most healthcare organizations receive reimbursement (payment) from private (commercial) and public (government) third-party payers. These payers generally require healthcare organizations to demonstrate that the quality of the health care is worth the reimbursement and, thus, tie reimbursement to quality either directly or in general.

Healthcare Effectiveness Data and Information Set (HEDIS). The data of HEDIS is collected by NCQA (National Committee for Quality Assurance) from various platforms like health insurance

plans of agencies, the healthcare organisations and government agencies. HEDIS contains more than 90 measures organized into six health care domains. The domains are:

- ✚ Effectiveness of Care
- ✚ Access/Availability of Care
- ✚ Experience of Care
- ✚ Utilization and Risk Adjusted Utilization
- ✚ Health Plan Descriptive Information
- ✚ Measures Collected Using Electronic Clinical Data Systems

TOPIC 2 DENTAL QUALITY MEASURES IN HEALTHCARE ORGANISATIONS

In order for a state to receive Medicaid funds (to receive Medicaid payments/reimbursement) states must report quality measures.

Some of the quality measures address dental care and oral health. Specifically, they are two measures in the Child Core Set related to the Oral Health Quality Improvement Initiative:

- Dental and Oral Health Services: Dental Sealants for 6–9-Year-Old Children at Elevated Caries Risk (SEAL-CH)
- Dental and Oral Health Services: Percentage of Eligible Who Received Preventive Dental Services (PDENT-CH)

Some dental healthcare organizations receive reimbursement (payment) from private (commercial) and government (public) third-party payers. These payers generally require healthcare organizations to demonstrate that the quality of the health care is worth the reimbursement and, thus, tie reimbursement to quality either directly or in general.

TOPIC 3: - QUALITY MEASURES OF PHARMACY IN HEALTHCARE ORGANISATION

Under this topic we will discuss about the: -

- Pharmacy Quality Measures
- Pharmaceutical Quality Measures

Pharmacy Quality measures

Reimbursement/payment for a pharmacy is usually directly linked to the pharmaceuticals dispensed. Each pharmaceutical (medication) has a price and the pricing of that pharmaceutical

is usually established elsewhere. As such, no specific pharmacy quality measures affect that drug product price and how much the pharmacy is reimbursed/paid for that medication product.

Pharmaceutical Quality Measures

Pharmacy quality and quality improvement are essentially meaningless if the quality of the pharmaceuticals dispensed is not good. And the quality of the pharmaceuticals (medications) is largely out of the control of the individual pharmacy (except for compounding pharmaceuticals). The mass-produced pharmaceuticals/medications dispensed by pharmacies have quality controlled external to the pharmacy.

Many of the "quality measures" associated with pharmacies are, in fact, local, state, and federal laws/regulations regarding the operation of a pharmacy. However, there are some quality measures developed specifically for pharmacies such as those developed by pharmacy accreditation associations.

TOPIC 4: - HEALTH INSURANCE PLAN QUALITY MEASURES

Quality measures are defined for those healthcare organizations which provide health insurance plans (medical, dental, prescription drug). This section addresses:

- Medical/Health Insurance Plan Quality Measures One of the best- known quality ratings of medical/health plans is the National Committee for Quality Assurance (NCQA) Health Insurance Plan Ratings for commercial (private, Medicaid, and Medicare) insurance plans. Each rated plan is assigned an overall quality rating from 0 to 5 (five is highest) as well as a 0 to 5 quality rating in each of three categories: Consumer Satisfaction, Prevention, and Treatment.
- Dental Insurance Plan Quality Measures: The American Dental Association (ADA) Dental Quality Alliance (DQA) has developed a set of quality measures for Medicaid and Dental Plan Assessments. The measures are divided into three categories:
 - ✓ EVALUATING UTILIZATION
 - ✓ EVALUATING QUALITY OF CARE
 - ✓ EVALUATING COST

WEEK 3

TOPIC 1: - TYPES QUALITY DATA IN HEALTHCARE ORGANISATION

Once a healthcare organization chooses the specific quality measures to be used, that organization has to determine, collect, and analyse the data associated with that measure.

- Type of quality data
- Quality data Documentations

TYPE OF QUALITY DATA

The data for healthcare organization quality measures are of two general types: qualitative and quantitative. Qualitative data include descriptions, stories, images, and opinions in their entirety - exactly as they were created (e.g., exactly as written, exactly as spoken). Quantitative data are numerical data. Such data are able to be modelled and analysed statistically. Quality and quality improvement are measured are mostly by Quantitative methods which are as follows:

- NOMINAL
- ORDINAL
- INTERVAL
- RATIO

Quality Data documentations

It is important for any healthcare organization to document in detail the quality measures and data used for quality improvement.

Details for a dataset of measures (variables) and data are usually contained in a document called data documentation, such document "describes the contents, structure, and layout of a data collection ... information intended to be complete and self-explanatory for each variable in a data file". Specifically, such data documentation often contains (at a minimum):

- ❖ Measure/Variable Name
- ❖ Data Type/Level (e.g., quantitative, ratio)
- ❖ Valid Data for the Measure (e.g., range of 0 to 100; 1, 2, 3)
- ❖ Any Value Associated with the Valid Data (e.g., 1= Fair, 2=Good, 3=Excellent)

TOPIC 2 QUALITY DATA METHODOLOGY IN HEALTHCARE ORGANISATION

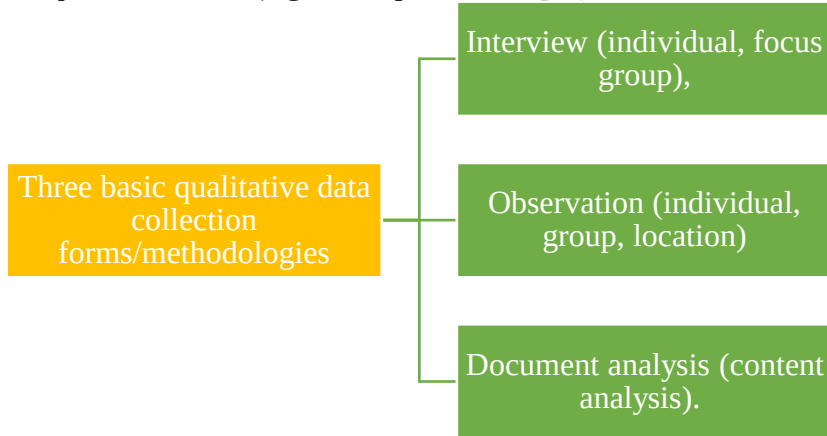
Once a healthcare organization has decided which measures and data to include in the quality improvement (QI) program, the healthcare organization must decide on the methodologies to be used collecting that data and analysing the data.

- Quality Data Collection Methodologies
- Quality Data Analysis Methodologies

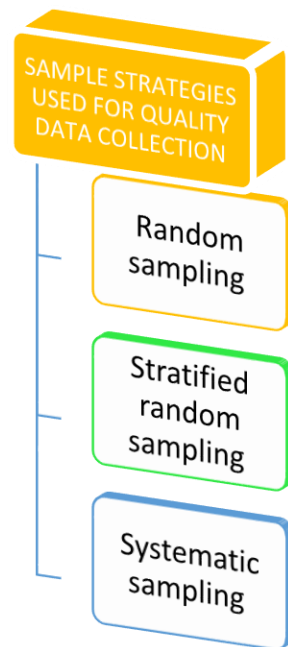
QUALITY DATA COLLECTION METHODOLOGIES

Healthcare organizations usually collect data for quality improvement (QI) programs using three basic methodologies: surveys (e.g., survey of patients/customers), internal healthcare organization records (e.g., Electronic Medical Records), and external relevant databases

For qualitative data (e.g. descriptions, images), there are:



Quantitative data, the usual data collection forms/methodologies are surveys/questionnaires, direct observations/measurements, and use of existing records/data.

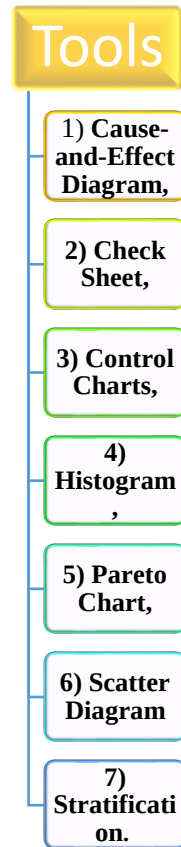


A data collection strategy called **Design of Experiments (DOE)** is often used. The basic strategy of DOE is to:

- ✓ Identify the factors to be examined
- ✓ Determine the reasonable high and reasonable low value for each factor
- ✓ Run an experiment/test which examines the effect of each factor at its low and at its high value
- ✓ Analyse the results of all of the experiments/tests to determine the effect of each factor and their interaction.

TOPIC 3: - QUALITY TOOLS IN HEALTHCARE ORGANISATIONS

There are certain tools and methods commonly found in quality improvement (QI) work with which any QI professional should be familiar. Some of these are referred to as Basic Seven or The First Seven. Kaoru Ishikawa is credited with development of this list **basic seven analytical quality tool**.



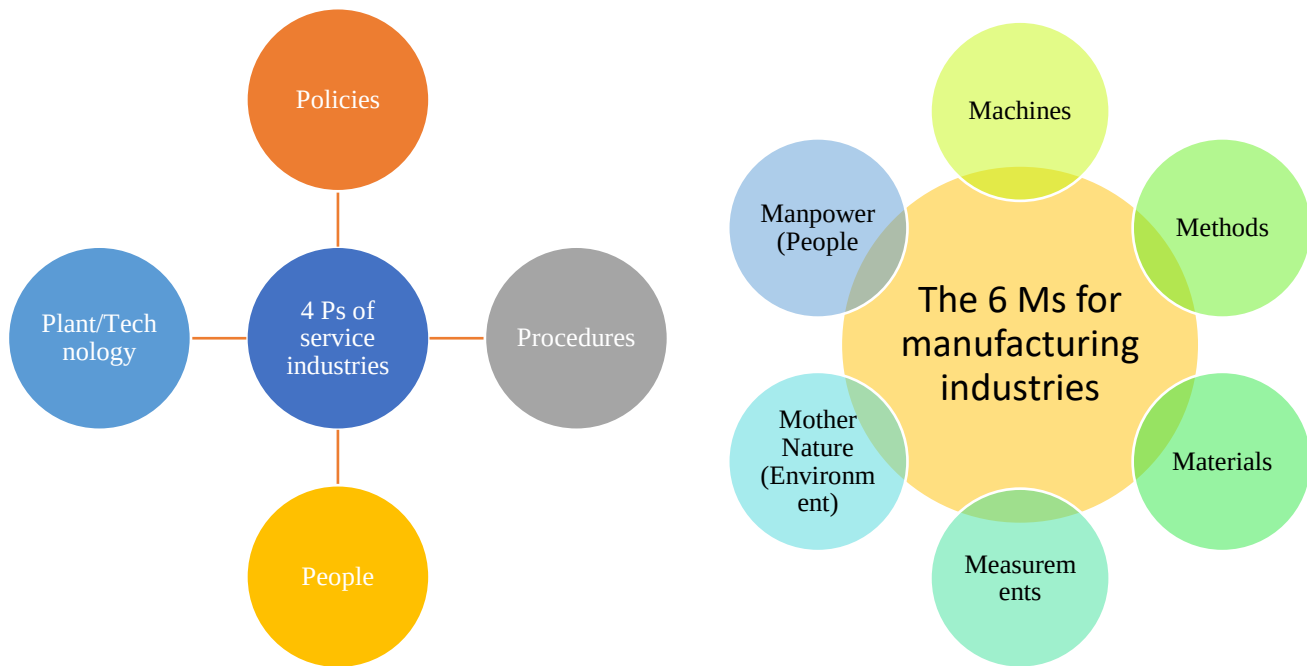
CAUSE- AND- EFFECT DIAGRAM

The development of Cause-and-Effect Diagram is **credited to Kaoru Ishikawa**. The diagram is also known as the Ishikawa chart or fishbone chart. The purpose of the diagram is to visually represent the possible causes for a quality problem situation (effect) which is the focus of quality improvement (QI). The process of developing the diagram helps those involved in the QI program organize their thinking and understand the processes affecting the quality problem situation of focus. The diagram itself adds visual clarity to the discussion and QI efforts. The diagram visualizes a quality problem situation (the effect) and the factors which impact it (the causes of the effect).

To build this cause and effect diagram

Step 1. Briefly define the effect (quality problem situation) which is the focus of the QI effort (e.g., low level of patient/customer satisfaction); this definition takes the form of a brief quality problem statement.

Step 2. Briefly define the major causes/factors affecting the quality problem situation (effect). It is suggested, although not required, that as an initial step the causes be organized into four categories for service industries (The 4 Ps) and six categories for manufacturing industries (The 6 Ms).



Step 3. Briefly define each major cause in more detail in order to find root causes of the effect. This process is sometimes accomplished through use of a process called the Five Whys Analysis. The process asks "Why" repeatedly to get to the root cause of the major cause, and thus, the root cause of the problem. Usually identifying the root cause takes five or fewer "whys".

CHECK SHEET

The check sheet is a data collection tool to track "effects" - to track when, where, etc a specific quality problem occurs. The check sheet is a spreadsheet with the effects to be tracked listed vertically in the first column. The when, where, etc. of interest are listed horizontally in the first row. A check mark is placed in the intersection of the effect and the relevant when, where, etc. at the time the effect occurs.

An effective check sheet requires that the QI team generate a complete list of all of the effects of interest as well as a complete list of all of the conditions under which that effect occurs. One or more individuals then observes (watches for) the occurrence of the listed effects and the conditions under which they occur and marks the check sheet accordingly.

Effect	Morning	Afternoon	Total
EMR Too Slow	= 8	= 3	11

TOPIC 4 QUALITY TOOLS IN HEALTHCARE ORGANISATION: -

CONTROL CHARTS

A control chart can be considered a monitoring system which indicates when action needs to be taken. As long as no action needs to be taken the situation is considered under control. The basic purpose of the control chart is to determine when events are under control and when they are not; when organizational processes can continue as is and when changes (interventions) need to be made.

"Statistical quality control (SQC) is the application of ... statistical and analytical tools ... to monitor process outputs (dependent variables). Statistical process control (SPC) is the application of the same ... tools to control process inputs (independent variables)". ISIXSIGMA states that *Few people prefer statistical quality Control (SQC) because its emphases more on quality rather than process, so other counters their view by saying that process is problem than quality is also a symptoms of that problem.*

Common types of Control Charts are:

- Individuals and Moving Range Chart (I-MR Chart or X-MR Chart): continuous data, one data point collected at each point in time
- Xbar and Range Chart (Xbar-R Chart): continuous data, data collected in groups of between two and 10 (at least 2, but less than 10) observations
- Xbar and Standard Deviation Chart (Xbar-S Chart): continuous data, data collected in groups of at least 10 observations
- c-Chart: discrete data, number of defects per unit, number of samples of each sampling period is essentially the same

- *u*-Chart: discrete data, number of defects per unit, number of samples of each sampling period may vary significantly
- *np*-Chart: discrete data, whether the unit has at least one defect (whether unit is defective or not, unit is pass/fail), constant sampling size.
- *p*-Chart: discrete data, whether the unit has at least one defect, sampling size is not constant

HISTOGRAM

The histogram is a common tool to display frequency (counts) in different categories both within and outside of QI programs. The histogram shows the distribution of data; for example, the distribution (frequency, count) of patients/customers arriving at an Emergency Room by day of the week. Most spreadsheet software such as Excel includes the histogram as a chart option. ASQ provides a quality-related histogram Excel template.

TOPIC: - 5 QUALITY TOOLS IN HEALTHCARE ORGANISATION

PARETO CHART

A pareto chart can be considered a histogram (bar chart) to display counts (frequencies) arranged in descending order combined with a line graph to represent percentages. The category with the largest count is the first bar. The categories/bars are then placed next to each other in descending order in terms of count (frequency). The line graph placed above each bar represents the percentage each category (each bar) adds to the total percentage. The American Society for Quality (ASQ) states that a "Pareto chart is a bar graph. The lengths of the bars represent frequency or cost (time or money) and are arranged with longest bars on the left and the shortest to the right. In this way the chart visually depicts which situations are more **significant**". The utility a pareto chart works on Pareto Principle which is: 80 percent of a situation/problem is the result of 20 percent of the causes.

SCATTER DIAGRAM

A scatter chart (otherwise called a scatter plot) is a typical device to show the connection between two factors on one diagram both inside and outside of QI programs. For instance, the scatter diagram can show the connection somewhere in the range of tallness and weight. An individual's stature and weight are recorded and plotted: the x-pivot can be tallness and the y-hub can be weight. An individual whose tallness is 5' 0" and weight is 100 pounds would be spoken to by a with the worth (5,100); that is, $x=5$ and $y=100$.

ASQ states that the scatter diagram "graphs sets of numerical information, with one variable on every axis, to search for a connection between them. On the off chance that the factors are connected, the focuses will fall along a line or bend. The better the correlation, the tighter the points will hug the line"

STRATIFICATION

Stratification is a strategy of process which helps to isolate the information from the messy data which is collected from an unknown sources and classes. It helps in analysing of broad and big data of the organisation and after stratification, the decision will be taken accordingly

WEEK 4

DESIGN A HEALTHCARE ORGANIZATION QUALITY IMPROVEMENT PROGRAM

TOPIC 1: - CREATE A QUALITY IMPROVEMENT PROGRAM

In constructing the spreadsheet, it is to be done from the perspective of the chief healthcare administrator of an organization. It describes the organization's quality improvement program to an audience.

Healthcare administration encompasses responsibility for all aspects of a healthcare organization. The focus is both internal to the organization and external to the organization to maximize the efficient and effective operation of the organization as a whole and its survival both short-term and long term. Healthcare administrators make decisions about the direction and operation of the healthcare organization. The role of the healthcare administrator is more strategic than tactical.

TOPIC 2. TO GENERATE AN EFFECTIVE ELECTRONIC SPREADSHEET

The basic process for generating an effective electronic spreadsheet file is:

1. Choose the spreadsheet software to use
2. Add the content
3. Iterate to improve

TOPIC 3. TO JUDGE THE QUALITY OF A SPREADSHEET

The quality of the spreadsheet will be judged on two major factors:

- 1) whether the spreadsheet content is sufficient for its intended purpose, and
 - 2) whether the spreadsheet appearance is such that the content can be grasped relatively easily.
- Most spreadsheets are produced for a specific purpose (e.g., a meeting, for consideration and feedback) and the sufficiency of the content is related to its purpose.