Recommendation's
Conclusion
Analysis
Methodology
Research objective
Introduction

Part -1 (Research Project)

"Comparative Study of the COVID-19 Precautionary Measures and Responses of Seven States (Maharashtra, Gujrat , Rajasthan, Delhi, MP, UP, and West Bengal) of India in Lockdown Period"

Presented By: Yash Jain
Roll no: 1041
Guide: Dr. Dhirendra Kumar

IIHMR UNIVERSITY

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. 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 of active cases. Maharashtra is the state which have highest no of COVID-19 cases and very much affected by this pandemic. This study shows the COVID-19 situation in seven states (Maharashtra, Gujrat, Rajasthan, Delhi, Madhya Pradesh, Uttar Pradesh and West Bengal) in lockdown period.

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

Mode of Data Collection: Secondary Sources

Data Source: Websites, Articles and MOHFW website

Study Period: 2 Months

Type of Research: Secondary Research

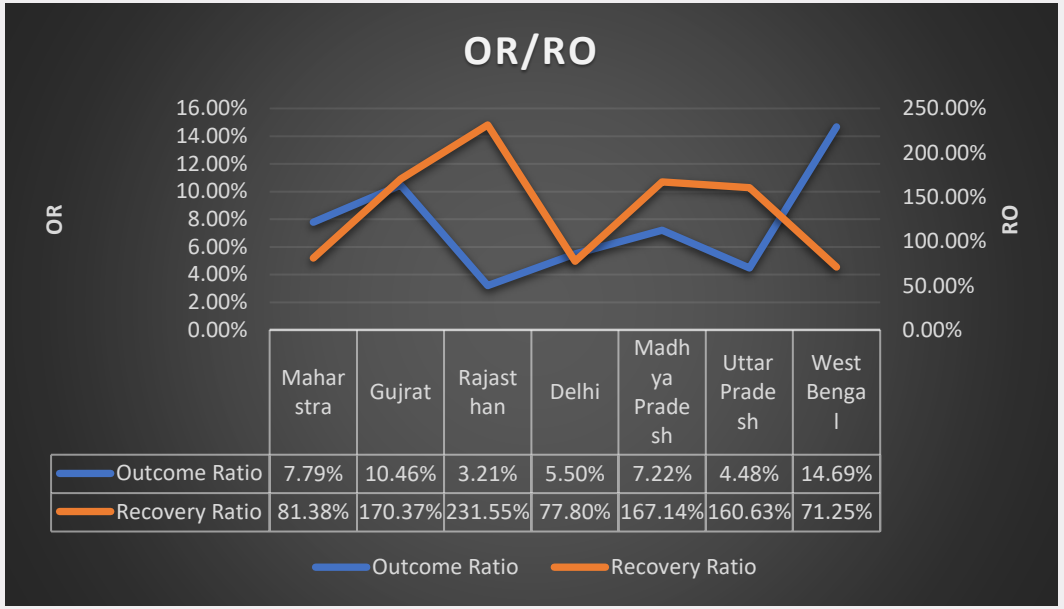
Parameters :

Recovery Rate,
Case fatality Rate,
Outcome Ratio,
Recovery Ratio

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	2nd March 2020	19th March 2020	2nd March 2020	2nd March 2020	20th March 2020	5th March 2020	17th March 2020
Total COVID-19 Cases Till 31st may	67655	16779	8831	19844	8089	8075	5501
Total COVID-19 Active cases Till 31st may	36041	5822	2605	10893	2897	3015	3027
Total COVID-19 Recovered cases Till 31st may	29329	9919	6032	8478	4842	4843	2157
Total COVID-19 Deaths Till 31st may	2285	1038	194	473	350	217	317
Recovery rate till 31st may	43.35%	59.11%	68.30%	42.72%	59.86%	59.97%	39.21%
Fatality rate Till 31st 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

Parameters	Maharashtra		Gujarat		Rajasthan		Delhi		Madhya Pradesh		Uttar Pradesh		West Bengal	
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 31st 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 31st 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	RR	OR	RR	OR	RR	OR	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 15april 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 4th May to 17 May (OR, RO)	**15.58 %**	**31.81%**	**14.64%**	**72.31%**	**4.28%**	**151.53 %**	**3.5%**	**77.74%**	**10.32 %**	**103.33%**	**4.24 %**	**153.61%**	**24.81 %**	**64.79 %**
Lockdown 4.0 18th May to 31st May (OR, RO)	**7.79%**	**81.37%**	**10.46%**	**170.37 %**	**3.21%**	**231.5 %**	**5.5%**	**77.82%**	**7.22%**	**167.13%**	**4.48 %**	**160.63%**	**14.69 %**	**71.25 %**

Analysis

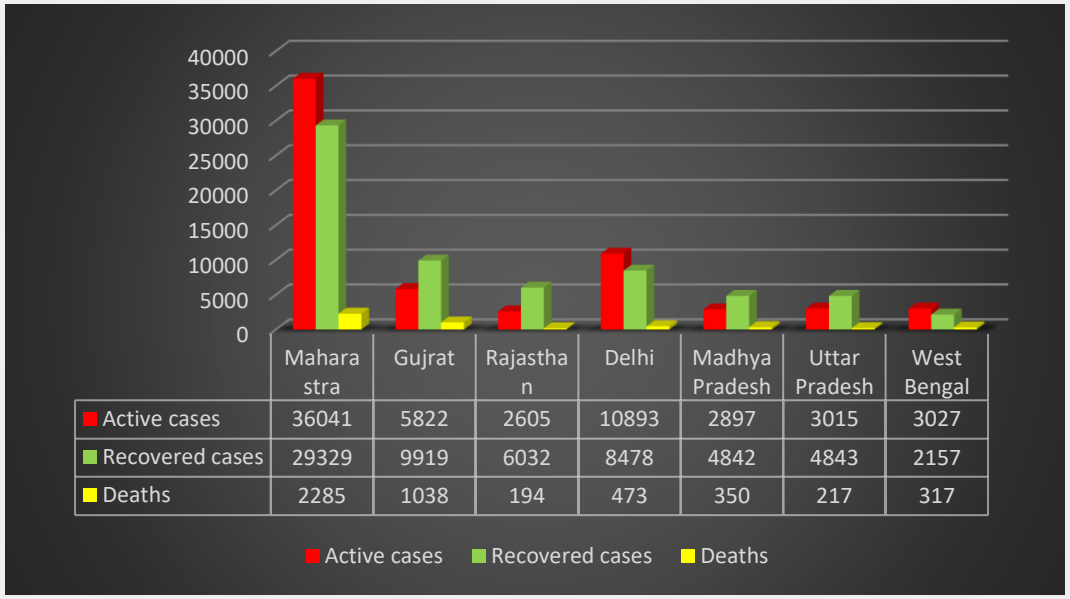


	Maharastra	Gujrat	Rajasthan	Delhi	Madhya Pradesh	Uttar Pradesh	West Bengal
Outcome Ratio	7.79%	10.46%	3.21%	5.50%	7.22%	4.48%	14.69%
Recovery Ratio	81.38%	170.37%	231.55%	77.80%	167.14%	160.63%	71.25%

Graph 1: 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.

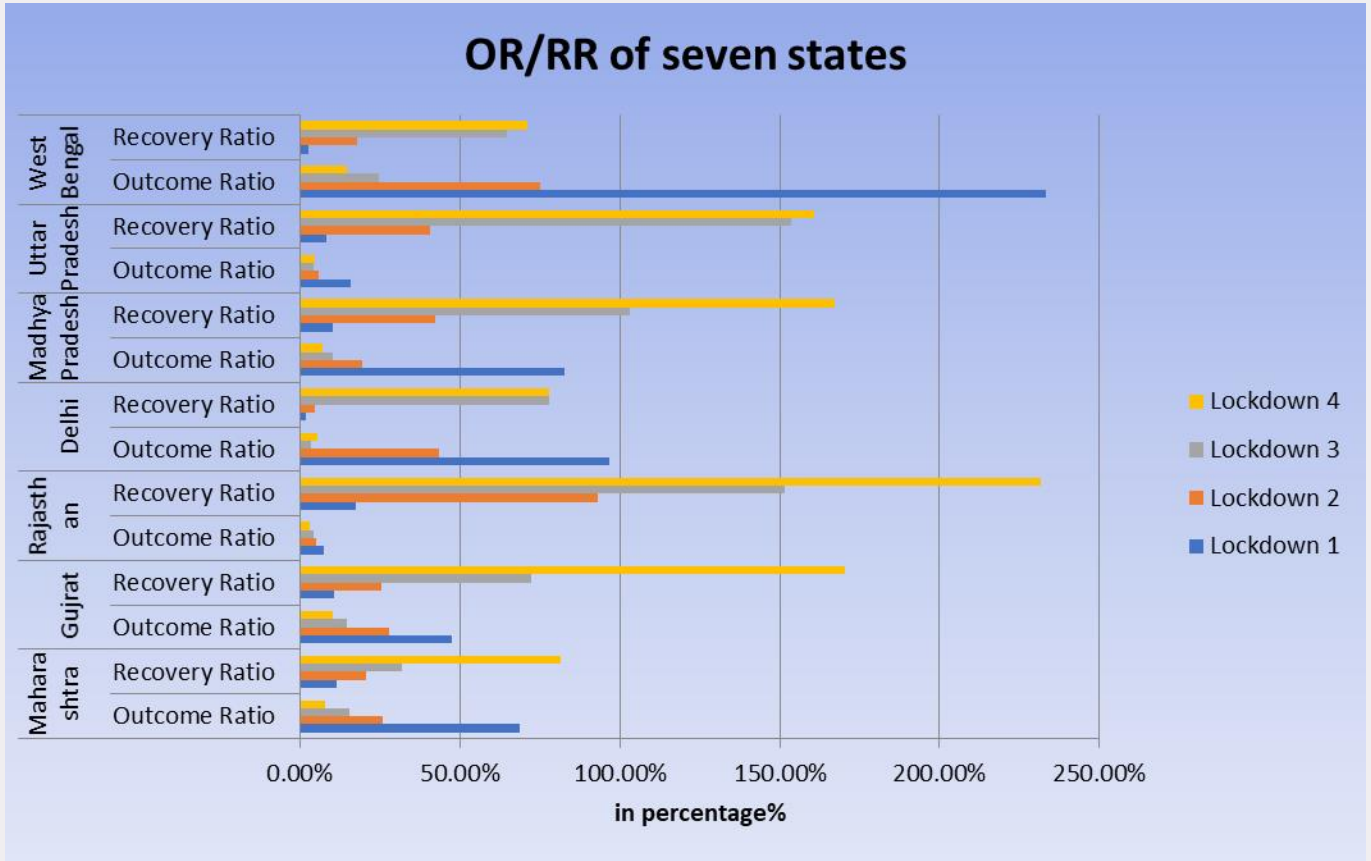
Analysis



	Maharastra	Gujrat	Rajasthan	Delhi	Madhya Pradesh	Uttar Pradesh	West Bengal
Active cases	36041	5822	2605	10893	2897	3015	3027
Recovered cases	29329	9919	6032	8478	4842	4843	2157
Deaths	2285	1038	194	473	350	217	317

Graph 2: Comparison of seven states in respect of Active cases, Recovered cases and Deaths. (till 31st May 2020)

Interpretation: Graph 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)



Graph 3: Comparison of seven states with respect of OR and RR in four phases (lockdown 1.0, lockdown 2.0, lockdown3.0, lockdown 4.0).

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

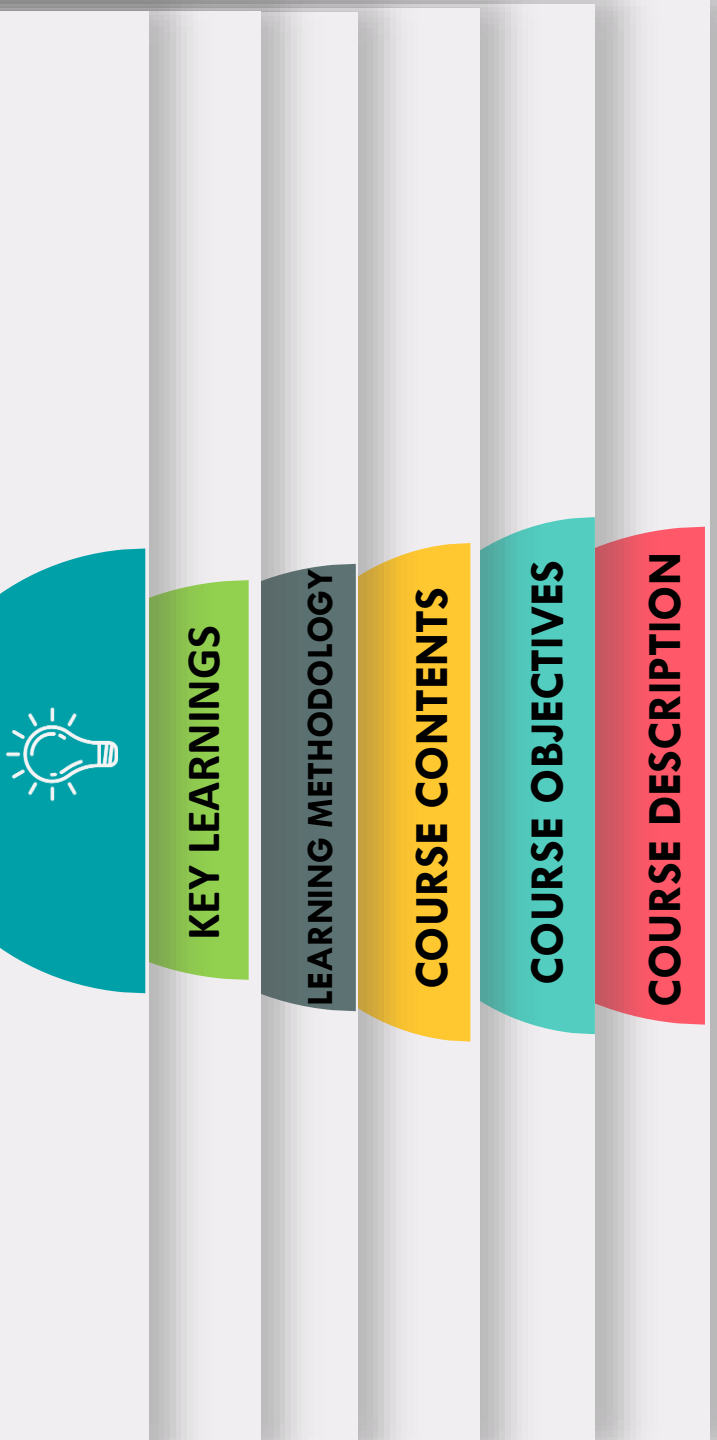
Analysis

Interpretation: Graph 3 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.

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.

- 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.



Part -2 (Online Course)

QUALITY IMPROVEMENT IN HEALTHCARE ORGANISATIONS

Presented By: Yash Jain
Roll no: 1041

Guide: Dr. Dhirendra Kumar

KEY LEARNINGS

LEARNING METHODOLOGY

COURSE CONTENTS

COURSE OBJECTIVES

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

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".

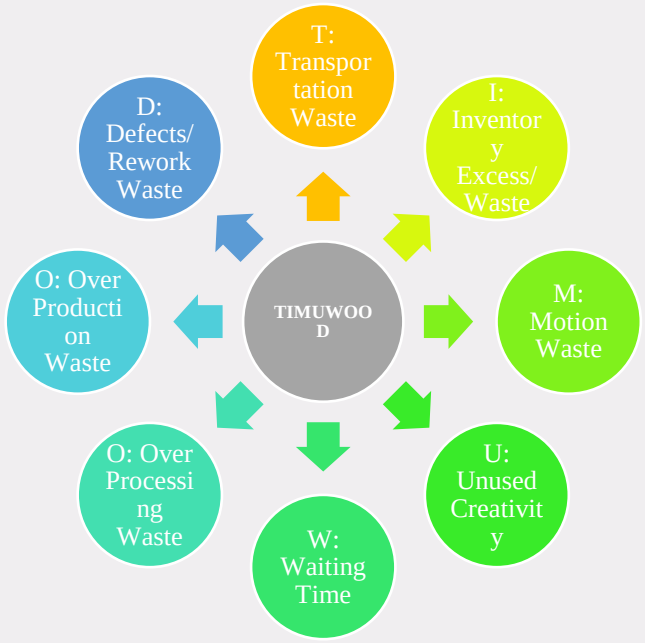
Defensive medicine is the medicine which is used by the practioner not for the cure of the disease but to prevent from the legal action.

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.

QUALITY IMPROVEMENT FRAMEWORKS / MODELS

Chronic Care Model

LEAN:



LEAN SIX SIGMA

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.

KEY LEARNINGS

SIX SIGMA: -

DMAIC and DMADV

Define the problem, improvement activity, opportunity for improvement, the project goals, and patient/customer (internal and external) expectations/requirements.

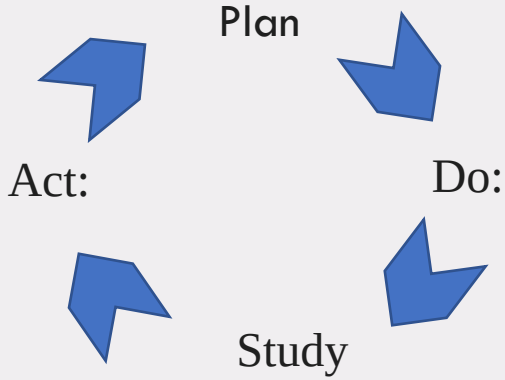
Measure healthcare organization process performance.

Analyse the healthcare organization process to determine root causes of variation, poor performance (defects such as medical errors).

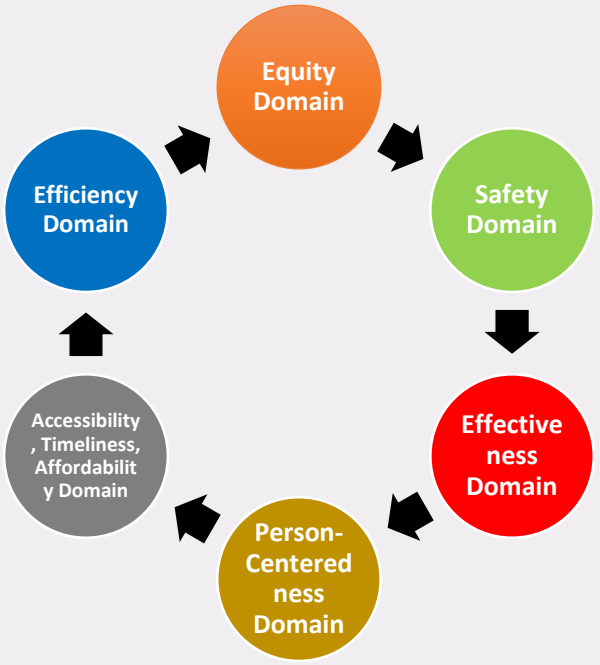
Improve healthcare organization process performance by addressing and eliminating the root causes.

Control the improved healthcare organization process and future process performance.

PLAN – DO – STUDY – ACT

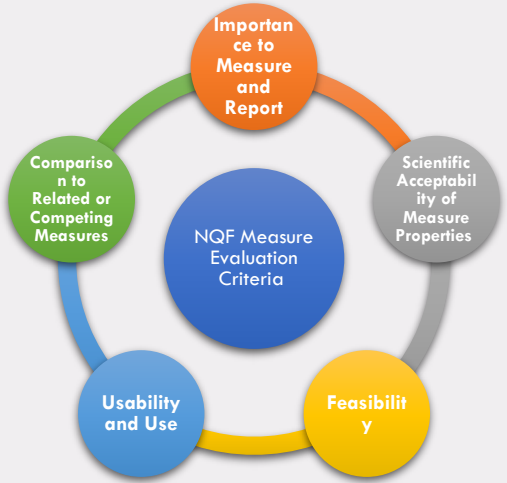


HEALTHCARE ORGANISATION QUALITY DOMAINS



QUALITY MEASURES TYPES IN HEALTHCARE ORGANISATIONS

STRUCTURAL QUALITY MEASURES
PROCESS QUALITY MEASURES
OUTCOME QUALITY MEASURES



ORGANISATIONS WHICH ENCOURAGE QUALITY IN HEALTHCARE ORGANISATION

✓ 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**
- **Institute for Healthcare Improvement (IHI)**
- **National association for healthcare organisations (NCQA)**
- **Public health Foundation**
- **Pharmacy Quality Alliance**
- **The centres for Medicare and Medicaid services**

KEY LEARNINGS

MEDICAL QUALITY MEASURES IN HEALTHCARE ORGANISATION

- 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

QUALITY MEASURES OF PHARMACY IN HEALTHCARE ORGANISATION

- Pharmacy Quality Measures
- Pharmaceutical Quality Measures

TYPES QUALITY DATA IN HEALTHCARE ORGANISATION

- Type of quality data

Two general types of data - 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

DENTAL QUALITY MEASURES IN HEALTHCARE ORGANISATIONS

- 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)

HEALTH INSURANCE PLAN QUALITY MEASURES

- Medical/Health Insurance Plan Quality Measures
- Dental Insurance Plan Quality Measures

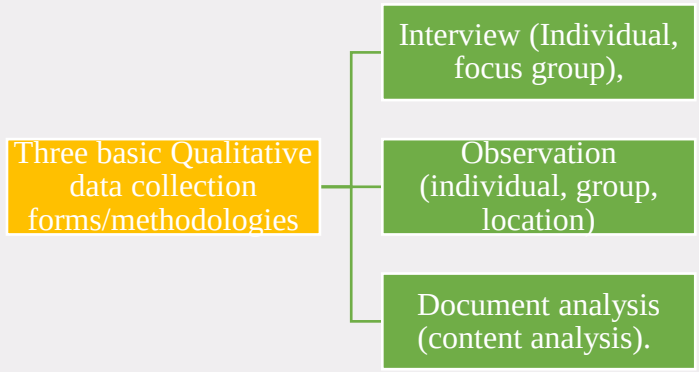
- ✓ EVALUATING UTILIZATION
- ✓ EVALUATING QUALITY OF CARE
- ✓ EVALUATING COST

- Quality data Documentations

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

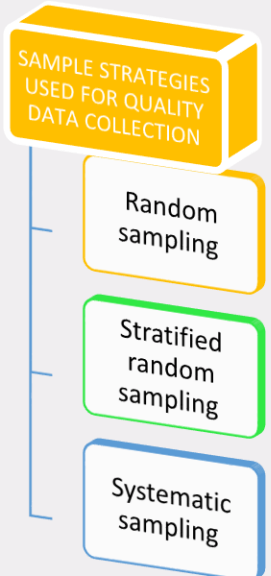
QUALITY DATA METHODOLOGY IN HEALTHCARE ORGANISATION

- QUALITATIVE DATA COLLECTION METHODOLOGIES



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

- SAMPLING FOR DATA COLLECTION



QUALITY TOOLS IN HEALTHCARE ORGANISATIONS

Tools

- **Cause-and-Effect Diagram,**
- **Check Sheet,**
- **Control Charts,**
- **Histogram,**
- **Pareto Chart,**
- **Scatter Diagram**
- **Stratif5ication**

KEY LEARNINGS

❑ 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).

❑ CHECK SHEET

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. 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.

❑ 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.

❑ 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.

❑ STRATIFICATION

KEY LEARNINGS

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

❑ PARETO CHART

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.

KEY LEARNINGS

LEARNING METHODOLOGY

COURSE CONTENTS

COURSE OBJECTIVES

COURSE DESCRIPTION