

Part – 1

Summer Training Report

COVID-19 Management Strategies- A Study

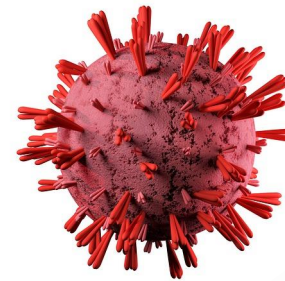
**Summer Training
April to June, 2020**

A Report by

Komal Kaur

MBA Hospital and Health Management

2019-21



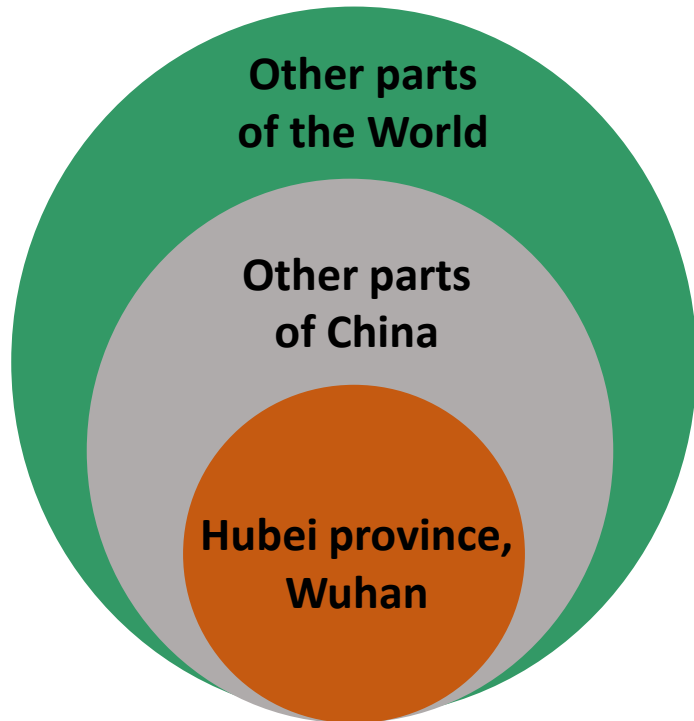
Background

Coronaviruses (CoV) - large family of viruses which cause upper respiratory tract illness.

Mostly limited to animals; May sometimes '**Spillover**' to humans (as in SARS, MERS)

Late **December 2019** - in one such spillover event, an outbreak of a **SARS-like bat CoV** began.

NOMENCLATURE
Disease: **COVID-19**
Virus: **SARS-CoV-2**



Objectives

This study aims:

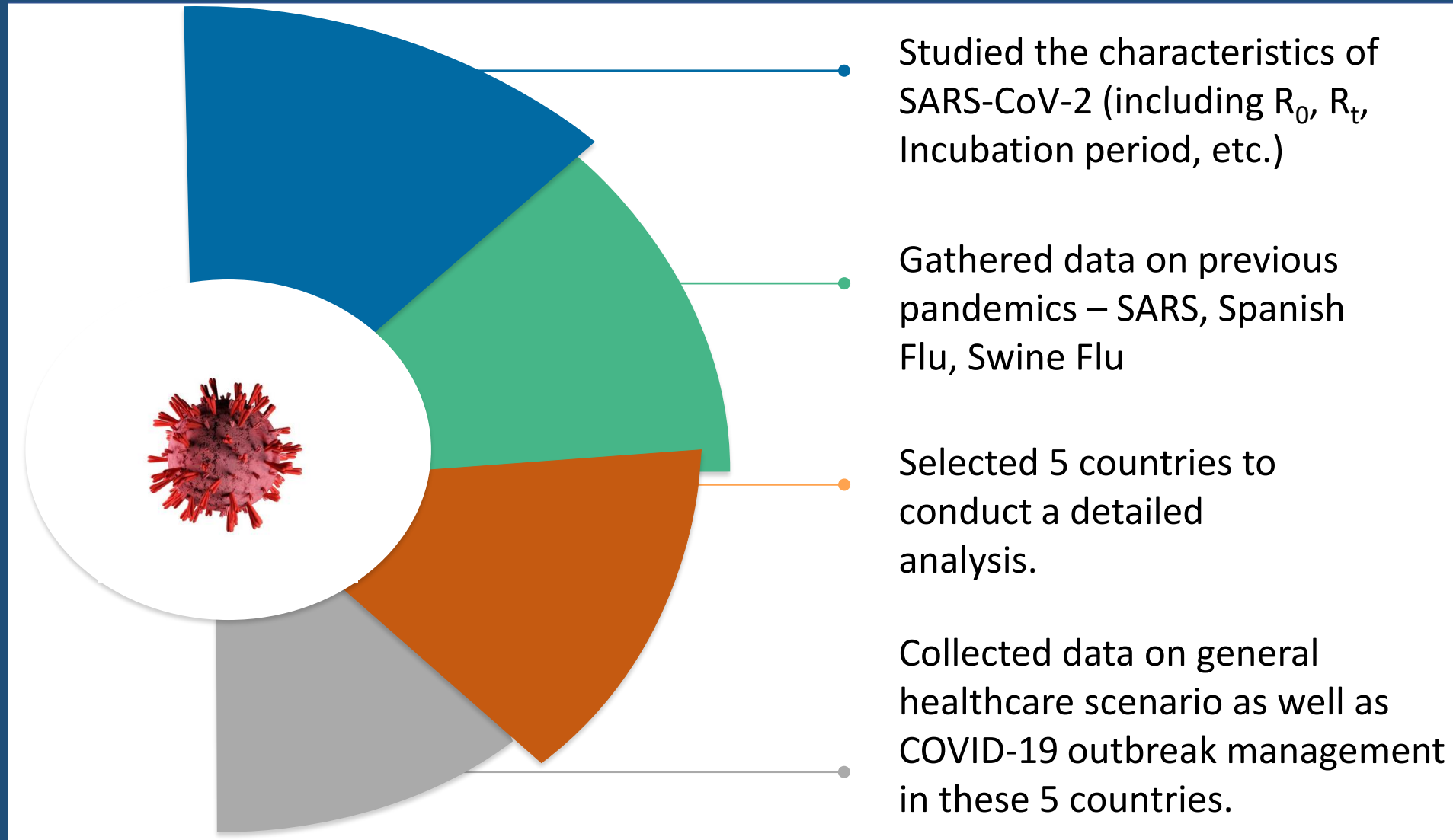
- To study the health systems of various countries across the world
- To study epidemiological aspects of the COVID-19 pandemic
- To study management strategies adopted by various countries to combat the COVID-19 pandemic



Methodology

Sources

- Newspaper articles (digital)
- Journal Articles
- Research Studies
- Modules from IIHMR University (MBA HM first year)



Results

FRAMEWORK

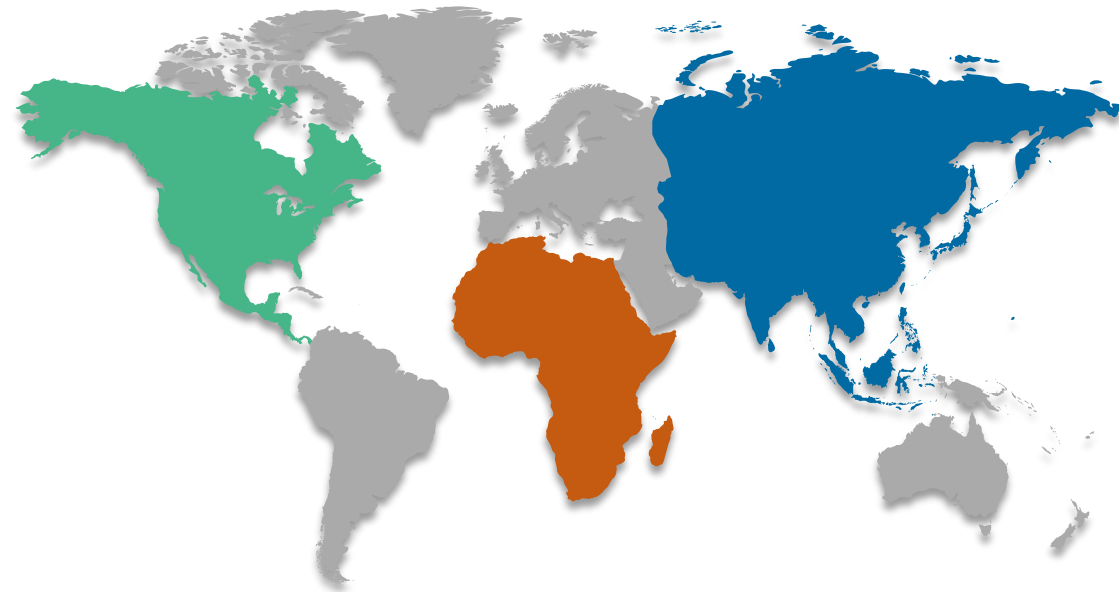
Demography

Health Status of the Population

Structure of the Health Care System

COVID-19 Timeline

Management Strategies



CHINA

Population:
140 crore

>65 years old population:
11.9%

CD to NCD

Schools shut down, online classes started

Travel ban

Partial Lockdown

Quarantine Stations

Construction of COVID hospitals

Contact Tracing

Suspension of Public Transport

Health Code System

December 31, 2019
China alerted the WHO about a pneumonia-like illness in the Hubei province, Wuhan

January 11, 2020
First COVID-19 death reported in China

January 23, 2020
Strict traffic restrictions in Wuhan

January 29, 2020
All regions had launched varied strategies depending on number of cases.

March 18, 2020
No new domestic COVID-19 cases reported

3-Tier Healthcare system

Rural	Urban
■ County	■ Municipality
■ Township	■ District
■ Village	■ Community

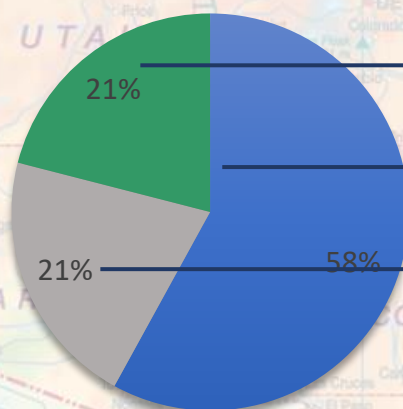
U.S.A.

>65 years old
population: 15%

NCDs cause 89%
of all deaths

28 million people
uninsured

COMMUNITY HOSPITALS



**Government
owned**

Non-profit

For-profit

MANAGEMENT

No national
lockdown
policy

Passenger
screening at
major airports

14 days Self-
quarantine after
foreign travel

Paid sick leave
for COVID-19
patients

'Stay at home'
orders issued
by some states

National
Guard and
Navy Ships
deployed in
some states



SOUTH KOREA

>65 years old
population:
14.42%

Economic
disease burden:
69.1% - NCDs
15% - Cancer
61% - Men
39% - Women

NHIS covers 97%
of the population
as a single insurer

January 20, 2020
1st case of COVID-19
reported



January 30, 2020
1st case without any
travel history



February 16, 2020
Patient 31 reported
Later turned out to be
the 'Super-Spreader'



February 20, 2020
1st COVID death

May 1, 2020
Fear of 2nd wave after
COVID +ve patient
visits 5 nightclubs in
Itaewon



April 18, 2020
New cases per day
reach single digit mark



Schools
shut
down

Drive
through
testing
sites

Paid leave
to all
Infected
persons

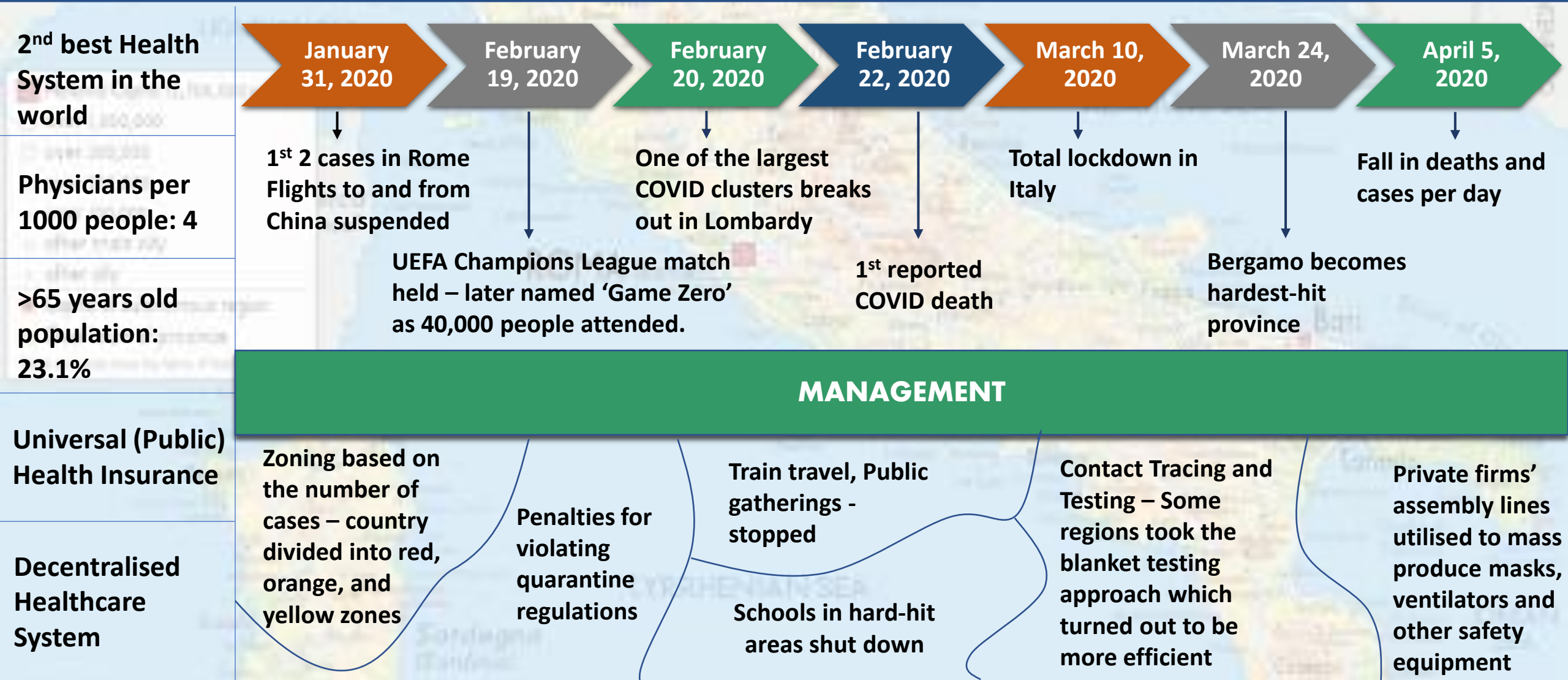
All COVID
treatment
expenses to be
borne by the
government

Sale of masks
tracked through
the NHIS database
to prevent
hoarding

Smartphones,
Credit cards and
other technology
used for contact
tracing and
surveillance

MANAGEMENT

ITALY



INDIA

Second largest population in the world: 139 crore

Double burden of disease – CDs and NCDs

70% of the world's malaria cases come from India

68.86% population lives in rural areas

Population percentage:
>65 years: 6.2%
15-24 years: 19.1%

Out of Pocket Health Expenditure: 70% of the total

34% population covered under Health Insurance, out of which 79%

METHODOLOGY

January 30, 2020

1st reported case of COVID-19 in Kerala

March 6, 2020

Passenger screening at all International Airports

March 9, 2020

1st 2 cases in Maharashtra

March 12, 2020

1st COVID death reported
Entry of foreigners banned till April 14, 2020

March 22, 2020

14-hr long 'Janata Curfew' observed

March 25, 2020

LOCKDOWN 1: Nizamuddin area emerges as a hotspot after a religious congregation

April 14, 2020

LOCKDOWN 2 and 3: Zoning of the country according to number of cases

May 17, 2020

LOCKDOWN 4: Partial re-opening of Orange and Green Zones



Screening of passengers at airports

Observed the world's largest (139 crore people) country-wide lockdown

'Aarogya Setu' App – used for contact tracing

Visas of foreigners cancelled indefinitely

Production of safety equipment ramped up

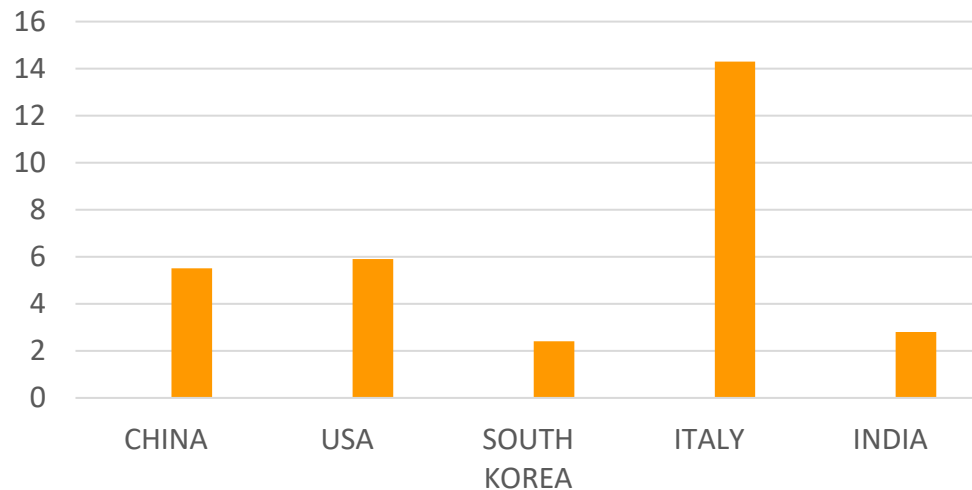
Discussion

COUNTRY	STRENGTH	WEAKNESS
CHINA	Proactive response	Origin, never been managed before
USA	- Ventilator surplus - Resources for vaccine development	- Lack of testing - Lack of a single national policy
SOUTH KOREA	- Use of Technology - Pre-made outbreaks and learnings from the previous MERS outbreak	Open border with China, even during the outbreak
ITALY	- Robust healthcare system - High doctor to patient ratio	- Sluggish response - High proportion of older adults in the population
INDIA	Low percentage of older adults	- Large population - Lack of resources

- China, even though it was the origin country, managed to flatten the curve and get out of danger by strictly implementing control measures.
- USA's high healthcare expenditure did not prove to be a strength.
- Past experience, proactive testing, and efficient use of technology pulled South Korea out of a crisis.
- Despite having the best Health System, Italy performed poorly due to administrative failures, which led to a delayed response.
- India has the advantage of having a youthful population, which might be the saving grace in spite of lack of resources and testing.

Discussion

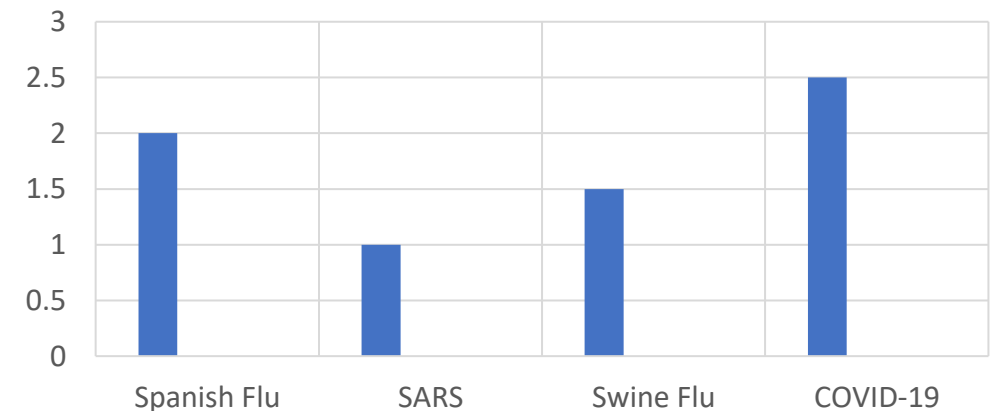
Comparing the CFR of COVID-19 in various countries



This further tells us that Fatality Rate can vary hugely depending on a variety of factors related to the demography, healthcare systems, and administration.

Although a CFR is only accurate in retrospect, we can compare the R_0 of COVID-19 with past pandemics.

Comparing the R_0 of past pandemics with COVID-19

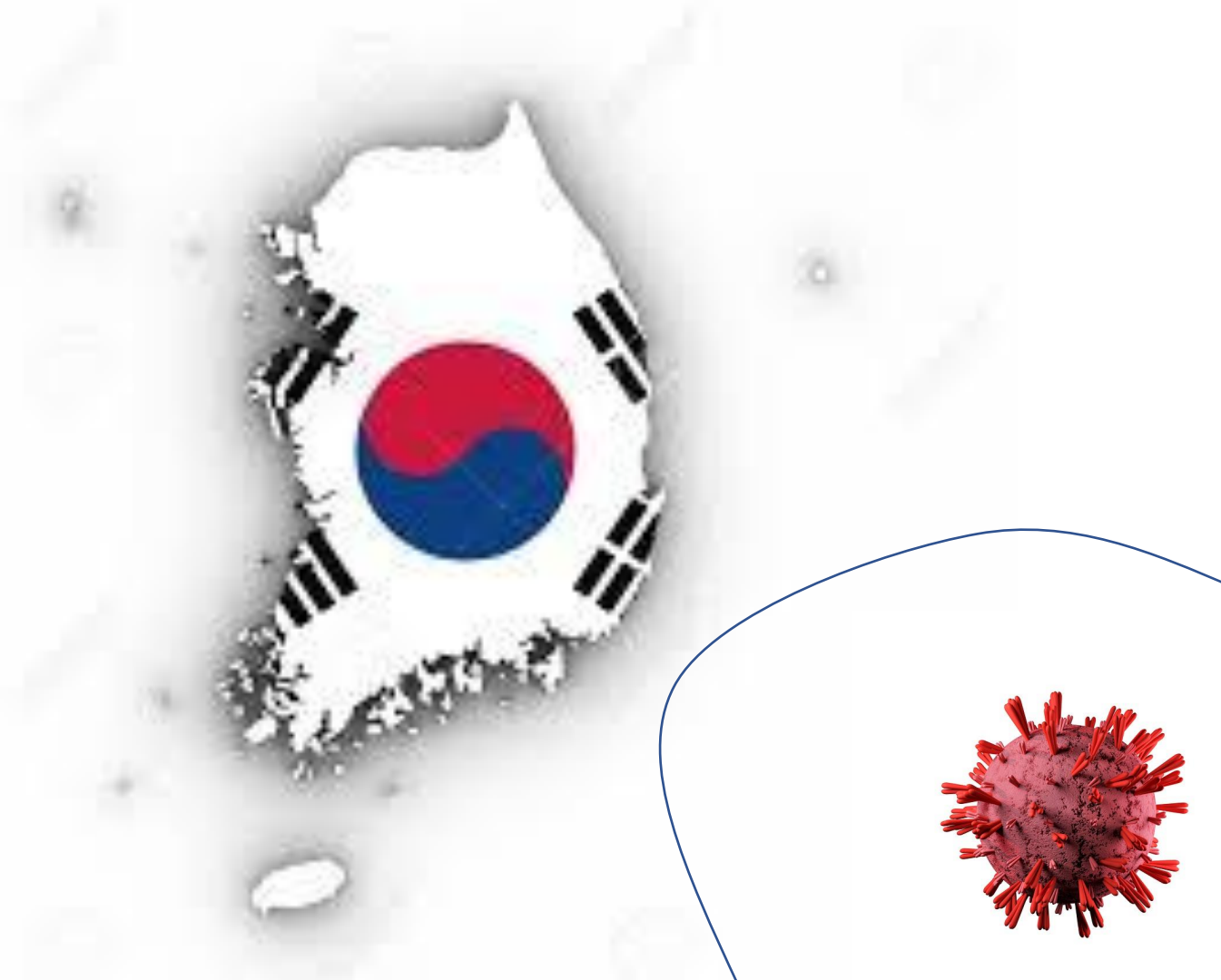


Conclusion

Out of these 5 countries, South Korea performed exceptionally well, with the most efficient utilisation of resources.

The country maintained a low Case Fatality Rate and managed to flatten the curve of the outbreak within a few weeks.

With prompt measures, South Korea remained one step ahead of the virus throughout.



THANK YOU!

PART – 2

Online Course Report

Biostatistics in Public Health Specialization

By Dr. John McGready, PhD, MS

Associate Scientist, Biostatistics

Bloomberg School of Public Health

Johns Hopkins University

Attended by

Komal Kaur

MBA Hospital and Health Management

2019-21



About the Course

From the basics concepts of Biostatistics, the course goes onto talk about the concepts of Simple and Multiple regression.

This proves to be a very useful tool in the field of Research – reading, interpreting, and writing research studies.



About the Course

Summary Statistics in Public Health

Statistical measurement methods within the world of public health research.

Practice interpreting data and performing calculations on real data from published studies.

Topics include summary measures, visual displays, continuous data, sample size, the normal distribution, binary data, the element of time, and the Kaplan-Meier curve

Hypothesis testing in Public Health

Evaluate sample variability and apply statistical hypothesis testing methods. perform calculations and interpret real-world data from the published scientific literature.

Key points - Sample statistics, the central limit theorem, confidence intervals, hypothesis testing, and p values.

Simple Regression Analysis in Public Health

Simple regression applied to find out the relationship between outcome and variable.

Topics include logistic regression, confidence intervals, p-values, Cox regression, confounding, adjustment, and effect modification.

Multiple Regression Analysis in Public Health

extend simple regression to the prediction of a single outcome of interest on the basis of multiple variables.

practice interpreting data and performing calculations on real data from published studies.

Topics include the Spline approach, confidence intervals, p-values, multiple Cox regression, adjustment, and effect modification.

Learning methodology

The course was completely done online through video lectures, discussion forums and reading material.

In addition, there were compulsory timed practice quizzes after completing every week of the module and one timed quiz after the completion of every module.

All the parts of this course were done online.

Key learnings

- Calculation of Summary Statistics from Public Health data
- Interpretation of graphical as well as written statistical data
- Usage of various regression methods and their evaluation and interpretation
- Choosing the appropriate statistical method for a given research question

Applications

During the course of the first part of my summer project (the work from home report), I completed a research project which entailed the study of various research papers to get relevant information.

The learnings from this online course helped me throughout this project.

Thank You!