PART-1

Research work

Inter-Country Variations In Age-Sex Specific Burden Of COVID-19: A Literature Review

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Introduction - Coronavirus disease 2019(Covid-19), which is caused by severe acute respiratory syndrome coronavirus 2(SARS-CoV-2),has evolved to a global pandemic with million of confirmed cases .

❑ **Background Of The Study-**

- At the end of the 2019 SARS coronavirus two emerged in Wuhan, China. As this disease contagious in nature it spread rapidly all over the world.
- On March 11,2020, due to the alarming levels of spread and severity of COVID-19 worldwide and by the alarming levels of inaction, WHO has characterized the Covid-19 situation as a pandemic.
- The first case in the United States (U.S) were reported on January19th,2020 in the Washingtone state
- In India ,the first case of coronavirus disease 2019 (COVID-19) was detected on Jan 30,2020.

❑ **Sex and Gendre** .

- Collecting sex- disaggregated data is essential to understanding the risk factors of poor health, early health , and health inequities .

- **Need Of the study -** Public health policies needs to address the **sex impact of this pandemic** so that targeted **treatment strategies can be implemented**, such an early recognition and aggressive testing in subgroups, and to prevent bias in treating men and women As the world responds to this extraordinary crisis, we need to have **sex-specific analysis of the outbreak** by health agencies and governments to better inform public health policies.

❖ **Objective of the study** –

To understand the age-sex specific co-morbidities contributing in COVID-19 mortality.
To understand age-sex specific burden of COVID-19 across countries.

METHODOLOGY-

STUDY DESIGN – All the data collected from secondary sources .It is a narrative review of Published research papers and articles that taken from sources like-ResearchGate, PubMed, Lancet
SAMPLING- Research paper – 7 Media Article – 19

Inclusion Criteria

Papers or articles in which study is focused on age,sex burden on the Covid-19 confirmed cases .

Exclusion Criteria

News Paper reviews based on any research paper, or papers which also included any health related issues apart from age, sex criteria

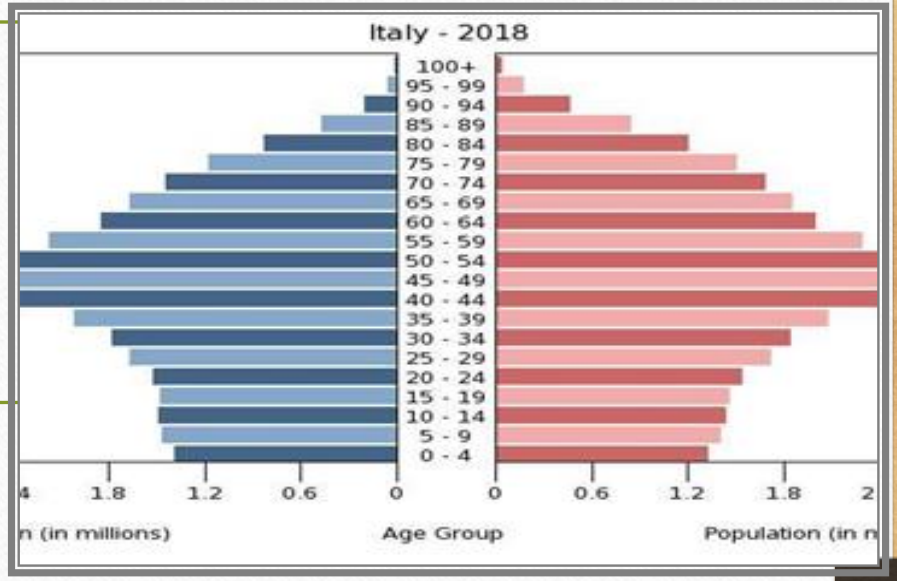
RESULTS AND FINDINGS

COUNTRY (Top ten most affected countries)	Current case fatality rate of Covid-19 % (Only observation with ≥100 cases) percent
USA	4.33%
BRAZIL	3.97%
INDIA	2.75%
RUSSIA	1.52%
PERU	3.56%
CHILE	2.17%
UK	15.51%
MEXICO	11.93%
SPAIN	-
ITALY	14.42%

- CFR [Case Fatality Rate] is the number of confirmed deaths divided by number of confirmed cases. In this table shown top ten most affected countries by COVID-19 and the Current CFR.(as per dated 9th July)

Age structure of Italy–(%above age 50) **CFR rate of Italy** – 14.42%

- Age 55-64 years -13.29%
- 65years and over -21.69%



- In a study that have been conducted in Italy named “Case fatality rate and characteristics of Patients dying in relation to Covid-19 in Italy.. When the overall fatality rate of persons with confirmed Covid-19 in the Italian population have been collected ,it was observed the **rate was significantly higher than other countries**.
- It may be related to 3 factors-
- **1) Fatality Rate and Population Age** -The demographic characteristics of the Italian population differ from other countries. In 2019, **approximately 23% of the Italian population aged 65 years or older**.
- CFR of **Italy and China been compared the result was high for Italy than China.**

Comparison between China and Italy Confirmed Covid Cases -

- Among the dataset the distribution of cases is very different for this 2 Countries: **individuals aged 70 years or older represent 37.6% cases in Italy and only 11.9% in China.**

- A relevant number of cases in **Italy are in people aged 90 years or older,** this age group has a very high fatality rate (22.7%) **.** Data on cases aged 90 years or older were not reported in China.

- Thus, the overall **older age distribution in Italy** relative to that China may explain the higher average case fatality rate in Italy.

- current data illustrate that Italy has a high propotion of older patients with confirmed COVID-19 infection and that the older population in Italy may partly explain differences in cases and case fatality rates among countries. Within **Italy, Covid-19 deaths are mainly observed among older, male patients** who also have multiple comorbidities

AGE STRUCTURE OF INDIA-(%Above age 50)-

Age 55-64 years – 7.6% 65 years and over- 6.39%

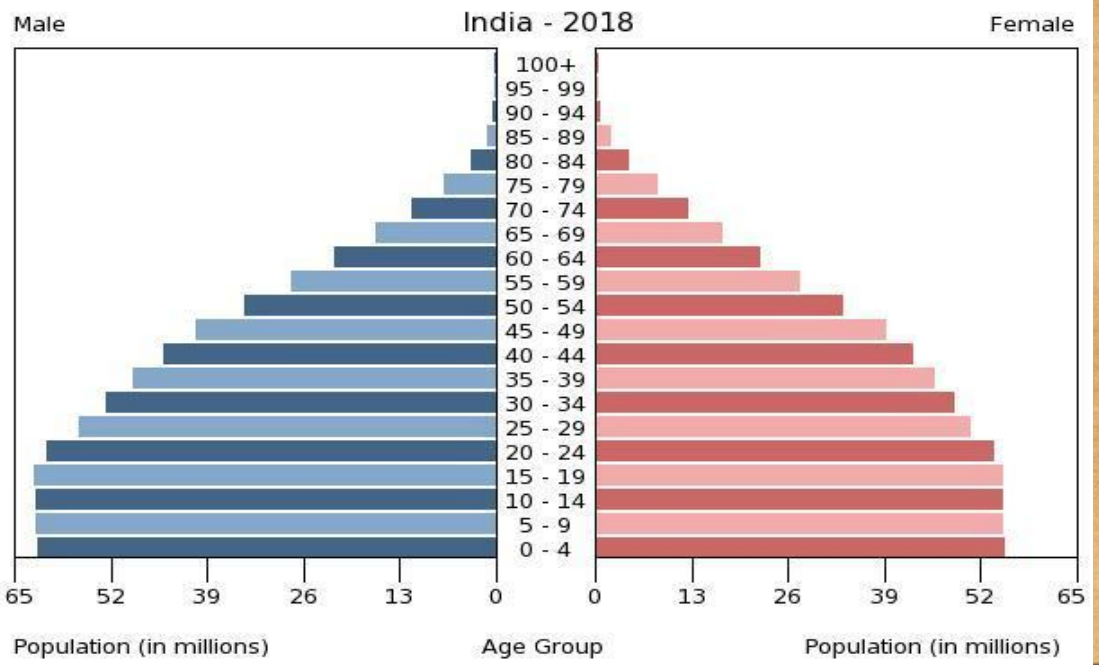
CFR of INDIA-

- 2.75%

- In a study that conducted in India to examine via gender lens and present a disaggregated view of age-sex specific Covid-19 infection and mortality risk in India.

Results –

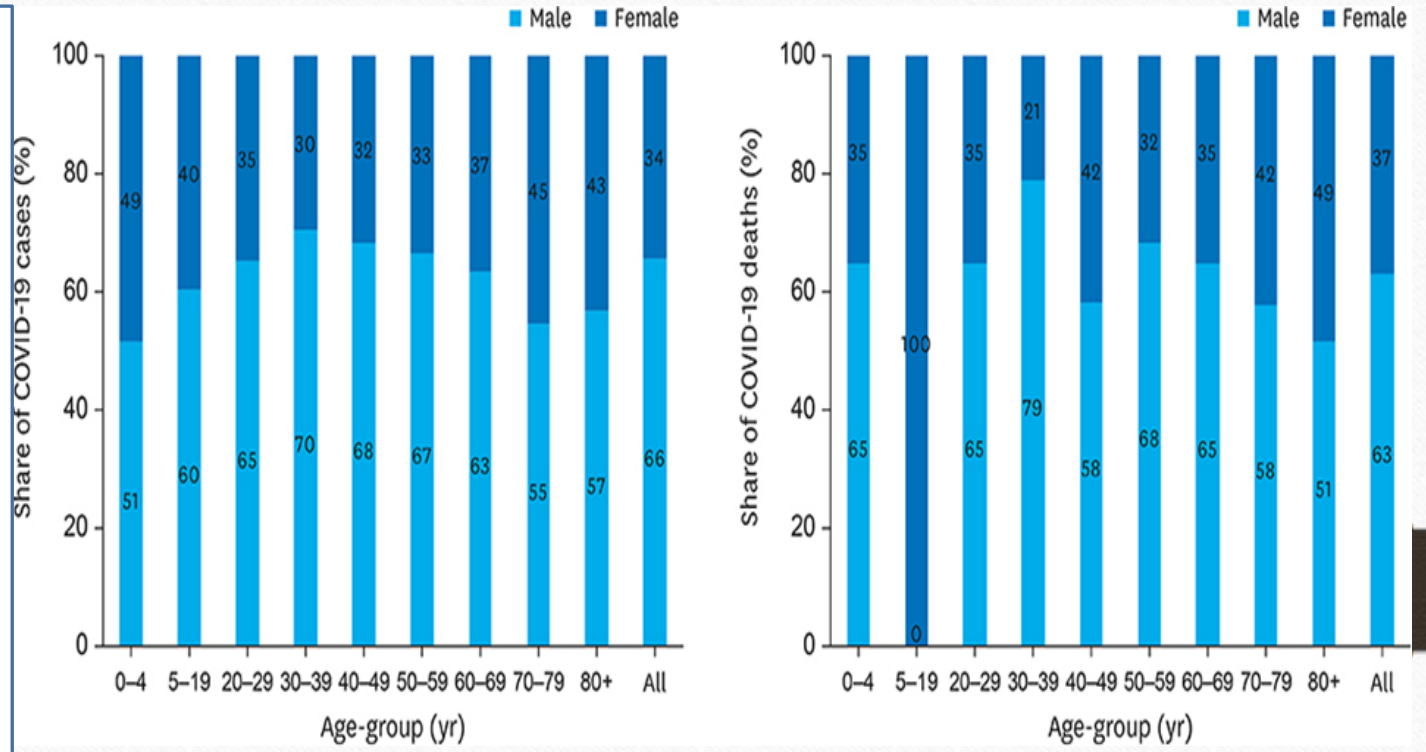
- The early reports of COVID-19 cases and deaths in India suggests that males are at a greater disadvantage than females with CFR of 3.3% and 2.9% respectively..
- The burden is more or less similar among under 5 boys (51.5%) and girls (48.5%).
- The burden **increases among males in middle age group** and reaches a maximum of 70.4% for the age group 30-39 years.
- The share of females in the total burden increases with age. The burden among females is over 40% for the age groups 70-79 years and 80+ years.



Population Pyramid Of India -2018, Souce- https://www.indexmundi.com/india/age_structure.html

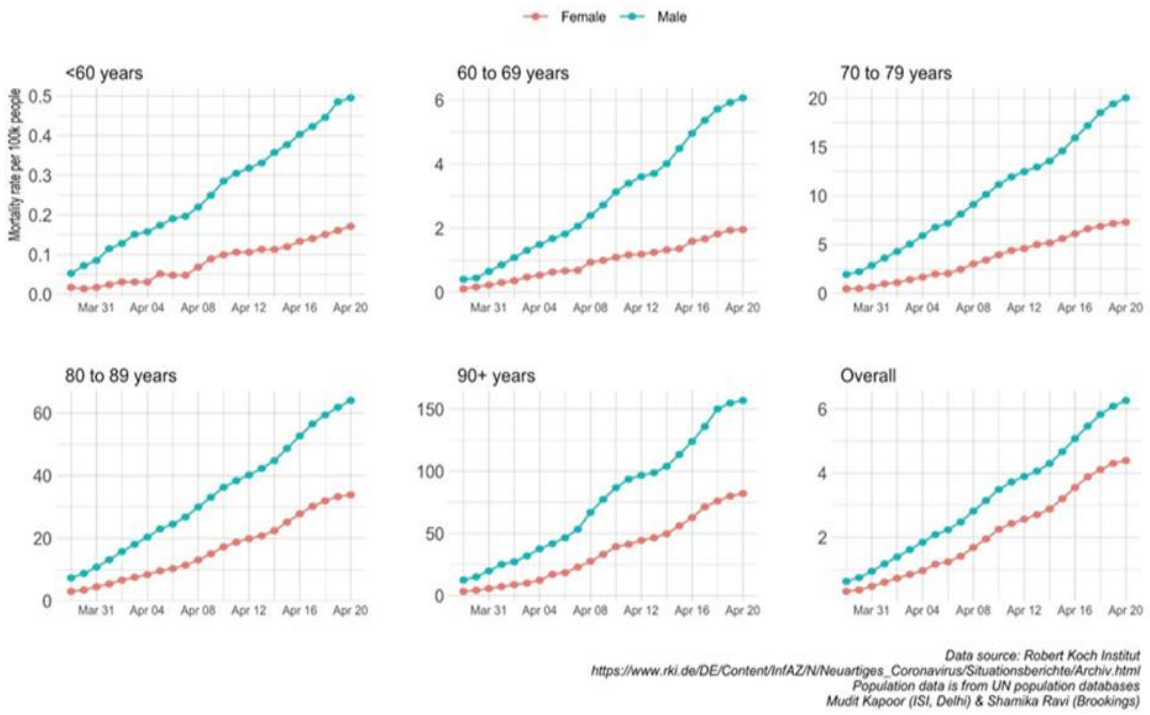
Findings from the study –

- The burden of females in total COVID-19 deaths is 36.9%
- The absolute burden of deaths among females is higher than males than the absolute burden among females in total number of infection.
- Females in the age group 30-39 years have lowest burden of deaths (21.3%) whereas elderly females in the age group 80+years have more or similar burden (48.5%) in total death for this particular age group.
- the age of 5-19 years there is no male mortality so for that the entire burden lies to female age group.



Male and Female share in total burden of COVID-19 cases and deaths in India, May20,2020

Study Source: Equal risk, unequal burden? Gender differentials in COVID-19 mortality in India



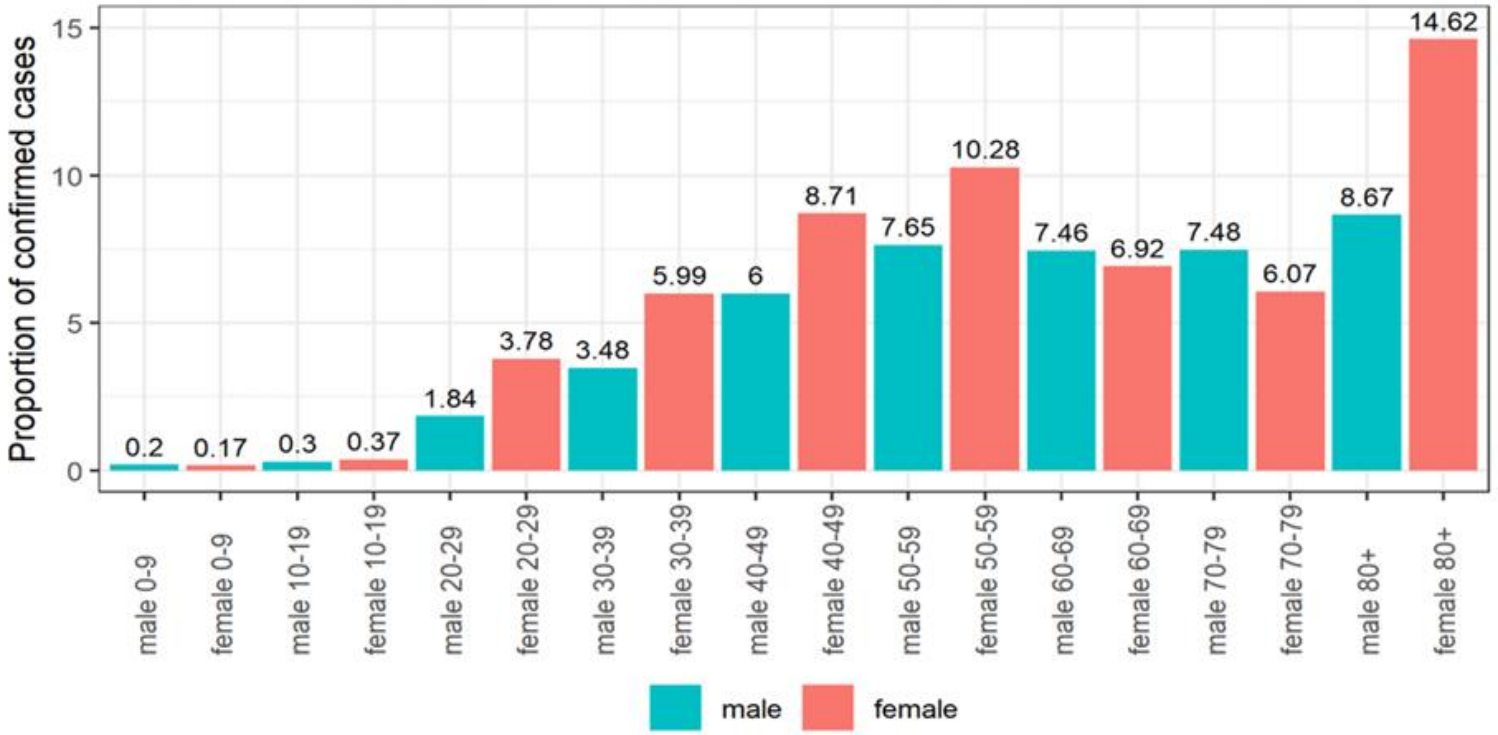
Mortality rate per 100,00 population by age and gender in Germany

Source: COVID-19 trends from Germany show different impacts by gender and age.

❖ **Learnings COVID-19 trends from Germany** (Different impacts by gender and age) –

- In a study carried out in Germany to see the different impacts by gender and age in Germany the result shows whereas the early stage of the outbreak the number of Covid-19 cases are higher in men soon it takes a rise for the women in a short period of time .
- This figure shows mortality rate per 100,000 Population for different age groups in Germany, Which are normalized by the population size of each group. Here they **taken below 60 age as one group, and analyse people in their 60s,70s,80s and 90s separately.**
- The results show that the **COVID-19 related mortality rate in Germany is rising significantly with age and over time,** for all the age groups in the population. The **mortality rate is systematically higher for men compared to women in all age groups**; and the difference in the mortality rates of men and women have increased with time

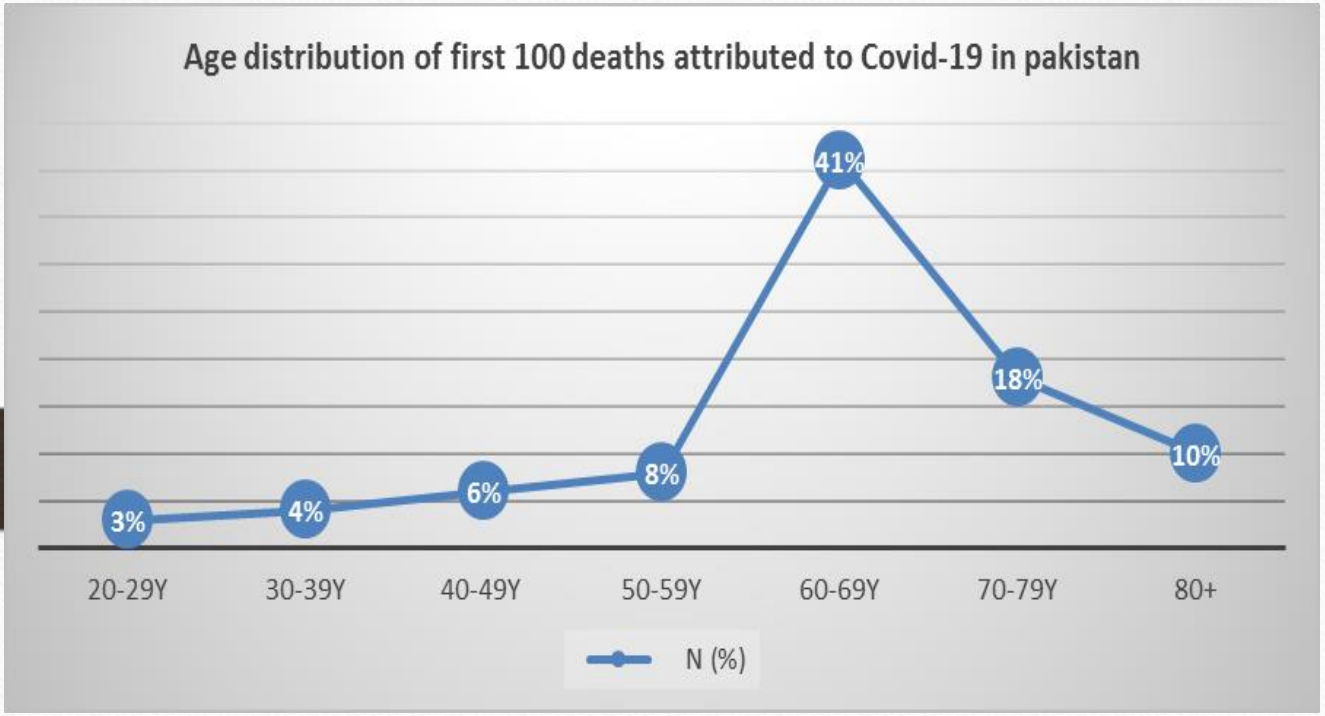
Proportion of confirmed cases by age group and gender of Spain



Study Source- Assessing the age-and gender-dependence of the severity and case fatality rates of COVID-19 disease in Spain

The graph shows proportion of the confirmed cases in age group and gender wise calculated. Depicting a lower risk of covid-19 in the younger age (less than 20). Proportion of confirmed cases are higher in the adult female ages (20-39) than adult male(20-39) age group . Respectively higher risk been observed at older age groups for both the genders.

Age distribution of first 100 deaths attributed to COVID-19 in Pakistan



Study Source-Mortality Analysis of COVID-19 Confirmed Cases in Pakistan

- **Findings –**

In this study a total of 100 mortality were analysed

- Median age of patient was 64.5 years with a range of 22-84years.
- 75% cases were males among first 100 deaths in Pakistan.
- Among all age groups 60-69 years were most affected age groups while no death had been reported under 20 years

❑ Discussion

- The number of effected person due to COVID-19 gender wise means to men and women is similar for many countries. Except one which Pakistan where 72% cases were male.

- In all countries that report by sex, men diagnosed with Covid-19 are more likely to die.
- The male female death rates tend to be higher in older people than the rates of in younger age.
- Its been seen middle age people have high chances of getting infected and mildly affected.
- For many countries no such mortality has been reported for below age 20.
- Propotion of confirmed cases in adult females(age30-39)than males are high for many countries.

Conclusions

As Covid-19 is such a new disease,and still now lot of things to be discover and learned about it. Still from the data interpretation and results we can infer **age is surely a risk factor** for the severe disease . While **males have a higher mortality rate** for most of the countries , the burden of infection rate is more or less equally distributed among men and women. COVID-19 is a disease that disproportionately impacts older people. However,They result may vary due to different testing strategies, Counting of confirmd cases taken by country. Thus, the gendered impacts of COVID-19 Outbreak need to be effectively analysed for potential public health and policy inferences.

Refference –

1) Mortality Analysis of COVID-19 confirmed cases in Pakistan.[posted June09,2020] https://www.medrxiv.org/content/10.1101/2020.06.07.20121939v1
2) Equal risk, unequal burden? Gender differentials in COVID-19 mortality in India. [Published online Jun02, 2020] https://e-jghs.org/DOIx.php?id=10.35500/jghs.2020.2.e17
3) Shamika Ravi, Mudit Kapoor. COVID-19 trends from Germany show different impacts by gender and age [May1,2020] https://www.brookings.edu/blog/techtank/2020/05/01/covid-19-trends-from-germany-show-different-impacts-by-gender-and-age/
4) Case-Fatality Rate and Characteristics of Patients Dying in Relation to COVID-19 in Italy. [Posted on March 23,2020] *JAMA.* 2020;323(18):1775-1776. doi:10.1001/jama.2020.4683
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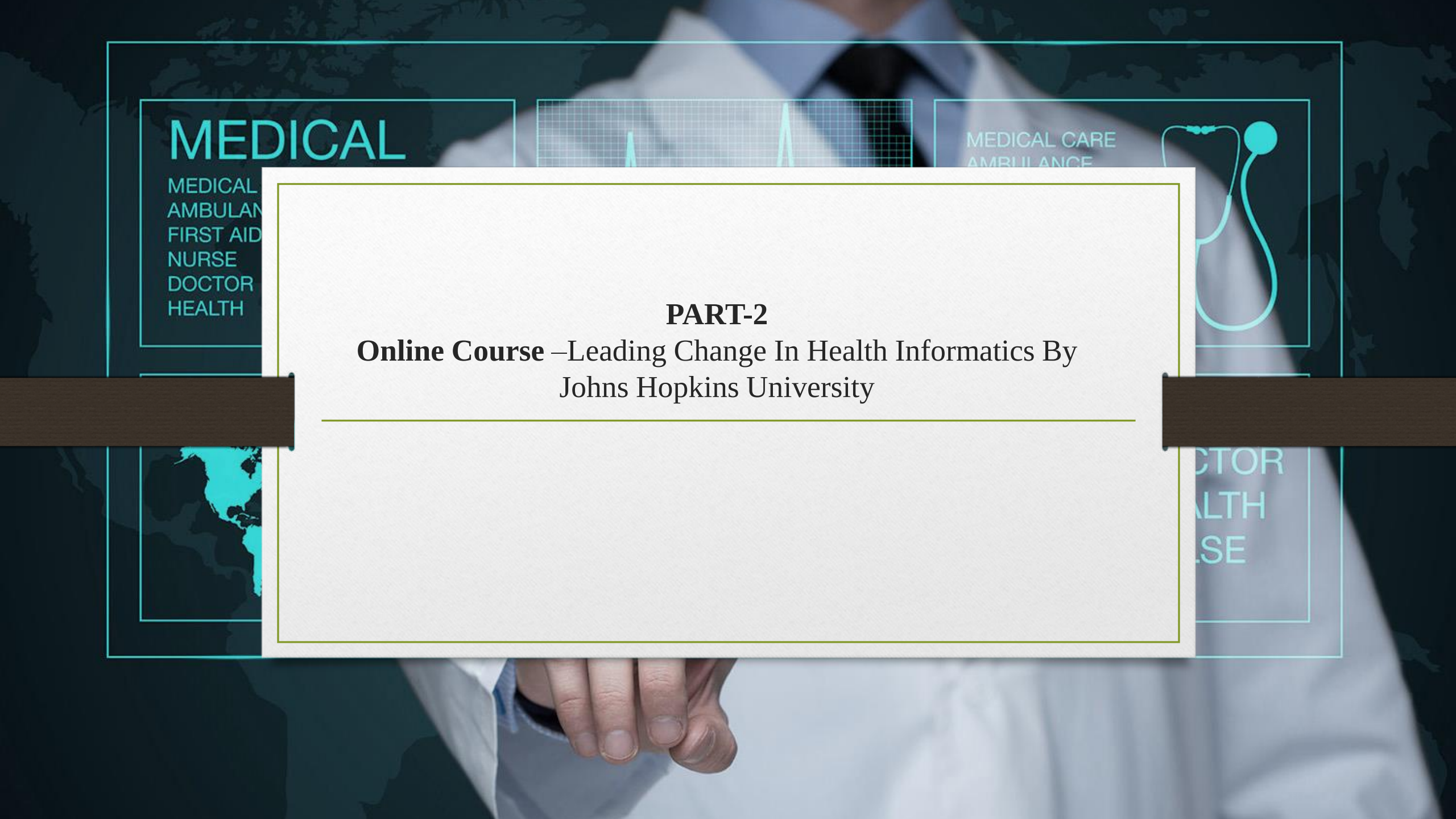
6) Sex, gender and COVID-19 [Published 17 Apr 2020] Coronavirus: the science explained- UKRI https://coronavirusexplained.ukri.org/en/article/cad0007/
7) Sex Differences in Mortality From COVID-19 Pandemic: Are Men Vulnerable and Women Protected? JACC :Case Reports ,Volume 2, Issue 9, 15 july 2020, Pages 1407-1410 https://doi.org/10.1016/j.jaccas.2020.04.027



PART-2

Online Course –Leading Change In Health Informatics By Johns Hopkins University

HEALTH INFORMATICS

❖ **Objectives of the Course** –

1)Building up the concepts of Health informatics , Health IT, Electronic Health Record adoption, Change Management

2)To understand kotter's 8 step process for Leading Change and how to implement it.

3)To give depth knowledge for how to conduct Organizational Readiness Assessment and to analyse the results.

4)To know about the project planning and tools of it

❖ **Learning Methodology Used in the Course**

1. WEEK 1 -13 Videos, 8readings, 4practice quizzes
2. WEEK2- 8 Videos,2 Readings, 2 practice quizzes
3. WEEK3- 10 Videos, 4 Readings, 2practice quizzes
4. WEEK4- 13Videos,7Readings, 1practice quiz

Key Learnings from the Course –

- **Key Steps in the process of successfully leading change** in health information systems.
- Interpreting the results from an **organizational readiness assessment**.
- Describing the reasons why **interprofessional collaboration** is essential component of leading change efforts in health informatics
- Recognizing the **role of the patient and family as important stakeholders** in health informatics.
- Identifying the steps in the knowledge management lifecycle that are important for those involved with clinical Governance

Kotter's 8 step process for Leading Change

Key Learnings-

I. Difference between **projects and ongoing operations i**n health IT

II. Selection of the right **project management tool** to use based on the needs of a given healthcare IT scenario

III. Create a process map that correctly portrays the essential steps in a designated health IT Workflow

IV. Identifying the **common challenges** encountered during **health informatics projects** and ways to overcome them.

V. Calculate total cost of ownership and return on investment.

VI. Utilizing a vendor evaluation matrix tool to make a recommendation on purchasing.

VII. PDSA Cycle

VIII. Incorporating best practices in change management to mitigate risks.

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