

PERSPECTIVE ARTICLE

Impact of Better Healthcare services on rapid recovery and low mortality of COVID19 patients

Mulazim Hussain Bukhari¹, Mandeep Bedi², Farwa Batool³, Shahzadi Zain⁴, Memet Taşkın Egici⁵,
Muhammad Anwar⁶

¹Head of Pathology Department, UCM, University of Lahore, Pakistan

²District Pathologist, Kasturba Medical College, Manipal, India

³Head of Pathology, Faisal Abad Medical University, Faisalabad, PK

⁴Epidemiologist Canada

⁵Family Medicine Clinic, Istanbul Haydarpaşa Numune Education and Research Hospital, University of
Health Sciences Turkey

⁶Epidemiologist, Japan

Corresponding Author's Email: Mulazim.hussain@gmail.com

ABSTRACT

COVID-19 Pandemic is a public health emergency since March 2020. The COVID19 is a new infection caused by severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2). This study was conducted on COVID-19 cases, to understand the impact of better healthcare services and delivery on patient recovery and provide one window approach from reception to diagnosis and treatment. Countries with lower mortality rates adopted the approach of early symptom screening, rapid testing and diagnosis by taking nasopharyngeal samples and use of real time PCR to confirm diagnosis within 24 hours, and timely use of chest CT determine the severity of pneumonia besides confirming the diagnosis. A practical approach to the management of COVID19 pandemic is crucial for the faster recovery and lower mortality. Early start of anticoagulant, heparin (Enoxaparin), and maintaining the oxygen saturation along with use of antiviral drugs may reduce the mortality rates and speed up the recovery of the patients suffering from the disease. Some of the key contributing factors for higher mortality rates includes overwhelmed healthcare systems, poorly equipped Intensive Care Units (ICUs), inadequate testing facilities, and larger proportions of elderly population.

Key words: COVID19, Remdesivir, chloroquine, rtPCR, Anticoagulant, Heparin, Enoxaparin

Received 22.04.2020

Revised 28.04.2020

Accepted 23.05.2020

How to cite this article:

M H Bukhari, M Bedi, F Batool, S Zain, M Taşkın Egici, M Anwar. Impact of Better Healthcare services on rapid recovery and low mortality of COVID19 patients. Adv. Biores., Vol 11 (3) May 2020: 10-14

Like the rest of the world, the subcontinent especially India and Pakistan is facing the challenge of COVID-19 infection from new coronavirus (SARS CoV2) [1]. No doubt our mortality rate is low as compared to Europe, and America but in order to develop a better approach to control the spread and reduce the mortality from COVID-19, we need to analyze the approach adopted by other countries facing similar challenges such as Italy, Singapore, Russia, Australia, and Malaysia. Countries such as Singapore, Malaysia, Australia, Germany, Qatar, Turkey, Saudi Arabia, and Russia reported a much lower mortality rates as compared to other countries [2, 3].

Mortality rates were reported to be much higher in United State of America, United Kingdom, and other European countries. Fewer countries of Asia reported better "recovery versus deceased ratio" as compared to those in Europe and America because of better treatment strategies in their hospitals [3].

Accelerated testing protocols, good laboratory system, and use of antivirals, anticoagulants and plasma therapy, supplement oxygen therapy, along with better nursing care, improved mental healthcare procedures, and balanced diet are the important factors in rapid recovery and low mortality rates. Better understanding of pathophysiology, (figure 1 and 2) clarity of signs, symptoms and presentation of SARS-CoV-2 infection, correlation of radiological and pathological biomarkers, and availability of first line of treatment are some of the factors that can lead to more precise mitigation strategies.⁴On the other end,

overwhelmed healthcare systems, poorly equipped ICUs, inadequate testing facilities and greater proportion of seniors are considered as key factors for higher death rates [4].

Another important factor behind the excellent control of COVID-19 in these countries, is selfless attitude of their physicians and their dedication to provide excellent patients care. Physician in these outperforming countries believe that they have a duty to serve the sick, at all times. Does the oath bound physicians to serve the sick even at the cost of their own lives? Hippocratic Oath doesn't. It ends with these words 'now if we carry out this oath, and break it not, may we gain forever reputation among all men for my life and for my art; but if we break it and forswear myself, may the opposite befall us [5].

All the super powers and economic powerhouses in the world have bent down to their knees due to COVID19, while the nations who did not spent money in increasing their military powers have better standing during this pandemic [1].

Coronavirus has spread rapidly to the entire world. Difference in rate of infections, recoveries, and fatalities witnessed in different countries can be explained by examining epidemiological pattern of spread of infection, rapidity of testing and diagnosis, response of the people towards the public health measures to control its spread, parameters of reporting cases and recoveries, and preparedness of these countries to control the disease.

Comparison of mortality rates across different countries is challenging as the testing rate is not uniform in those countries. The asymptomatic carriers are not tested routinely. Deaths occurring at home are not included in statistics. Availability of rapid screening and early testing for patients lead to higher number of confirmed cases for the same number of fatalities [1]. Testing done at the asymptomatic or mildly symptomatic stage of illness, and early identification and isolation of these cases produce a huge positive impact on the spread and hence, effective control of the disease. On the other hand in many countries, only the critically ill or high-risk individuals are tested. This results in more accurate fatality statistics but underestimates the cases significantly, as most of the COVID-19 containing individuals develop mild illness and would not be tested [1].

Preparedness of the healthcare system is a cardinal feature of effective control of COVID-19. Capability of employing public health measures, hospital capacity and availability of better resources are some determinants of readiness of the healthcare systems for effective control of COVID-19. The number of emergency beds in Germany is 621 per 100,000 people, as compared to Italy's 275, and United Kingdom's 228 beds per 100,000 on average. Pakistan is very low in numbers of emergency hospital beds to deal the COVID19 patients. Better equipped ICUs, the hospital's capacity of early critical interventions and increased preparedness is seen to impact the first case through first fatality of COVID-19, which is lacking in countries where the mortality rate is high.[1,4,5,6]

Australia has almost bent the curve. [2] Turkey's healthcare is putting up a brave fight against the novel coronavirus, trying its best to keep the number of deaths as low as possible, and is succeeding so far. The proper understanding of the disease is very important as shown in the tow pictures. This helped the medical staff to deal the management of the patients.⁴

Since pandemic spread became at later date than others countries, the experiences of other countries and so more flexible treatment protocols used by the Scientific Council was held in Turkey: Chest CT was used to determine the severity of pneumonia besides confirming the diagnosis and each Covid-19 positive adult patients are initially treated with hydroxychloroquine and azithromycin. Favipravir had been started to use in intensive care patients who had severe Covid-19 pneumonia and ocilizumab treatment option in ICU for patients with severe Covid-19 related cytokine release syndrome. In addition to low ratio elderly population of country, takening the risk groups, pregnant, have chronic disease, and elders out of public life completely might have been played role [4,5,8-9].

Singapore controlled the mortality by rapid testing, and crucial public health measures such as isolation of cases and physical-distancing protocols. On the other hand, the countries such as India and Pakistan, where improvised conditions, substandard testing and other cultural, religious or economic factors dictated inadequate testing and ineffective isolation, lead to poor COVID-19 control. Large religious gathering, as seen in India and Pakistan, where social distancing measures were taken for granted, lead to widespread propagation of infection. Improvised economic condition and poor infrastructure such as congested subways, and limited room space per person is another factor for widespread community infections, New York is the example for this case. It is impossible to predict who is infected without widespread testing. Consequently, this inadequate testing lead to inadequate isolation and poor control of the pandemic.[10-15]

The mortality rates are reported highest in United States of America and lowest in Malaysia and Singapore as shown in table 1. This is because of their excellent response to the current pandemic, preparedness to face the patient load, better ICU system, and excellent laboratory structure. Their

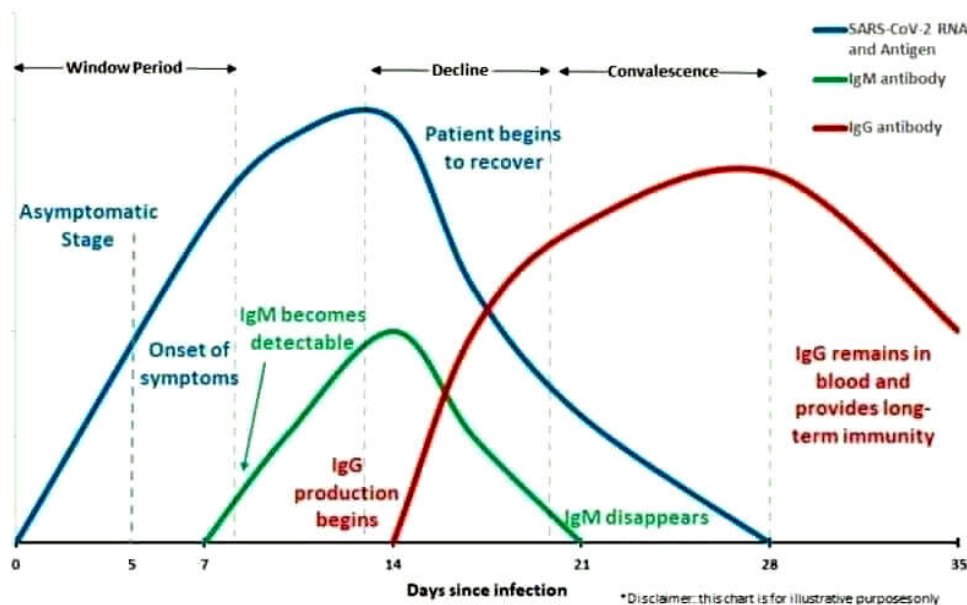
governmental bodies took proper measures and their general population behaved in a responsible manner by following public health guidelines and proved themselves as better nations to plank the epidemiological curve.

In view of the successful control of current pandemic, Japan declared the current pandemic a national state of emergency and closed the borders in the beginning. They also Japan has strongest health care system since the world war which helped them to control the current situation. The life is now slowly returning to their everyday lives. Tutoring schools are back in operation, with the children sitting apart from each other in well-ventilated rooms. Amusement parks have reopened, but people running a fever is asked to stay away. The nation is obeying the laws of social distancing and other precautionary measures to avoid any big mishap.

CONCLUSION

Better Healthcare services and delivery is an emerging paradigm in disease management and the rapid recovery of COVID19 patients with fewer complications. The excellent response to the current pandemic, preparedness to face the patient load, early and rapid laboratory testing, better ICU system, and excellent laboratory structure was important to reduce the morality rate

Therefore, this COVID-19 Rapid Test should not be used until symptoms have been present for at least 3 days.



Test results			Clinical Significance
PCR	IgM	IgG	
+	-	-	Patient may be in the window period of infection.
+	+	-	Patient may be in the early stage of infection.
+	+	+	Patient is in the active phase of infection.
+	-	+	Patient may be in the late or recurrent stage of infection.
-	+	-	Patient may be in the early stage of infection. PCR result may be false-negative.
-	-	+	Patient may have had a past infection, and has recovered.
-	+	+	Patient may be in the recovery stage of an infection, or the PCR result may be false-negative.

Figure 1. Showing the clinical significance of COVID19 for better follow up

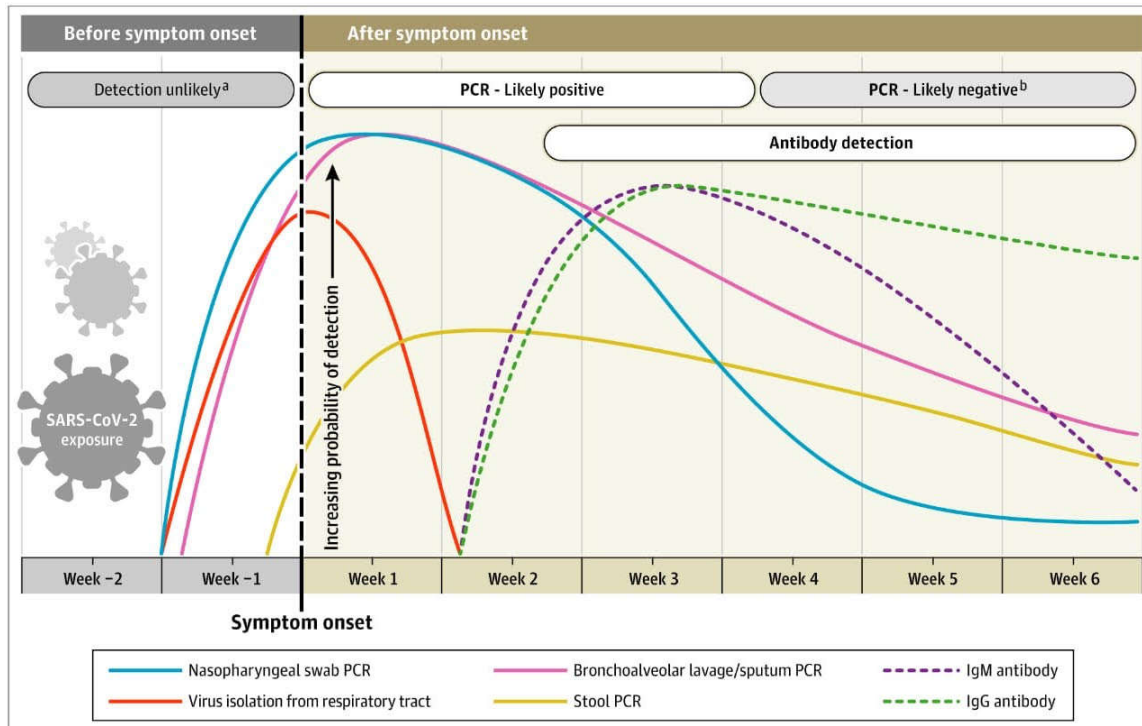


Figure 2. The Pathological journey of the SARS CoV-2 in asymptomatic and symptomatic state

Table I: The world record of COVID-19 until 4.5.2020 with recovery and death rates

Countries	Total Cases	Total Deaths	Total Recovered	Active Cases	Total Tests	Death Rate
World	3,523,355	246,394	1,141,898	2,135,063		18%
USA	1,168,985	67,954	174,017	927,014	6,976,379	28%
Spain	247,122	25,264	148,558	73,300	1,528,833	15%
Italy	210,717	28,884	81,654	100,179	2,153,772	26%
UK	182,260	28,131	N/A	153,785	1,129,907	
France	168,396	24,760	50,562	93,074	1,100,228	33%
Germany	165,183	6,812	130,600	27,771	2,547,052	5%
Russia	134,687	1,280	16,639	116,768	4,100,000	7.8%
Turkey	126,045	3,397	63,151	59,497	1,135,367	5.3%
Iran	97,424	6,203	78,422	12,799	496,273	07%
Brazil	97,100	6,761	40,937	49,402	339,552	14%
China	82,877	4,633	77,713	531		06%
Canada	57,148	3,606	24,416	29,126	832,222	13%
India	40,263	1,323	10,886	28,054	1,046,450	11%
Pakistan	20,084	457	5,114	14,513	203,025	08%
Singapore	18,205	18	1,408	16,779	143,919	1.2%
Australia	15,597	598	13,228	1,771	274,355	04%
Malaysia	6,298	105	4,413	1,780	195,833	2%

REFERENCES

1. Bukhari MH, Mahmood K, Zahra SA. (2020). Over view for the truth of COVID-19 pandemic: A guide for the Pathologists, Health care workers and community'. Pak J Med Sci.;36(COVID19-S4):doi: <https://doi.org/10.12669/pjms.36.COVID19-S4.2519>
2. Noor AU, Maqbool F, Bhatti ZA, Khan AU. (2020). Epidemiology of CoViD-19 Pandemic: Recovery and mortality ratio around the globe. Pak J Med Sci. 2020;36(COVID19-S4): doi: <https://doi.org/10.12669/pjms.36.COVID19-S4.2660>
3. Coronavirus: why is Germany's fatality rate so low? <https://theconversation.com/coronavirus-why-is-germanys-fatality-rate-so-low-135496>. April 6, 21.04pm AEST. Cited 3.5.2020
4. Kodaz H. Editorial: (2020). Successful Treatment Strategy of Turkey against Covid-19 Outbreak. Eurasian Journal of Medicine and Oncology [Internet]. Available from: <https://www.ejmo.org/10.14744/ejmo.2020.12345/02010.16pm> AEST Updated April 6, 2020 11.04pm AEST. Cited 3.5.2020

5. Why is the coronavirus fatality rate low in Turkey? [Internet]. (2020). Why is the coronavirus fatality rate low in Turkey?. Available from: <https://www.trtworld.com/turkey/why-is-the-coronavirus-fatality-rate-low-in-turkey-35688>
6. Strengthening-health-system-response-COVID-19.pdf [Internet]. [cited 2020 May 13]. Available from: http://www.euro.who.int/_data/assets/pdf_file/0003/436350/strengthening-health-system-response-COVID-19.pdf
7. Gao J, Tian Z, Yang X. (2020). Breakthrough: Chloroquine phosphate has shown apparent efficacy in treatment of COVID-19 associated pneumonia in clinical studies. *BioScience Trends*. 29;14(1):72–73.
8. Ai T, Yang Z, Hou H, Zhan C, Chen C, Lv W, Tao Q, Sun Z, Xia L. Correlation of Chest CT and RT-PCR Testing in Coronavirus Disease 2019 (COVID-19) in China: A Report of 1014 Cases. *Radiology*. 2020 Feb 26;200642.
9. T. C. Ministry Of Health General Directorate of Public Health, Covid-19 (Sars-Cov2 Infection) Directory, (2020) Coronavirus Scientific Advisory Board, [Internet]. Turkey. Available from: https://covid19bilgi.saglik.gov.tr/depo/rehberler/COVID-19_Rehberi.pdf
10. Zaidi SH. (2020). The Virtuous Health Workers. *Pak J Med Sci*;36(COVID19-S4):doi: <https://doi.org/10.12669/pjms.36.COVID19-S4.2733>.
11. Crisci CD, Arduoso LRF, Mossuz A, Müller L. A (2020). Precision Medicine Approach to SARS-CoV-2 Pandemic Management. *Curr Treat Options Allergy*. 8:1–19. doi: 10.1007/s40521-020-00258-8. Epub ahead of print. PMID: PMC7205603.
12. Dough Hendrie. Why does the coronavirus fatality rate differ so much around the world?. News GP. <https://www1.racgp.org.au/newsgp/clinical/why-does-the-coronavirus-fatality-rate-differ-so-cited-2.5.2019>
13. Verity R, Okell LC, Dorigatti I, et al. (2020). Estimates of the severity of coronavirus disease 2019: a model-based analysis [published online ahead of print, [published correction appears in *Lancet Infect Dis*. 2020 Apr 15;]. *Lancet Infect Dis*. 2020;S1473-3099(20)30243-7. doi:10.1016/S1473-3099(20)30243-7
14. Why is the coronavirus fatality rate low in turkey? <https://www.trtworld.com/turkey/why-is-the-coronavirus-fatality-rate-low-in-turkey-35688>. Cited 4.5.2020
15. Singapore's Covid-19 death rate low, but seniors vulnerable. <https://www.straitstimes.com/singapore/spores-covid-19-death-rate-low-but-seniors-vulnerable>. Cited. 4.5.2020