

Case-fatality-rates of Covid-19 in Bangladesh at the Certain Period of July-2021 to December 2021

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Abstract

Corona Virus Disease 2019 (COVID-19) is an ongoing pandemic caused by SARS-CoV-2, a newly emerged virus. SARS-CoV-2 tests are required not just to confirm cases, but also to control the virus's spread. Covid-19 is confirmed using the SARS-CoV-2 Real-Time Polymerase Chain Reaction (RT-PCR). From July 2021 to December 2021, a retrospective, cross-sectional study was done at the Department of Microbiology at Brahmanbaria Medical College to establish CFR. The data was collected from the daily corona update by IEDCR (Institute of Epidemiology Disease Control and Research) from 1st July 2021 to 31st December 2021 in Bangladesh. Our founding that in July, August, September, October, November, December-2021 COVID-19 CFR 1.8%, 2.2%, 2.4%, 2.6%, CFR 1.7 % 1.0 %. This highest CFR was Oct-2021 and Lowest CFR in Dec-2021. July-2021 to December -2021 within six months the total number of cases was 675684, deaths 13569, and recovery 662115. so that the recovery rate is 98% and CFR 2%.

Keywords: CFR, SARS-CoV-2, COVID-19, RT-PCR, IEDCR.

Introduction

The new novel coronavirus disease (2019-nCoV or COVID-19) first was detected as viral pneumonia in Wuhan, Hubei Province, China, on December 31, 2019¹⁻². and quickly spread to most nations around the world. Given the global scope of the problem, the new disease was

officially named "COVID-19" by WHO on February 11, 2020,³. COVID-19 (coronavirus-infected pneumonia) has already been revealed to be a highly communicable disease that has caused massive illness and death in China and other countries⁴. Thousands of people were infected with the novel coronavirus in the weeks after it was isolated in Wuhan, China, and it spread quickly from human to human, spreading to other nations. COVID-19 has been declared the Public Health Emergency of International Alarm (PHEIC) by the World Health Organization (WHO) on January 30, 2020, following the appearance of a new coronavirus that has generated widespread concern⁴⁻⁷. The World Health Organization declared the outbreak of novel coronavirus (2019-nCoV) as a pandemic hazard on March 11, 2020⁷. Because of its extensive dispersion, it has become a global health hazard. The coronaviruses are not new viruses; it was first reported in 1966 by Tyrell and Bynoe¹, who produced them from people who had normal colds. Coronaviruses are enveloped, positive single-stranded, RNA viruses that infect a wide range of animals, including humans, and cause respiratory and gastrointestinal disorders⁸. The COVID-19 disease, which is caused by a SARS-CoV-2, has an impact on Bangladesh, a heavily populated country. On March 8, 2020, Bangladesh's Institute of Epidemiology, Disease Control and Research (IEDRC) recorded the first case of COVID-19 disease. COVID-19 has rapidly spread across the country, with the first death being on March 18, 2020,^{9,10,11}.

The government of Bangladesh confirmed 803 cases of COVID-19 as of April 13, 2020, with a fatality toll of 39¹². In Bangladesh, there were 3,79,738 confirmed COVID-19 cases and 5,555 deaths as of October 12, 2020. On the other hand, on the same day, WHO reported 373,26080 confirmed cases of COVID-19, with 10,73,973 fatalities. The United States ranked first in the globe, with 7,636,803 cases and 212804 deaths due to corona reported to WHO on October 12, 2020.

According to a press release from the Directorate General of Health Service (DGHS), 379,738 COVID-19 cases were confirmed by the RT-PCR test between March 8 and October 12, 2020, with 5,555 deaths (1.46%)^{13,14}.

The initial wave of coronavirus infection had been effectively overcome in Bangladesh. The infection rate was below 5% from mid-January to the first week of March 2021, and since the last week of March 2021, the infection and death toll have gradually climbed, indicating the onset of the second wave of COVID-19. In the first week of April 2021, the case rate was 22%. In May 2021, the case rate will be below 10%. The number of cases continuously climbed until the last week of July 2021, when it reached a new high of 31%. The largest number of deaths occurred on July 5, 2021, with 264 confirmed cases 12744. The date rate was 2% In Bangladesh, there have been 1549553 confirmed cases and 27368 deaths as of September 25, 2021¹⁵. Up till September 25, 2021, the overall number of confirmed cases was 231893647, and the total number of deaths was 4751259 around the world¹⁶.

Methodology:

The goal of this study is to determine the case-fatality rate among the SARS-CoV-2 positive patients. The data was collected from the daily corona update by IEDCR (institute of Epidemiology Disease Control and Research) from 1st July 2021 to 31st December 2021 in

Bangladesh. The data about daily infected (diagnosed) cases and daily deaths due to COVID-19 was taken. A diagnosed case of COVID-19 is which showed a positive result in a respiratory specimen of nucleic acid. A recovered case is identified which showed negative results in two consecutive tests. A death case is recognized which was first identified as COVID-19 patient before dying. Total reverse transcription-polymerase chain reaction (RT-PCR) clinically diagnosed cases due to COVID-19 was found July-2021 to December -2021 within six monthsa total number of cases675684, deaths 13569, and recovery 662115.

Result:

The case fatality rate (CFR) is the most commonly discussed measure of the risk of dying. But this is not the same as the risk of death for an infected person. The CFR is defined by dividing the number of deaths from a specified disease over a defined period by the number of individuals diagnosed with the disease during that time and the resulting ratio is then expressed as a percentage multiplying by 100¹⁷.

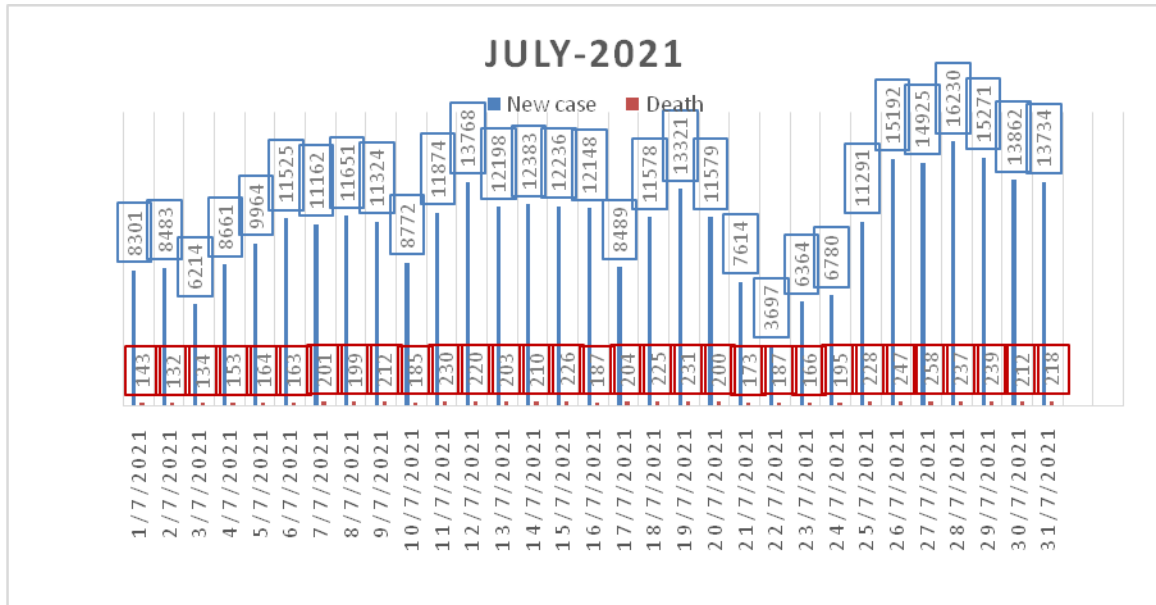


Figure: - 1 The bar diagram showing the daily based information in the month of July-2021. The total number of cases was 340591, the total number of deaths was 6182, and the CFR $6182/340591 \times 100 = 1.8\%$ in July-2021.

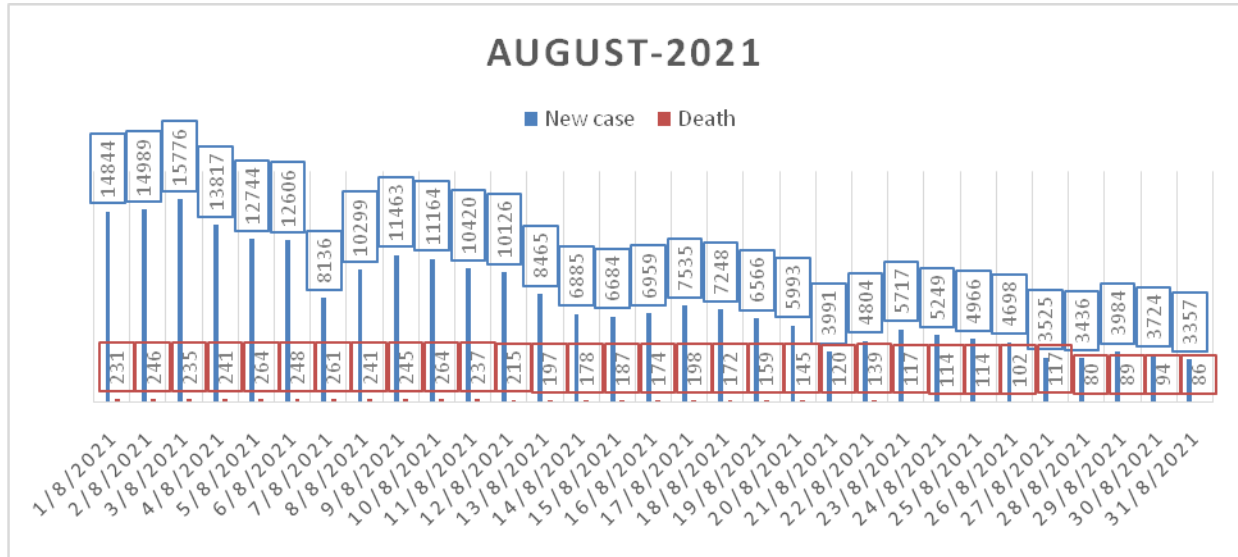


Figure: - 2 The bar diagram showing the daily based information in the month of August-2021. total number of cases was 250170, the total number of deaths 5510, and the CFR $5510/250170 \times 100 = 2.2\%$ in August -2021.

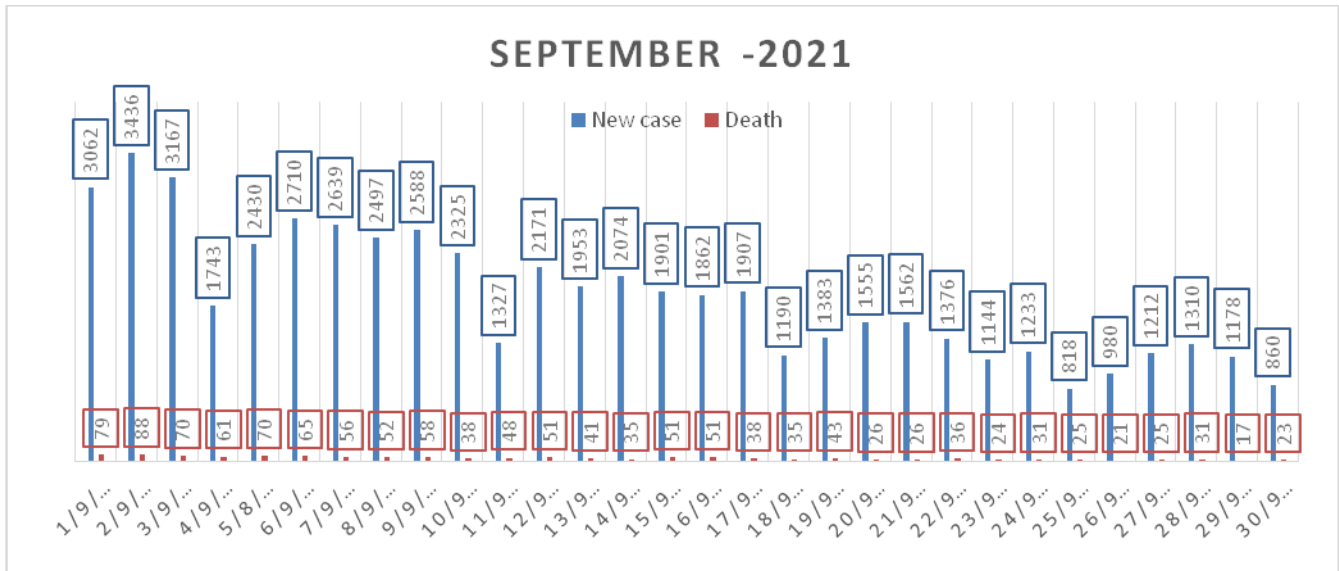


Figure: - 3 The bar diagram showing the daily based information in the month of September -2021. The total number of cases was 55593, the total number of deaths 1315, and the CFR $1315/55593 \times 100 = 2.4\%$ in September -2021.

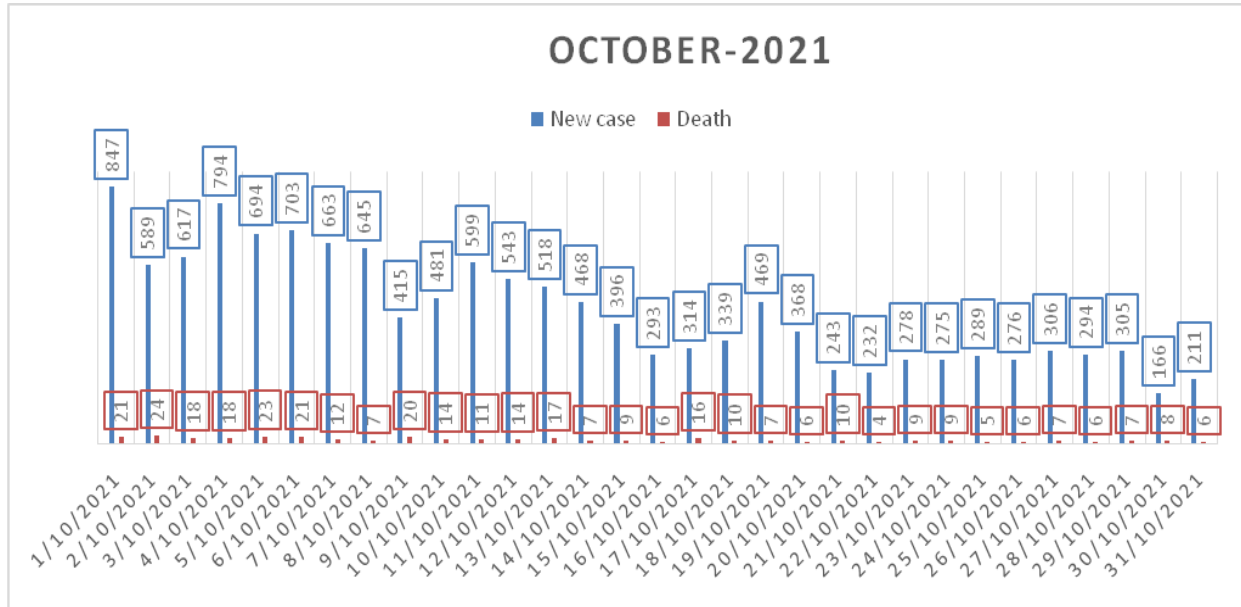


Figure: - 4 The bar diagram showing the daily based information in the month of October -2021. The total number of cases was 13630, the total number of deaths 358, and the CFR $358/13630 \times 100 = 2.6\%$ in October -2021.

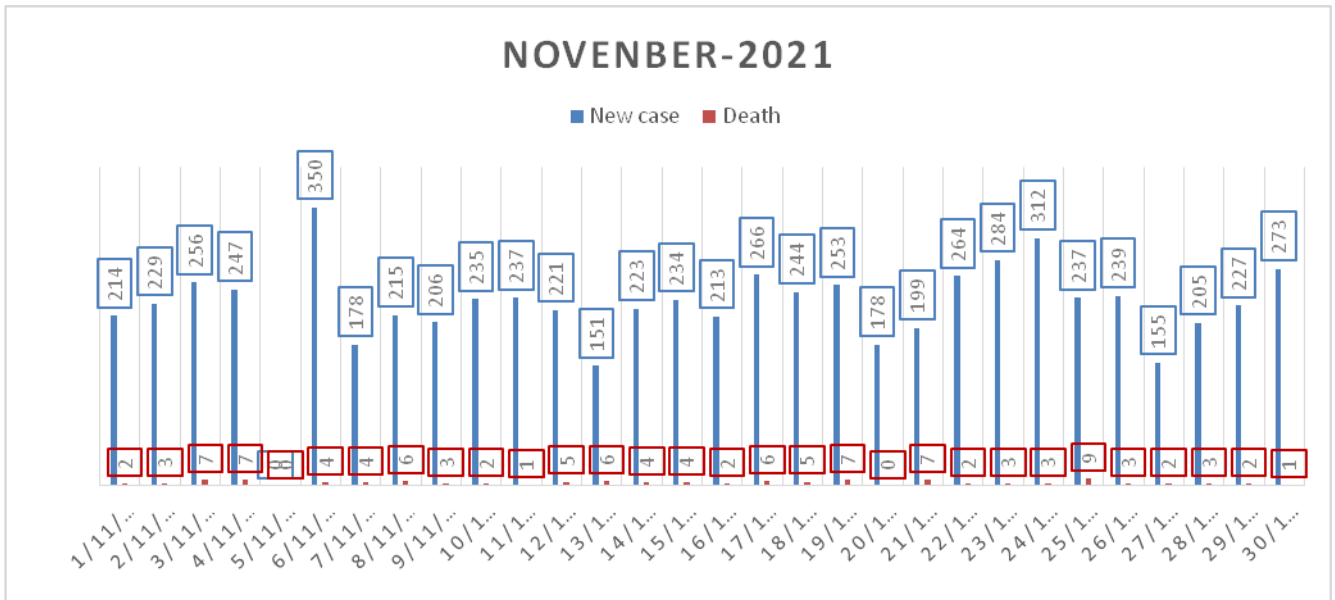


Figure: - 5 The bar diagram showing the daily based information in the month of November - 2021. The total number of cases was 6745, the total number of deaths 113, and the CFR $113/6745 \times 100 = 1.7\%$ in November -2021.

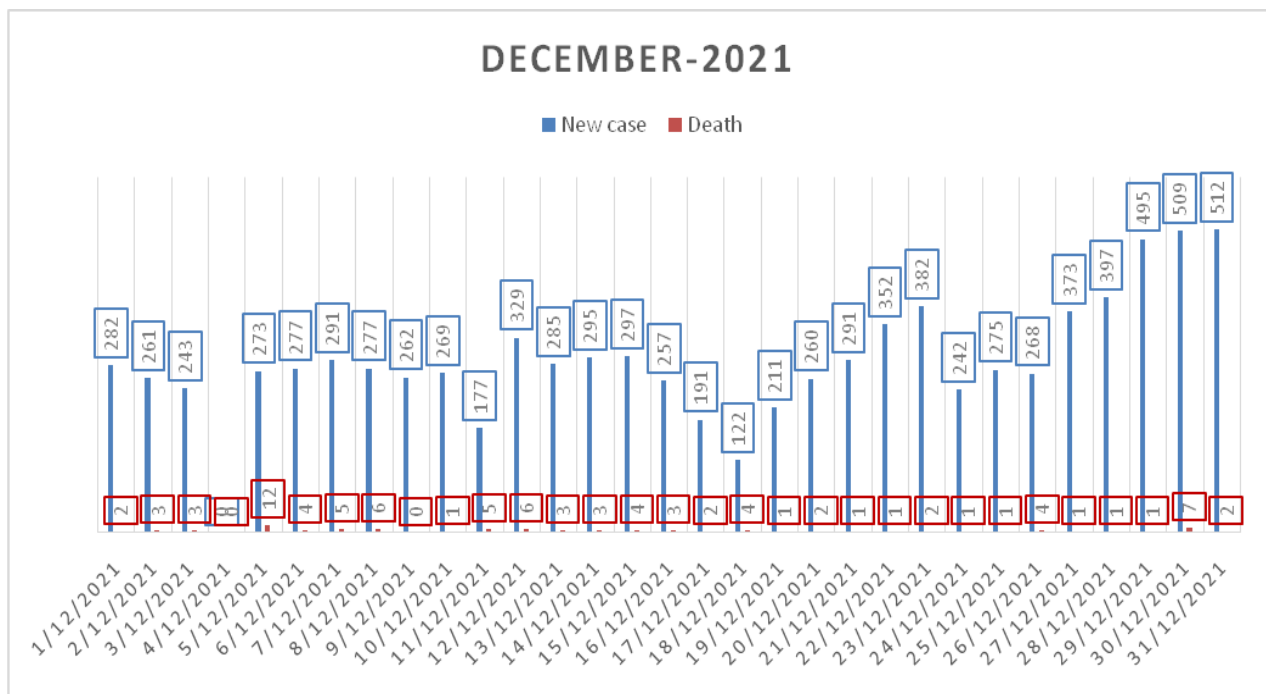


Figure: - 6 The bar diagram showing the daily based information in the month of December - 2021. The total number of cases was 8955 the total number of deaths 91, and the CFR $91/8955 \times 100 = 1.0\%$ in December -2021.

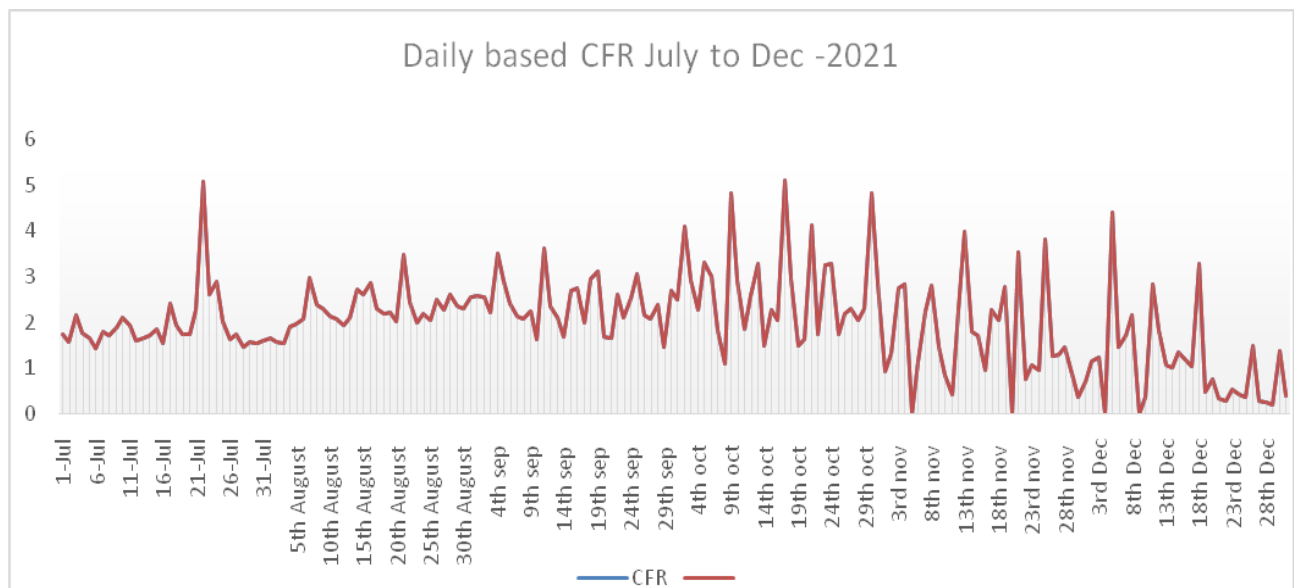


Figure: - 7 The bar diagram showing the daily based information of CFR in the month of July- 2021 to December -2021.

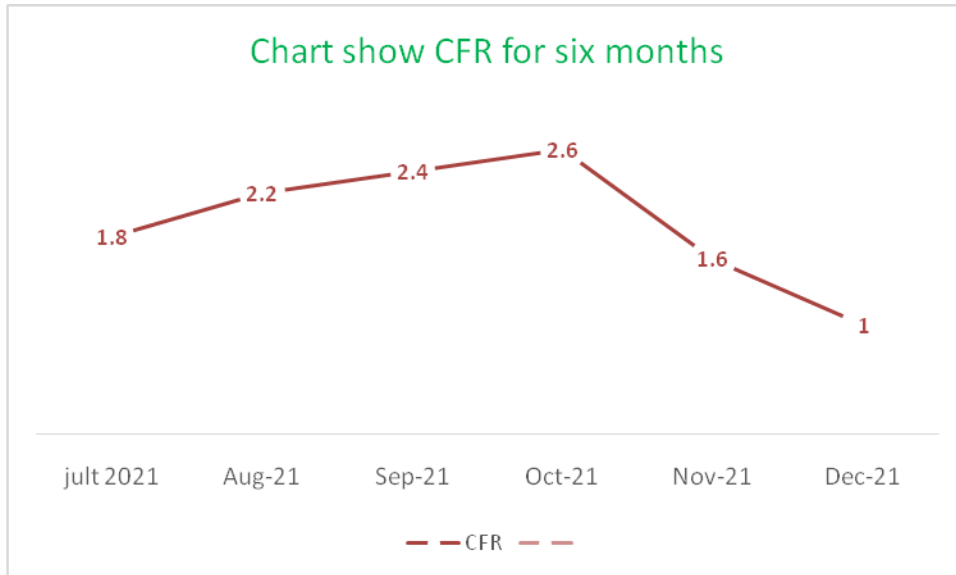


Figure:- 8 This chart shows highest CFR was Oct-2021 and Lowest CFR in Dec-2021

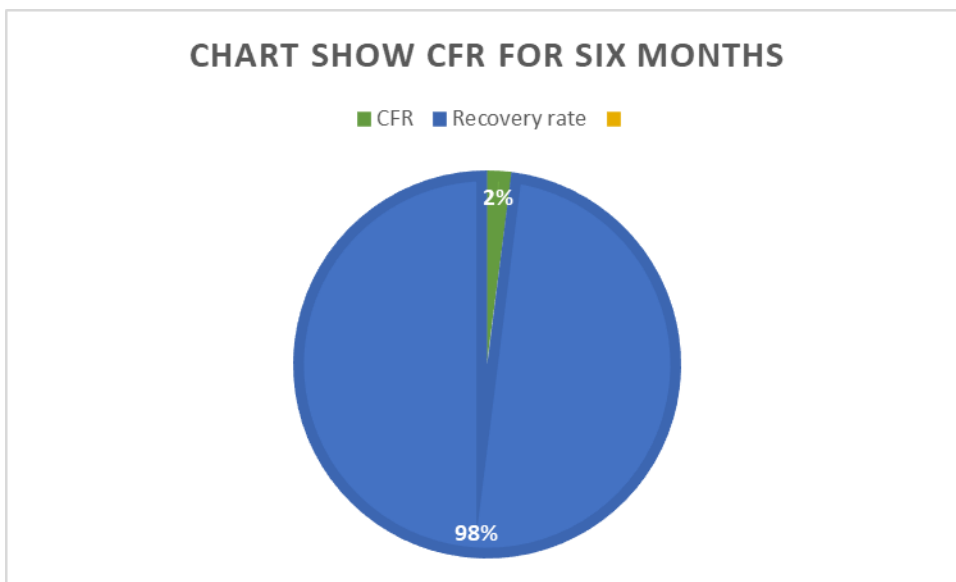


Figure:- 9 This pie chart shows the CFR Vs Recovery rate. From July-2021 to Dec-2021 during these six months, the total number of cases was 675684, deaths 13569, and recovery 662115 is CFR 2%.

Our study found that in July- 2021 total number of cases was 340591, the total number of deaths 6182, and the CFR 1.8%, In the month of August-2021 total number of cases was 250170, the total number of deaths 5510, and the CFR2.2%, In the month of September-2021 total number of cases was 55593, the total number of deaths 1315, and the CFR 2.4%, In the month of October-2021 total number of cases was 13630, the total number of deaths 358, and the CFR 2.6%, In the

month of November-2021 total number of cases was 6745, the total number of deaths 113, and the CFR 1.7 % and In the month of December-2021 total number of cases was 8955 the total number of deaths 91, and the CFR 1.0 %. This highest CFR was Oct-2021 and Lowest CFR in Dec-2021. July-2021 to December -2021 within six months the total number of cases was 675684, deaths 13569, and recovery 662115. So that the recovery rate is 98% and CFR 2%.

Discussion

The difference in age, sex, clinical condition, testability, and public health reaction to COVID-19, as well as the methodology used to estimate the CFR, explain the wide variation in CFR for COVID-19 among regions. For example, the WHO predicted an overall CFR of 2% for COVID-19 in January 2020, but WHO did not take into account certain crucial characteristics at the time, such as the dynamic and rapid spread of SARS-COV-2, population group, and the period between symptom onset and mortality. This means that the CFR varies with the moment of the COVID-19 pandemic and its adjustment can provide more accurate information to assist policymakers in controlling the disease. Since the first fatality in Bangladesh attributable to COVID-19 was discovered on March 18, the CFR estimate for that day was 7.1 percent. That means that out of the total number of patients diagnosed with COVID-19 up to that point, 7.1 percent died as a result of COVID-19. CFR's trend was decreasing until March 20th, when it began to rise again. The CFR reached on March 25, fluctuated moderately until April 07, and then began to decline on April 08, 2020, indicating a negative trend. Bangladesh's CFR discovered 1.55 percent as of May 09, 2020¹⁸. The CFR estimated for the world, Europe, America, Africa, and Southeast Asia are 6.89 %, 9.17%, 9.17%, 5.61%, 3.26%, and 3.52% respectively as of May 9, 2020¹⁸. The estimated CFR of COVID-19 in Wuhan was the highest 5.25%¹⁹. COVID-19 CFR are Yemen 28.9%, Italy 13.2%, the United Kingdom 12.4%, Belgium 11.6%, and France 11.0%²⁰. Sri Lanka, Maldives, Nepal, Bangladesh, India, Pakistan has CFR 0.3%, 0.3%, 0.6%, 1.5%, 2.0%, 3.7%²¹.

Our study found that in July, August, September, October, November, December-2021 COVID-19 CFR 1.8%, 2.2%, 2.4%, 2.6%, CFR 1.7 % 1.0 %. This highest CFR was Oct-2021 and Lowest CFR in Dec-2021. July-2021 to December -2021 within six months the total number of cases was 675684, deaths 13569, and recovery 662115. so that the recovery rate is 98% and CFR 2%.

The European region (7.3%) and the American region (5.3%) recorded the highest CFRs. The South-East Asian region reported the lowest CFR (1.1%)²². Italy 6.22%, China 3.91%, Iran 3.62%, USA 3.07% and Spain 2.12% had the highest CFR on 12 March 2020²³. Bangladesh, a developing country in South Asia, has not been freed from the clutches of Covid-19 like other countries in the world but it is a relief that the death rate here is much lower than the developed countries in the world.

Conclusion

Updating initial CFR calculations by removing biases can also provide initial information on the community burden of disease for public health professionals and policymakers during the early

stages of a growing outbreak when not all cases have been resolved or reported.

More study is needed to evaluate the reporting rates, given the possibility of asymptomatic infection, the underdiagnosis of COVID-19 cases attributed to subclinical infection, and province-, country, or geographical area rates.

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