COVID-19 Pandemic in Bangladesh; Number of closed cases of COVID-19, RR & CFR: From July-2020 to December-2021

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Abstract
On March 11, 2020, the World Health Organization declared the outbreak of novel coronavirus (2019-nCoV) as a pandemic threat. It has become a global health hazard as a result of its widespread dispersion. Bangladesh is also experiencing the effects of the pandemic. The study's goal is to determine the CFR from the Bangladeshi population. The data was taken from the IEDCR's (Institute of Epidemiology Disease Control and Research) daily corona update in Bangladesh from July 1, 2020, to December 31, 2021. From July 2020 to December 2021, the total number of cases was 1440056, the total number of deaths was 26225, and the total number of recoveries was 1413831, resulting in a recovery rate of 98.2 percent and a CFR of 1.8 percent. It is promising that Bangladesh's CFR is fairly low when compared to developed-world countries.
Keywords- CFR, IEDCR, RR, SARS-COV-2, COVID-19

I.   Introduction:

The new SARS-COV-2 was first was detected as viral pneumonia in Wuhan, Hubei Province, China, on December 31, 2019[1-2] and quickly spread to most nations around the world. Due to the global severity of the problem of SARS-COV-2 was officially recognized as "COVID-19" by WHO on February 11, 2020, [3]. COVID-19 has already been revealed to be a highly communicable disease that has caused massive illness and death in China and other countries [4]. 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. Especially with the advent of a new coronavirus that has generated worldwide concern, the World Health Organization (WHO) declared COVID-19 as a Public Health Emergency of International Alarm (PHEIC) on January 30, 2020, [4 – 7]. The World Health Organization declared the outbreak of SARS-COV-2 as a pandemic on March 11, 2020[7], Because It has become a global health issue as a result of its rapid spread. The coronaviruses are not new viruses; it was first reported in 1966 by Tyrell and Bynoe[11], 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 disorders [8]. In Bangladesh, a South Asian 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 39[12]. 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]. On the other hand, on the same day, WHO reported CFR 2.9% in the world. The United States ranked first in the globe, CFR 2.8% to WHO on October 12, 2020.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 CFR was 1.7% in Bangladesh, there have been 1549553 confirmed cases and 27368 deaths as of September 25, 2021 [15] . Up till September 25, 2021, the overall number of confirmed cases was 231893647, and the total number of deaths was 4751259 around the world that CFR 2.0% [16]

II. Methodology:

The aim of the research is to establish the CFR of SARS-CoV-2 positive patients in Bangladesh from total positive cases From July 1, 2020, to December 31, 2021, the data was taken from the IEDCR (Institute of Epidemiology Disease Control and Research) daily corona update in Bangladesh. Data was gathered on daily infected (diagnosed) patients and daily COVID-19-related mortality and analysis by excel.

III. 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 100 [17].
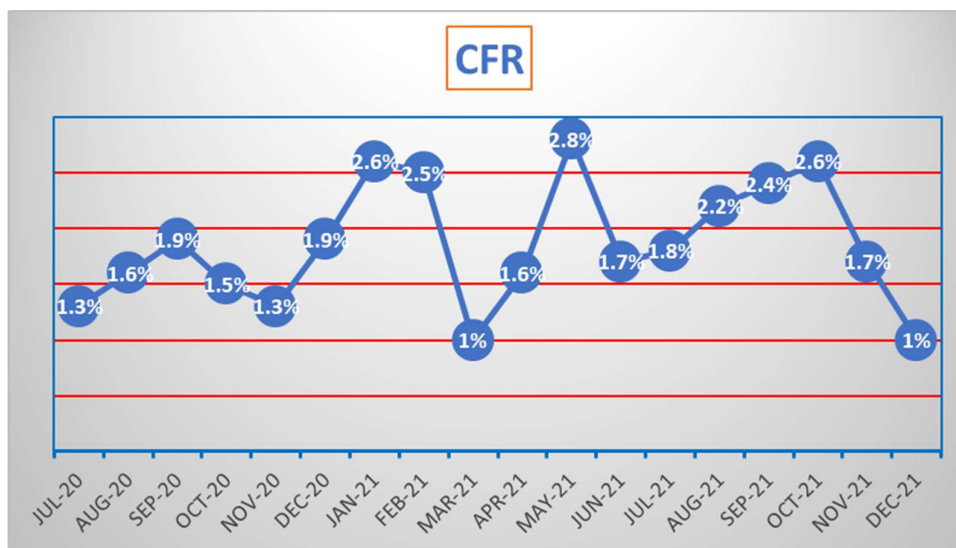
The formula below was used to measure CFR and RR

CFR (%) = (Number of death due to COVID-19/Number of closed cases of COVID-19)×100
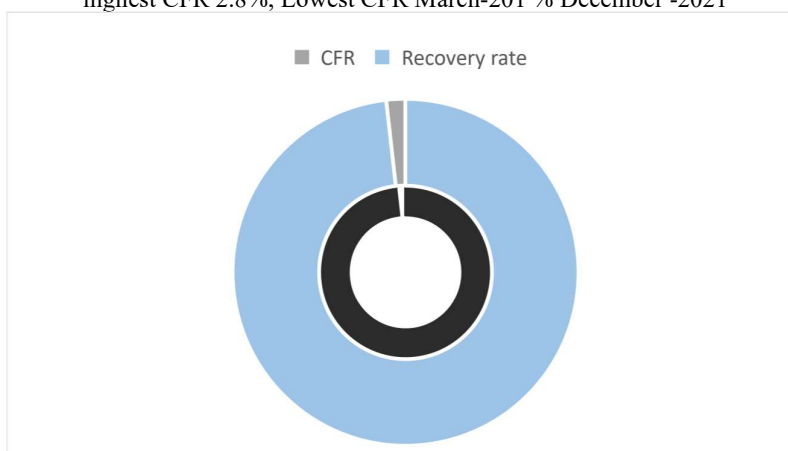
RR (%) = (Number of cases recovered from COVID-19/Number of a closed case of COVID-19)×100
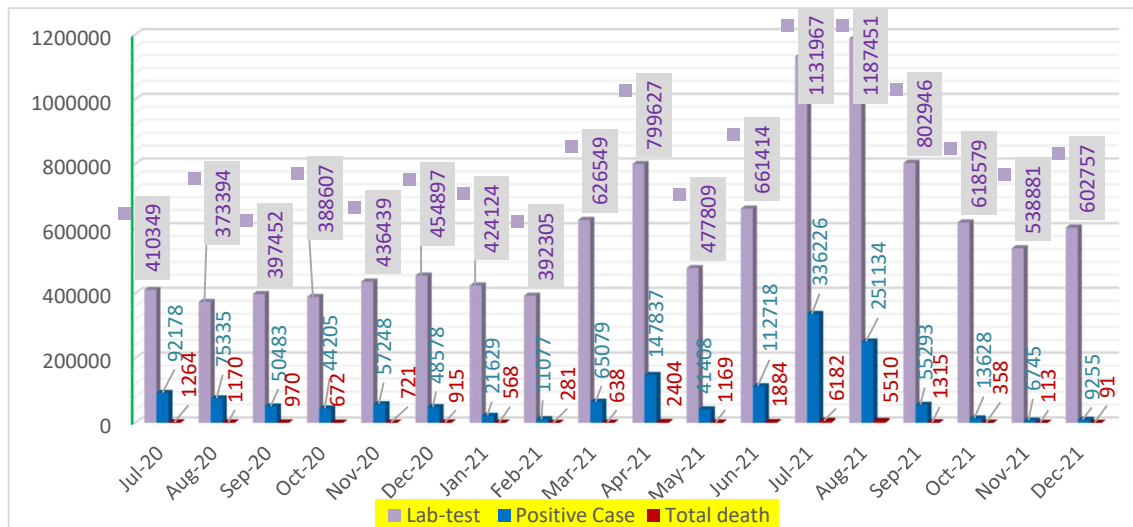
Figure1: The Chart Showing Number of the test, Confirmed Cases, and the number of deaths from July-2020 to December -2021.

Figure2: The Chart Showing CFR of COVID-19 from July-2020 to December -2021. May-2021 was the highest CFR 2.8%, Lowest CFR March-201 % December -2021

Figure3: This figure Showing recovery rates are 98.2 % and CFR 1.8 %. COVID-19 from July-2020 to December -2021

The total number of tests from one and half year's ware 10725547 and new cases were 1440056 that the incidence rate was 13%.our finding from July-2020 to December-2021 total number of close cases was 1440056, the total number of deaths was 26225, Recovery 1413831 so RR (Recovery rate) = $(1413831/1440056) \times 100 = 98.2$ % and CFR (case-fatality -rates) = $(26225/1440056) \times 100 = 1.8$ %.

IV. 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, 2020, [18]. 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, 2020,

[18]. 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-2020 to December-2021 COVID-19 CFR 1.3%, 1.6%, 1.9%, 1.5%, 1.3%, 1.9%, 2.6%, 2.5%, 1%, 1.6%, 2.8%, 1.7%, 1.8%, 2.2%, 2.4%, 2.6%, 1.7 % , 1.0 %. The highest CFR was may-2021 and Lowest CFR in March-2021 Dec-2021.

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 2020 [23]. One of our studies shows 7.7% CFR with local population with a short period of time [24] was greater than our current study. Another finding from our last study CFR 2.0% that also conduct with national data with a period of time 6 months [25]. 2.8% CFR in India showing lowest against World [26] that also higher than our finding. 4.9% CFR on April 2020 in Canada & USA 5.4% it also so high from our study [27]. Another study was carried out at Brahmanbaria Medical College from August to October 2020. A total of 28.5% COVID19 positive confirmed cases were discovered among 752 COVID19 suspects. This is comparable to the national date obtained from Bangladeshi citizens in July 2021, although not with the entire finding process [28].

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.

V.   Conclusion

Updating initial Lab tests, positive rate, 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. It is gratifying that the CFR of Bangladesh is less when compared with the countries of the developed world. However, whether the loss is small or high, the loss is loss. 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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