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Prevalence of COVID-19 Positive Cases Diagnosed By Real Time Polymerase Chain Reaction and Mortality from SARS-Cov-2 among Suspected Population

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ABSTRACT

SARS-CoV-2, a newly emergent virus is the responsible agent for causing Corona Virus Disease 2019 (COVID-19) which is an outgoing pandemic. Test for SARS-CoV-2 is necessary not only to confirm the cases but also to control its transmission. To diagnose Covid-19, Real Time Polymerase Chain Reaction (RT-PCR) for SARS-CoV-2 is used. A retrospective, cross sectional research was conducted in Brahmanbaria Medical college to find out the prevalence of RT-PCR positivity in suspected COVID-19 patients presented from July, 2021 to August, 2021 in the Department of Microbiology. Data was collected from the registry book of the Department of Microbiology. Among the total suspected samples (n=2025), about 1145 (56.54%) cases found positive. Among the positive cases, 59% were symptomatic, and 41% were asymptomatic. Out of the total confirmed cases, 487 (42.53%) were male & 658 were (56.54) % female. Among the confirmed cases, total recovery cases were 1057 (92.3 %) and death cases were 88 (7.7%). More death was observed in age group between 51-60 years. More than half of the positive cases with a medium number of asymptomatic population indicate a high chance of disease transmission. Female being the more vulnerable group of getting infected and age group above 50 years were more prone to succumb.

KEYWORDS: COVID-19, Mortality, RT-PCR, SARS-CoV-2, WHO

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INTRODUCTION

Corona virus disease 2019 (COVID-19) is a Severe Acute Respiratory Syndrome caused by Corona Virus 2 (SARS-C0V-2), was first identified in Wuhan, China[1]. SARS-CoV-2 could cause severe, even lethal pneumonia and lung failure. In less than 5 months after the first emergence of the virus in December 2019, nearly two million people in 185 countries around the globe have been identified as confirmed cases of Corona Virus disease (SARS-CoV-2)[2]. By June, 2020, about 6,397,294 confirmed cases and 383,872 deaths cases have been reported to WHO[3].

Bangladesh has confirmed the first COVID-19 case on March 7, 2020 and within April 13, 2020 the country had reported 803 cases of COVID-19 and the death toll stood at 39. In October 12, 2020, the total confirmed cases and death cases of COVID-19 reported were 3,79,738 and 5,555 respectively [4,5]. Due to its aggressive, rapidly spreading contagious nature, on March 11, 2020 World Health Organization (WHO) declared this novel Corona Virus Disease, 2019 (COVID19) as a pandemic[6]. Timely and rapid testing prevents the spread of the virus and optimizes infection control measures. It enables early case identification, isolation of cases and

comprehensive contact tracing[7]. By the end of the first wave, it became clear that countries that test more have lower mortality rates[8,9,10].

During the pandemic, many countries have faced difficulties in maintaining effective screening due to limited access to laboratory equipment and commercial consumables for PCR[11]. Bangladesh with a low economic status has been thriving to increase testing since its first case detection on March 2020. Due to issues like unavailability of proper laboratory structures, low resource of equipment and funding, lack of trained personnel etc. there is lack of enough escalation of testing. Primarily, Institute of Epidemiology, Disease Control and Research (IEDCR) of Bangladesh was the only center which started testing. According to the press releases of Directorate General of Health Services, Bangladesh, testing capacity has been increased from 92 daily (24-03-2020) to 9,554 tests daily (25-05-2020) being carried out in 48 labs and 35,585 cases have been detected from 2,54,068 tests, 4373 has recovered and 501 died till May 25 with 20.7% infection rate and 1.4% death rate[12].

This study was carried out to find out the rate of RT-PCR for SARS-CoV-2 positivity among the suspected COVID-19 patients and mortality rate as well.

MATERIALS AND METHODS

Place and duration of the study

This research was carried out in the Department of Microbiology of Brahmanbaria Medical college, Bangladesh over the period of July, 2021 to August 2021.

Procedure

The people who were presented as suspected COVID-19 cases and came for RT-PCR for SARS-CoV-2 were included in the study. Data was collected from the registry book of the Department of Microbiology. Verbal consent was taken from the hospital authority. Data was compiled, presented and analyzed using Microsoft Excel 2007, and was expressed as percentage.

RESULT

Table 1: Sex distribution of suspected individual for RT-PCR (n=2025)

Sex	Frequency	Percentage (%)
Male	997	49.2 %
Female	1028	50.7 %
Total	2025	100 %

Table 2: Results of RT-PCR for SARS-CoV-2(n=2025)

Test report	Frequency	Percentage (%)
Negative cases	880	43.46
Positive cases	1145	56.54
Total cases	2025	100

Table 3: Sex distribution SARS-CoV-2 positive and negative patients.

RT-PCR for SARS-CoV-2	Male		Female	
Positive (n=1145)	Frequency	Percentage (%)	Frequency	Percentage (%)
	487	42.53	658	57.47
Negative (n=880)	510	58.0	370	42.0

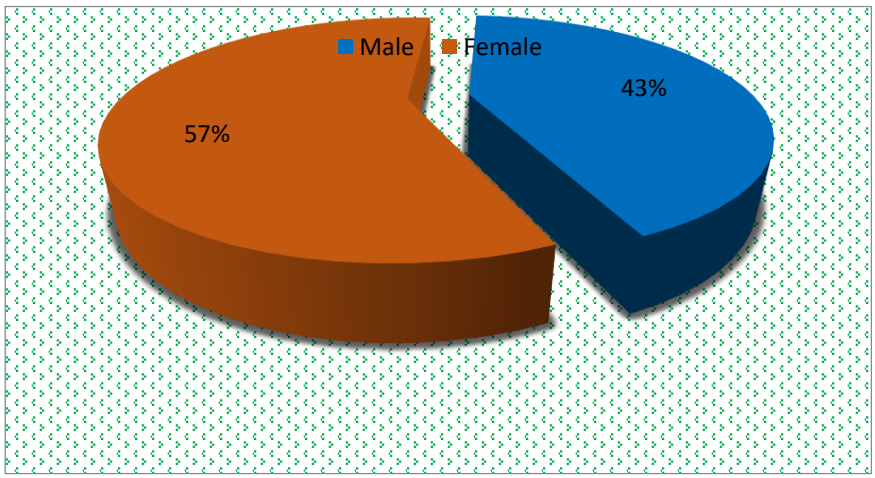

Figure 2. Pie chart showing the percentage of total number of SARS-CoV-2 positive patients among the male & Female.

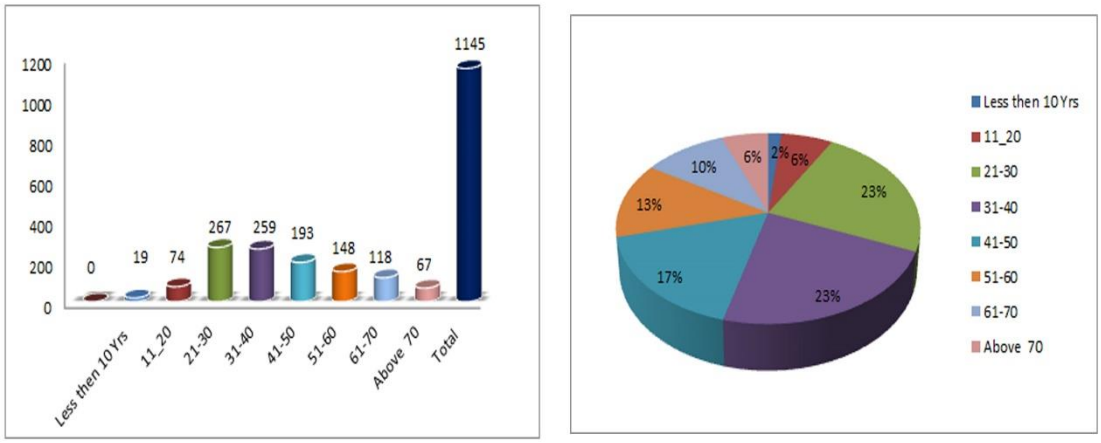

Figure 3: The bar diagram showing the frequency distribution of SARS-CoV-2 positive patients according to their ages And the Pie chart showing the percentage.

Table 4. Recovery vs Death among the positive patient

Subject Case	Frequency	Percentage (%)
Mortality	88	7.7 %
Recovery	1057	92.3 %
Number of Positive Case	1145	100%

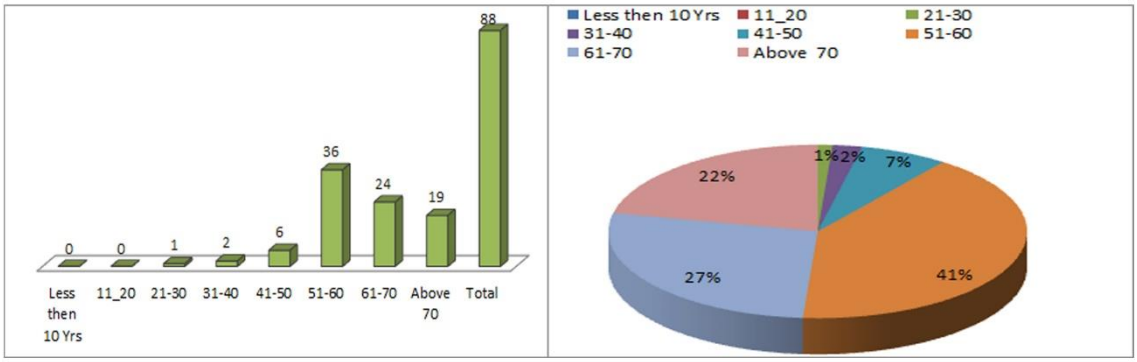

Figure 4: The bar diagram showing the frequency of mortality among the SARS-CoV-2 positive patients according to Their ages & the pie chart showing the percentage.

Total 2025 cases were included in this study period of which 49.2 % (997) were male and 50.7 % (1028) female (Table-1). Among the suspected persons total 56.54 % (n=1145) cases were positive for RT-PCR for SARS-CoV-2; 43.46 % (n=880) were negative (Table- 2). Total number of positive cases were 1145 for RT-PCR for SARS-CoV-2; Male 43 % (n=487) and Female 57 % (n=658) (Figure -2, Table-3). Out of the total positive cases, 672 (59%) were symptomatic & 473(41%) were asymptomatic (Table-4). Highest infected cases were observed in age range 21-30 years which was 267 (23%) & 2nd highest group was of age range 31-40 which was 259 (23%), Figure 3. Total number of recoveries were 1057 (92.3%) & the total number of mortalities were 88 (7.7%), Table-4. Highest number of death observed in age range 51-60 years which was 36 (41 %) & 2nd highest number of death observed in age group 61-70 years which was 24 (27%), Figure 4.

DISCUSSION

Screening of suspected population who meet the criteria of suspected case definition for COVID-19, is a priority for clinical management, reducing mortality rate and also to control outbreak. Suspected cases are screened for the virus with nucleic acid amplification test such as RT-PCR [13]. In the current study it was found that out of 2025 suspected population, 1145 (56.54%) cases found positive for COVID-19 infection which is very higher than the finding of a study conducted in Dhaka Medical College where the positive RT-PCR was 26.9%[14].

Furthermore, out of total positive cases, female were diagnosed more (57.57%) as positive cases than male (42.53%). The reverse results were found in studies conducted in Nepal[15, 16].

Out of all the cases reported positive for COVID-19 infection by performing real-time polymerase chain reaction (RT-PCR) test, 59% were symptomatic, and 41% were asymptomatic. This study finding differ from the study conducted in Nepal which reports more than half asymptomatic cases[15].

Among the RT-PCR positive SARS-COV-2 cases, most were in the age range of 21-40 years that is similar with other studies[14, 17].

Among the confirmed cases, 93.3% recovered fully and 7.7% death cases were accounted which is similar with a study conducted in a rural area of Bangladesh[18.] Highest number of mortality was observed in the age group of 50 years and above that similar with other study findings[19].

CONCLUSION

More than half of the cases were detected as positive with a significant number of asymptomatic cases which indicate a high chance of silent disease transmission. Women had the higher risk of getting infected than male. Persons older than 50 years had strikingly higher COVID-19 mortality rates compare to younger individuals. Increase awareness is a key action to control transmission of the disease and mortality as well.

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