

Original Article

BASELINE CHARACTERISTICS AND OUTCOME OF COVID-19 PATIENTS IN BANGLADESH

ANM Shamsul Islam^{1}, Md Golam Abbas², Md. Nazmul Hassan Refat³, KM Baizid Amin⁴, Md Mahmudul Hasan⁵, Mosfika Rahman⁶*

ABSTRACT

Background: Coronavirus disease-2019 (COVID-19) is the disease caused by Severe Acute Respiratory Syndrome Corona virus 2 (SARS-CoV-2). The disease was declared as a pandemic by WHO in a press release on 11 February 2020. The virus was confirmed to have spread to Bangladesh in March 2020. To combat this pandemic disease, baseline characteristics of the COVID-19 patients are essential to be identified in the context of Bangladesh.

Methods: The cross-sectional study was conducted among 1016 COVID-19 patients diagnosed by Reversed Transcriptase-Polymerase Chain Reaction (RT-PCR) assay at the National Institute of Preventive and Social Medicine (NIPSOM) laboratory. The study was conducted during the period from March to June 2020, Data were collected from the participants, who were selected conveniently and were interviewed by using a pre-tested semi-structured questionnaire over telephone.

Results: The study revealed that among 1016 respondents, 64.1% were male and the rest 35.9% were female. Almost half of the respondents (46.5%) were aged 19-39 years. Among the respondents, 72.6% were married and 39.6% were graduated and above. More than two-thirds (69.3%) of the respondents lived in urban area and 72.7% were from nuclear family. On the fourteenth (14th) day or onwards of being positive, RT-PCR Test-1 found 12.5% positive and on twenty-eighth (28th) day or onwards RT-PCR Test-2 found positive only 3.3%. On the other hand, RT-PCR Test-1 was not done by 11.6% and RT-PCR Test-2 by 41.8%. While on the fourteenth (14th) day or onwards of being positive, 62.1% patients were continuing treatment and on the twenty-eighth (28th) day or onwards only 3.5% patients were continuing treatment due to covid related complications.

Conclusion: Baseline characteristics, severity and outcomes of sequentially tested patients with confirmed COVID-19 positive cases in Bangladesh. Such information should be disseminated across the country to raise awareness and initiate necessary measures by the policy makers to prevent spread of corona virus in Bangladesh.

JOPSOM 2022; 41(2): 36-42

<https://doi.org/10.3329/jopsom.v41i2.69546>

Key Words: *Baseline characteristics, Outcome, COVID-19, RT-PCR, Attack rate, WHO*

-
1. *Dr. ANM Shamsul Islam, Associate Professor & Head, Department of Public Health & Hospital Administration, National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka-1212*
 2. *Dr. Md Golam Abbas, PhD, Assistant Professor, Department of Occupational & Environmental Health, NIPSOM, Mohakhali, Dhaka-1212*
 3. *Dr. Md. Nazmul Hassan Refat, Assistant Professor, Department of Public Health & Hospital Administration, NIPSOM, Mohakhali, Dhaka-1212*
 4. *Dr. KM Baizid Amin, Assistant Professor (CC), Department of Public Health & Hospital Administration, NIPSOM, Mohakhali, Dhaka-1212*
 5. *Dr. Md Mahmudul Hasan, Assistant Professor, Pediatrics Gastroenterology & Nutrition, Shaheed Ziaur Rahman Medical College, Bogura*
 6. *Dr. Mosfika Rahman, Assistant Register, Department of Medical Oncology, NICRH, Mohakhali, Dhaka-1212*

***Correspondence:** *Dr. ANM Shamsul Islam, Email: masumsislam@yahoo.com*

INTRODUCTION

On December 2019, a new strange pneumonia of unknown cause appeared in Wuhan, China was reported to the Chinese World Health Organization (WHO) country office. These infections were found to be caused by a new corona virus which was given the name “2019 Novel Coronavirus” (2019-nCoV). It was later renamed “Severe Acute Respiratory Syndrome Corona Virus 2” (SARS-CoV-2) by the International Committee on Taxonomy of Viruses on 11 February 2020. COVID-19 is the name given by the WHO in a press release on February 11, 2020 for the disease caused by the novel corona virus SARS-CoV-2. As the latest corona virus, known as COVID-19, sweeps the world in a global pandemic and till 11 July 2020 it causes around 5,59,000 deaths [1].

A “novel” coronavirus means that it is a new corona virus that has not been previously identified in humans. This means it is different from corona viruses that causes the common cold, and those that caused SARS in 2002 and MERS in 2012. The virus was confirmed to have spread to Bangladesh in March 2020. The first three (03) known cases were reported on 8 March 2020 by IEDCR. Since then, the pandemic has spread day by day over the whole nation and the number of affected people has been increasing. On 18 March, Bangladesh reported its first coronavirus death. The patient was aged over 70 and had other morbidities [2]. By the end of March, 2020 Bangladesh had reported 51 confirmed cases and 05 deaths. Bangladesh is a densely populated country. Currently the total population of Bangladesh is 164,689,383 with 1.01% growth rate which makes the country 10th rank in world [1]. Though the COVID-19 is highly contagious, there is a chance of infection with maximum number of populations in the country. Between 9 March and 13 July 2020, according to Institute of Epidemiology, Disease Control and Research (IEDCR) one hundred eighty-six thousand eight hundred ninety-four (186,894) COVID-19 cases were confirmed by RT-PCR including two-thousand-three-hundred-ninety-one (2,391) related deaths (CFR 1.28%).

In epidemiological week 28, the number of new weekly COVID-19 cases decreased by 10.2% (23,817 and 21,387 respectively) and the number of COVID-19 new weekly deaths decreased by 4.8% (315 and 300). Out of the total 186,894 positive cases registered on 13 July 2020, 52.61% (98,317/186,894) was recovered, 1.28% (2,391) died and 46.11% (86,186) were active cases.

According to the available data, highest 26.8% cases were confirmed in people between 31 to 40 years, 21.3% in 21 to 30 years, 18.6% in 41 to 50 years and 14.7% in 51 to 60 years. As of 13 July 2020, the highest death rate 29.8% was reported in the age group of 61 to 70 years, 24.7% in 51 to 60 years and 23.5% in 71 years and above. Male represented 71% and 79% of the of total reported confirmed COVID-19 cases and deaths respectively.

On 13 July, Bangladesh over all attack rate (AR) is 1,079.4 per 1 million and 100% (64/64) of districts with the total population of 170,306,468 people have reported at risk for COVID-19 cases. In the epidemiological week 28, COVID-19 weekly AR increased by 13.1%, in comparison to the previous week (1,079 and 954 respectively). According to the available data, the highest AR continues to be observed in the Dhaka division (2,916.6/1,000,000). Within the Dhaka division, Dhaka city has the highest AR (1,826.9/1,000,000) followed by Narayanganj district (1,604.2/1,000,000). Rangpur division reported the lowest AR in the country (211/1,000,000) [3].

This study aims to assess the baseline characteristics and outcome of COVID-19 patients in Bangladesh.

METHODS

The cross-sectional study was conducted to find out the baseline characteristics and outcome of COVID-19 patients in Bangladesh. Data was collected from 1016 diagnosed COVID-19 positive patients by RT-PCR assay at NIPSOM laboratory from 1st March to 31st June, 2020. Among all, 525 (51.7%) and 491 (48.3%) patients were from Dhaka and Munshiganj district respectively. Pre-tested semi-structured questionnaire was used to collect data through telephone interview and a checklist was used to collect data form medical records and relevant documents of the participants. Cluster sampling technique was used to select the sample for data collection. Following informed consent, the respondents was interviewed over telephone ensuring confidentiality at the 14th day and after at 28th day of diagnosis. On an average it took around 20-25 minutes for data collection from every

respondent and also case record form was reviewed. After collection all data was checked and verified for quality control and made entry in IBM SPSS software. All data input was done with proper caution. After completing entry of data in software, cleaning was done in order to find out the error of input or any data missing during entry. Ethical clearance for the study was obtained from Institutional Review Board (IRB) of NIPSOM. An informed consent in Bengali was used to obtain informed consent from the participants before data collection over telephone. Prior to data collection, the participants were informed about the objectives and procedure of the study and also informed about risk and benefits of participation. Their participation was voluntary and confidentiality of data was maintained strictly.

RESULTS

Table-1 shows that the mean age of the respondents was 38.32±16.05 years; around two-third were female (64.1%); the majority were graduate (39.6%) and service holder (29.9%). More than two-third (72.7%) of the respondents belonged to nuclear family, 69.3% came from urban area and 77.8% were living in pucca house.

Table-1: Distribution of the respondents by socio-demographic characteristics (n-1016)

| Characteristics | Respondents | | Characteristics | Respondents | |
|--------------------------|-------------------|------------|------------------------------------|-----------------------|------------|
| | Frequency | Percentage | | Frequency | Percentage |
| Age group (Years) | n | % | Monthly Family Income (Tk.) | n | % |
| 1-18 | 93 | 9.1 | <10000/- | 72 | 7.1 |
| 19-39 | 472 | 46.5 | 10001-30000/- | 376 | 37 |
| 40-59 | 349 | 34.4 | 30001-50000/- | 264 | 26 |
| ≥60 | 102 | 10.0 | 50001-100000/- | 221 | 21.7 |
| Mean age | 38.32±16.05 years | | Mean income | 44852.90±3038.16 Taka | |
| Sex | | | >100000/- | 83 | 8.2 |
| Male | 651 | 64.1 | Marital status | | |
| Female | 365 | 35.9 | Married | 739 | 72.7 |
| Education | | | Unmarried | 236 | 23.2 |
| Illiterate | 78 | 7.7 | Divorced | 7 | 0.7 |
| Primary | 141 | 13.9 | Widow/Widower | 34 | 3.4 |
| Secondary | 238 | 23.4 | Place of residents | | |
| Higher secondary | 187 | 18.4 | Rural | 188 | 18.5 |
| Graduation and > | 372 | 39.6 | Urban | 704 | 69.3 |
| Occupation | | | Peri-urban | 124 | 12.2 |
| Housewife | 158 | 15.6 | Type of house | | |
| Service | 304 | 29.9 | Kacha | 50 | 4.9 |
| Business | 142 | 14.0 | Semi-pucca | 176 | 17.3 |
| Healthcare worker | 189 | 18.6 | Pucca | 790 | 77.8 |
| Police/ansar | 26 | 2.6 | Type of family | | |
| Student | 104 | 10.2 | Nuclear | 739 | 72.7 |
| Retired | 37 | 3.6 | Joint | 277 | 27.3 |
| Unemployed | 39 | 3.8 | | | |
| Others (Day labor) | 17 | 1.7 | | | |

Table-2 shows that 62.1% of respondent's continuing their treatment at 14th day of diagnosis, 35.6% were cured where 2.3% were dead and 94% of total respondents were cured after 28th day of diagnosis, only 3.5% continued their treatment and 2.5% were dead.

Table-2: Distribution of respondents according to present condition at the 14th day and 28th day of diagnosis (n-1016)

| Present condition of respondents | | | | | |
|--------------------------------------|-------------|--------------|--------------------------------------|-------------|--------------|
| at 14 th day of diagnosis | | | at 28 th day of diagnosis | | |
| | Frequency | Percent | | Frequency | Percent |
| Continuing treatment | 631 | 62.1 | Continuing treatment | 36 | 3.5 |
| Cured | 362 | 35.6 | Cured | 955 | 94.0 |
| Death | 23 | 2.3 | Death | 25 | 2.5 |
| Total | 1016 | 100.0 | Total | 1016 | 100.0 |

Table-3 shows that 75.9% of total respondents found negative, 12.5% were positive and 11.6% did not do any test in RT-PCR Test-1 finding; on the other hand, finding of RT-PCR Test-2, 54.8% found negative, 41.8% did not do any test and only 3.3% respondents were positive.

Table 3: Distribution of respondents by finding of RT-PCR Test-1 and RT-PCR Test-2 (n-1016)

| Findings of RT-PCR Test | | | | | |
|-------------------------|-------------|--------------|---------------|-------------|--------------|
| RT-PCR Test-1 | | | RT-PCR Test-2 | | |
| Finding | Frequency | Percent | Finding | Frequency | Percent |
| Positive | 127 | 12.5 | Positive | 34 | 3.3 |
| Negative | 771 | 75.9 | Negative | 557 | 54.8 |
| Not done | 118 | 11.6 | Not done | 425 | 41.8 |
| Total | 1016 | 100.0 | Total | 1016 | 100.0 |

Table-4 shows that relationship between age of the respondents and the outcome or present condition at the 4th and 28th day of diagnosis. But the relationship was not statistically significant relationship ($p > 0.05$).

Table-4: Distribution of outcome by age (at 14th and 28th day of diagnosis)

| Outcome of respondents (condition) at 14 th day of diagnosis | | | | | |
|---|----------------------|-------------------|-----------------|-------------------|--------------------------------|
| Age of the respondents | Continuing Treatment | Cured | Death | Total | Test of significance |
| 1 – 18 | 54 (58.1) | 39 (41.9) | 0 (0) | 93 (100) | $x^2 = 0.000,$ $p = 80.075$ |
| 19 – 39 | 290 (61.4) | 182 (38.6) | 0 (0) | 472 (100) | |
| 40 – 59 | 234 (67.2) | 105 (30.2) | 9 (2.6) | 348 (100) | |
| 60 and above | 53 (51.5) | 36 (35.0) | 14 (13.6) | 103 (100) | |
| Total | 631 (62.1) | 362 (35.6) | 23 (2.3) | 1016 (100) | |
| Outcome of respondents (condition) at 28 th day of diagnosis | | | | | |
| | Continuing Treatment | Cured | Death | Total | |
| 1 – 18 | 3 (3.2) | 90 (96.8) | 0 (0) | 93 (100) | $x^2 = 0.000,$ |

| | | | | | |
|--------------|-----------------|-------------------|-----------------|-------------------|------------|
| 19 – 39 | 18 (3.8) | 453 (96.0) | 1 (0.2) | 472 (100) | p = 67.477 |
| 40 – 59 | 14 (4.0) | 324 (93.1) | 10 (2.9) | 348 (100) | |
| 60 and above | 1 (1.0) | 88 (85.4) | 14 (13.6) | 103 (100) | |
| Total | 36 (3.5) | 955 (94.0) | 25 (2.5) | 1016 (100) | |

*Percentages in parentheses

Table-5 shows that the relationship between age of the respondents and duration of suffering but it was not statistically not significant relationship ($p > 0.05$).

Table-5: Distribution of outcome by duration of disease (n-1016)

| Age of the respondents | Duration of suffering | | | Test of significance |
|------------------------|-----------------------|-------------------|-------------------|--------------------------------|
| | 2 weeks | > 2 weeks | Total | |
| | f (n) | f (n) | f (n) | |
| 1 – 18 | 39 (41.9) | 54 (58.1) | 93 (100) | $\chi^2 = 0.55$ $p = 7.589$ |
| 19 – 39 | 181 (38.3) | 291 (61.7) | 472 (100) | |
| 40 – 59 | 113 (32.5) | 235 (67.5) | 348 (100) | |
| 60 and above | 47 (45.6) | 56 (54.4) | 103 (100) | |
| Total | 380 (37.4) | 636 (62.6) | 1016 (100) | |

*Percentages in parentheses

Table-6 shows that the relationship between sex of the respondents and present condition at the 14th and 28th day of diagnosis. But the relationship was not statistically significant relationship ($p > 0.05$).

Table-6: Distribution of outcome by sex (at 14th and 28th day of diagnosis)

| Sex of the respondents | Present condition at 14 th day of diagnosis | | | | Test of significance |
|------------------------|--|-------------------|-----------------|-------------------|---------------------------------|
| | Continuing Treatment | Cured | Death | Total | |
| | f (n) | f (n) | f (n) | f (n) | |
| Male | 400 (61.4) | 233 (35.8) | 18 (2.8) | 651 (100) | $\chi^2 = 0.341$ $p = 2.152$ |
| Female | 231 (63.3) | 129 (35.3) | 5 (1.4) | 365 (100) | |
| Total | 631 (62.1) | 362 (35.6) | 23 (2.3) | 1016 (100) | |
| | Present condition at 28th day of diagnosis | | | | |
| Male | 23 (3.5) | 609 (93.5) | 19 (2.9) | 651 (100) | $\chi^2 = 0.453$ $p = 1.584$ |
| Female | 13 (3.6) | 346 (94.8) | 6 (1.6) | 365 (100) | |
| Total | 36 (3.5) | 955 (94.0) | 25 (2.5) | 1016 (100) | |
| | | | | | |

*Percentages in parentheses

DISCUSSION

The study revealed that 46.5% respondents were aged between 19 to 39 years, 34.4% were 40 to 59 and 9.1% were aged between 1 to 18 years. Among total respondents, male was 64.1% and female 35.9%. Guan *et. al.*, published-on 28 February 2020, the socio-demographic characteristics of 1099 patients with laboratory confirmed COVID-19 from 552 different hospitals in mainland China. The median age of the patients was 47 years; 41.9% patients were female and 0.9% patients were less than 15 years of age [4, 5]. In one of the first reported cases on COVID-19 published on January 24, 2020, illustrated by Huang *et. al.*, most of these 2019-nCoV infected patients were men 73%; 49.0% patients were aged 25 to 49 years and 34.0% cases were aged 50 to 64 years. There were no clinical cases of children below 15 years of age [6]. Similarly, in another study, among the first 18 patients diagnosed with SARS-CoV-2 infection in Singapore, median age was 47 years and 50.0% cases were women [7].

The study also showed that 75.9% of total respondents found negative, 12.5% were positive and 11.6% did not do any test in RT-PCR Test-1 finding and on the other hand finding of RT-PCR Test-2, 54.8% found negative, 41.8% did not do any test and only 3.3% respondents were positive. Another study in New York City showed that the first test for COVID-19 was positive in 5517 patients (96.8%), while 183 patients (3.2%) had a negative first test. The rate of co-infection with another respiratory virus for those tested was 2.1% (42/1996) [8].

From the study we found that 62.1% of respondent's continuing their treatment at 14th day of diagnosis, 35.6% cured where 2.3% were dead; while 94% of total respondents were cured after 28th day of diagnosis, 3.5% continued their treatment and 2.5% were dead. Another study showed that among the 2634 patients who were discharged or had died at the study end point; during hospitalization, 373 (14.2%) were treated in the ICU, 320 (12.2%) received invasive mechanical ventilation, 81 (3.2%) were treated with kidney replacement therapy, and 553 (21%) died [8].

Similarly, as of May 5, 2020, a total of 18 (15.4%) patients died, 12 (10.3%) remained in ICU, 16 (13.7%) were discharged from ICU but remained in hospital, and 71 (60.7%) were discharged home in a study conducted in Vancouver City, Canada [9]. No statistically significant relationship was found among qualitative variables and socio-demographic characteristics.

CONCLUSION

The study revealed the baseline characteristics and outcome of COVID-19 positive patients in Bangladesh by interrelating socio-demographic variables with severity and outcome of the disease after WHO recommended isolation or quarantine period. It also showed the wide range of affected respondents participating in follow up RT-PCR tests. The study findings draw the attention to the importance of effective public health strategies to combat against the incessant threats imposed by these novel pathogens. The study also recommends improvement of healthcare managers, which could ultimately lead to the improvement of the services. Special attention should be given to the young adolescent group regarding self-protection and infection prevention and control practice in the work places.

REFERENCE

1. <https://worldpopulationreview.com/countries/bangladesh-population/>
2. Bangladesh reports first coronavirus death -officials. Reuters. 18 March 2020. Archived from the original on 28 March 2020. Retrieved 30 March 2020. <https://www.reuters.com>
3. WHO. COVID-19 Bangladesh situation Reports. 2020. Available at: <https://www.who.int/docs/default-source/searo/bangladesh/COVID-19-who-bangladesh-situation-reports/who-COVID-19-update-20-20200713.pdf>
4. Mannan N, Akram A. Variation of Clinical Features of Covid19 Patients. *Bangladesh J of Infect Dis.* 2020 Apr 25; 7(1): 54-7. DOI: 10.3329/bjid.v7i0.46804.

5. Guan Wj, Ni ZY, Hu Y, Liang WH, Ou CQ, He JX, et. al. Clinical Characteristics of Coronavirus Disease 2019 in China. *N Engl J Med.* 2020 Feb 28; 382(18):1708-20. DOI: 10.1056/NEJMoa2002032.
6. Huang C, Wang Y, Li X, Ren L, Zhao J, Hu Y, et. al. Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China. *The Lancet.* 2020 Jan 24; 395 (10223): 497-506. DOI: 10.1016/S0140.6736(20)30138-5.
7. Young BE, Ong SWX, Kalimuddin S, Low JG, Tan SY, Loh J, et. al. Epidemiologic features and clinical course of patients infected with SARS-CoV-2 in Singapore. *JAMA.* 2020 Apr 21; 323(15):1488-94. DOI: 10.1001/jama.2020.3204.
8. Richardson S, Hirsch JS, Narasimhan M, Crawford JM, McGinn T, Davidson KW, et.al. Presenting characteristics, comorbidities, and outcomes among 5700 patients hospitalized with COVID-19 in the New York City area. *JAMA.* 2020 Apr 26; 323(20):2052-59. DOI: 10.1001/jama.2020.6775.
9. Mitra AR, Fergusson NA, Lloyd-Smith E, Wormsbecker A, Foster D, Karpov A, et.al. Baseline characteristics and outcomes of patients with COVID-19 admitted to intensive care units in Vancouver, Canada: a case series. *CMAJ.* 2020 Jan 29;192(26): E694-701. DOI: 10.1503/cmaj.200794.