

Research Article

Demographic and Clinical Characteristics of COVID-19 Positive Cases: A Prospective Study in a COVID-19 Referral Hospital

Mohammad Ripon Sikder^{*}, Marzuk Ahamed, Mohammad Salehin Abedin, Mohammad Motiur Rahman, Sohel Rana Sumon, Mohammad Mojibur Rahman, Abdur Rab Akanda

Department of Public Health and Life Science, University of South Asia, Dhaka, Bangladesh

Abstract

Background: The emergence of the SARS-CoV-2 virus, also referred to as COVID-19, was first identified in China and rapidly spread throughout the globe, leading to a worldwide public health crisis. COVID-19 is an extremely transmissible disease caused by the SARS-CoV-2 virus. The main symptoms were of heightened body temperature, inflammation of the lungs, breathing difficulties, muscular discomfort or fatigue, headache, hemoptysis, gastrointestinal disturbance, and acute respiratory distress syndrome (ARDS). **Objective:** To determine the demographic and clinical characteristics of people who have tested positive for COVID-19. **Methods:** This study was conducted as a cross-sectional prospective investigation in partnership with the Radiology and Imaging department and the Virology and COVID unit at IbnSina Hospital in Dhaka, Bangladesh. The study took place from January 2022 to June 2022. This study included a cohort of 120 individuals who tested positive for COVID-19 and were above the age of 18. The data acquired underwent analysis using the Statistical Package for Social Sciences (SPSS) software, specifically version 23.0. The study gained ethical clearance from the Ethics Committee of the School of Public Health & Life Science at the University of South Asia, located in Dhaka, Bangladesh. **Result:** In this study a total of 120 (n=120) confirmed COVID-19 positive cases were enrolled. According to age distribution, the majority 63 (52.5%) patients belonged to the age group >52 years and followed by 30 (25%) age group (43-52) years, 18 (15%) (33-42) years, 6 (5%) (22-32) years and 3 (2.5%) <22 years. According to sex distribution, the majority, 82 (68%) were male and 38 (32%) were female. According to distribution of residence, the maximum, 96 (80%) were from urban area and 24 (20%) were from rural area. Distribution by clinical presentation, general weakness 120 (100%) and followed by sneezing 114 (95%), fever 116 (96.66%), headache 117 (99.16%), cough 115 (95.83%), respiratory distress, 119 (98.33%), cough and SOB, 118 (99.16%), loss of smell, 212 (88.74%), lac of apatite, 116 (96.66%), asthma 81 (68.50%) and pneumonia, 40 (33.33%)., the Majority 116 (96.66%) had Diabetes Mellitus (DM) and followed by 113 (94.16%) had Hypertension (HTN), 7 (5.83%) Chronic Liver Disease (CLD) 22 (18.33%) had Chronic Kidney Diseases (CKD) and 12 (10%) Thyroid. **Conclusions:** This study investigated that the highest age group of COVID-19 positive cases was >52 years (52.5%). The majority of the COVID-19 positive cases were male (68%). The majority of the patients were from urban area (80%). Respiratory 119 (98.33) and general weakness 120 (100) were the most common clinical presentations. The maximum patients had Diabetes 116 (96.66%) and hypertension 113 (94.16%).

*Corresponding author: riponsikder.mtr@gmail.com (Mohammad Ripon Sikder)

Received: 1 November 2023; **Accepted:** 7 December 2023; **Published:** 17 April 2024



Copyright: © The Author(s), 2024. Published by Science Publishing Group. This is an **Open Access** article, distributed under the terms of the Creative Commons Attribution 4.0 License (<http://creativecommons.org/licenses/by/4.0/>), which permits unrestricted use, distribution and reproduction in any medium, provided the original work is properly cited.

Keywords

Demographic, Clinical, Characteristics, COVID-19, Positive, Cases

1. Introduction

In December 2019, Chinese authorities informed the World Health Organization (WHO) of an epidemic of pneumonia in Wuhan, Hubei province. The etiology of the sickness remained unknown at that period. A novel strain of the coronavirus, designated severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), was discovered and formally designated as "coronavirus disease 2019" (COVID-19) on January 7, 2020. The inaugural fatality attributed to COVID-19 occurred on January 9, 2020, in Wuhan. Subsequently, the global tally of confirmed cases has surpassed 370,000, with a death toll of over 16,000 [1]. Despite the implementation of heightened steps to reduce the spread of the pandemic, there continues to be a steady increase in the number of individuals affected and the mortality rate. The elderly population is more susceptible to developing severe acute respiratory syndrome, complications, and mortality when infected with SARS-CoV-2 [2]. The main symptoms seen were increased body temperature, inflammation of the respiratory tract, breathing difficulties, muscle discomfort or fatigue, headache, coughing up blood, gastrointestinal disruption, and acute respiratory distress syndrome (ARDS) [3, 4]. In February 2020, the World Health Organization (WHO) formally classified this pandemic as a global health emergency [5]. The first instance was officially recorded on March 8th, 2020, in Bangladesh, and the first death was reported on March 18th, 2020. The COVID-19 pandemic has predominantly impacted persons in the first phases of their professional lives and those who are currently employed. The IEDCR expressly stated that persons aged 21 to 50 constituted 68% of the confirmed COVID-19 cases. In contrast, those who were 50 years old or older made up 21% of the total infected population. Minors constituted 11% of the total number of affected cases [6]. The age distribution of COVID-19 positive patients in Bangladesh and India is comparable, but it dramatically deviates from that of the USA and Italy, where it has had a substantial impact. In India, 75.09% of the persons who were diagnosed with the virus were younger than 50 years old. So far, the predominant demographic affected by the virus in India consists of adults in the working age group. Conversely, the prevalence of COVID-19 infection among individuals aged 19 to 50 years in Italy stands at a mere 27.2%. COVID-19 cases in the United States were comprised of individuals who were 50 years old and older, accounting for 50.63% of the total cases [7]. Countries with fragile healthcare systems are more susceptible to increased risk, as indicated by the World Health Organization (WHO). As of August 11, 2020, the sickness has

affected a minimum of 204,173,377 people and caused at least 742,311 fatalities worldwide [8]. The emergency committee of the World Health Organization has affirmed that the transmission of COVID-19 can be halted through meticulous contact tracing, swift case identification, rigorous isolation measures, and rapid administration of medical interventions. The objective of this study was to determine the demographic and clinical attributes of individuals who tested positive for COVID-19.

2. Objectives

General Objective:

To determine the demographic and clinical characteristics of the COVID-19 positive cases.

Specific Objectives:

- 1) To determine the demographic characteristics of the COVID-19 positive cases.
- 2) To identify clinical characteristics of the COVID-19 positive cases.

3. Methodology

This study was conducted as a cross-sectional prospective investigation at the Radiology and Imaging department in partnership with the Virology department and COVID unit at IbnSina Hospital in Dhaka, Bangladesh, from January 2022 to June 2022. A purposive random sampling technique was used and a total of 120 confirmed COVID-19 positive cases by RT-PCR lab test aged above 18 years were enrolled in this study. Due to COVID-19 Pandemic situation, face to face interview was not possible. The formal permission was taken from the Director and Registrar of IbnSina Hospital and the data were collected from the hospital registry using a pre-structured Case Record Form (CRF). The gathered data underwent a process of cleansing, editing, and inputting into a computer system for analysis. The data acquired were analyzed using the Statistical Package for Social Sciences (SPSS) software, specially version 23.0. Statistical analysis was executed to make inferences, and the findings were displayed in tables and charts, indicating the frequency and percentage. The study received ethical approval from the Ethics Committee of the School of Public Health & Life Science at the University of South Asia in Dhaka, Bangladesh. The inclusion and exclusion criteria of this study were as follows:

Inclusion criteria:

- 1) Confirmed COVID-19 positive cases by RT-PCR lab test.
- 2) Aged > 18 years.
- 3) Having complete information in the hospital registry.

Exclusion criteria:

- 1) Non COVID-19 Cases.
- 2) Aged < 18 years.
- 3) Having incomplete information in the hospital registry.

4. Results

Table 1. Age distribution of COVID-19 positive cases (n=120).

Age in years	Frequency	Percentage
< 22	3	2.5
22-32	6	5
33-42	18	15
43-52	30	25
>52	63	52.5
Total	120	100

Table 1 shows the age distribution of the study subjects. 63 (52.5%) patients belonged to the age group >52 years, which was the highest and followed by 30 (25%) age group (43-52) years, 18 (15%) (33-42) years, 6 (5%) (22-32) years and 3 (2.5%) <22 years.

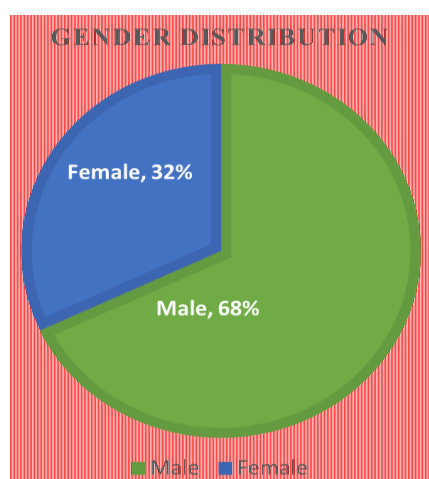


Figure 1. The gender distribution of COVID-19 positive cases (n=120).

Figure 1 shows the gender distribution of the study subjects. Among the COVID-19 positive cases, 82 (68%) were male and 38 (32%) were female.

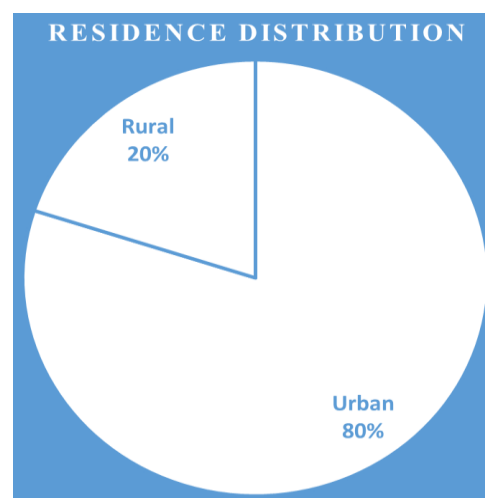


Figure 2. The residence distribution of COVID-19 positive cases (n=120).

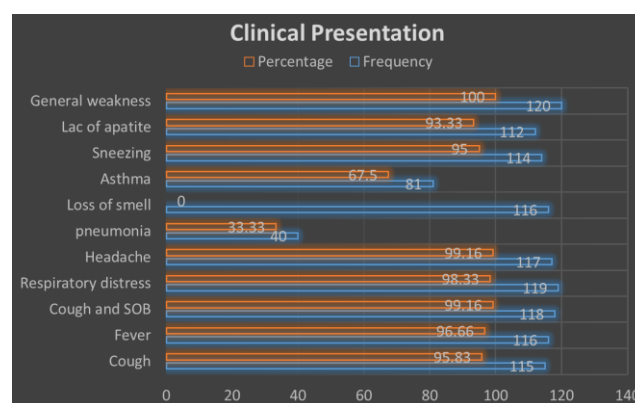


Figure 3. The distribution of clinical presentation of COVID-19 positive cases (n=239).

Figure 2 shows the residence distribution of COVID-19 positive cases. Among the patients, the maximum 96 (80%) were from urban area and 24 (20%) were from rural area of Bangladesh.

Table 2. Clinical presentation of COVID-19 positive cases (n=120).

Clinical Presentation	Frequency	Percentage
Cough	115	95.83
Fever	116	96.66
Cough and SOB	118	99.16
Respiratory distress	119	98.33
Headache	117	99.16
pneumonia	40	33.33
Loss of smell	116	96.66
Asthma	81	67.50

Clinical Presentation	Frequency	Percentage
Sneezing	114	95
Lac of apatite	112	93.33
General weakness	120	100

Table 2 shows distribution of clinical presentation of the study subjects. Among the COVID-19 positive cases, the highest symptom was observed, general weakness 120 (100%) and followed by sneezing 114 (95%), fever 116 (96.66%), headache 117 (99.16%), cough 115 (95.83%), respiratory distress, 119 (98.33%), cough and SOB, 118 (99.16%), loss of smell, 212 (88.74%), lac of apatite, 116 (96.66%), asthma 81 (68.50%) and pneumonia, 40 (33.33%).

Table 3. Distribution of co-morbidities of COVID-19 positive cases (n=120).

Co-morbidities	Frequency	Percentage
Hypertension (HTN)	113	94.16
Diabetes Mellitus (DM)	116	96.66
Chronic Liver Disease (CLD)	7	5.83
Chronic Kidney Disease (CKD)	22	18.33
Thyroid	12	10

Table 3 shows distribution of co-morbidities of COVID-19 positive cases. Among the patients, the Majority 116 (96.66%) had Diabetes Mellitus (DM) and followed by 113 (94.16%) had Hypertension (HTN), 7 (5.83%) Chronic Liver Disease (CLD) 22 (18.33%) had Chronic Kidney Diseases (CKD) and 12 (10%) Thyroid.

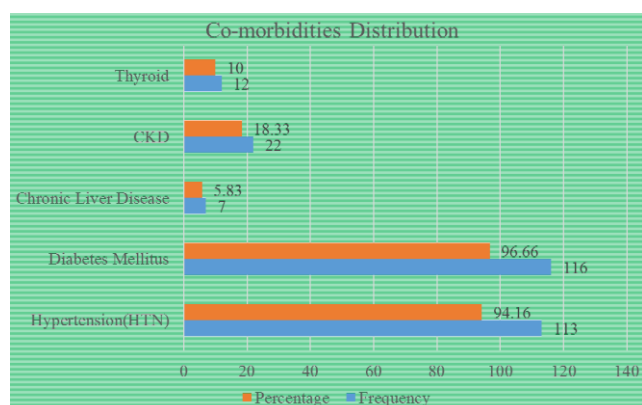


Figure 4. The distribution of co-morbidities of COVID-19 positive cases (n=120).

5. Discussion

This study was conducted at IbnSina Medical College and Hospital in Dhaka, Bangladesh. The participants were patients who tested positive for COVID-19 using the RT-PCR lab test. A cohort of 120 individuals who tested positive for COVID-19 were included in this investigation. The objective of this study was to identify the demographic and clinical attributes of individuals who tested positive for COVID-19. This study observed, 63 (52.5%) patients belonged to the age group >52 years, which was the highest and followed by 30 (25%) age group (43-52) years, 18 (15%) (33-42) years, 6 (5%) (22-32) years and 3 (2.5%) <22 years. A similar study was conducted in China in 2020 by Zheng et al. In their study, they observed, the highest prevalent group was (40-59) years, 24 (32.9%) (n=73). This finding of their study are almost persistent with this present study [9]. This current study observed, Among the COVID-19 positive cases, 82 (68%) were male and 38 (32%) were female and the maximum 96 (80%) were from urban area and 24 (20%) were from rural area of Bangladesh. This current study also observed, Among the COVID-19 positive cases, the highest symptom was observed, general weakness 120 (100%) and followed by sneezing 114 (95%), fever 116 (96.66%), headache 117 (99.16%), cough 115 (95.83%), respiratory distress, 119 (98.33%), cough and SOB, 118 (99.16%), loss of smell, 212 (88.74%), lac of apatite, 116 (96.66%), asthma 81 (68.50%) and pneumonia, 40 (33.33%). A separate investigation carried out at Shaheed Suhrawardy Medical College Hospital in Dhaka between July 2020 and December 2020 revealed that the majority of patients experienced fever (95%), cough (88.4%), dyspnea (43.8%), pneumonia (37.4%), and severe pneumonia (36.4%). Within this study, 40% of the patients experienced a digestive symptom. Specifically, 47.9% reported diarrhea, 55.5% reported vomiting, 16.5% reported loss of appetite, 29.8% reported abdominal discomfort, 24.8% showed abdominal bloating, 0% reported reflux, and 3.3% reported jaundice. The study sample comprised 121 patients who tested positive for COVID-19. Of these, 57.85% were male and 42.15% were female, which closely aligns with our own study [10]. Almost similar findings were observed in some other studies in Bangladesh and other countries of the world [11-15]. Our study prevailed the majority 116 (96.66%) had Diabetes Mellitus (DM) and followed by 113 (94.16%) had Hypertension (HTN), 7 (5.83%) Chronic Liver Disease (CLD) 22 (18.33%) had Chronic Kidney Diseases (CKD) and 12 (10%) Thyroid. A study conducted in Malaysia in 2021 revealed that the most common underlying health conditions were hypertension (15.5%) and diabetes (11.0%). Approximately 43.8% of patients had fever, whereas 37.1% presented with cough. Among the 25 cases requiring intubation/mechanical ventilation, 68.0% had hypertension, 88.0% had fever, 40.0% had dyspnea, and 44.0% showed lethargy. According to the study, persons who were older (360 years of age) had a far greater chance (adjusted odds ratio = 3.9) of needing intuba-

tion/mechanical ventilation. In addition, people who had hypertension (adjusted odds ratio [aOR] = 5.7), fever (aOR = 9.8), dyspnea (aOR = 9.6), or lethargy (aOR = 7.9) were more prone to requiring intubation/mechanical ventilation compared to those who did not have these conditions [16]. Other investigations investigating the clinical appearance and comorbidities of COVID-19 positive individuals have reported similar findings [17-19]. The results of this study will be highly valuable to policymakers, clinicians, and medical staff in effectively managing and treating individuals who have tested positive for COVID-19.

6. Conclusion

This study investigated that the highest age group of COVID-19 positive cases was >52 years (52.5%). The majority of the COVID-19 positive cases were male (68%). The majority of the patients were from urban area (80%). Respiratory 119 (98.33) and general weakness 120 (100) were the most common clinical presentations. The maximum patients had Diabetes 116 (96.66% and hypertension 113 (94.16%).

7. Limitations of the Study

This was a single center study with a limited purposive sample size and short study duration. So, the findings of this study may not reflect the whole country.

8. Recommendations of the Study

A multicenter retrospective study may be conducted with a large statistical calculated sample size over a long period of time to justify the results of this study.

Ethical Approval

The ethical clearance of this study was obtained from the Ethics Committee of School of Public Health & Life Science, University of South Asia, and Dhaka, Bangladesh.

Conflicts of Interest

The authors declare no conflicts of interest.

References

- [1] World Health Organization. Coronavirus disease 2019 (COVID-19): Situation report-64. 2020.
- [2] Arentz M, Yim E, Klaff L, et al. Characteristics and outcomes of 21 critically ill patients with COVID-19 in Washington state. *JAMA*. 2020; 323 (16): 1612-1614. DE SOUZA ET AL. 1897.
- [3] Huang C, Wang Y, Li X, et al. Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China. *Lancet* 2020; 395: 497-506. [PMC free article] [PubMed] [Google Scholar]
- [4] Chen N, Zhou M, Dong X, et al. Epidemiological and clinical characteristics of 99 cases of 2019 novel coronavirus pneumonia in Wuhan, China: a descriptive study. *Lancet* 2020; 395: 507-13. [PMC free article] [PubMed] [Google Scholar]
- [5] Sohrabi C, Alsafi Z, O'Neill N, et al. World Health Organization declares global emergency: A review of the 2019 novel coronavirus (COVID-19). *Inter J Surg* 2020; 76: 71-6. [Google Scholar]
- [6] Institute of Epidemiology Disease Control and Research (IEDCR). Bangladesh Covid-19 update. 2020. [Google Scholar]. Available from: <https://www.iedcr.gov.bd/>
- [7] Maswood MH. Young, working-age people mostly infected with COVID-19 in Bangladesh. 2020. [Google Scholar] Available from: <https://www.newagebd.net/article/104307/young-working-age-people-mostly-infected-with-covid-19-in-bangladesh>
- [8] Worldometer. COVID19 Coronavirus pandemic. 2020. [Google Scholar] Available from: <https://www.worldometers.info/coronavirus/>
- [9] Yi Zheng, Chang Xiong, Yuquan Liu, Xin Qian, Yijun Tang, Liang Liu, Elaine Lai-Han Leung, Meifang Wang, Epidemiological and clinical characteristics analysis of COVID-19 in the surrounding areas of Wuhan, Hubei Province in 2020, *Pharmacological Research*, Volume 157, 2020, 104821.
- [10] Ghosh, D., Ahmed, A., Ahsan, H., Ullah, P., Nath, M. and Safwath, S. (2022) Clinical Characteristics of COVID-19 Patients with Digestive Symptoms in a Tertiary Level Hospital. *Open Journal of Gastroenterology*, 12, 232-248. <https://doi.org/10.4236/ojgas.2022.129024>
- [11] Mowla, S. G. M., Azad, K. A. K., Kabir, A., Biswas, S., Islam, M. R., Banik, G. C., et al. (2020) Clinical Profile of 100 Confirmed COVID-19 Patients Admitted in Dhaka Medical College Hospital, Dhaka. *Bangladesh Journal of Bangladesh College of Physicians and Surgeons*, 38, 29-36.
- [12] Hossain, I., Khan, M. H., Rahman, M. S., Mullick, A. R. and Aktaruzzaman, M. M. (2020) The Epidemiological Characteristics of an Outbreak of 2019 Novel Coronavirus Diseases (COVID-19) in Bangladesh: A Descriptive Study. *JMSCR*, 8, 544-551.
- [13] Amin, M. T., Hasan, M. and Bhuiya, N. M. M. A. (2021) Prevalence of Covid-19 Associated Symptoms, Their Onset and Duration, and Variations among Different Groups of Patients in Bangladesh. *Frontiers in Public Health*, 9, Article ID: 738352.
- [14] Jin, X., Lian, J. S., Hu, J. H., Gao, J., Zheng, L., Zhang, Y. M., et al. (2020) Epidemiological, Clinical and Virological Characteristics of 74 Cases of Coronavirus-Infected Disease 2019 (COVID-19) with Gastrointestinal Symptoms. *Gut*, 69, 1002-1009.
- [15] Gupta, N., Agrawal, S., Ish, P., Mishra, S., Gaind, R., Usha, G., et al. (2020) Clinical and Epidemiologic Profile of the Initial COVID-19 Patients at a Tertiary Care Centre in India. *Monaldi Archives for Chest Disease*, 90, 193-196. <https://doi.org/10.4081/monaldi.2020.1294>

- [16] Hasani WSR, Ganapathy SS, Lin CZ, Rifin HM, Bahari MN, Ghazali MH, Lodz NA, Ramli MHT, Majid NLA, Ling MYJ, Yusoff MFM, Ahmad NA, Suleiman A, Yusoff AF, Balan V, Ngadiman S. Comorbidities and clinical features related to severe outcomes among COVID-19 cases in Selangor, Malaysia. *Western Pac Surveill Response J*. 2021 Feb 16; 12 (1): 46-52. PMID: 34094624; PMCID: PMC8143935. <https://doi.org/10.5365/wpsar.2020.11.3.007>
- [17] Yang J, Zheng Y, Gou X, Pu K, Chen Z, Guo Q, et al. Prevalence of comorbidities in the novel Wuhan coronavirus (COVID-19) infection: a systematic review and meta-analysis. *Int J Infect Dis*. 2020; 94: 91–5. [PMC free article] [PubMed] [CrossRef] [Google Scholar] <https://doi.org/10.1016/j.ijid.2020.03.017>
- [18] Li K, Wu J, Wu F, Guo D, Chen L, Fang Z, et al. The clinical and chest CT features associated with severe and critical COVID-19 pneumonia. *Invest Radiol*. 2020. June; 55 (6): 327–31. [PMC free article] [PubMed] [CrossRef] [Google Scholar] <https://doi.org/10.1097/RLI.0000000000000672>
- [19] Baradaran A, Ebrahimzadeh MH, Baradaran A, Kachooei AR. Prevalence of comorbidities in COVID-19 patients: a systematic review and meta-analysis. *Arch Bone Jt Surg*. 2020. April; 8 Suppl 1: 247–55. [PMC free article] [PubMed] [Google Scholar]