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Original Research Article

Epidemiological and Demographic Profile of COVID-19 Suspects in a Tertiary Care Hospital at Jaipur, Rajasthan

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Conflict of interest: Nil

Abstract

Background: The coronavirus disease (COVID-19) was a pandemic which spread to various countries and originated in Wuhan, China. For appropriate response, planning, and allocation of resources demographic data play an important role in understanding the impact of COVID-19 across the country.

Aim: To estimate epidemiological and demographic parameters like age, sex, area, sample type etc. of samples reported in COVID-19 diagnostic laboratory of RUHS College of Medical Sciences, Jaipur, Rajasthan.

Material and Method: The study was conducted retrospectively in a tertiary care hospital at Jaipur. Data like age, gender, urban or rural, IPD/ICU or OPD etc. were collected between January 1, 2021 to June 30, 2021. The collected data were expressed in number, counts and percentage. The data of six months were analysed using Microsoft Excel.

Results: From January to June 2021, April and May 2021 showed highest positivity 13084 (27.42%) and 10968 (23.06%) respectively. February 2021 and June 2021 showed least positivity 156 (2.39%) and 163 (0.8%) respectively. Total COVID-19 positive cases during 6 months were 25134 and deaths were 357 with highest deaths were during May 2021 (n=270). Males (64.28% to 72.20%) were affected most. In April and May 2021 positivity in urban area was 6053 (46.26%) and 5712 (52.07%) respectively, while in rural area 7031 (53.74%) and 5256 (47.93%) respectively. The positivity in OPD patient during April and May was 93.58% (12245) and 95.26 % (10449) respectively. Nineteen to forty years was most affected age group.

Conclusion: During second wave both urban and rural population was affected. Males and working age group were affected more. Among COVID-19 suspects' positivity rate was low in IPD patients as compared to OPD patients. Critical factors for an effective public health response are surveillance and contact tracing.

Keywords: SARS-CoV-2, Age, Gender, qRT-PCR.

Introduction

SARS-CoV-2 is a single-stranded positive-sense RNA which comes under Coronaviridae family. [1] First on 29th December 2019, in Wuhan, Hubei province, China a cluster of cases having the symptoms of "pneumonia of unknown cause" was reported. [2] The World Health Organization (WHO) subsequently declared 2019-nCoV (then named COVID-19) outbreak a Public Health Emergency of International Concern (PHEIC) on 30th January 2020. [3]

In India, a student from Thrissur, Kerala, who returned from Wuhan, China, on 30 January 2020, was first case of novel coronavirus. [4] By September 2020, India had already become the country with second highest number of COVID-19 cases next to the United States of America. [5] Studies have reported that most of the people infected with COVID-19 recover after a mild illness, whereas around 14% may develop severe disease requiring hospitalization and 5% may need intensive care unit admission. [6] In April 2021, India has confirmed a total of greater than 16.9 million cases with 192311 deaths due to COVID-19. [7]

A respiratory droplet was main route for human to human transmission. [8] However according to study by van Doremalen *et al*., SARS-CoV-2 has the ability to remain viable and infectious on surfaces for up to days (depending on the inoculum shed) and for hours in aerosols; so fomite and aerosol transmission of the virus is plausible. [9] The virus presumed to be highly contagious and more prone to spread in the first three days after showing symptoms, [2,10,11] although it should also be noted that the span does not stop at any stage of the coronavirus infection. [12] Furthermore studies shows that the incubation period of the virus was on average 5-6 days, though it can last up to14 days. [13,14]

COVID-19 infections can occur in any age, ethnic groups, and socioeconomic levels. The overcrowded living conditions and gatherings like festivals, marriages etc. were associated with high prevalence. The disease happen to be transmitted from one infected person to another, after close contact with the infected person like in a household, working area, or health care facility through nasal or salivary secretions of patient especially when unhealthy person sneezes and coughs.

The symptoms may vary to mild, moderate, and severe cases. Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infections might cause a hyper immune response that is associated with acute respiratory distress syndrome, as illustrated by typical radiological findings.[15] The COVID-19 disease has highly diverse clinical manifestations and it ranges from asymptomatic to symptomatic cases, which have symptoms like sore throat, fever, diarrhoea, fatigue, body ache, inflammation of conjunctiva, severe pneumonia with respiratory failure that could responsible for invasive mechanical ventilation or death. The COVID-19 infection ranges from self-limiting influenza like illness to more severe form of pneumonia, which also deteriorates the respiratory system and finally leads to death.

COVID-19 has biggest impact on community Health, so in view of this pandemic emergency, epidemiological surveillance takes on a key role, with regard to case notification, investigation and closure, and also with regard to identifying the various features of the affected population and factors which are associated with greater severity and lethality of the new

infection, hence helpful to decrease the impact of pandemic by planning of care and taking a right course of actions against disease. social and mass gatherings of all sort including sports, schools, religious or any other crowded meetings was prohibited to less counts from preventing the virus from spread, this was also supported by mass media through communicating across the country. Even with those endeavours, public overlook the importance of self-restriction from gatherings and it happened because of the perspective people had. The development of SARS-CoV-2 has showed that global health systems preparedness was weak and handicapped to an inevitable danger, since the covid-19 have higher rate of transmission across universal borders and because of this rising/ reappearing infection threat there was lack of proper arrangement to cope with it. [16-18]

It is essential to report demographic data especially on SARSCoV-2, since it helps to understand the impact of COVID-19 throughout the country besides that it can also provide information on an appropriate response, planning, and distribution of resources. Demography information will facilitate to know however this pandemic has unfolded and its impact on particular age groups, moreover to know how its spread affects everyone

Materials and Methods

Study Type

Laboratory based observational study

Study Design

Retrospective study design

Source of Data, Study Place and Study Duration

The retrospective study was done in a tertiary care hospital at Jaipur, Rajasthan. Data like age, gender, urban or rural, Positivity in area, IPD/ICU or OPD, Positive population, sample type, etc. were collected between January 1, 2021 to June 30, 2021. The data were expressed as counts, number, and proportion (%). The data of six months were analyzed using Microsoft Excel software.

Sample Size

Total 1,39,097 COVID-19 suspected samples of six months duration were analysed. Among these suspects 25,134 were positive for COVID-19 by real-time reverse transcription polymerase chain reaction (qRT-PCR). Further epidemiologic and demographic analyses of these positive samples were done.

Inclusion Criteria

COVID-19 Positive samples were included in the study to get number and percentage of data like age, gender, urban, rural, IPD/OPD, area etc.

Method

Respiratory specimens such as oropharyngeal and nasopharyngeal swabs were collected from COVID-19 suspects, analysed and confirmed by real-time reverse transcription polymerase chain reaction (qRT-PCR). Details like age, gender, urban or rural, Positivity in area, IPD/ICU or OPD, Positive population, sample type, etc. were recorded in excel format than recorded data analyzed using Microsoft Excel software.

Results

In figure 1, From January to June 2021, April 2021 and May 2021 showed high positivity 13084 (27.42%) and 10968 (23.06%) respectively. February 2021 and June 2021 showed least positivity 156 (2.39%) and 163 (0.8%) respectively.

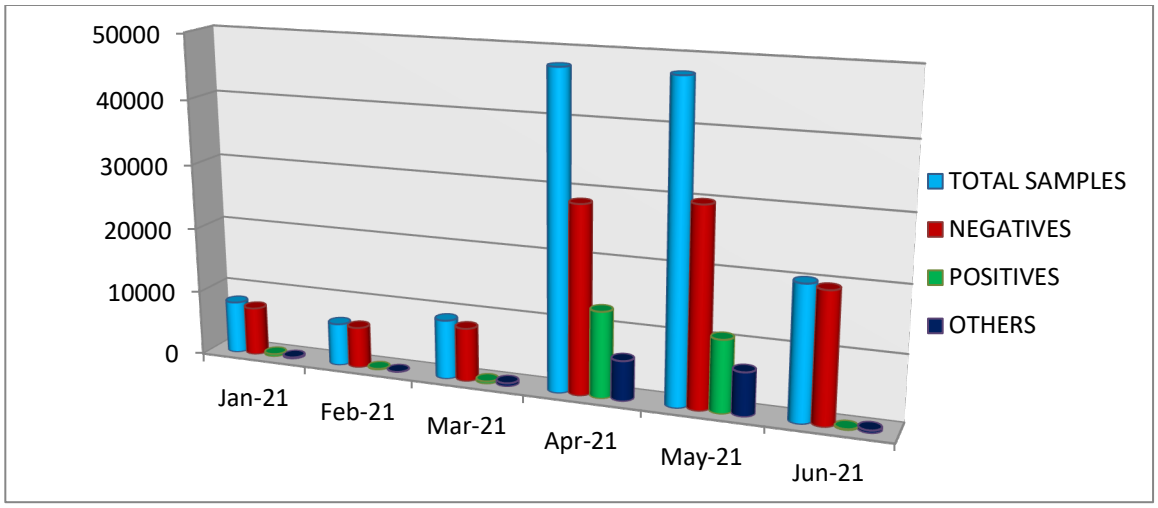

Figure 1: Showing Total number of Samples, Negative, positive and other results by qRT-PCR

*(Others include sample not received, sample not sufficient, repeat with fresh samples, inconclusive etc.)

Males (64.28% to 72.20%) were affected more than females (27.80% to 35.72%) during the study period in all months. In April and May 2021 positivity in urban area was 6053 (46.26%) and 5712 (52.07%) respectively, while in rural area 7031 (53.74%) and 5256 (47.93%) respectively in Table – 1.

Table 1: Distribution of COVID-19 positive samples accords to gender and area wise from January to June 2021.

Months (year 2021)	Total samples	Positive samples		Sex				Area			
				Male		Female		Urban		Rural	
		Number	%	Number	%	Number	%	Number	%	Number	%
January	8037	385	4.79%	278	72.20%	107	27.80%	385	100%	0	0
February	6501	156	2.39%	112	71.79%	44	28.21%	153	98.07%	3	1.93%
March	9048	378	4.17%	262	69.31%	116	30.69%	376	99.47%	2	0.53%
April	47706	13084	27.42%	8411	64.28%	4673	35.72%	6053	46.26%	7031	53.74%
May	47552	10968	23.06%	7218	65.80%	3750	34.20%	5712	52.07%	5256	47.93%
June	20253	163	0.80%	115	70.55%	48	29.45%	152	93.25%	11	6.75%

As given in table two, total COVID-19 positive cases during 6 months were 25134 and deaths were 357 with highest deaths were during May 2021 (n=270). The positivity in OPD patient during April and May was 93.58 % (12245) and 95.26 % (10449) respectively. Nineteen (19) to forty (40) years age group was most affected followed by 41 to 60 years age group.

Table 2: Distribution of Sample types, admission and age among COVID-19 positive patients from January to June 2021.

Months (year 2021)	Sample type				Admission				Age (in years)							
	nasopharyngeal		oropharyngeal/ nasopharyngeal		IPD/ICU		OPD		<=18		19 to 40		41 to 60		>60	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
January	1	0.26	384	99.74	156	40.52	229	59.48	9	2.33	193	50.12	86	22.33	97	25.22
February	0		156	100	63	40.39	93	59.61	11	7.05	74	47.43	37	23.71	34	21.81
March	1	0.26	377	99.74	119	31.49	259	68.51	16	4.23	165	43.65	134	35.44	63	16.68
April	72	0.56	13012	99.44	839	6.42	12245	93.58	1265	9.66	6854	52.38	3650	27.89	1315	10.07
May	270	2.47	10698	97.53	519	4.74	10449	95.26	846	7.71	6155	56.11	3012	27.46	955	8.72
June	13	7.98	150	92.02	48	29.45	115	70.55	6	3.68	85	52.14	55	33.74	17	10.44

After evaluating data, areas affected during second wave in month of April (total positive n=13084) were: Jaipur 44% (n=5778), Dholpur 28% (n=3664), Tonk 17% (n=2220) as per the samples received from these districts. Similarly in May (total positive n=10968) Jaipur 53.64% (n=5883), Dholpur 16.50% (n=1810), Tonk 24.74% (n=2714) as per the sample burden received in our lab. The COVID-19 positive cases reported from remaining place during April and May were less than 0.57% and less than 0.36% respectively.

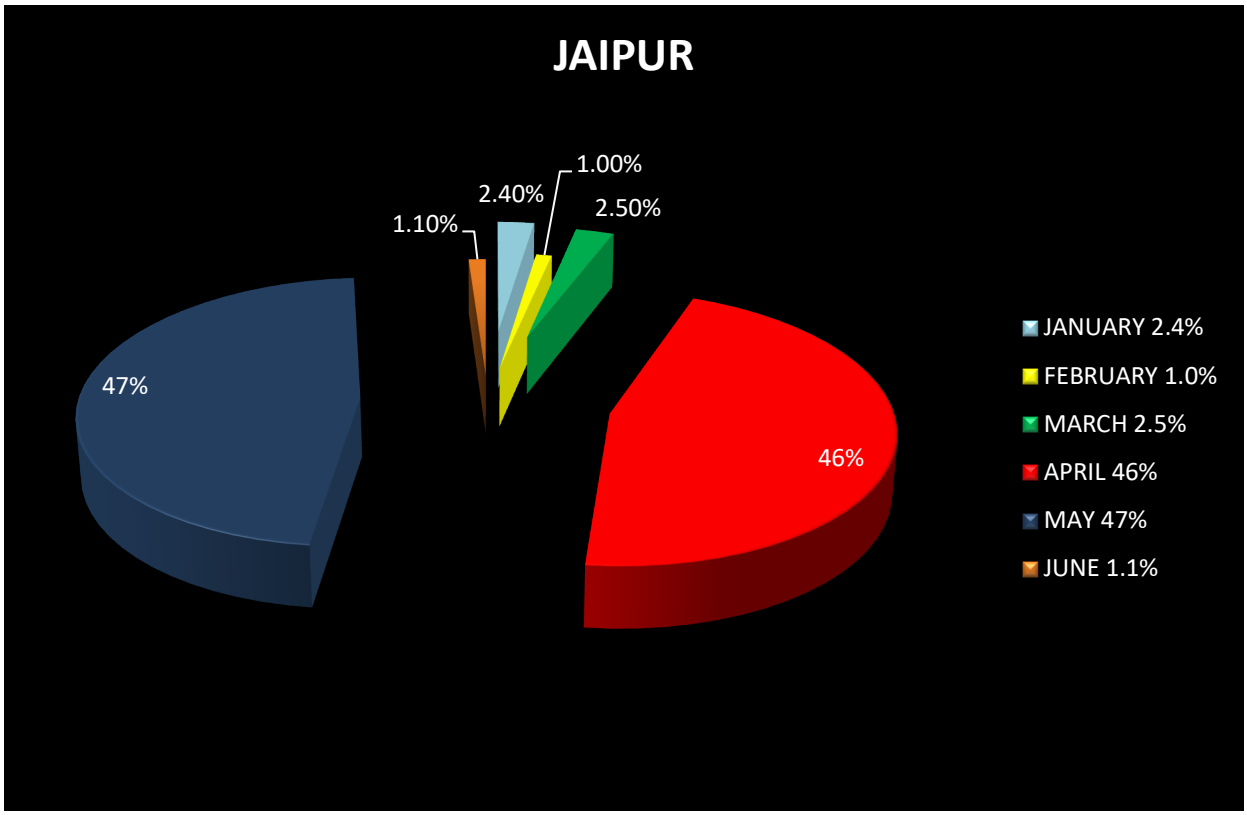

Figure 2: COVID-19 positivity from January to June 2021 in Jaipur district (As per sample received).

In above figure, Total numbers of COVID-19 positive patients in Jaipur during all the six months were 12551(49.93 % of total COVID-19 positive patients). In January positivity was 2.4% (n=300), during February 1.0 % (n=130), march 2.5 % (n=317), but during second wave in April and May the positivity suddenly raise to 46 % (n=5778) and 47 % (n=5883) respectively. Then again in June there was fall in COVID-19 positive cases to 1.1 %(n=143) as per sample burden received.

Discussion

The worst pandemic hit across the countries in the early 2020 year in the history of humans, which was caused by a novel severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), secondary attack rate of SARS-CoV-2 is more among household members that is 10.5% and 0.45% among all contacts. [19] The clinical manifestations of novel coronavirus disease is varied from asymptomatic to symptomatic, however symptoms ranges from mild to moderate levels that is cough, sore throat, headache, rhinorrhoea, vomiting and diarrhoea, fever, and shortness of breath, to complex clinical features of severe pneumonia, acute respiratory distress syndrome, septic shock, and/or multiple organ failure.[15] India and other nations

suffered huge burden on health care system due to pandemic of coronavirus disease (COVID-19), to restrain the spread of this virus, every country has been struggling and applying different methods , like preventing mass gatherings for any purpose and also implement nationwide lockdowns. Around February 2021, the second wave of COVID-19 began, has made India vulnerable with the daily cases hyped nearly triple the first peak value as on April 2021. SARS-CoV-2 cases were accelerated during April and may months of 2021. In this study, the positive rate was comparatively less but it boosted during April and May 2021. Males were affected more than females during the study period in all months. This has been explained by some studies that mast cells in females able to trigger a lot of active reaction, this help them to fight infectious diseases higher than males. [20] Furthermore, X chromosomes and estrogen hormone, both predominantly found in females, genetic components along with hormones provide some significant level of protection against SARS-CoVs in women in comparison to men. [20,21] Estrogen hormone promotes innate as well as acquired immunologic response which has higher and quicker response to pathogens. Not only this, men are more susceptible to infectious diseases since the higher level of androgens and this hormone have an immune suppressive effect which may explain male preponderance. [15]

Moreover, this study showed that Working age group 19 to 60 years was affected more than other age group (<18 years and >60 years). One of the explanation to this observation might be that the youth, actively engaged in outdoor activities and doing jobs were rampant, do not keep up with safety protocols as advised, which leads to extremely rise in cases. Other reason could be the vaccination in older age group.

Owusu M *et al* in 2020, collected 72,434 samples were collected and reviewed, the prevalence of SARS-CoV-2 within the study population was 13.2%. Females were less affected than males (4,897; 51.5%). Most number of infections was reported between the age groups of 21–30 years (3,144, 33.4%). The relatedness between gender or age and infection with SARSCoV-2 was significant ($p<0.05$). [22]

Other studies which show similar observations Malhotra S *et al*. in 2021 retrospectively studied, a total of 125 600 participants' details and concluded that the mean age group was 33.1 (±15.3) years and among them 66% were men. Among these tested, 9515 (7.6%) were positive for COVID-19. Most of the SARSCoV-2 positive patients were asymptomatic. Male gender was associated more with SARS-CoV-2 test positivity. [23]

Ali M R *et al* in 2021 carried out a cross sectional analysis and studied from March 1 to April 15, 2021, collected 1326 samples and out of which 326 patients that were positive for COVID-19. Out of these, approximately 19.02% (n = 62) were asymptomatic, and rest were symptomatic. It showed that the prevalence of this infection was varied and its dependency was on various factors like age, gender, area involved, occupation, behavioural habit like smoking, comorbidities, etc. in this study Males (60.12%) were affected more than females (39.88%), and this pandemic infected both urban and rural people almost equally (urban = 50.92%; rural = 49.08%). [24] Similarly, in our study also reported that during second wave urban and rural residents were affected nearly equal.

Hossain M I *et al* in 2021 conducted a study at Sheikh Russel National Gastroliver Institute on 486 admitted cases during the 2nd wave of COVID-19 in Bangladesh (March-April, 2021). A cross-sectional

study design was used along with a convenient sampling technique. Out of 486 cases, 306 (62.9%) were male, and 180 were female, with a mean age of 53.47 ± 13.86. The majority of patients (32.5%) were between the ages of 51 and 60. While fever and cough being the predominant symptoms (>70% cases), the most common co-morbidities were hypertension (41.4) and diabetes mellitus (39.4). Intensive care unit utilization rate was 25%. [25]

A cross-sectional analysis by Ortiz-Prado E *et al* in 2021, a total of 9,468 positive COVID-19 cases and 474 deaths were included in the analysis. Men accounted for 55.4% (n = 5,247) of cases and women for 44.6% (n = 4,221). [26]

Similarly in our study 19-40 years age group affected in January to June month ranges from 43.65% to 56.11%. Men accounted for 64.28% to 72.20% and women for 27.80% to 35.72% in all months. Total COVID-19 positive cases during 6 months were 25134 and deaths were 357 with highest number deaths were during May 2021 (n=270).

Babu GC *et al* in 2021 found that out of 1149 patients, males and females, accounts for 70% and 30% respectively, and mean ± SD (standard deviation) of age was 44.23 ± 3.57. Individuals were from 40 to 80 years of age groups were most affected. Most of the cases were from Jaipur 63%, Bikaner 5.4%, Ajmer 4.4%, Alwar 2.6%, Sawai Madhopur 2.6%, Dausa 2.3%, Nagaur 2.3%, Bharatpur 2.1%, and Karauli1.7%, and remaining places reported <1.5% cases. [27]

From January to march urban area was affected more, but during April and May both urban and rural areas were affected equally. Positivity in OPD patients was high since the drastic spread of SARSCOV-2. In our study cases reported during second wave were: In April (total positive n=13084) Jaipur 44%, Dholpur 28%, Tonk 17%, Kota 6% and Pali 0.31%. Similarly in May (total positive n=10968) Jaipur 53.64%, Dholpur 16.50%, Tonk 24.74%, Kota 0.14% and Pali 3.13%. The COVID-19 positive cases reported from remaining place during April and May were less than 0.57% and less than 0.36% respectively. Total numbers of COVID-19 positive patients in Jaipur during all the six months were 12551(49.93 % of total COVID-19 positive patients). In January positivity was 2.4 %, during February 1.0 %, march 2.5 %, but during second wave in April and May the positivity suddenly raised to 46 % and 47 % respectively. Then again in June there was fall in COVID-19 positive cases to 1.1 %.

Conclusion

Despite rigorous efforts even by developed countries, the pandemic of COVID-19 has drastically affected the life as well as economy of the world. Surveillance and contact tracing are critical components of an effective public health response, to understand the epidemiological characteristics of the cases and to explore the demographical influence on the community. Statistics of demographic, epidemiology or clinical profiles is crucial for proper administrative drive, implementation of immunization programmes, and not only this public active participation also needed to halt the spread of infection. Hand hygiene, wearing of masks and social distancing in patient with co-morbidities and elderly age, can be advised for reverse isolation to prevent the spread of pandemic.

Significance of the Study

This paper demonstrates demographic and epidemiologic key points and various outcomes of the COVID-19 pandemic, which reflects that the pandemic creates unprecedented havoc in the community. Henceforth the demographic and epidemiologic data is needed for, the appropriate administrative intervention,

aggressive vaccination drive, policies for prevention and its control. Along with health care workers, active participation of general population also helps in flattening the curve of COVID-19 pandemic.

References

1. Bhatraju PK, Ghassemieh BJ, Nichols M, Kim R, Jerome KR, Nalla AK, *et al*. Covid-19 in critically ill patients in the Seattle region - case series. N Engl J Med. 2020;382(21):2012–22.
2. Li Q, Guan X, Wu P, Wang X, Zhou L, Tong Y *et al*. Early Transmission Dynamics in Wuhan, China, of Novel Coronavirus-Infected Pneumonia. N Engl J Med. 2020 Mar 26;382(13):1199-207.
3. World Health Organization. Novel Coronavirus (2019-nCoV)-Situation Report-10-30 January 2020. World Health Organization. 2020.
4. Andrews MA, Areekal B, Rajesh KR, Krishnan J, Suryakala R, Krishnan B, Muraly CP, Santhosh PV. First confirmed case of COVID-19 infection in India: A case report. Indian J Med Res. 2020 May;151(5):490-2.
5. World Health Organization. Coronavirus disease (COVID-19) weekly epidemiological update and weekly operational update. Accessed October 17, 2020. https://www.who.int/emergencies/diseases/novel-coronavirus-2019/situation-reports
6. Giri AK, Rana DRSJB. Charting the challenges behind the testing of COVID-19 in developing countries: Nepal as a case study. Biosaf Health. 2020; 2:53-6.
7. Ministry of Health and Family Welfare. 2021 Coronavirus disease (COVID-19).
8. Shereen MA, Khan S, Kazmi A, Bashir N, Siddique R. COVID-19 infection: Origin, transmission, and characteristics of human coronaviruses. J Adv Res. 2020 Mar 16; 24:91-8.
9. van Doremalen N, Bushmaker T, Morris DH, Holbrook MG, Gamble A, Williamson BN, Tamin A, Harcourt JL, Thornburg NJ, Gerber SI, Lloyd-Smith JO, de Wit E, Munster VJ. Aerosol and Surface Stability of SARS-CoV-2 as Compared with SARS-CoV-1. N Engl J Med. 2020 Apr 16;382(16):1564-7.
10. Paules CI, Marston HD, Fauci AS. Coronavirus Infections-More Than Just the Common Cold. JAMA. 2020 Feb 25;323(8):707-8.
11. Kucharski AJ, Russell TW, Diamond C, Liu Y, Edmunds J, Funk S, Eggo RM; Centre for Mathematical Modelling of Infectious Diseases COVID-19 working group. Early dynamics of transmission and control of COVID-19: a mathematical modelling study. Lancet Infect Dis. 2020 May;20(5):553-8.
12. Wang Y, Wang Y, Chen Y, Qin Q. Unique epidemiological and clinical features of the emerging 2019 novel coronavirus pneumonia (COVID-19) implicate special control measures. J Med Virol. 2020 Jun;92(6):568-76.
13. WebMD Medical Reference. Coronavirus incubation period. 2020.
14. Lauer SA, Grantz KH, Bi Q, Jones FK, Zheng Q, Meredith HR, Azman AS, Reich NG, Lessler J. The Incubation Period of Coronavirus Disease 2019 (COVID-19) From Publicly Reported Confirmed Cases: Estimation and Application. Ann Intern Med. 2020 May 5;172(9):577-82.
15. 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. Lancet. 2020 Feb 15;395(10223):497-506.
16. Almutairi KM, Al Helih EM, Moussa M, Boshaiqah AE, Saleh Alajilan A, Vinluan JM, Almutairi A. Awareness, Attitudes, and Practices Related to Coronavirus Pandemic Among Public in

Saudi Arabia. Fam Community Health. 2015 Oct-Dec;38(4):332-40.
17. van der Hoek L, Pyrc K, Jebbink MF, Vermeulen-Oost W, Berkhout RJ, Wolthers KC, Wertheim-van Dillen PM, Kaandorp J, Spaargaren J, Berkhout B. Identification of a new human coronavirus. Nat Med. 2004 Apr;10(4):368-73.
18. Kahn JS, McIntosh K. History and recent advances in coronavirus discovery. Pediatr Infect Dis J. 2005 Nov;24(11 Suppl):S223-7, discussion S226.
19. Burke RM, Midgley CM, Dratch A, Fenstersheib M, Haupt T, Holshue M, Ghinai I, Jarashow MC, Lo J, McPherson TD, Rudman S, Scott S, Hall AJ, Fry AM, Rolfes MA. Active Monitoring of Persons Exposed to Patients with Confirmed COVID-19 - United States, January-February 2020. MMWR Morb Mortal Wkly Rep. 2020 Mar 6;69(9):245-6.
20. Moeser A. COVID-19 affects men more than women and this could be the reason why, according to scientists. World Economic Forum. https://www.weforum.org/agenda/2020/06/covid19-mortality-ratesmen-women/. Accessed 03/08/2020. 2020.
21. Channappanavar R, Fett C, Mack M, Ten Eyck PP, Meyerholz DK, Perlman S. Sex-Based Differences in Susceptibility to Severe Acute Respiratory Syndrome Coronavirus Infection. J Immunol. 2017 May 15;198(10):4046-53.
22. Owusu M, Sylverken AA, Ankrah ST, El-Duah P, Ayisi-Boateng NK, Yeboah R *et al*. Epidemiological profile of SARS-CoV-2 among selected regions in Ghana: A cross-sectional retrospective study. PLoS One. 2020 Dec 10;15(12):e0243711.
23. Malhotra S, Rahi M, Das P, Chaturvedi R, Chhibber-Goel J, Anvikar A *et al*. Epidemiological profiles and associated risk factors of SARS-CoV-2 positive patients based on a high-throughput testing facility in India. Open Biol. 2021 Jun;11(6):200288.
24. Ali MR, Hasan MA, Rahman MS, Billah M, Karmakar S, Shimu AS *et al*. Clinical manifestations and socio-demographic status of COVID-19 patients during the second wave of pandemic: A Bangladeshi experience. J Infect Public Health. 2021 Oct;14(10):1367-74.
25. Hossain MI, Parvin S, Islam MS, Alam MJ, Podder S, Datta R *et al*. Demographic profile and outcome of patients admitted to a COVID dedicated hospital in Bangladesh during the second wave. Medicine (Baltimore). 2021 Sep 17;100(37): e27281.
26. Ortiz-Prado E, Simbaña-Rivera K, Barreno LG, Diaz AM, Barreto A, Moyano C el al. Epidemiological, socio-demographic and clinical features of the early phase of the COVID-19 epidemic in Ecuador. PLoS Negl Trop Dis. 2021 Jan 4;15(1):e0008958.
27. Babu GC, Chundawat B, Pareek R, Kadali RM, Thakur A. Estimation of Demographic Parameters of COVID-19 Patients Admitted in a Tertiary Care Hospital, Jaipur. Int J Nutr Pharmacol Neurol Dis 2021;11(3):220-4.