Original Article

Asymptomatic COVID Infections in Port Harcourt, Nigeria

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Abstract

Background: Determining the prevalence of asymptomatic carriers of an infectious agent plays a major role in the control of infections, especially with regard to measures aimed at isolating individuals who can potentially transmit the infection to others while they are not showing symptoms of the disease. **Aim:** This study was aimed at determining the positivity rate of COVID-19 among patients who presented for testing; the proportion of asymptomatic cases among the patients who tested positive; and the factors associated with being symptomatic at diagnosis. **Materials and Methods:** The data for the first 595 suspected cases and probable contacts who presented for reverse transcription-polymerase chain reaction testing for severe acute respiratory syndrome-coronavirus-2 (SARS-CoV-2) in our center were assessed to determine their biodata, symptomatology, and the presence of the SARS-CoV-2 genes. **Results:** Patients positive for SARS-CoV-2 made up 133/595 (22.4%) of the cohort. At presentation for testing, 97/133 (71.4%) of the positive patients had no symptoms fitting the case definition of COVID-19. Of these, 28 (73.7%) were males and 10 (26.3%) were females, this was statistically significant. However, there was no statistically significant difference between the ages of the respondents who had symptoms and those who did not have symptoms. **Conclusion:** A significant proportion of patients in our setting had asymptomatic infections, this stresses the need to test more and advocate compliance with all preventive measures including universal masking.

Keywords: Asymptomatic, COVID-19 infection, transmission

Introduction

As the year 2019 turned, the news of the spread of the novel coronavirus went viral. The case definition initially was that of cough, fever, catarrh, difficulty in breathing, and a history of international travel; it was also associated with a significant rapid mortality. The highly infectious disease later called COVID-19 by the WHO in March 2021 was rapidly spreading globally; there were some concerns that developing countries in Africa would be the next epicenter for severe COVID-19 infection because of the high population density and weak health systems.[1] The infection was first confirmed in Africa on February 14, 2021 in Egypt and Nigeria reported the first case in Sub-Saharan Africa.[2] Being a novel virus, methods for testing were initially poorly defined until when the reverse transcription-polymerase chain reaction (RT-PCR) was designated as the gold standard for diagnosis. People who had a history of international travel or contact with those who tested positive were line-listed for testing. Those found to be positive were isolated and given supportive care or treatment of complications of COVID-19 infection. Globally, concerns were raised about cases that tested positive but did not have any symptoms, this set of people need to be identified promptly to limit the chance of inadvertent spread of the virus. To control the spread of infectious diseases, it is important to ascertain the prevalence of asymptomatic carriers, especially with regard to measures aimed at isolating individuals who can potentially transmit the infection to others.

It is alleged those asymptomatic positive cases are a significant source of the spread of this virus, especially as more young people were found to have asymptomatic infections.[3] Studies show that people who are positive but asymptomatic make up 40%–45% of severe acute respiratory syndrome-coronavirus-2 (SARS-CoV-2) infections, and they can shed the virus for a long time, up to two weeks.[4]

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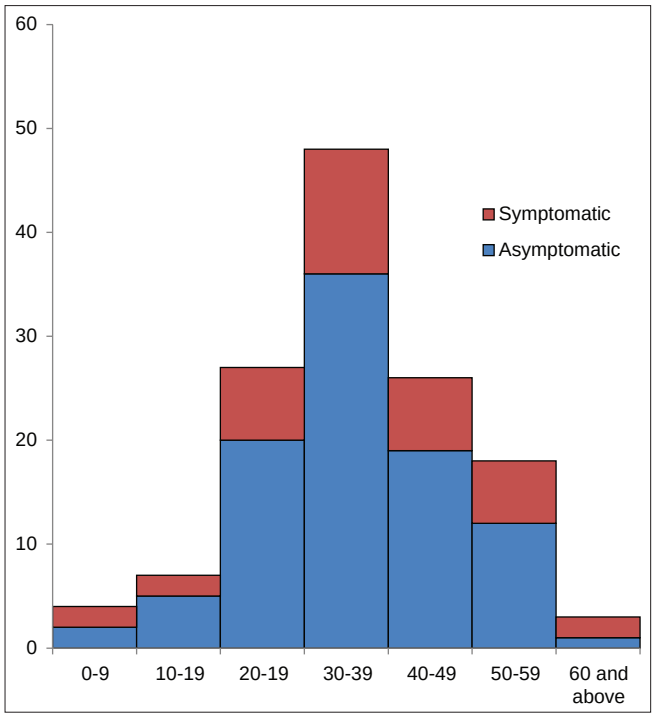

Figure 1: The age category of respondents with and without symptoms

The Satellite Molecular Laboratory in Rivers State University Teaching Hospital was activated by the Nigeria Center for Disease Control (NCDC) in May 2020 to provide molecular testing for COVID-19 in Rivers State and the environs. The first case documented in Rivers State, however, was in March 2020. The index case had a history of international travel and became symptomatic upon return. Active contact tracing and follow-up of contacts were carried out by the State's epidemiology team, and samples of suspected cases and contacts were sent to the molecular laboratory for testing.

Methods

This assessment was done in a cohort of suspected cases of COVID-19 and their contacts in May 2020. The age, sex, date onset of symptoms, and date of sample collection were documented. A diagnosis of COVID-19 infection was made according to the guidance developed by the NCDC using multiplex RT-PCR which identified the E-gene, RDRP-gene, and N-gene using GeneFinder by Osang Korea. All positive patients were referred to the treatment facility.

Data were entered into an Excel spreadsheet and analyzed using the SPSS version 26 (SPSS Inc., Chicago, Illinois, USA). Descriptive statistics of basic data were done; age was transformed into age groups with 10-year intervals and presented as a histogram. Frequencies and cross tables were performed, and relevant tables were developed. Categorical variables were presented as proportions and compared using the Chi-square test. The level of statistical significance was set at a $P < 0.05$.

Ethical consent

As this was a retrospective laboratory-based study, all the participants were anonymous. Confidentiality was also maintained all through the study.

Results and Discussion

We assessed the age, sex, presence of symptoms, and duration of symptoms before testing was provided in the first 595 cases who presented to our facility in the first month when we commenced testing in May 2020. There were 327 males and 268 females with a mean age of 35.4 ± 15.7 years (range: 1–82 years) tested in this period. All these patients were tested either because they had symptoms that fitted the case definition for COVID-19 infection at that time or they were in close contact with people who had tested positive in the period.

Of this number, 133 (22.4%) tested positive for COVID-19, their age ranged between 2 and 72 years. Thirty-eight of these patients had symptoms at the time of this initial test. Among these, 28 (73.7%) were males, whereas 10 (26.3%) were females, reflecting the disproportionate number of males to females who presented to our facility for testing. This is congruent with findings from other studies that men were more likely to get infected, have a complication, and die from COVID-19 infection than women.[5]

Among the 38 who had symptoms, the time interval from onset of symptoms to testing was most often in 1–5 days (range: 1– 20 days; mode: four days) [Table 1]. Of the 133 who were positive for SARS-COV-2, 95 (71.4%) were asymptomatic for COVID-19 infection. Their age range was 63 years (2 to 65 years). It was observed that 43 (81.1%) females were asymptomatic at the time of initial testing, compared to 52 (65.0%) males, this difference was statistically significant [Table 2]. The most impacted age group from our analysis was the active age range 30-39 where 12 (25%) were symptomatic and 36 (75%) asymptomatic [Table 3 and Figure 1].

The CDC estimates that about 35% of COVID-19 infections are asymptomatic, and 40% of infection transmission occurs before symptoms are noticed.[6] Although our study population is small, the prevalence of 71.4% asymptomatic infections is significantly higher than findings from Bahrain where 48.9% (92/188) of travelers into the country were asymptomatic and remained so till viral clearance.[7] A large population study in South Korea gave a prevalence of 62% asymptomatic patients,[8] whereas a report in Kuwait gave a prevalence of 42% infected people without symptoms.[9]

Some serological studies in Nigeria have shown 45.1% of health-care workers in a single institution who had no prior symptoms were seropositive for COVID-19 antibodies by ELISA methods.[10] A report from South Africa showed that 45% of the cases were asymptomatic,[11] while a large cohort of the first 17,763 cases in Ghana showed about 80.2% of the cases were asymptomatic.[12]

Table 1: Time of onset of symptoms to testing

Onset of symptoms to test (days)	Freq (%)
1-5	23 (60.5)
6-10	8 (21.1)
11-15	6 (15.8)
16-20	1 (2.6)

Table 2: Number of asymptomatic patients

Presence of symptoms at time of initial test	Symptoms present	
	Male	Female
Yes	28 (73.7)	10 (26.3)
No	52 (54.7)	43 (45.3)

Table 3: The age distribution of symptomatic and asymptomatic cases

Age group	Symptomatic, *n* (%)	Asymptomatic, *n* (%)
0-9	2 (50.0)	2 (50.0)
10-19	2 (28.6)	5 (71.4)
20-29	7 (25.9)	20 (71.4)
30-39	12 (25.0)	36 (75.0)
40-49	7 (26.9)	19 (73.1)
50-59	6 (33.3)	12 (66.7)
60 and above	2 (66.7)	1 (33.3)

Fisher's exact=4.0, *P*=0.69

Although the reports of COVID-19 infection from Africa are few, and the prevalence of severe infection as well, compared to reports from Asia, Europe, and the Americas, the real-time story of COVID-19 in Africa is a lot different from earlier predictions. Some of the explanations given for a lower incidence of severe infections in Africa are of a larger youth population and limited testing capacity in Africa.[13] The high prevalence of asymptomatic infections might have been a major driver of the COVID-19 infection in our community and the reason why there appeared to be less severe infections as compared to developed countries.

Conclusion

This finding stresses the need to maintain high standards of infection prevention, especially in developing countries with weak health services.

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Conflicts of interest

There are no conflicts of interest.

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