

Investigation of a Cluster of COVID-19 Cases in a Private Healthcare Facility in Lagos State, Nigeria

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Abstract

Background: *On February 27, 2020, the first case of SARS-CoV-2 was confirmed in Nigeria. As of 23rd May, 2020 there were 152,888 infections and 1413 deaths among healthcare workers globally. As of 3rd June, 2020, 800 healthcare workers were reported to have been infected in Nigeria.*

The subsequent use of rapid test kits and vaccination of healthcare workers has reduced widespread outbreaks in health facilities. Before the development of vaccines, outbreaks in health facilities were commonplace. We report the findings of one such outbreak. Our objective was to investigate and control the outbreak.

Methods: *The study was carried out in Lagos State, Nigeria using a descriptive cross-sectional study of an outbreak of COVID-19 in a healthcare facility. Suspected and confirmed cases were identified using the case definition published by the Nigeria Center for Disease Control (NCDC) for COVID-19 and worked in the facility from 15th March to 31st May 2020.*

Case investigation: *After confirmation of the first case, exposure history, symptom assessment was used to identify suspect cases, from whom we took nasal samples and recommended self-quarantine. Nasal samples obtained from suspect cases were tested using Reverse Transcriptase Polymerase Chain Reaction (RT-PCR).*

Data collection and management: *Data was collected using a structured questionnaire and in-depth interviews with hospital staff. Microsoft Excel was used for all analysis and R version 4.0.3 was used to depict transmission dynamics*

Results

A total of 132 suspected cases were identified in the facility, 90 (68.2%) were female and the mean age of respondents was 36.7 ± 9.2 years. Nurses constituted the single largest occupational group with 30 (22.7%) and doctors were 23 (17.4%). Fifty-nine (45.1%) workers reported

symptoms in keeping with SARS-COV-2 and 48 (36.3%) used some drug or home remedy for prevention. Only 81 of the suspected cases were tested and 32 tested positive for COVID-19 with an overall attack rate of 39.5% and no mortality. The highest attack rates were seen in the age group ≥ 50 years (54.5%), females (40.4%), caterers (60%), symptomatic respondents (53.1%) and those who did not take drugs or home remedies (45.5%). The prevalence of premorbid conditions was 13.6% with hypertension being the most prevalent premorbid condition (10.6%). The median incubation period was 4 (IQR: 1.5-6.0) days and there was a median delay of about 8 (IQR: 4.3-13.0) days from symptom onset to diagnosis. Staff interviewed suggested that a lack of proper personal protective equipment and improper use, commonality of shared spaces like changing rooms may have contributed to the spread of the infection.

Discussion

The high attack rates seen among the nurses and caterers was probably a consequence of their high numbers during shifts, commonality of shared spaces and shared transportation unlike doctors. Attack rates increased with increasing age, and in the presence of preexisting diseases similar to some other studies. A number of factors were important in the outbreak in this facility; delays in getting tested, delays in test turn around time of RT-PCR and communication of results, lack of certified rapid kits and high number of susceptible staff as there were no vaccines at the time.

The increasing vaccination of health workers makes future outbreaks like this unlikely. However, vaccine hesitancy even among health workers means that outbreaks are still a possibility, if there are sufficient number of susceptible individuals. This is less likely in private facilities where the management can mandate health workers to be vaccinated as a precondition for work, unlike in publicly owned health establishments.

Conclusion

The index case was 63 year old hypertensive who reported symptoms on the 23/03/2020 and was confirmed positive on the 04/04/2020. Factors that may have contributed to its spread were commonality of shared spaces, working in close proximity and in large numbers increasing the chances of person-to-person transmission. The continued use of approved rapid test kits, and increased uptake of COVID vaccination can prevent future outbreaks and must be encouraged.

Keywords: *Outbreak, COVID-19, SARS-CoV-2, Cluster of cases, private facility, healthcare workers, Lagos State, Nigeria*

Disclosure

Ethical approval for this study was provided by the Institutional Review Board of the Nigeria Institute of Medical Research (NIMR), Lagos.

*Rowland Utulu and Muhammad Shakir Balogun conceptualized the research. All authors contributed to the data acquisition and interpretation. The article was drafted by Rowland Utulu, revised by all au-thors. All authors read and approved the final version of the manuscript to be submitted for publication.
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