



# Lessons from the field: COVID-19 outbreak investigations in Kpone-Katamanso, Greater Accra, Ghana: a Global South approach to disease control and contact tracing

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In the Kpone-Katamanso Municipality (Greater Accra, Ghana), as part of the coronavirus disease 2019 (COVID-19) pandemic response, public health teams implemented and carried out enhanced contact tracing and surveillance from March 2020 to March 2021. There were 725 confirmed COVID-19 cases during this time period, most of which were detected as part of the enhanced surveillance. This is resource intensive, but beneficial in the early detection of cases, thus reducing further community transmission and, in effect, stopping larger outbreaks at the source. A proactive approach to case detection can be successful in reducing community transmission and supporting the pandemic response.

## Introduction

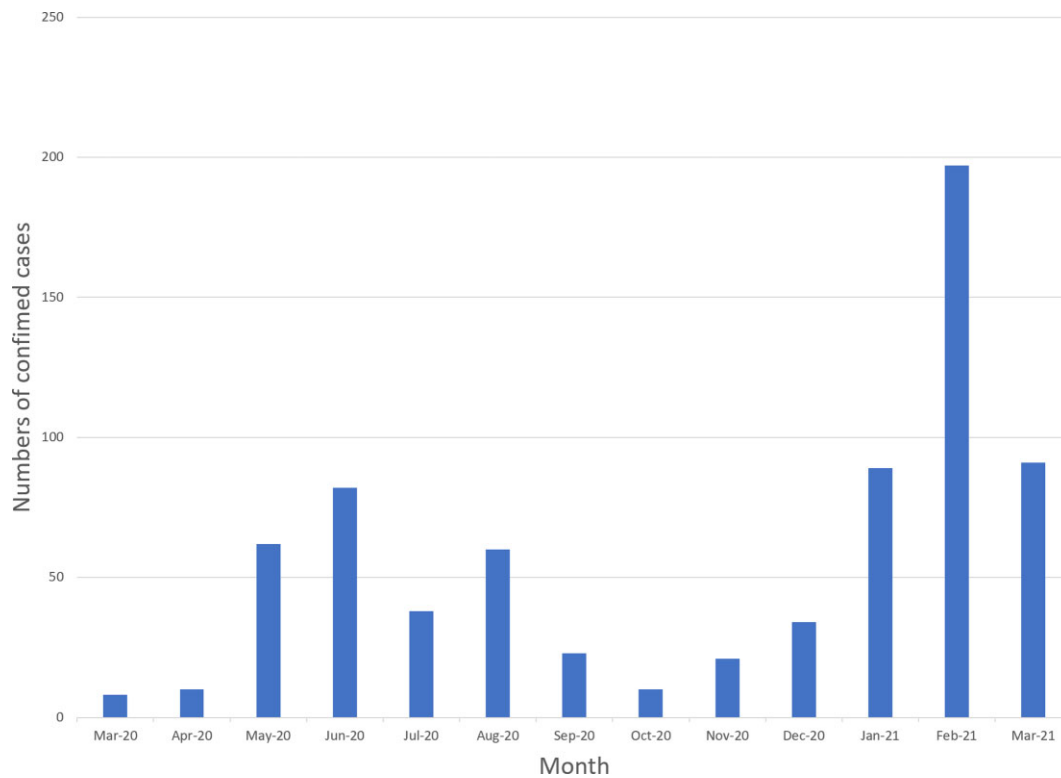
The coronavirus disease 2019 (COVID-19) pandemic has a greater impact on upper-income countries than lower-income settings. The reported mortality rates and excess deaths in the UK and USA have been much greater than those observed in much of sub-Saharan Africa (SSA). While part of this can be explained by underreporting and a lack of testing capacity, this is not the full picture. There is evidence that West Africa learned a great deal from the Ebola outbreak of 2014–15 and translated that knowledge into policy and practice.<sup>1</sup> Countries in West Africa and across the continent are used to addressing community infectious disease outbreaks, underpinned by early and decisive decision making. Disease control in SSA, including Ghana, is often typified by an enhanced approach to pathogens that pose a potential significant threat, e.g. outbreaks of meningitis, yellow fever or polio.<sup>2</sup> There are also established procedures regularly rolling out of health services into communities, such as mass vaccination campaigns and mass drug administrations.<sup>3</sup>

Ghana is a lower- to middle-income country in West Africa. The capital city, Accra, is in the south of the country and is within the Greater Accra region. Herein the findings from routine and enhanced surveillance programmes to control COVID-19 are described. The activities followed national guidance and are thus typical of the approaches observed within Ghana.

## Methods

Kpone-Katamanso is one of 29 districts within Greater Accra, a peri-urban location with a population of approximately 132 000. Across the 12-month period from March 2020 to March 2021, the Kpone-Katamanso Municipal Health Directorate set up a dedicated team to address new COVID-19 cases and monitor outbreaks.<sup>4</sup> Enhanced contact tracing here involves community-wide surveillance via active searching for cases—in effect, teams were going ‘door to door’ within neighbourhoods. This enhanced surveillance deals with the testing of samples from residents (and thus including cases and their contacts and persons at higher risk of infection) within a certain geographical area of an already confirmed case. The goal is early case finding, isolation and treating of infected persons to effectively reduce the spread of infection in the population and control of disease. A 1- to 2-km radius was used in Ghana’s enhanced contact tracing. This radius was based on population density and pragmatic consideration of other factors such as social interaction within the localities.

From March 2020 to April 2021, Ghana tested 533 813 people, of which 58 879 returned a positive result (positivity rate of 11.0%). This took place in two phases. During the first phase the contact tracing teams screened and tested all residents living within a 2-km radius of confirmed cases at the time of their visit. All tests were via polymerase chain reaction. The ArcGIS collector



**Figure 1.** Monthly confirmed COVID-19 cases in Kpone-Katamanso District, Greater Accra, Ghana, from March 2020 to March 2021

was used to determine the coordinates of each house visited. The second phase had teams of contact tracers deployed to commercial areas to take sputum samples of high-risk groups, including traders, food vendors, commercial sex workers and commercial drivers. Variables collected during screening included name, age, sex, occupation, exposure history, signs and symptoms of COVID-19, previously diagnosed chronic medical conditions, date the sample was taken and household details (including household head name, contact and household size). Data were entered into a national database called the Surveillance Outbreak Response Management and Analysis System (SORMAS).

## Results

Ghana recorded its first two cases of COVID-19 on 12 March 2020, as imported cases from Norway and Turkey. As of 22 January 2022, Ghana has recorded 154 891 cases and 1357 associated deaths.<sup>5</sup>

Across the 12-month period of March 2020 to March 2021, the Kpone-Katamanso Municipal Health Directorate set up a team to address new cases and monitor outbreaks.<sup>4</sup> There were 725 COVID-19 cases recorded (figure 1), with a median case age of 37 y and 61% of cases were male. There were two deaths and 43 cases (6%) severe enough to need hospitalisation. Within the Kpone-Katamanso District, the subdistrict of Kpone recorded 399 (55%) cases. Outbreaks were particularly noted in industrial sectors, such as factory workers, but there were fewer cases recorded within school settings (25 cases, noting schools were closed for

several months in 2020) and 52 cases were noted in health-care workers within the district. There were newly reported cases across each of the 12 months, with the peak number of recorded cases in February 2021.

With the enhanced community surveillance that tested contacts living within 2 km of a confirmed case in March and April 2020, there was a positivity rate of 10%.

This enhanced surveillance was a significant contributory factor to the high proportion of asymptomatic cases detected.<sup>6</sup> The enhanced contact tracing system found 409 (57%) of the total cases, with the remainder being discovered by routine surveillance.<sup>4</sup>

With information obtained through the enhanced contact tracing, hotspots were noted. For example, of the first 72 cases detected by May 2020, 16 (22%) could be traced back to the Kpone Market. Across the whole dataset and time period, 203 (28%) cases could be traced to the Free Zone Enclave, an industrial area that includes many factories.

## Discussion

Strengthening early detection of cases for containment is a key activity under the Ghana Health Service outbreak response strategy.<sup>7,8</sup> One of the strategies adopted was an expanded contact tracing system to identify contacts of confirmed cases of COVID-19. For the district health teams, this early and proactive approach to identifying cases is key in promoting timely isolation of individuals and reductions in onward community

transmission.<sup>8</sup> Instituting enhanced contact tracing was likely a key contributing factor to the high proportion of asymptomatic cases detected.

Nationally in Ghana, enhanced contact tracing contributed >63% of cases detected as of April 2020, with 93% of those cases being asymptomatic.<sup>4</sup> Within Kpone-Katamanso, the importance of the proactive approach to enhanced contact tracing is again reinforced by the 43% of cases who were reported via routine surveillance. These are people who presented to healthcare facilities, typically with relevant symptoms and thus a higher chance of being infectious, with associated risks of nosocomial or community transmission. With a rigorous approach to early case detection, the district health teams were able to minimise the impact.

In Ghana, there were many early interventions aimed at reducing imported cases and onward transmission, e.g. restricting travel in and out of the country. Similar approaches were used by nations in Southeast Asia.<sup>9</sup> High-income countries are arguably relatively unpractised in the need to rapidly control infectious disease outbreaks, and few would argue that the European pandemic response has been successful.<sup>10</sup> Many countries in the global north have been criticised for delays in implementing interventions designed to prevent the spread of COVID-19.

Additionally, multisectorial coordination and collaborations has also helped with the outbreak response in Ghana.

However, there has been little obvious acknowledgement of the proactive approaches of countries like Ghana and of districts like Kpone-Katamanso. Two years into the pandemic, the emergence of the Omicron variant across late 2021 and early 2022 brings new risks and poses new challenges. However, the essence of disease control and outbreak management remains the same—within resource-poor settings, early and effective decision making is vital. It is a lesson that some higher-income settings would do well to acknowledge. Our doors are always open to discussions about a cohesive way forward to manage this and future public health emergencies.

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