

Challenges in Kidney Care in a Lower Middle Income Country During the COVID-19 Pandemic — the Ghanaian Perspective



Elliot Koranteng Tannor¹

¹Komfo Anokye Teaching Hospital, Department of Medicine, Kwame Nkrumah University of Science and Technology, Kumasi, Ghana

Kidney Int Rep (2021) 6, 2014–2016; <https://doi.org/10.1016/j.ekir.2021.06.019>

© 2021 International Society of Nephrology. Published by Elsevier Inc. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

Coronavirus disease 2019 (COVID-19), caused by the severe acute respiratory syndrome coronavirus 2 virus, is a highly infectious respiratory disease associated with high mortality rates globally.¹ The recorded cases and mortalities in Sub-Saharan Africa have been less devastating compared to other continents. Low testing capacity, genetics, and environmental factors have been hypothesized as reasons why Sub-Saharan Africa, including Ghana, has had lower incidence and mortality rates.²

Ghana, a lower-middle-income country in West Africa with an estimated population of 30 million, recorded its first case March 12, 2020, 1 day after the World Health Organization declared COVID-19 a pandemic. Ghana has since recorded 91,707 cases with 783 deaths as of March 22, 2021— a case fatality rate of 0.85% according to

the Ghana Health Service. This rate may be underestimated because most residents are tested only when symptomatic. Some COVID-19–positive patients may have been infected and even died from COVID-19 without being identified due to low testing rates and/or reluctance to report their symptoms because of the stigma associated with a COVID-19 diagnosis.

When compounded by kidney disease, COVID-19 has been shown to be associated with increased morbidity and mortality.³ Risk factors and causes of chronic kidney disease (CKD) such as old age, hypertension, diabetes mellitus, and coronary heart disease have been shown to be associated with increased mortality among patients with COVID-19. Despite the seemingly favorable COVID-19 statistics in most parts of Sub-Saharan Africa and in Ghana, the impact of COVID-19 on patients with CKD, end-stage renal disease (ESRD) with or without kidney replacement therapy have not been described in Ghana. Patients with COVID-19 are also at risk of acute kidney injury (AKI), with mortalities of up to 49.5% reported in those admitted to intensive care

unit settings in some countries.⁴ The dearth of data in Ghana makes it difficult if not impossible to measure the rate of COVID-19 and its kidney-related comorbidities.

The prevalence of CKD in Ghana is 13%.⁵ CKD receives less attention in Ghana compared to other noncommunicable diseases such as hypertension, diabetes, chronic respiratory diseases, and cancers.⁶ Lack of kidney disease awareness, a low nephrology workforce, and inadequate knowledge among primary health care providers accounts for an underreporting of CKD, resulting in associated complications in more than 70% of cases, and poor quality of life.⁷ Kidney replacement therapy is not readily available nor is it affordable in most lower-middle-income countries in Sub-Saharan African countries such as Ghana. Patients have to pay out-of-pocket for hemodialysis (HD), the most common form of kidney replacement therapy in Ghana, because national health insurance does not cover acute or chronic HD. Furthermore, chronic peritoneal dialysis is currently unavailable.

The COVID-19 pandemic has presented many challenges in the management of patients with CKD and AKI when HD is required. Those who could afford HD were restricted during the pandemic as a result of temporary lockdown measures by the government to curb the spread of the COVID-19. Many patients missed clinical and HD appointments, resulting in hospital admissions and increased mortality. Some died at home directly or indirectly from COVID-19. Deaths outside the hospital setting have been poorly documented. Most patients have been afraid to report to the hospital with symptoms suggestive of COVID-19

Correspondence: Elliot Koranteng Tannor, Komfo Anokye Teaching Hospital, Department of Medicine, Kwame Nkrumah University of Science and Technology, P. O. Box 1934, Okomfo Anokye Street, Bantama, Kumasi, Ghana. E-mail: elliottkannor@yahoo.co.uk

such as cough, breathlessness, or fever due to fear of prolonged isolation while awaiting COVID-19 real-time polymerase chain reaction test results, which averaged a duration of 2 weeks. During isolation, patients suffered suboptimal renal care and missed HD sessions. Patients receiving HD in private units were refused dialysis if they were suspected to have or had been diagnosed with COVID-19, leading to delays in HD and increased traffic to teaching hospitals.

Practitioners face major difficulties in dialyzing patients with COVID-19 because few units have had the space or resources to isolate COVID-19 patients. Suspected or confirmed cases of COVID-19 required rescheduling of other HD patients to facilitate necessary HD unit disinfection and fumigation before resuming regular treatment. When possible, temporary isolation units for COVID-19-infected patients were created. Most cases of COVID-19 presenting to HD units were mainly newly diagnosed ESRD or AKI patients with COVID-19. Interestingly, no cases of COVID-19 were reported in inherent ESRD patients in HD units within the two major teaching hospitals in Ghana, although not all patients were tested in some these HD units.

The unavailability of required personal protective equipment such as particulate-air filter respirators (e.g. N95 masks) and face shields in HD units led to increased risk to staff. Reported data from HD units in two teaching hospitals revealed a staff positivity rate of 20%-25%. The lack of personal protective equipment led to increased workload for the remaining staff, therefore increasing their risk of COVID-19 as well as psychological stress on themselves and their families.

Reports from a hospital-based registry in Ghana showed that 10% of patients admitted with COVID-19 had underlying CKD. AKI occurred in approximately half of COVID-19 cases with in-hospital mortality rate of about one-third. Although AKI was not found to be significantly associated with increased mortality, those with stage 3, defined as an increase in serum creatinine of greater than or equal to 353.6 mmol/l or initiation of kidney replacement therapy according to the Kidney Disease Improving Global Outcomes, had high in-hospital mortality compared with those with mild-to-moderate AKI. In-hospital mortality among those with CKD was 43.5%, as found in an unpublished hospital-based report of COVID-19 patients admitted at the Komfo Anokye Teaching Hospital as of February 2021.

The development of vaccines sparked hope for controlling the spread of COVID-19 globally and in Ghana. Ghana received its first 600,000 vials on February 24, 2021, enabling the vaccination of 2% of the population with the AstraZeneca/Oxford (COVAX) vaccine. Ghana was the first country in Africa to receive the COVID-19 COVAX vaccine. Government officials, security agencies, health workers, and citizens 60 years of age and older were prioritized for vaccination. We had to advocate for and educate our CKD and ESRD patients, many of whom were 50 years of age or younger,⁷ as they needed vaccination prioritization due to their increased risk of severe disease when infected by COVID-19.⁸ Unfortunately, efforts to increase vaccine uptake were met with resistance by the general public due to lack of education and misinformation. Thus, many of our vulnerable patients with CKD and ESRD on dialysis and even some

transplant patients refused to receive the vaccine.

Those who were vaccinated experienced delays in receiving the second dose, which was expected to arrive within 8 weeks after the first delivery. Instead, the second vaccine shipment was received May 7, 2021, 10 weeks later. Unfortunately, only 350,000 vaccines were included, which was fewer than the first shipment, providing a supply for only 58% of those who received the first dose. Questions remain regarding when we to expect additional vaccines to meet the needs of the vulnerable population and the majority of the population.

In conclusion, the COVID-19 pandemic has presented many challenges in the management of most medical conditions, including kidney disease. Kidney disease increases susceptibility to COVID-19, and is associated with both AKI and increased mortality. Resources are clearly needed such as education, adequate personal protective equipment provision for staff, adherence to prevention protocols, nationwide vaccinations, and further research into COVID-19 and kidney disease in Sub-Saharan Africa and Ghana.

DISCLOSURE

The author declared no competing interests.

REFERENCES

1. Zhou F, Yu T, Du R, et al. Clinical course and risk factors for mortality of adult inpatients with COVID-19 in Wuhan, China: a retrospective cohort study. *Lancet*. 2020;395:1054–1062.
2. Bamgboye EL, Omiye JA, Afolaranmi OJ, et al. COVID-19 pandemic: is Africa different? *J Natl Med Assoc*. 2020. S0027-9684(20)30345-X.
3. Cheng Y, Luo R, Wang K, et al. Kidney disease is associated with in-hospital death of patients with COVID-19. *Kidney Int*. 2020;97:829–838.

4. Wang F, Ran L, Qian C, et al. Epidemiology and outcomes of acute kidney injury in COVID-19 patients with acute respiratory distress syndrome: a multicenter retrospective study. *Blood Purif.* 2020;1–7.
5. Adjei DN, Stronks K, Adu D, et al. Chronic kidney disease burden among African migrants in three European countries and in urban and rural Ghana: the RODAM cross-sectional study. *Nephrol Dialysis Transplant.* 2018;33:1812–1822.
6. Tannor EK. Chronic kidney disease – the “neglected” non-communicable disease in Ghana. *African J Curr Med Res.* 2018;2:1.
7. Tannor EK, Norman BR, Adusei KK, et al. Quality of life among patients with moderate to advanced chronic kidney disease in Ghana - a single centre study. *BMC Nephrol.* 2019;20:122.
8. Wong P-N, Mak S-K, Lo K-Y, et al. Clinical presentation and outcome of severe acute respiratory syndrome in dialysis patients. *Am J Kidney Dis.* 2003;42:1075–1081.