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Short Communication

Social consequences of COVID-19 in a low resource setting in Sierra Leone, West Africa

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ABSTRACT

Economical and psychological consequences of the lockdown in low-resource setting in rural Africa are unknown. We drafted a survey in order to address the social impact of COVID-19 lockdown on a rural village in Sierra Leone. The survey developed by the study group and translated in the local language, distributed to the householders of the village on April 13th and responses collected on April 14th, when Sierra Leone was on day 11 of lockdown. The questions aimed to assess in the community the following items: age group, main activities before lockdown, change in income and ability to feed the family during lockdown, anxiety during lockdown. 78 householders (100% of Bureh Town) replied. All, expect one, declared a 51–80% (19.2%) to 81–100% (79.4%) reduction of weekly income compared with the pre-lockdown period, declaring difficulties in providing food for the family members (82%), and anxiety (60%). Our analyses showed that people lost their jobs and have difficulties in providing food for their families.

Highlights: Our analyses in a low resource setting in rural Africa in Sierra Leone, West Africa, showed that people lost their jobs and have difficulties in providing food for their families, as a consequence of COVID-19 lockdown

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Introduction

Since its first description in Wuhan, China (Zhu et al. 2020), SARS-CoV-2 spread all over the world, being declared by the World Health Organization as a pandemic. SARS-CoV-2, the virus causing Coronavirus Disease 2019 (COVID-19), caused millions of infections and thousands of deaths, causing significant challenges to every health systems, including in high-income countries, where shortages of human resources and devices have been documented (Bressan et al. 2020). Several authorities raised fears of potential consequences of SARS-CoV-2 spread in sub-Saharan Africa. However, despite preventive strategies raised by the Sierra Leone

government, local spread of SARS-CoV-2 in Sierra Leone has been documented. On March 16th 2020 first cases were reported in neighboring countries (Guinea and Liberia) and the local government restricted unnecessary travels and banned public meetings; on March 19th non-emergency flights were stopped; on March 27th borders with Guinea and Liberia were closed; on April 3rd a three-day lockdown started and eventually on April 8th, due to the local escalation in reported cases, a 14-day lockdown was released, with the possibility of extension according to the epidemiological development. Despite these restrictions, on April 18th, 30 confirmed cases were reported, 532 people put in quarantine but still zero deaths related to COVID-19 were documented. Economical and psychological consequences of the lockdown in low resources setting in rural Africa are worrying the experts of global health (El-Sadr and Justman, 2020), but are still unknown and their early analysis will allow corrective interventions or preventive measures to support fragile areas to minimize the impact on the population.

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Methods

We drafted a survey in order to urgently address the social impact of COVID-19 lockdown on the rural village of Bureh Town, Sierra Leone, West Africa (Figure 1) and quickly implement corrective measures. It was developed in English by the lead author, reviewed by the research team and translated in the local language by the Headman and the authors of this study. The headman represent the chief of rural areas in sub-Saharan West Africa, being comparable as a mayor of city in high resource countries. The survey had been deliberately made simple so that everyone could respond regardless of schooling and included questions on age of the respondents, number of people and age groups of people living in the house, work situation and weekly income before and after the lockdown. The administered survey was composed with a descriptive purpose and composed of detailed questions aimed to assess the following items in the community: age group, main activities before lockdown, change in income and ability to feed the family during lockdown, anxiety during lockdown (supplementary material). The survey was a clinical/demographic one with descriptive aims.

The survey written on papers and left in front of each home of the village to allow each householder to reply, distributed on the morning of April 13th and responses collected on the morning of April 14th (all answers were provided on a single day). On April 12th, the headman and the health workers of the Community Health Centers informed the householders of the coming survey and highlighted them the importance to participate. Responses analysis (data analysis) was performed using descriptive statistics techniques by a professional statistician (cv available upon request). A formal statistical calculation of the sample size was not performed as the primary objective of the survey was of purely descriptive nature. No hypotheses were to be tested and no

previous literature on COVID social consequences in rural areas of sub-Saharan Africa is available. However, we planned to collect at least 80% of responses. When the study was performed, Sierra Leone was on lockdown since 11 days (first one declared on April 3rd). The survey was performed while the village of Bureh Town was in the full lockdown and touristic activities interrupted (see appendix figure, that compares presence of tourists on Easter 2019 and Easter 2020).

The choice to focus on the householder derives from a number of assumptions: in the Bureh Town village, the family income derives in almost all cases from the work of the head of the family; the householders usually manage incomes and is responsible for main decisions regarding the household; in rural communities there is a strong sense of respect to ancient people and householders, therefore we focused on them in order to respect local behaviors; this was necessary in order to provide timely data from such a remote setting.

The study was approved by a local commission composed of the research team of the Bureh Town Community Hospital, the headman of the community and the old men of the village, in a similar way to what happens for all the important political and economic decisions in the examined area (n24_april-2020). Personal data were not collected on the survey.

Results

78 householders (100% of Bureh Town) living with a mean of 7 other people (1–21) filled the questionnaire (Table 1), representing a total of 560 Bureh Town citizens (142 children under 5; 75 aged between 6 and 15; 80 aged between 16 and 25; 186 aged between 25 and 40, 75 aged between 40 and 60; 12 aged more than 60 years). All people were dependent from the local stream to collect water, where the younger groups of the family go every

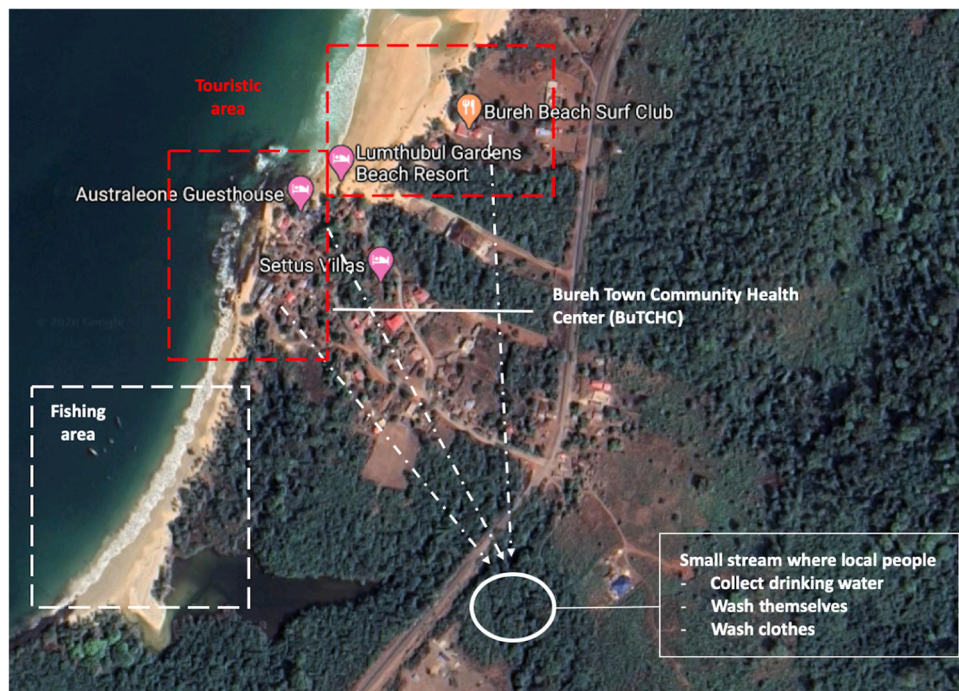


Figure 1. Map showing Bureh Town, a fishing village of about 600 people located in the Rural Western Area of Sierra Leone, at 50 km from the capital Freetown with main income represented by fishing and tourism. Despite the good position, Bureh Town represents a very basic and typical village of West Africa. Most people from the village have their own boat for fishing and entire families live in hand made small houses where running water and electricity are not available. Community members every morning go to a local stream where they collect drinking water, wash themselves and their clothes.

Table 1
Details of answers to the survey.

Number of respondents	Male	Female				
78 (100%)	61 (782%)	17 (218%)				
Total population 560 (100%)	>5yrs 142 (25,3%)	5–15 yrs 75 (13,4%)	16–25 yrs 80 (14,3%)	26–40 yrs 186 (33,2%)	41–60 yrs 75 (13,4%)	>60 yrs 12 (2,1%)
Main activity 78 (100%)	Fisherman 20 (25,7%)	Tourism 18 (23,1%)	Marketing 8 (10,2%)	Teacher 4 (4,1%)	Other 8 (10,2%)	Nothing 20 (25,7%)
Reduction of income 78 (100%)	0–50% 1 (1,3%)	51–80% 15 (19,2%)	81–100% 62(79,4%)			
Difficult in providing food to family 78 (100%)	No 14 (14%)	Yes 64 (82%)				
Anxiety after COVID 78 (100%)	Never 18 (23%)	Seldom 15 (19,2%)	Often 45 (57,7%)	Always 0 (0%)		

morning for this issue. People were involved in local jobs such as: fishing (20, 25.7%), tourism (18, 23.1%), marketing (81 10.2%), schoolteacher (4, 4.1%), others (8, 10.2%) while 20 (25.7%) declared not to have a job before the lockdown. All householders, except one, declared a 51–80% (15 householders, 19.2%) to 81–100% (62 householders, 79.4%) reduction of weekly income compared with the pre-lockdown period, declaring difficulties in providing food for the family members in 82% of respondents, due to lack of economic resources related to the reduced income and activities related to the lockdown; 76.9% of respondents declared to be very worried about economic fallout from the lockdown with 60% of householders declaring a mild-moderate anxiety.

Discussion

Our analyses, even if just focused on a small village, showed a profound indirect impact of SARS-CoV-2 spread in Sierra Leone. Considering the rapid worldwide diffusion of COVID-19, the arrival of SARS-CoV-2 in sub-Saharan Africa was not unexpected, with potentially dramatic health impacts (of note only one ventilator is available for the whole population of Sierra Leone). Lockdown seemed to be the only measure to delay contagion but this decision was not without consequences for people, especially those living in fishing and touristic areas of the country. In our survey, all people but one declared a 51% to 100% reduction of weekly income with consequences in the ability to provide food for the family members, thus confirming results by other studies (Dyer 2020). Most of the respondents considered themselves worried about the situation with a mild percentage of the population living in a mild-anxiety state. In fact, the households provided the response on day eleven since first lockdown was declared, meaning that local touristic activities, as well as minor markets, were already affected, with economic consequences for local workers, by more than seven days. These results are probably due to the fact that, differently from governments of high-income countries, community members were not supported by the administrations. For example, in the European Union and the United States, the government pushed the economy providing billions of euros/dollars to support those families that lost jobs or whose income was severely affected by the reduced business. The findings of our survey confirm the fear of severe consequences of the spread of SARS-CoV-2 in sub-Saharan Africa and the need for special surveillance tools (El Zowalaty and Järhult 2020). Although Kapata et al. (Kapata et al. 2020) gave a positive answer to the question “Is Africa prepared and equipped to deal with yet another outbreak of a highly infectious disease – COVID-19?”, our data suggest that

community members is economically and then psychologically suffering from this situation. Certainly, substantial progresses has been made in Africa since the 2014–16 Ebola outbreak (Delamou et al. 2017), with lessons learned from previous and ongoing outbreaks (Largent 2016; Omoleke et al. 2016). In fact, African countries in general, and Sierra Leone in this case, properly responded to the risk of the epidemic providing timely lockdown and activating diagnostic centers and quarantines, giving the population daily updates. However, the local impact of COVID-19 is growing constantly, with a total of 570 cases and 34 deaths (including one doctor), on May 20th. Moreover, a WHO Strategic Preparedness and Response Plan has been developed, with a call for US\$675 million to support those African countries, shipped personal protective equipment, trained community health workers using WHO’s online courses on COVID-19 (Djalante et al. 2020). Nevertheless, people leaving in a low resource settings in rural Africa are suffering from social and economic consequences of the COVID-19 pandemic and the limitation of travels. Our study has been performed in a rural village of sub-Saharan Africa, where tourism, fishing and minor markets represent the main income activities. Although the collection of responses from the householders is a limitation of our survey, and our results are not generalizable to the whole sub-Saharan Africa, we can expect that similar difficulties would be faced in other low-income rural areas with similar characteristics (in Africa but not only) during COVID-19 related restrictive measures. The international society is properly worried about the health consequences of Africa and impact on community health systems (El-Sadr and Justman, 2020); however, the social impact could be even harder in these contexts and funds are urgently needed to support community populations.

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Nothing to declare

Ethical approval

The study was approved by a local commission composed of the research team of the Bureh Town Community Hospital, the headman of the community and the old men of the village, in a similar way to what happens for all the important political and economic decisions in the examined area (n24_april-2020).

Conflict of interests

The authors have no conflict of interests to declare

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Appendix A. Supplementary data

Supplementary material related to this article can be found, in the online version, at doi:<https://doi.org/10.1016/j.ijid.2020.05.104>.

References

- Bressan S, Buonsenso D, Farrugia R, Parri N, Oostenbrink R, Titomanlio L, et al. Preparedness and response to Pediatric CoVID-19 in European Emergency Departments: a survey of the REPEM and PERUKI networks. *Ann Emerg Med*. 2020; May 15.
- Delamou A, Delvaux T, El Ayadi AM, Beavogui AH, Okumura J, Van Damme W, et al. Public health impact of the 2014–2015 Ebola outbreak in West Africa: seizing opportunities for the future. *BMJ Glob Health* [Internet] 2017; Mar 16 [cited 2020 Apr 21];2(2). Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5435258/>.
- Djalante R, Shaw R, DeWit A. Building resilience against biological hazards and pandemics: COVID-19 and its implications for the Sendai Framework. *Progress in Disaster Science*. 2020;6:100080.
- Dyer O. Covid-19: Africa records over 10 000 cases as lockdowns take hold. *BMJ*. 2020;369:m1439.
- El-Sadr WM, Justman J. Africa in the Path of Covid-19. *N Engl J Med*. 2020; doi: <http://dx.doi.org/10.1056/NEJMp2008193>.
- El Zowalaty ME, Järhult JD. From SARS to COVID-19: A previously unknown SARS-CoV-2 virus of pandemic potential infecting humans – Call for a One Health approach. *One Health* [Internet] 2020; Feb 24 [cited 2020 Apr 21]; Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7075990/>.
- Kapata N, Ihekweazu C, Ntoumi F, Raji T, Chanda-Kapata P, Mwaba P, et al. Is Africa prepared for tackling the COVID-19 (SARS-CoV-2) epidemic. Lessons from past outbreaks, ongoing pan-African public health efforts, and implications for the future. *Int J Infect Dis*. 2020;93:233–6.
- Largent EA. EBOLA and FDA: reviewing the response to the 2014 outbreak, to find lessons for the future. *J Law Biosci*. 2016;3(3):489–537.
- Omoleke SA, Mohammed I, Saidu Y. Ebola Viral Disease in West Africa: A Threat to Global Health, Economy and Political Stability. *J Public Health Afr*. 2016;7(1):534.
- Zhu N, Zhang D, Wang W, et al. A novel coronavirus from patients with pneumonia in China, 2019. *N Engl J Med*. 2020;382(8):727–33.

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