



Research Article

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COVID-19 pandemic, challenges, and opportunities in Northern Uganda; Community overview and perspectives: A qualitative study using informant interviews

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ABSTRACT

Background: Severe Acute Respiratory Syndrome-Coronavirus 2 (SARS-CoV-2), a virus that causes COVID-19, has overwhelmingly interrupted human activities worldwide, especially in the low-to-middle income countries. Not much is reported about exclusive challenges and opportunities presented by the COVID-19 pandemic in some remote communities in Africa.

Objective: The objective of this study was to assess the community's views and perspectives on the challenges and opportunities of the COVID-19 pandemic in Northern Uganda.

Methods: We interviewed 36 participants (age range, 28-63 years), including health workers, civil servants, members of civil society, security forces, politicians and staff of local government administration who were members of COVID-19 district task forces in Northern Uganda using qualitative study methods between August and September 2021. The initial selection of participants was purposeful, but the snowballing technique was later used to select others. The interview questions were pre-tested among health workers and laypersons who were not part of the main study. Participants described how the COVID-19 pandemic presented challenges and opportunities, and the experience could be used to strengthen community resolves to control the pandemic and any other in the future. A local IRB approved this study. Data were analyzed using thematic analysis.

Results: The current study findings revealed challenges but many opportunities during the COVID-19 pandemic in this community, including loss of lives and livelihoods,

increased poverty, lack of personal protection equipment, uncertainties, stress, and anxiety among health workers in the community. However, it also offered opportunities for quality family time, increased engagement, sensitization, and mobilization of communities for health, improved general security of persons and property, increased budgets and logistics for government departments, reduced incidences of diarrheal diseases and road traffic accidents, increased incomes for task force members, and more interactions among members during task force meetings.

Conclusion: Although the COVID-19 pandemic presented enormous challenges to low-to-middle-income countries, there are opportunities in some communities that are worth mentioning. Information obtained in this study has practical lessons that disease control experts could use to develop strategies to organize communities better and conduct disease surveillance activities for the COVID-19 pandemic and others.

Keywords: COVID-19, Challenges, Interviews, Opportunities.

ABBREVIATIONS

CTUs: COVID-19 Treatment Units; DTF: District Task Force; ICU: Intensive Care Unit; IPC: Infection, Prevention, and Control; SOPs: Standard Operating Procedures; VHTs: Village Health Teams; WASH: Water, Sanitation and Hygiene.

INTRODUCTION

Coronavirus disease 2019 (COVID-19) is a severe respiratory disease that results from infection with a new coronavirus (SARS-CoV-2) (Wu Z et al., 2020). One of the most critical issues related to the COVID-19 is the high rate of spread, which has resulted in millions of people being infected worldwide, and hundreds of thousands of deaths to date (Wu Z et al., 2020). COVID-19 patients present with different symptoms: fever, dry cough, sore throat, loss of smell and taste, flu-like symptoms, headache, difficulty in breathing, chest pain, general body weakness, and fatigue, which are mild in about 80 percent of cases. Still, in severe cases, patients may develop respiratory distress or respiratory failure, and hence the need for Intensive Care Units (ICUs) has increased globally (Wu Z et al., 2020).

Although the COVID-19 first spread slowly in Africa, confirmed cases of the virus on the continent have continuously been rising steadily since March 2020 (Infographic, 2021). The rapid spread of SARS-CoV-2 could be attributed to its numerous characteristics, including its high transmissibility, asymptomatic persons' ability to shed the virus, enormous numbers of asymptomatic persons, or mild symptoms but with the ability to transmit the virus, new variants, and super-spreading events (Yuen KS et al., 2020; Zheng J, 2020). Poor public health practices, disbeliefs, and misconceptions about the virus and its origin in many African communities are the other reasons for its rapid spread in the continent. Currently, there are no effective drugs approved for the treatment of COVID-19 (Zheng J, 2020; Fauci AS et al., 2020). As a result, health care interventions are limited to preventive measures, supportive therapy, and vaccination. Several medications for the COVID-19 are being evaluated

in Randomized Controlled Trials (RCT) (Zhang T et al., 2020) and preventative measures include social distancing, practicing hand hygiene and respiratory etiquette, wearing facemasks in public, self-isolation of people suspected of infection, and COVID-19 vaccination (WHO, 2021).

At least seven different COVID-19 vaccine candidates have demonstrated excellent efficacy in Randomized Controlled Trials, have been granted emergency use authorization by the World Health Organization (WHO), and are being rolled out globally (Voysey M et al., 2020; Polack FP et al., 2020; Baden LR et al., 2020; FDA, 2021; Logunov DY et al., 2021). Over 13 million doses have been administered in the African continent (COVID-19 Vaccines, 2021).

Despite this progress, concerns about access to COVID-19 vaccines in Africa due to higher-income countries pre-emptively buying up vaccine supplies and hoarding have been described by some scholars and academicians as vaccine apartheid. The other reasons for limited COVID-19 vaccine access in Africa include the continent's low vaccine-manufacturing capacity and barriers to widespread delivery and uptake of COVID-19 vaccines across the African continent (Nkengasong JN et al., 2020; WHO, 2020). Given this prospect, African countries will likely continue to rely on implementing the existing public health prevention measures to contain the spread of SARS-CoV-2 for the foreseeable future.

It should be recalled that Uganda went through a lockdown beginning in March 2020, where it applied stringent measures (total lockdown). Initially, in early 2020, Uganda had registered one of the best statistics on the incidence, prevalence, number of hospitalizations, and COVID-19 related deaths in the East African region (Kitara DL and Ikoona EN, 2020). However, the country went through presidential, parliamentary, and local government elections from September 2020 to March 2021, characterized by massive rallies and electioneering processes.

By December 2020, Uganda had experienced the first wave of COVID-19, which affected a few people, 40,000 confirmed cases, and 300 deaths compared to other countries in the region (CGTN, 2021). Uganda experienced a severe second wave of COVID-19 in May, June, and July 2021. The country registered three times the number of

COVID-19 cases from the first wave and more than 2000 deaths, overturning the country's successes in controlling the pandemic. COVID-19 related loss of lives, livelihoods; increased poverty, economic losses, and psychosocial problems have become significant challenges facing communities in Uganda.

However, COVID-19 related opportunities in many communities in Uganda have remained unreported. The opportunities created by the COVID-19 pandemic have enabled the Government of Uganda to strengthen disease surveillance systems, increase the number of beds in health centers and hospitals, increase the numbers of Intensive Care Units (ICUs), establish oxygen plants in most Regional Referral Hospitals, procure ambulances, and many supplies that helped save the lives of many people and communities in Uganda.

The Ugandan Government must be applauded for taking advantage of the COVID-19 pandemic for strengthening its healthcare systems amidst many social and economic uncertainties. Because of these experiences, authors developed interests to assess the views and perspectives of communities in Northern Uganda on their experiences during the COVID-19 pandemic.

The purpose of this study was to gather information from the community of Northern Uganda so that disease control experts could use it to organize and strategize on surveillance, prevention, and control during and after the COVID-19 pandemic.

The objective of this study was to assess the views and perspectives of communities in Northern Uganda on the challenges and opportunities resulting from the COVID-19 pandemic from March 2020 to September 2021.

MATERIALS AND METHODS

Study design

We employed qualitative study methods using informant interviews to assess experiences and lessons learned during the COVID-19 pandemic among health workers, security forces, civil society, politicians, district task forces, and communities. A core strength of this design was to allow participants to freely describe, with minimal limitations, their lived experiences during the COVID-19 pandemic and lockdowns. Participants were encouraged to express their opinions on what they considered were strategies, challenges, and opportunities achieved during the COVID-19 pandemic. Therefore, a qualitative study design was suitable for answering these research questions. Informant interviews were conducted between August and September 2021.

Study Settings: This study was conducted in Gulu City, Nwoya, Pader, and Gulu districts in Northern Uganda. The four districts where the study was conducted are part of the districts that form the Acholi sub region in central northern Uganda. The

area has just emerged out of a 20-year-old war between the Government of Uganda and the rebel Lord's Resistance Army (LRA). The population is in the recovery period of the civil war. There are ten districts in the Acholi sub region with a total estimated population of one million, eight hundred thousand people.

During this study, Uganda had just eased the second lockdown. The number of COVID-19 patients had significantly reduced in COVID-19 Treatment Centres (CTUs) in many health facilities in Northern Uganda. Health workers remained the frontline workforce (especially nurses, doctors, and laboratory staff). Many health workers cancelled their annual leaves and were recalled from leave to care for patients and provide the required clinical services. In addition, the task forces were set up by the Government of Uganda along the layers of administrative structures (national and districts) of the country to support the management, prevention, and control of the COVID-19 pandemic in communities. Weekly task force meetings were conducted in the four districts where this study was conducted.

The President of Uganda had announced new methods of controlling the spread of the virus, where 30% of staff in public and private organizations were allowed in offices. These COVID-19 control measures were intended to disrupt day-to-day contacts between management, administration, and the community to break the cycle of person-to-person physical contacts and the transmission cycle of COVID-19.

Participants

Interviews were conducted with 36 participants twenty-one health workers, five members of security forces, two members of civil society, four politicians, and four members of the local government administration who were members of the COVID-19 district task forces in Northern Uganda. We initially adopted a purposive sampling strategy (Palinkas LA et al., 2015), not aiming to achieve statistical representation of the study population. Subsequently, the snowballing method became evident as those interviewed suggested the next person to provide additional information on COVID-19 (Renosa MD et al., 2020). Reynosa et al. mentioned that face-to-face interaction is the hallmark in qualitative research data collection because it enables rapport building, open and honest dialogue with research participants, and showing empathy (Renosa MD et al., 2020). This study adopted the snowballing technique definition as a sampling method whereby the sample population was built up by recruiting potential participants from known informants (Ritchie J et al., 2013).

To start the snowballing, we engaged two members of the district task force well-known in the community *via* community organizations and networks. Participants were selected to represent self-identifying as members of the COVID-19 district task force set by the Government of

Uganda, adults living in the district of study and having experience in the management of COVID-19, a year after its budding as a pandemic. The snowballing aspect involved researchers asking interviewees to identify and refer others they knew fit the selection criteria.

Ritchie et al., noted that snowballing sampling works well for recruiting dispersed and small populations with selection criteria that may not be as widely disclosed due to the topic's sensitivity (Ritchie J et al., 2013). However, by recruiting new participants from an existing sampling pool, the researchers risked the sample's diversity as sampling members would refer a potential participant from the same place of work or institution. However, this procedure allowed us to identify participants from various experiences related to our research questions.

As data collection and analysis progressed in parallel, the sample size was adapted to the variety, the extent of experiences, and opinions captured in line with the principle of the power of information until information saturation was reached.

The snowballing method enabled us to obtain all the required participants to gather the information we required eliminating the need to publicize the study among health workers, security forces, civil society, politicians, and district administrators who were members of the district task forces.

Appointments for interviews were made with participants before the actual interview sessions and, on most occasions, twenty-four hours in advance. Interview sessions lasted between 30-45 minutes, although the conversation lasted more than one hour on a few occasions.

Socio-demographic characteristics (age, sex, and occupation) and the district of work or residence of participants who had completed interviews were reviewed during the data collection process, enabling targeted inclusion of participants not well represented to optimize diversity in the sample, achieving a balanced gender representation and widespread coverage of the region (Supplementary Files 1 and 2).

Research questions

This study was guided by seven research questions which were.

1. In your opinion, what were the reasons for the surge in coronavirus cases in this region?
2. In your opinion, what were the most typical complaints/presentations of COVID-19 patients in this hospital or district?
3. In your opinion, what were the challenges you faced with the COVID-19 patients, and what remedies do you recommend?
4. In your opinion, what were the opportunities presented by the coronavirus pandemic to your hospital or district?
5. In your opinion, what were the main COVID-19 success stories from your hospital or district that you wish to share?

6. In your opinion, what were the main challenges your staff and hospital/district faced during this pandemic?
7. What advice would you give to the population in the region on how to protect against coronavirus infection?

Interview process and quality assurance

A team of twelve senior researchers experienced in qualitative study methodologies conducted the interviews. Before data collection, the questionnaire was pre-tested among health workers and laypersons; however, the pre-test results were excluded from the main study results. The pre-test informed the team to re-word some questions to improve clarity and ensure face and content validity.

At interviews, no question was mandatory, as was provided in the informed consent form. Participants were free to answer any question and opt-out if they felt they did not want to, without any adverse consequences. All questions provided to participants were reassuring and elicited responses that were included in the data collection form.

The Gulu Regional Referral Hospital Research and Ethics Committee approved this study. The purpose of the study was explained to participants, and only participants who gave written informed consent to the study were interviewed as guided by the Standards for Reporting Qualitative Research Recommendations (O'Brien BC et al., 2014). Researchers contacted and invited participants for the interview at a time and place convenient to participants and within their work districts. Although health workers and local leaders were initially targeted for interviews, the snowballing method revealed vital stakeholders researchers included in the study. The stakeholders identified by the snowballing included members of the army, police, the prisons, private security organizations, civil society, NGOs, local councilors, and community members. The snowballing allowed us to include diverse persons who provided wide-ranging and rich perspectives on the research questions. However, only participants who could communicate in English were interviewed as not all the researchers could speak Acholi, the main dialect in the region.

Participants' socio-demographic characteristics such as age were obtained at the end of the interview to avoid creating uneasiness among participants at the beginning of the discussions. In the meantime, the research team met weekly on Zoom to discuss potential themes from participants' responses during data collection. Data collection for this study ended when information saturation on the subject matter had been achieved.

Data analysis

Data from the interviews were cleaned and

thematically analyzed. The first author (a Ph.D. degree holder in Public Health) with extensive training and experience in qualitative research methods thematically analysed data in line with the suggestions from Braun and Clarke (Braun V and Clarke V, 2006). Before conducting data analysis, the analyst (the first author) underwent

bracketing by reading literature and openly discussing various aspects of his knowledge that may influence data analysis with co-authors (Tufford L and Newman P, 2012). Identified prior knowledge on the subject and strategies to minimize its effects on data analysis were openly discussed among co-authors. The first author immersed himself with the data by reading and re-reading responses from participants four times (Braun V and Clarke V, 2006). The researcher wrote down all the identified themes and the corresponding quotations that endorsed each theme from the data. After this step, the research team was invited to read and re-read each theme and the related quote(s) to confirm appropriateness and accuracy. Any disagreements among researchers on the evolving themes were resolved through discussions and consensus. During these discussions, all researchers refined the themes of this study. In addition, researchers

presented the leitmotifs to five study participants to determine if the developed themes represented their views. Furthermore, two external qualitative research experts were given and requested to review samples of the articles and their corresponding quotes to ensure external validity. Still, the study utilized the consolidated criteria for reporting qualitative health care research (Booth A et al., 2014).

RESULTS

A total of 36 (21 males, 15 females) study participants with age (range, 28-63 years) were interviewed in this study. Participants included: 21 health workers (clinical and administrative staff), five members of the security forces, two members of the civil society, four politicians, and four members of the local government administration who were members of the district task forces (Table 1). Participants' experiences on the COVID-19 response varied according to the service type, geographical location, and roles played. However, all participants overwhelmingly conveyed numerous COVID-19 pandemics and lockdown-related challenges and opportunities (Supplementary File 3).

Table 1: Socio-demographic characteristics of participants.

Variables	Frequency (n=36)	Percent (%)
Sex		
Male	21	58.3
Female	15	41.7
Occupation		
Health workers	21	58.3
Members of security forces	5	13.9
Politicians	4	11.1
Members of civil society	2	5.6
Members of local government administration	4	11.1
Ages (years)		
<40 years	13	36.1
>40 years	23	63.9
Districts		
Gulu	12	33.3
Pader	5	13.9
Nwoya	6	16.7
Gulu City	13	36.1

In Table 1, most participants were males 21(58.3%), health workers 21(58.3%), more than 40 years of age 23(63.9%), and from Gulu City 13(36.1%).

The following sections of the results present participants' descriptions of opportunities and challenges faced by communities during the

COVID-19 pandemic, the impact of the changes on staff, community, health systems, the dilemmas and challenges encountered, and the opportunities created in these low resource settings.

For the health workers, changes in services and the nature of work were enormous. The most immediate consequence of the pandemic as

described by participants (health workers) was the rapid reorganization of the in-and outpatient departments and community services to minimize risks of infection with the COVID-19, where essential and non-essential services were defined. Some health workers' annual leaves were canceled, and those on leave were recalled, joining others to provide the COVID-19 treatment services and other prioritized essential services. These decisions were usually within the management team structure and were cascaded to service managers in different sections of health facilities. Results of the interviews are presented according to participants' views and perspectives. In addition, the participant's code, age, sex, and roles played in the management of COVID-19 were included in each quotation.

DISCUSSION

This study on members of the COVID-19 district task forces in Northern Uganda has exposed a wide range of extraordinary conditions associated with the COVID-19 pandemic. It adds insights into opportunities and vast fields of the challenges they face. In response to the pandemic, health workers and health facilities had to rapidly adapt to new modes of service delivery in an economically challenged community. Participants reported multiple issues related to health workers, health facilities, health systems, the community, and the national government's response to the pandemic and how, in the process, the population of Northern Uganda brot numerous opportunities.

On the challenges during the COVID-19 pandemic

Participants in this study had to deal with a wide range of ethical quandaries on how to treat patients with COVID-19 without the required Personal Protection Equipment (PPEs). This may have meant indulging in providing substandard care to the population and at the same time feeling the sense that their services were undervalued by their employers. There were nerve-racking reports consistent with a view of moral injury as a perceived violation of one's professional integrity and obligations and concurrent feelings of being constrained from taking the ethically appropriate action (Lamiani G et al., 2015).

Feelings of guilt and uncertainties on how COVID-19 patients and health workers were progressing during this time contributed to prolonged stress and other symptoms of burnout among health workers and the community. These had implications on whether health workers and the community would comply with the set guidelines for the management of COVID-19 (Booth A et al., 2014). As seen from responses of members of district task forces and health workers, there were observed open defiance to the SOPs and presidential directives in some communities in

Northern Uganda. This partly explains in their view the reason for the heave in COVID-19 cases in Northern Uganda.

Some members of the district task force recommended that executions of activities and duties should be done openly and satisfactorily to the task force committee and community, ensuring that every penny or kind contribution was well documented and accounted for. This was suggested to be followed quickly by processing funds to facilitate activities of task forces, review the standard policy on admissions of COVID-19 cases, and increase bed capacities of regional and general hospitals in Northern Uganda. They recommended the involvement of all medical staff in the preliminary planning and implementation processes of COVID-19 management and strategies for containment in the community.

Some health workers reported that staff should be paid what they deserve, without prejudice. The allocated fund should be used for its budget and well-accounted for. In addition, the government should prioritize more drug supplies and increase medical supplies and PPEs to health workers. This was expected to motivate health workers and support their quality-of-service delivery to the community they serve. The inadequate numbers and quality of PPEs for health workers during the surge may have in many ways contributed to many health workers contracting COVID-19 during the second wave. This had implications on the morale, resilience, motivation, and effectiveness of health workers during the second wave of COVID-19 in Northern Uganda.

Also, community members who tested positive for COVID-19 got worried and psychologically anguished about their condition. Isolation from their families and communities after diagnosis made them feel abandoned by their people. This was compounded by the high level of community stigma on COVID-19 cases. These authors suggest that the Ugandan Government could appropriately handle this issue by adopting the grassroots approach to community mental health programs where counselling and psychosocial support to survivors of COVID-19 are conducted at the village level using properly trained VHTs.

Furthermore, most community members were underprivileged and didn't have funds to buy home therapies such as Zinc, azithromycin, Vitamin C, ginger, hand sanitizers, and facemasks, commonly used to manage the disease. The community found it very difficult and expensive to care for cases of COVID-19 from home as families did not have enough rooms and money to isolate victims who buy PPEs and other items.

In addition, there was excessive fear of contracting the disease from patients they cared for. This situation was made worse by men who tested positive for COVID-19 turning violent and refusing to be isolated from their families. This situation deepened and was witnessed by increased incidences of domestic violence in some communities combined with the fear of contracting COVID-19 by some family members. These

authors suggest that the Ugandan Ministry of Health could support communities in the home-based care management by providing drugs and protective wears to caregivers so that there is reduced risks of spread of COVID-19 infection to families and caregivers or at most provide food and drug vouchers for the affected families to ensure compliance to the home-based care management model.

On the opportunities during the COVID-19 pandemic

Despite the challenges mentioned above, several opportunities were presented to the region as the community experienced the COVID-19 pandemic. There was successful management of most COVID-19 patients using the home-based care model, where most patients were successfully managed at home without referring to hospitals for further treatment. This home-based care management approach was adopted following guidance from the Ugandan Ministry of Health and World Health Organization (WHO), which recommended safe home care for patients with suspected COVID-19 infection who presented with mild symptoms and public health measures for managing their contacts (WHO, 2020).

Engagement, sensitization, and community mobilization for action against the virus were significant achievements during the pandemic. This was in line with the excellent principle of epidemic management, where the willingness and cooperation of the community to accept harsh measures became pillars for the successful management of the epidemic (Ikoona EN and Kitara DL, 2021). This was also in line with WHO's recommendation where engagement, sensitization, mobilization, and involvement of communities in the management and control of the COVID-19 pandemic were considered critical (WHO, 2020). This is contained in a WHO guideline intended to support teams working directly with communities during the COVID-19 pandemic. The guideline provides general guidance on community engagement during any disease outbreak response, including keeping an integrated response and outbreak prevention and response team (WHO, 2020).

One community in Northern Uganda observed that engagement of high-risk communities where cases of COVID-19 were increasing daily registered a sudden drop in the number of positive cases when health workers and members of the district task force engaged them for action against the spread of the virus. We authors argue that involvement and engagement of communities in prevention and control of any epidemic remain critical for sustainable and long-term prevention and management of the disease in question, which was experienced in Northern Uganda (WHO, 2020).

During the lockdown period, many community members moved from towns to villages. They got involved in farming, resulting in increased household food production, more quality time with

families, and higher-income through sales of agricultural products. The pandemic provided a rare opportunity for the urban residents to find comfort in villages, have more quality family time, and get involved in practical activities, for example, farming, when most economic activities in towns were restricted due to the lockdown measures (WHO, 2020; Kitara DL and Ikoona EN, 2020). In addition, there has been increased availability of medical equipment, infrastructural improvements, availability of more funds, training of health workers, improved general security in the region, and successful recovery of many patients in this resource-limited environment of Northern Uganda. These opportunities were enormous during the COVID-19 pandemic and deserved mention for a community that is very much poorly resourced in many ways.

The Secretary-General of the World Health Organization (WHO) also mentioned in his address that "no one would be safe from the COVID-19 pandemic until everybody was safe" (WHO, 2020). This was a powerful message from the WHO boss and should be followed through so that all nations, communities, and peoples are safe from the COVID-19 now and in the future.

Also, efforts made by the Ugandan Government to overcome challenges shaped by the COVID-19 pandemic were commendable, and these opportunities allowed Northern Uganda to enjoy rare opportunities in the health sector. It is hoped that opportunities presented by the pandemic could provide an atmosphere for health systems reforms, quality service delivery, improved surveillance of diseases with epidemic potential, and multi stake holder involvement in the management of epidemics in the future.

STRENGTHS AND LIMITATIONS OF THIS STUDY

These findings must be contextualized within the methodological strengths and limitations. We employed a qualitative study design using interview guides that prompted participants to describe their opinion on the challenges and opportunities during the COVID-19 pandemic in remote areas of Northern Uganda. We recruited 36 participants with a wide age range (28-63 years) that resided in the four districts of the Acholi sub region in Northern Uganda. We provided participants with feedback and conducted external qualitative research experts to review our results. In addition, themes on participants' responses were not generated according to age, sex, or districts but on consistently essential issues on the COVID-19 over the period. This perhaps provides the strength and validity of our findings. Furthermore, our current study may form a basis for future studies on various groups as the COVID-19 pandemic progresses, especially in a resource-limited environment.

The snowballing sampling technique for recruiting participants may have limited several health workers or teams of district task forces from

participating in this study. However, this was necessary as we conducted the investigation immediately after easing the second lockdown measures on COVID-19 in Uganda. Most restrictions were still in place, with everyone taking care not to have close physical contact with any new person in their environment.

Furthermore, the strength of our study is based on real-time documentation of a wide range of health issues; this was after the second wave of the COVID-19 pandemic in Northern Uganda, where several community members lost their lives, others were infected, got treated, and luckily recovered.

This study had several limitations. We did not conduct any formal measurements or assessments of the mental health status of health workers when they reported stress, anxiety, burnout, and restlessness. Still, we relied on their qualitative narratives to present in this paper. Whether the information provided was accurate or not, the scope and limitations of our study could not verify all information using standard measuring tools for the mental health situations reported. Nevertheless, we believe that the stress and psychological challenges of providing healthcare during the COVID-19 pandemic were likely similar across many regions and beyond our healthcare systems. Still, we acknowledge that further work in this low-resource setting will be required in the future.

In addition, this study was conducted immediately after easing the second lockdown measures on the COVID-19 pandemic in Uganda. This finding may not fully describe the chronology of experiences during the first, lockdown, and second waves. It may be that the effect of the second wave we have described could be different from the first wave, which was not fully documented in this study.

CONCLUSION

Although the COVID-19 pandemic presented numerous challenges to low-to-middle-income countries and communities, some opportunities are worth mentioning. Information obtained on experiences has practical options to help communities organize and strategize on disease prevention and control during and beyond the COVID-19 pandemic.

DECLARATIONS

Ethics approval and consent to participate

Ethical approval for the study was obtained from Gulu Regional Referral Hospital Ethics and Review Committee. All research methods were carried out according to relevant guidelines and regulations. Informed consent was obtained from all participants.

CONSENT FOR PUBLICATION

All participants agreed to have this information published.

AVAILABILITY OF DATA AND MATERIALS

Requests for anonymized data can be made to the corresponding author.

Competing interests: All authors declare no conflict of interest.

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AUTHORS' CONTRIBUTIONS

DLK was the lead researcher and managed the project. CO, SB, NAO, FWDO, JE, PA, PL, FPP, DA, JA, ENI, and JNO contributed to the study design, analysis, and writing-up. PL, JNO, SB, FWDO, and DLK conducted the interviews. DLK, ENI, SB, FWDO, JA, PL, and JNO contributed to analysis and manuscript writing-up. All authors read and approved the final manuscript.

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