Factors associated with access to food and essential medicines among Ugandans during the COVID-19 lockdown: a cross-sectional study

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KEYWORDS: COVID-19, Pandemic, Access to essential medicines, Lockdown, Uganda, Access to food, Control and prevention measures

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RECEIVED
23/11/2020

ACCEPTED
14/10/ 2021

PUBLISHED
28/10/2021

LINK

https://www.afenet-journal.net/content/series/4/2/4/full/

CITATION
Elizabeth Katana et al. Factors associated with access to food and essential medicines among Ugandans during the COVID-19 lockdown: a cross-sectional study. Journal of Interventional Epidemiology and Public Health. 2021October ; Suppl 2:4.
DOI:
https://doi.org/10.37432/jieph.supp.2021.4.4.02.4

Abstract

Introduction: Many sub-Saharan African countries implemented lockdowns, curfew, and restricted movements among other strategies to control and prevent the spread of COVID-19. These measures caused problems of access to food and essential medicines. We evaluated the importance of this problem in Uganda. **Methods:** In April 2020, we organized an online survey using a questionnaire to investigate the adherence to COVID-19 preventive measures and the impact of COVID-19. We used a modified Poisson regression analysis to identify factors associated with difficulties to access food or essential medicines. **Results:** Of the 1,726 study participants, 1,015 (58.8%) were males, 1,660 (92.6%) had at least tertiary level of education, 734 (42.5%) reported difficulties to obtain food. Of the 300 with a chronic illness, 107 (35.7%) experienced difficulties in accessing medication and 40 (13.3%) completely discontinued medication in the past week. Experiencing violence (Adjusted POR=1.61 CI:1.31 -1.99) was associated with difficulties accessing food or essential medicines while increasing age was associated with lower odds of experiencing difficulties (Adjusted POR= 0.97 CI: 0.96 – 0.98). **Conclusion:** This study confirms the reports that the strict lockdown measures implemented in Uganda made it difficult for Ugandan citizens to access food and essential medicines. Lockdown measures should be accompanied by interventions that ensure the continuity of access to food and essential medicines.

Introduction

On 30 January 2020, the World Health Organisation (WHO) declared the coronavirus disease 2019 (COVID-19) outbreak a public health emergency of international concern [1]. By early February 2020, the WHO had activated the United Nations crisis management policy to coordinate the UN system-wide scale up to assist countries to prepare for and respond to the COVID-19 threat before its declaration as a global pandemic in March 2020 [2,3].

The primary objective of the crisis management policy was to stop the human-to-human transmission of the virus with rapid detection, diagnosis, and care for those affected [2]. Due to the high infectivity rate of the virus and to halt widespread transmission, many countries in Sub-Saharan Africa including Uganda instituted preventive measures including lockdowns, curfew, and restrictions on human movements. These measures were intended to complement the global recommendations to contain the pandemic, such as public face mask use, risk communication, proper handwashing, and promotion of physical distancing. However, large-scale implementation of these strategies is not void of socio-economic consequences. Therefore the WHO encouraged countries to efficiently balance the effects of directly responding to the COVID-19 epidemic, while simultaneously developing strategies to address its potential collateral damage on the delivery of all essential services especially in low-income settings and among vulnerable groups including women, children, refugees, and the youth [2].

It was shown that lockdowns may have serious impacts on people´s ability to access healthcare and their health service-seeking behaviour, as well as implications on food security [4,5]. For example, Nigeria reported its lowest outpatient consultation rates during the lockdown period, with 0.5 to 0.6 visits per person per year; meanwhile, in Chad, Ethiopia, Nigeria, and South Sudan, disruptions in measles vaccinations left over 20 million children unprotected [5,6].

In addition to this, the Global Alliance for Vaccines and Immunizations (GAVI) postponed 14 vaccination programmes against polio, measles, cholera, human papillomavirus, yellow fever, and meningitis, intended to cover over 13 million people. Moreover, many treatment programmes in sub-Saharan African countries were disrupted as the funding organisations shifted their focus on COVID-19 response [6]. Furthermore, it was reported that many countries in Sub-Saharan Africa implemented lockdowns in the planting season for maize and rice (March to April), resulting in food shortage, higher transaction or production costs. The insufficient local production capacity due to the COVID-19 crisis resulted in an increased demand for imported food crops but this was not always possible because of travel restrictions [4,7].

Lockdown in response to the COVID-19 epidemic as recommended by the World Health Organisation (WHO) refers to an emergency protocol with temporary conditions or procedures imposed by the government in which activities or movements are limited in the communities while allowing systems of all essential services to function normally. In response to the COVID-19 epidemic, the Ugandan government instituted a ban on all public gatherings "pre-lock down" on March 18, 2020, closed all institutions of learning on March 20, i.e. "partial lockdown" on March 25, followed by a ban on public transport, i.e. "total lockdown" on March 30, then a ban on private cars and a nationwide curfew from 7 pm to 6.30 am, i.e. "14 days extension of the total lockdown" on April 1, and "21 days extension of the total lockdown" that happened on April 15 till May 5, 2020. In this study, we focus on the ability of Ugandans to access food and those with chronic conditions to access essential medicines during the total lockdown.

In this study context, access to food refers to individuals being able to have adequate physical, social, or economic access to appropriate, safe, and basic foodstuffs, that always meet their dietary needs regardless of the social measures or hindrances resulting from the COVID-19 lockdown [8]. Examples include Ugandan staple or traditional foods such as; matoke, rice cassava, sweet potatoes, maize flour, white potatoes, yams, beans, peas, groundnuts, cabbage, onions, pumpkins, tomatoes, some fruits such as; oranges, pawpaws, lemons, and pineapples animal products such as; milk, eggs, beef, fish, meat and processed items such as; salt, and sugar [9].

Although the Ugandan government organized a door-to-door relief food distribution program in Kampala and surrounding areas using military personnel targeting 1.5 million poor residents in urban areas [10], there were still reports of communities struggling to access food [11].

Throughout the epidemic, there was a lack of a consensus regarding how food should be distributed. As food distribution potentially could result in community crowding and increase COVID-19 transmission, food distribution was organised by the national COVID-19 task force, a system that resulted in political tensions [10,12]. It was also not clear who should receive the food. Urban dwellers were considered to be more vulnerable than their rural counterparts since the lockdown measures were more stringent in the urban areas. It was unclear how to reach vulnerable groups such as the elderly, the sick, and pregnant women [10,12]. Also, how much food should be given to each household? The package of 6 kg of maize flour, 3 kg of beans and salt per household, the 2 kgs of powdered milk, and 2kgs of sugar per lactating mother were considered not enough by the community [10,12].

The government allowed the food markets to remain open, and cargo drivers, food delivery systems, and restaurants to continue operating with the observance of COVID-19 preventive measures. However, there were reports of continued challenges to access food and other social amenities [13].

In this study, we define access to essential medicines, among individuals with chronic conditions as uninterrupted ability to obtain medicines that are required to satisfy their priority health care needs or manage their condition, and are meant to be always available; in adequate amounts, appropriate dosage forms, with assured quality and adequate information and at an affordable price for the individual, amidst the COVID-19 epidemic and lockdown [14].

We focused on access to essential medicines among Ugandans with chronic conditions including heart disease, asthma, diabetes, hypertension, cancer, HIV/AIDS, tuberculosis, etc. Under normal circumstances, in the absence of an epidemic crisis such as COVID-19 and total lockdown, Ugandans with chronic conditions will move to private or public health facilities to access essential medicines or utilize community pharmacies, clinics, and drug shops. Previous studies have shown that access to essential medicines among Ugandans with chronic conditions is influenced by both health system and patient factors [15,16]. Some of the health system factors include; limited operating hours, stocking of low-quality brands often rejected by patients and low availability of essential medicines in the public sector; high costs of medicines and limited insurance coverage in the private sector; availability of some essentials medicines only at high-level health facilities especially for cancer and heart disease; and high level of counterfeit medicines among community pharmacies, clinics and drug shops [15,16]. Some of the patient factors include the preference for herbal treatment, socioeconomic status, level of education, and urban versus rural residence [15,16].

During the lockdown, the Ugandan government also included measures to support those that needed emergency and routine medical care including care for individuals with chronic conditions. Health facilities, pharmacies, and drug shops remained open, but with the ban on motor vehicle movement, many health care providers could not access their workplaces. Citizens could seek permission from their local leaders for the transportation of the sick to health facilities. However, there were reports of communities struggling to transmit the sick to health facilities [11]. Some of the regional and national hospitals closed their Non-Communicable Diseases (NCD) clinics due to increased COVID-19 cases that disrupted service delivery [17]. As a result, many individuals with chronic conditions missed out on their drugs and routine check-ups [17].

According to a report by the Joint United Nations Programme on HIV/AIDS (UNAIDS), there were efforts by civil society organizations and Uganda´s health systems to bring essential medicines to the communities such as antiretrovirals to persons living with HIV/AIDS, diabetes, and hypertension drugs [18]. However, these efforts were hindered by tight restrictions on transport, poor communication systems, curfew, and inadequate resources including funding, fuel, vehicles, and motorcycles [18]. During the lockdown, from April to June 2020, the Infectious Disease Institute (IDI), scaled up its efforts to ensure HIV/AIDS patients in Kampala and Wakiso districts received monthly refills of their Anti-Retroviral Drugs (ART)[19]. IDI launched a toll-free hotline so that patients could seek guidance on access to treatment and designed a community-based system in which expert or peer clients using motorcycles made drug deliveries[19]. However, efforts and options from some of the organizations including the government were fragmented, often vertical approaches usually focusing on individuals with a specific disease, or residents of certain areas that were considered more vulnerable than others, as opposed to the wider issue of access to food and essentials medicines among all Ugandans.

In this study, we documented the difficulties of the Ugandans with accessing food and essential medicines

during the lockdown period installed as a consequence of the COVID-19 epidemic.

Methods

Study design and data source

For this study, we conducted a secondary analysis of cross-sectional data collected by the International Citizen Project (ICP) survey. From April 16, 2020, day 22 of Uganda´s total lockdown, to April 30, 2020, the International Citizen Project (ICP) online survey was launched to assess adherence to COVID-19 preventive measures and the impact of COVID-19 on people´s lives. The link for the survey was distributed via email, WhatsApp, Facebook, and Twitter platforms. The survey targeted the 12.1 percent of the 38.8 million Ugandans who have access to the internet either through a mobile phone or computer, with most of them being residents of urban areas (19.5 percent) compared with the rural areas (7.1 percent)[20]. The survey used a 3-stage sampling technique. Through the Makerere University School of Public Health and the Ministry of Health platforms (convenience sampling), the survey link was shared to all district health officers and associates (saturation sampling), who shared it with staff or public servants, and whoever received the link was encouraged to shared widely within their networks (snowball or referral sampling). The survey conveniently aimed to collect data from a minimum of 1,500 participants since the online nature would make it difficult to convince participants as only those interested in the topic would give it their time and also, we anticipated that there would be less variation in responses from our target population. The survey collected responses from Ugandans nationwide from 1,726 participants. No screening questions were set up to ensure that only individuals of certain characteristics or age groups would respond or gain access to the survey. The survey respondents were aged 12 to 72 years and were all considered in this study analysis since the majority of Ugandans who own mobile phones or computers and have internet access are youth aged 15 - 24 years at 28 percent [20].

Study questionnaire

The survey questionnaire was adapted from a template questionnaire developed by the International Citizen Project (ICP) consortium [21]. The survey questionnaire included questions about socio-demographic characteristics (age, sex, religion, education, place of residence, marital status, and housing conditions), community and personal preventive measures for COVID-19 (including handwashing, wearing face masks, physical distancing, and respiratory hygiene or coughing etiquette), professional life during the COVID-19 lockdown (including the ability to continue work, transportation means, and working conditions), daily life during the COVID-19 lockdown including (access to food, talking to other people, experiencing violence or discrimination, and being worried about their health), and personal health (including, developing flu-like illnesses, smoking habits, having underlying disease or condition, access to essential medications). Regarding access to food, participants were asked if they had experienced any difficulties in obtaining food in the past week (yes, or no), and if they responded with yes, they were asked about the main reasons that had caused the difficulty. With access to essential medicines, participants with an underlying condition were asked about experiencing any difficulties in accessing their medications since the epidemic started (yes, or no), and for those who had experienced difficulties, they were asked about the main reasons why they had completely discontinued their medications in the past week. No further questions were asked to address the various forms of access to food/essential medicines or probe into the various types of food/essential medicines. Other findings resulting from the ICP survey in Uganda have been documented elsewhere [22, 23].

Data abstraction and analysis

For this study, we considered data from survey questions about socio-demographic characteristics, professional life, and daily life during the COVID-19 lockdown and personal health questions.

We extracted and cleaned the data using Ms. Excel 2019, used STATA 14 for analysis. We performed descriptive statistics for all the participants´ characteristics. To identify the factors associated with failure to access food or essential medication, we created a binary outcome variable called failure to access food or essential medicines. Participants who had difficulty accessing food and those who failed to access essential medicines were coded as 1, implying they had the outcome of interest (experiencing difficulties accessing food and essential medicines during the epidemic).

We performed multivariate modified-log Poisson regression analysis to identify the factors that were associated with failure to access food or essential medicines at a level of significance of 0.05. The modified-log Poisson regression was used to estimate prevalence ratios as an alternative to the binary logistic regression for analyzing data because the outcome variable had a prevalence of above 10% and the odds ratios would have overestimated the risk [24,25]. We performed both unadjusted and adjusted modified-log Poisson regression analysis with the adjusted model only considering variables that were significant in the bivariate analysis. Age was considered at multivariate analysis as it is commonly perceived that older age groups are expected to face challenges. Other independent variables included sex, education level, marital status, residential area, housing conditions, profession, working conditions, wealth index, having an underlying disease, and experiencing any form of violence or discrimination during the lockdown.

Availability of data and materials

The data sets can be availed upon reasonable request from the corresponding author.

Ethical considerations

The ICP COVID19 study was approved by the Ethics committee of the University Hospital Antwerp and the University of Antwerp on 23rd March 2020, Protocol number 20/13/148. The study was also approved by the Higher Degrees, Research and Ethics Committee (HDREC) of the School of Public Health at Makerere University with protocol number 809 on the 21st April 2020 and by the Uganda National Council for Science and Technology. Personal identification information was not collected during the ICP project data collection.

Results

Socio-demographic characteristics of study participants

Our study considered all the 1,726 ICP study respondents whose mean age was 36 years (Standard Deviation: 10.4). The majority of the respondents 58.8% (1,015/1,726) were males and had tertiary and above maximum level of education (1,660/1,726; 96.2%). Forty percent (688/1,726) resided in Kampala suburbs, 17.4% (300/1,726) had an underlying disease, and 8.4% (145/1726) reported having experienced any form of violence or discrimination since the start of the epidemic Table 1.

Level of difficulty to access food and essential medicines

Overall, 45.1% (779/1,726) of the respondents had experienced difficulties with accessing food and essential medicines during the epidemic, 42.5% (734/1,726) had difficulty obtaining food in the last week with the major reasons being lack of money as reported by 47.4% (348/734), food being expensive as reported by 34.7% (255/734) while 12.3% (90/734) felt it was unsafe to go out and buy food.

On a Likert scale of 1 to 5, 17.2% (297/1,726) reported that they were extremely worried about their health in the past week (i.e. score of 5/5). Furthermore, 35.7 % (107/300) of those who had an underlying condition reported that they had experienced difficulties in accessing medication since the epidemic started and 13.3% (40/300) had completely discontinued medication in the past week. Fifty-five percent of those (22/40) who had completely discontinued medication in the past week cited failure to get transport to the health facilities, 15.0% (6/40) reported no medication at health facilities while 2.5% (1/40) reported no health workers at the health facilities as reasons for discontinuing medication use Table 2.

Factors associated with experiencing difficulties accessing food and essential medicines

In multivariate analysis, after adjusting for covariates, the prevalence odds of experiencing difficulties accessing food or essential medicines were 0.97 times lower with increasing age of the participants (Adjusted POR= 0.97 CI: 0.96 - 0.98) while the prevalence odds were 1.61 times higher for participants who reported that they had experienced any form of violence or discrimination (Adjusted POR=1.61 CI:1.31 - 1.99)Table 3.

Discussion

This study assessed the effect of the Ugandan COVID-19 lockdown measures on access to essential services in Uganda. Almost half of the participants experienced difficulties in accessing food and essential medicines during the lockdown period. Forty-three percent of the participants had difficulties obtaining food in the past week. This survey reported a high level of difficulty to access food compared to the average of 11% of the Ugandan population that was reported to be food insecure in 2014 according to the Food and Agriculture Organization of the United Nations (FAO)[26]. This is also much higher than findings from the household survey conducted from 2010 to 2011 which found that 23% of Uganda´s households had insufficient food availability [27]. According to FAO, food availability and access are not considered a limiting factor in most of the regions of Uganda except in Karamoja, East Central, and West Nile where prolonged dry spells frequently affect production[26]. Our study predominantly reached individuals in the capital city of Kampala (about 50%) and individuals in the relatively higher socioeconomic status, and higher education who are not traditionally in the groups with food insecurity and may thus have under-estimated the challenges with access to food and essential medicines which would likely be more severe in the less advantaged informal sector communities. On the other hand, it is possible that the urban setting could experience more disruptions with access to food due to loss of employment especially among the informal sector workers.

Having no money to buy food, food being too expensive, and feeling it is not safe to get out to buy food were the major issues related to failure to access food in our study. Moreover, during the lockdown farmers experienced difficulties to transport their products and this resulted in limited food supplies for the population, which in turn increased food prices. At the same time, many households were struggling, unable to work and make ends meet financially in the early phase of the lockdown [28]. In the early phases of the epidemic, there was also reportedly increased panic buying and hoarding of certain goods including food and several household items which resulted in high prices and failure for individuals to afford or access some of these items[29].

Nearly 40% of the participants who had an underlying condition experienced difficulty in accessing medication since the epidemic started. This is higher than the 16% reported in a household survey in 2008 [30]. This difference may be because of the higher socioeconomic status of our participants. An in-depth qualitative descriptive study conducted between December 2016 and May 2017, highlighted the role of socioeconomic levels among Ugandans with chronic conditions accessing both public and privately-owned hospitals in Uganda. They found that financial factors, especially the high cost of medicines and limited insurance coverage were key barriers in private facilities, while free service provision was a major facilitator at the public facilities[15].

Thirteen percent of the participants with underlying conditions had completely discontinued medication in the past week, citing failure to access transportation means, failure to get permission to move, and unavailability of medication at the health facility as the major reasons.

Some of the directives in the lockdown instituted on March 30, 2020, such as banning both private and public transport issues and a nationwide curfew were instituted with urgency without prior proper planning and considerations for continuity of other essential health systems. This subsequently impacted the accessibility and continuity of health care systems including availability and ability of health workers to serve at their respective stations, continuity of maternal and newborn care, and management of chronic illnesses such as HIV/AIDS, Tuberculosis, Cancers, Diabetes, and Hypertension among others. To address the limited access to essential medicines, on April 20, 2020, the government and civil society upscaled efforts to ensure that there was no ban on transport for all sick people including those with chronic illness. They advocated district and local leaders to give permits for sick people to be able to move and establishment of mobile or courier systems that could enable people to access essential medicines, nevertheless, media reports continued to report incidences of people finding difficulties to access essential medicines during the COVID-19 epidemic [31].

Increasing age was associated with lower odds of experiencing difficulties with accessing food and essential medicines. This is in agreement with the findings of the 2008 household survey [30]. This may be because during the lockdown the elderly, children and pregnant women were prioritized for food distribution, potentially making youthful age groups more vulnerable and unable to access food [10,12].

Participants who had experienced any form of violence were more likely to also have reported difficulties accessing food and essential services. The reason may be because they experienced violence by the police, while not respecting the curfew or by using private cars to access food or routine medicines.

Experiences from previous epidemics including Ebola, Zika, and SARS have shown that Public Health Emergencies tend to exacerbate existing health or related problems such as weaknesses in the health system strengthening and access to routine care and other essential food services[32]. This further highlights the need to integrate safety nets and food protection as well as monitoring access to food and essential medicines and associated factors among Ugandans during the COVID-19 epidemic and future similar outbreaks.

Study limitations

Given the data collection through an online questionnaire, our study primarily focused on a certain group of people, more of the urban vs. the rural, who were probably less likely to have challenges with access to food or essential medicines depending on how the lockdown directives were implemented in each setting, making it difficult to generalize the findings to the entire Ugandan population and possibly underestimating the true magnitude of the problem.

No further questions or evaluations were done to explore the types or various forms of access to food and essential medicines including the government relief programs, community efforts, or from other organisations. Therefore, we cannot ascertain how our participants perceived these efforts.

Moreover, our survey only assessed access to food, and we did not evaluate access to other social services such as housing or shelter, clean water, and proper sanitation, support for the disabled people, crisis support for vulnerable groups such as refugees, children, pregnant or lactating mothers, and youth, among others. Also, our survey only considered access to essential medicines by individuals with chronic conditions, leaving out other critical components of essential health services such as routine vaccination; reproductive health services including care during pregnancy and childbirth; care of young infants and older adults; direct hospital care and management of mental health conditions as well as non-communicable diseases and infectious diseases such as HIV/AIDS, malaria and tuberculosis (TB); critical inpatient therapies; and management of emergency health conditions. We recommend future studies, especially community surveys with qualitative approaches, to further explore the various forms of access, the types of foods/essential medicines and disaggregate the chronic conditions while advocating for platforms and interventions that simultaneously address both access to food and essential medicines.

Conclusion

This study confirms the reports that the strict lockdown measures implemented in Uganda made it difficult for Ugandan citizens to access food and essential medicines. Lockdown measures may be a necessary solution to reduce the spread of COVID-19. However, it is important to integrate interventions to mitigate the collateral impact of these measures.

What is known about this topic

- Over the years, researchers have documented that systems can be overwhelmed during outbreaks or similar emergency crises such as lockdowns, floods, hurricanes, and earthquakes, mortality from vaccine-preventable and other treatable conditions as well as failure to access food and other social services can easily increase dramatically.
- There were local media reports that Ugandan communities were struggling to access social services such as food, during the COVID-19 lockdown as farmers were faced with challenges including, inability to access transport for produce resulting in limited food supplies, which in turn increased food prices yet many households were unable to work and make ends meet financially.
- Additionally, assessments have shown that the level of access to essential health services by Ugandans with underlying conditions has been of great concern over the years affected by household socioeconomic level and poor coverage of medical insurances.

What this study adds

- This study highlights the collateral impact of the COVID-19 lockdown, resulting in a high level of failure to access food and essential medicines among Ugandans
- Any interventions or efforts to ensure continuity of such services in the future should focus on the younger persons and persons who may face violence or discrimination such as the unemployed, self-employed, casual workers, among others who might get tempted to go out during a lockdown to earn a living

Competing interests

The authors declare no competing interests

Funding and Disclaimer

This study was supported and designed by the International citizen project to assess adherence to public health measures and their impact on the COVID-19 outbreak (ICP COVID-19).

The Uganda study was funded and supported by Makerere University School of Public Health, the Ministry of Health (MoH) Uganda, and the Uganda Public Health Fellowship Program (PHFP). The views and conclusions presented in this manuscript are those of authors and do not necessarily represent the official views of, Makerere University School of Public Health, PHFP, or the MoH. The team of the ICP project provided technical guidance in the design of the study, ethical clearance, and data collection.

Authors' contributions

ICP-COVID19 team, RC, JNSF, and RKW conceived and designed the study. EK, LB, and BOA analyzed, interpreted the data, and wrote the first draft of the manuscript. EK, BOA, RC, JNSF, and LB contributed substantially to analysis and interpretation of data. LB, ARA, RC, JNSF, and RKW critically reviewed the paper for important intellectual content. All authors read and approved the manuscript.

Acknowledgements

We would like to acknowledge the University of Antwerp, and the entire team of the ICP-COVID-19 project for designing the protocol, questionnaire, and managing the data. Makerere University School of Public Health, Uganda Ministry of Health, and the Uganda Public Health Fellowship Program for jointly supporting the design and dissemination of the Ugandan study.

Tables

Table 1: Socio-demographic characteristics of the study participants

Table 2: Level of experiencing difficulties with accessing food and essential medicines among Ugandans during the COVID-19 lockdown, April 2020

Table 3: Factors associated with experiencing difficulties with accessing food and essential medicines among Ugandans during the COVID-19 epidemic, April 2020

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Table 1: Socio-demographic characteristics of the study participants			
Characteristic (N=1,726)	**Category**	**Frequency**	**Percentage**
Age Group*	< 18 years	12	0.7
	18 – 28	445	25.8
	29 – 39	706	40.9
	40 – 49	347	20.1
	50 – 59	166	9.6
	≥ 60 years	49	2.8
Sex	Male	1,015	58.8
	Female	711	41.2
Nationality	Ugandans	1,679	97.3
	Foreigners	49	2.7
Maximum Education	Primary & None	3	0.2
	Secondary	63	3.6
	Tertiary (certificate, diploma, degree)	863	50.0
	University (masters & PhD)	797	46.2
Marital status	Single	676	39.2
	Legally married	754	43.7
	Cohabitation	247	14.3
	Divorced or Widowed	49	2.8
Currently lives with	Parent (s)	307	17.8
	Spouse/partner	841	48.7
	Child (ren)	734	42.5
	Sibling (s) or other relative (s)	447	25.9
	Friends	115	6.7
	Alone	247	14.3
Lives with house mates in age-groups	Over 70 years	179	10.4
	Between 18 and 70 years	1,495	86.6
	12 to 17 years	765	44.3
	Under 12 years	1,070	62.0
Lives in	Rural/village	189	10.9
	Within Kampala city center	186	10.8
	Kampala suburb	688	39.8
	Other town/city center	329	19.1
	Other suburb	334	19.4
Housing conditions	House or apartment with garden	697	40.4
	House or apartment, No garden	473	27.4
	Apartment with balcony	166	9.6
	A Room	108	6.3

	Apartment No balcony	259	15.0
	Hut, Shack, & Homeless	23	1.3
What they do for a living	Student	209	12.1
	Jobless	124	7.2
	Self-employed	284	16.4
	Work for a person, institution or company	731	42.4
	Work for the government	378	21.9
Current working conditions	Worker from home	663	38.4
	Worker in an open space (market, shop, roadside, etc.)	118	6.8
	Worker in a closed indoor space alone (office, etc.)	192	11.1
	Worker in a closed indoor space with several others (office, etc.)	300	17.4
	Not applicable (jobless or student)	453	26.3
Wealth Index	1st Quintile (poorest)	352	20.4
	2nd Quintile	339	19.6
	3rd Quintile	368	21.3
	4th Quintile	481	27.9
	5th Quintile (richest)	186	10.8
Arranging for Child care	At home, by myself	411	23.8
	At home, with my housemates	552	32.0
	To school/childcare/At friends/ acquaintances, aunts or uncles/At grandparents/other	81	4.7
	At home, with a house help/nanny	156	9.0
	Not Applicable (no children at home)	526	30.5
Consumption of fruits and vegetables	Yes	1,249	72.4
	No	477	27.6
Consumption of vitamins	Yes	369	21.4
	No	1,357	78.6
Has underlying disease	Yes	300	17.4
	No	1,426	82.6
Overall experience of any form of violence or discrimination	Yes	145	8.4
	No	1,581	91.6
* 1 missing value			

Table 2: Level of experiencing difficulties with accessing food and essential medicines among Ugandans during the COVID-19 lockdown, April 2020

Characteristic (N=1,726)	Category	Frequency (%)	95% CI
Overall difficulties accessing food and/or essential medicines	Yes (experienced difficulties)	779 (45.1)	42.8 – 47.5
	No	947 (54.9)	52.5 – 57.2
Experienced difficulties accessing food in last week	Yes	734 (42.5)	
	No	992 (57.5)	
Reason for difficulty obtaining food in last week (N=734)	No money	348 (47.4)	
	Little food available in shops, markets	39 (5.3)	
	Felt it was unsafe to go out and buy food	90 (12.3)	
	Was too ill to go out	2 (0.3)	
	Food too expensive	255 (34.7)	
Worried about their health in past week (on a scale of 1 to 5)	Not worried (1)	659 (38.2)	
	Scale of 2 (A little worried)	267 (15.5)	
	Scale of 3 (Moderately worried)	337 (19.5)	
	Scale of 4 (Very worried)	166 (9.6)	
	Extremely worried (5)	297 (17.2)	
Has underlying condition, failure to access essential medicines in the last week (N=300)	Yes	107 (35.7)	
	No	193 (64.3)	
Has underlying condition, discontinued medication in past week (N=300)	Yes	40 (13.3)	
	No	260 (86.7)	
If yes, why discontinue the medication? (N=40)	Failed to get any means of transport	22 (55.0)	
	Failed to get permission to move	11 (27.5)	
	Medication was not available at health facility	6 (15.0)	
	Health care workers were not available to provide the drugs	1 (2.5)	
	Very ill and not able to go the facility	0	

Table 3: Factors associated with experiencing difficulties with accessing food and essential medicines among Ugandans during the COVID-19 epidemic, April 2020

Variable	**Had difficulties accessing services n=779 (%)**	**No difficulties accessing services n=947 (%) (ref)**	**Crude POR (95% CI)**	**Adjusted POR (95% CI)**
Age in complete years *			0.98 (0.97 – 0.99)	0.97 (0.96 – 0.98)
Sex				
Male	481 (47.4)	534 (52.6)	1.00 (ref)	
Female	298 (41.9)	413(58.1)	0.88 (0.76 – 1.02)	
Marital status				
Single	321 (47.5)	355(52.5)	1.00 (ref)	
Legally married	27 (55.1)	22 (44.9)	1.20 (0.70 – 1.90)	
Cohabitation	127 (51.4)	120(48.6)	1.11 (0.60 – 2.10)	
Divorced & Widowed	304(40.3)	450(59.7)	0.85 (0.70 – 0.90)	
Lives in				
Rural/village	94 (49.7)	95(50.3)	1.00 (ref)	
Within Kampala city center	72 (38.7)	114(61.3)	0.97 (0.75 – 1.23)	
Kampala suburb	279(40.6)	409(59.4)	1.10 (0.82 – 1.36)	
Other town/city center	173(52.6)	156(47.4)	0.82 (0.65 – 1.03)	
Other suburb	161(48.2)	173(51.8)	0.78 (0.57 – 1.10)	
What they do for a living				
Student	106(50.7)	103(49.3)	0.89 (0.67-1.20)	
Jobless	71 (57.3)	53 (42.7)	1.00 (ref)	
Self-employed	145(51.1)	139(48.9)	0.88 (0.66 – 1.20)	
Work for a person, institution or company	322(44.0)	409 (56.0)	0.76 (0.60 – 0.99)	
Work for the government	135(35.7)	243(64.3)	0.62 (0.47 – 0.83)	
Current working conditions				
Worker from home	229(34.5)	434(65.5)	1.00 (ref)	
Worker in an open space (market, shop, roadside, etc.)	66(55.9)	52(44.1)	0.74 (0.58 – 0.96)	
Worker in a closed indoor space alone (office, etc.)	83(42.3)	109(56.7)	0.80 (0.65 – 0.98)	
Worker in a closed indoor space with several others (office, etc.)	139(46.3)	161(53.7)	0.59 (0.50 – 0.71)	
Not applicable (jobless or student)	262(57.8)	191(42.2)	0.96 (0.73 – 1.26)	
Wealth Index				
1st Quintile (poorest)	230(65.3)	122(34.7)	1.00 (ref)	
2nd Quintile	192(56.6)	147(43.4)	0.86 (0.7 – 1.05)	
3rd Quintile	160(43.5)	208(56.5)	0.66 (0.5 – 0.8)	
4th Quintile	157(32.6)	324(67.4)	0.50(0.40-0.6)	
5th Quintile (richest)	40(21.5)	146(78.5)	0.33(0.2-0.50)	

Experience of any form of violence or discrimination				
Yes	102(70.3)	43(29.7)	1.64(1.33-2.02)	1.58(1.28-1.95)
No	677(42.8)	904(57.2)	1.00(ref)	1.00(ref)
*1 missing value, 95% CI = 95% Confidence Interval				