

Assessment of risk perception, knowledge, and trust in messages for COVID-19 control among most-at-risk communities in Uganda: A qualitative study

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Research Article

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Abstract

Purpose

Uganda Ministry of Health (MOH) and partners conducted a baseline survey to understand the risk perception, knowledge, and trust of disseminated messages in communities about COVID-19 to guide the development of new focused messages.

Methods

This cross-sectional qualitative survey was conducted from 12th – 28th August 2020 in 12 districts from four geographic regions, purposively selected based on the risk levels of COVID-19. In each district, three sub-counties were selected with guidance from the District Health Office. We interviewed 392 participants through 71 Focus Group Discussions and 66 Key Informant Interviews with the formal employment comprised of heads of schools, Village Health Team (VHTs) members, local, religious, cultural leaders, and NGOs. Informal employees were refugees, sex workers, business people, and transport operators. Data were transcribed and content analysed. Five themes emerged: knowledge of COVID-19; channels and sources of information; trust in the messages; risk perception; and willingness to adhere to COVID-19 preventive measures. survey findings were validated.

Results

Communities were aware of COVID-19 from various sources, especially the MOH. Radio was the commonly used channel, followed by VHTs and local leaders, yet urban dwellers preferred television and social media. Many participants knew about the signs and symptoms, transmission, and prevention, yet very little about the causative organism and treatment pathways. Respondents with formal employment perceived COVID-19 as a danger while those in informal employment perceived the disease as less serious. Communities trusted the risk messages from the MOH, were willing to practice preventive measures and had varied perception of risk. Many did not adhere to these measures due to low perceived risk and limited access to materials. Written messages were given in English and about seven of 58 local languages.

Conclusions

There was a high level of awareness but poor adherence to COVID-19 preventive measures. Strategies adapted were community-led.

INTRODUCTION

The world experienced an unprecedented pandemic of the novel Coronavirus Disease (COVID-19), causing millions of cases and deaths (1). The Uganda Ministry of Health (MoH) confirmed the first case on March 21, 2020, and by October 20, 2021, 123,445 COVID-19 cases were identified and 3,152 deaths recorded (2). The burden globally led to several non-pharmaceutical interventions (NPIs) and raised the importance of risk communication in bringing down this outbreak (1), (3), (1). Globally, under the case patient management arm of the response, there was neither a known cure nor vaccine for COVID-19 (4), (5), (6) at the time of the study. Although prevention NPIs such as social distancing, hand hygiene, and use of masks remained the mainstay of controlling COVID-19, adherence was low in Uganda. Risk Communication and Social Mobilization (RCSM) is one of the eight response pillars under the Uganda National Task Force on epidemics (2), (7). Therefore, enhanced risk communication and social mobilization (RCSM) needed strengthening to increase adherence and effectiveness of NPIs (8), (6, 9).

Both risk communication and social mobilization are vital in the prevention and control of pandemics such as COVID-19 (10), (11). Pandemics cause uncertainty and do not adhere to specific boundaries, which makes risk communication even more critical for implementing effective public health preparedness strategies (2), (3), (8). A review of several studies revealed that good risk communication aims to provide clear, consistent information according to Lasswell's model. This enables people to understand risks, adapt their behavior, and attain self-efficacy to adhere to government regulations; respond to misinformation and disinformation. In addition, effective RCSM enhances appropriate interventions by health professionals (10), (12) and ultimately reduces COVID-19 cases and deaths.

The MoH and implementing partners rolled out the RCSM strategy to address information gaps about the COVID-19 pandemic in Uganda. This was done through engaging community members such as Village Health Teams (VHTs), designing risk communication messages that include printed Information Educational Communication (IEC) materials, radio and television spot messages (audio and visual), and drama skits, among others. The strategy focused on sending messages to enhance compliance with NPIs. Recognizing that interactive models of communication are advanced, teams require continuous feedback from the recipients. In Uganda, however, the feedback loop with the community was not complete, and there was an observed reduction in uptake and compliance with the NPIs. In addition, stigma to the discharged patients in communities, increasing myths and misconceptions were undermining case identification, isolation, and community compliance to mitigation strategies. This was fueling the outbreak, leading to total lockdown followed by opening up with partial lockdown of border districts. To support "dynamic listening and rumour management", the RCSM pillar conducted this survey to assess the current knowledge of COVID-19, establish respondents' perception of risk, and assess the source of current information/messages for the control of COVID-19. The information generated would be used to design new messages and communication approaches responding to community feedback, the outbreak trend and applied routinely during outbreak responses in other countries.

METHODS

2.1 Study Design, Setting and Sampling

This was a qualitative survey from August 12-28, 2020 employing Key Informant Interviews (KII), Focus Group Discussions (FGDs), and personal observation during data collection. Uganda is a landlocked country in East Africa bordered by Kenya to the East, South Sudan in the North, Rwanda and Democratic Republic of Congo (DRC) to the West and Tanzania in the South. The country has a population of about 45 million people, majority (70%) of whom live in rural areas practicing crop and livestock agriculture. There was multi-stage sampling of the study areas. The survey was carried out in 12 districts from four regions of Uganda namely: Eastern (Mbale, Soroti, Tororo), Northern (Amuru, Gulu, Adjumani), Western (Lyantonde, Mbarara, Isingiro), and Southern/Central (Kyotera, Kalungu, and Masaka). The districts were purposively sampled based on geographic location and high risk of the spread of COVID-19. The selected districts were located along transit routes into and out of Uganda, and were centres of commerce (**Figure 1**). The seclusion points where trucks transporting goods were packed overnight for refreshment were sampled, being important in transmission of the infection to the local populations.

Figure 1: Map of Uganda showing the study area

2.2 Study Participants

Survey respondents were randomly sampled from formal and informal employment groups. We defined formal employment as workers in an organized system of employment with clear written rules and job responsibility (ILO, 1993). These included religious leaders, community leaders, health workers, school owners or head teachers, workers in the media houses, and Non-Governmental Organisations (NGO) workers (**Table 1**). Informal employment was defined as those in casual employment based on social relations rather than contractual arrangements, not subject to national labor legislation, income taxation, or social security (<https://www.ilo.org/resource/informal-economy-and-atypical-forms-employment>). These participants included owners of small businesses, commercial sex workers, and public transporters. Participants from refugee settlements and those in quarantine sites were mixed.

Table 1: Survey respondents by employment and geographical region in Uganda, 2020

Category	Southern	Northern	Western	Eastern	Total
Informal employment					
<i>Bodaboda</i> * riders	22	28	14	2	68
Taxi operators	15	17	10	13	55
Business men/women	25	17	24	22	88
Quarantined population	0	15	0	0	15
Sex Workers**	2	2	0	6	10
Formal employment					
NGOs/CBOs***	13	7	14	28	60
Media	0	3	4	2	9
Health Workers	9	9	7	6	31
School owners	1	3	3	0	7
Religious/ cultural Leaders	3	3	5	8	19
Refugees	4	6	8	8	26
Total	94	110	89	99	392

* *Commercial motor cycle operators*

** *Commercial sex workers*

*** *Non-Governmental Organisations or Community Based Organisations*

2.3 Data variables and measurement

As a preamble to the FGDs and KIIs, the sociodemographic data of the respondents was collected. This included the age, sex, occupation, geographic location, work category (formal or informal), education level, and religion. We defined risk perception as a person or group's judgment and evaluation of COVID-19 or related hazard they might be exposed to. We measured perception by asking questions about their personal experiences, beliefs and attitudes, and community influences related to the pandemic.

2.4 Collection Process and Quality Control

National field teams of six people each were constituted for each region with at least a psychosocial worker and a health communication specialist. The members were selected based on their strengths in qualitative data collection skills, experience with delivering risk communication messages, and knowledge of the local language spoken in the region. For quality control, the teams were trained on how to interact and conduct in-depth Key Informant Interviews (KII) to gain insight into individual experiences

or perceptions. To triangulate the data generated from KIIs, the teams conducted Focus Group Discussions (FGDs) with 6 to 12 participants to generate shared insights and experiences. Standard semi-structured guides based on the five categories used: knowledge of COVID-19; channels and sources of information; trust in the messages; risk perception, and willingness to adhere to COVID-19 preventive measures. After training on the KII and FGD guides, teams were dispatched to regions for data collection.

Short planning meetings were held with the District Health Officers (DHOs) and District Health Educators (DHEs) to introduce the study, identify the specific groups and locations per district. Where feasible, a courtesy call was made to the Resident District Commissioners (RDCs) to meet the heads of District Task Forces (response teams at the district level). The district leaders guided the teams in identifying sub-counties that were at high risk of COVID-19 spread. The data collection tools were designed in English language but they were translated to the local languages of the four specific regions for respondents to understand the questions. During the interview process, interviewers and respondents observed Standard Operating Procedures (SOPs) such as social distancing, wearing masks, and washing hands to avoid the spread of COVID-19.

2.5 Data Management, Analysis, and results validation

Field teams convened in one meeting after fieldwork to collate the data, analyse and discuss the study findings. The audio recordings of the interviews were transcribed in English and entered into Microsoft Excel before analysis. Data were incorporated into a single database and analysed. During analysis, a systematic language-centered analysis technique was used. After coding and content review, transcripts and Microsoft Excel data were analysed thoroughly to generate themes and sub-themes. Copies of the data double archived on the MoH server for future reference. Where possible, the teams quantified the responses and presented these as proportions of the total number of responses for a given set of questions. After analysis and compilation of the report, eight stakeholder meetings were held to validate the survey findings, each comprising 25 participants over two days (2 meetings for each of the four regions).

2.6 Ethical Considerations

The community members and key persons who were not available at the time of the survey and those who were not willing to take part in the survey were not included in the engagement process. Being an outbreak setting, permission to conduct the survey was given by the National Task Force on Epidemics at MoH. To interact with the communities, permission was sought from the DHOs, and DHEs guided the teams while in the field. Informed verbal and written consent was obtained from every participant following a clear explanation of the purpose and risks associated with the survey. Confidentiality of the data was assured to them and there were no personal identifiers obtained from the clients. Autonomy was exercised and those who did not want to take part were allowed to decline their participation at any time of the survey.

RESULTS

3.1 Socio-demographic characteristics

Seventy-one (71) FGDs in all the regions were held, with about 17 FGDs in each region. Conversely, KIIs were 66 in the four regions, with about 16 KII respondents in each region (Table 2).

Table 2
Number of FGDs and KIIs by category of respondents carried out in the four regions

Category	FGD	KII
Bodaboda (motorcycle) riders	16	8
Taxi operators	13	4
Business men/women	20	10
People in quarantine centres	1	2
Sex Workers	1	4
NGOs/community members	12	12
Media	1	3
Health workers/VHTs	4	7
Heads of schools	0	7
Religious/ cultural leaders	2	7
Refugees	2	2
Total	71	66

Respondents were aged between 18–70 years of age, with 89.3% (350/392) of them between 18–50 years. Many of them (85.5%) had reached secondary education and above, while the rest had attained primary education (6.9%) or no formal schooling (7.6%). Most of them (70.0%) were involved in informal employment, while 30% were in formal employment. Seventeen percent (17.1%) out of the participants were truck drivers. They were mainly from Christian (88.2%) or Muslim (10.1%) religion.

General Knowledge about COVID-19

Knowledge of COVID-19 in terms of cause, signs and symptoms, transmission, prevention, and management was high among respondents interviewed across the four regions. Most of the respondents were able to mention that it was a viral infection (70.5%) and that it originated from China (89.0%). Most of the people translated the disease in their local language as *korona*, while a few respondents were not in a position to tell the cause. A good number of respondents (80%) were able to

correctly cite the incubation period of the virus to be between 2–14 days. Of the participants, 86% mentioned preventive measures to include putting on a mask, washing hands with soap and clean running water, avoiding overcrowded places, among others. The majority of the participants were not sure of the appropriate management procedure. However, some of them (38%) mentioned measures like self-quarantine for 14 days for the suspected cases, alerting the health officers in the community, calling on a toll-free number (6767), and informing the local authority, as indicated in the excerpts below:

"It is a respiratory illness that originated from China. The first case in Uganda was recorded in March 2020. I know there are a number of cases but no deaths in Uganda, and the negative impact on the businesses, social life and education" (KII - Sex Worker – Northern Region, Female)".

"It is a flu-like deadly disease that originated from China with no cure, caused by a coronavirus, kills in a short time, and is the biggest pandemic currently among humans. It was artificially made and usually attacks people who come from abroad." (FGD Religious Leaders - Western Region, Male).

"There are many modes of transmitting the disease like touching an infected person or surfaces or money, through coughing or sneezing in close contact, overcrowding, failure to use masks, failure to practice handwashing, saliva (touched or splashed). Other ways are poor hygiene, greeting by a handshake, spitting on surfaces." (FGD - Western Region, Female).

There were some key notable variations among the respondents from the different regions. About 20% of the respondents thought that the disease could not be contracted when individuals were close to each other or even in groups. All the respondents indicated that there was no vaccine, while about a third mentioned that the disease could be treated.

"The disease is not transmitted through staying close to an infected person, kissing, walking together, and staying without a mask." (KII respondent - Eastern Region, Female).

Trust in COVID-19 messages

The baseline survey aimed at assessing trust on COVID-19 messages based on: how much the respondents trusted information provided to them; measures already taken by the government against COVID-19 and the proactiveness of the government in taking preventive measures against the pandemic. Generally, respondents trusted the messages about COVID-19 by the Ministry of Health and the President. Messages were more about the cause, preventive measures, spread, risk factors associated with the disease, mortality rate, and its morbidity rate updates.

"People are dying due to COVID-19 outbreak in all countries worldwide. Therefore, we trust the information given by the Ministry of Health since it is the mother ministry responsible for people's health. There has been enough social sensitization and awareness creation done by MOH." (KII - Eastern Region, Male).

The levels of trust for some participants in informal employment varied. Refugees highly trusted the COVID-19 messages received due to confidence in the source (supporting partners such as Medical

Teams International & Lutheran World Federation) because they believed to be at a higher risk. However, other participants had doubts about the disease's existence among Ugandans because all information on people dying from COVID-19 was from other countries, not Uganda. Their doubt was also portrayed in the unfairness while implementing the control measures that left some hotspot regions and at-risk populations (such as truck drivers) operating while others were under lockdown. Some had little trust because they thought COVID-19 was a business for government officials. Their mistrust was due to the belief that MOH regulates the number of COVID-19 cases and the issue is political.

"Well, much as there are messages from Ministry of Health officials, via radios, TVs, we think this disease is not there at all. Other districts are not in lockdown and are operating normally. On top of that, some top officers are left unpunished after holding gatherings with many people which is not fair to some of us who are still under lockdown". (FGD - Southern Region near the border, Male).

Risk perception on COVID-19

Risk perception refers to the beliefs about potential harm or the possibility of a loss individual constructs around a situation. It is a subjective judgment that people make about the characteristics and severity of a risk. It is often expressed as the perception of susceptibility; severity, benefits, and cue to action. During the baseline survey, risk perception assessed the extent to which participants thought COVID-19 would spread across the country, the extent to which respondents felt they were at high risk of contracting COVID-19, and the extent to which respondents felt their friends and family were at risk of contracting COVID-19. Risk perception varied among different respondents, the majority felt neither they nor their families were at risk of contracting the disease. A small proportion was afraid that they were at risk and could easily spread it to their friends and family members through contact since they interacted closely daily. In some communities, there was a greater perception, especially those from formal employment. They believed that the COVID-19 could easily spread to the whole country.

"If no precautions are taken, it will spread throughout the country just like what happened to the USA. Trump first played down COVID-19 and now it is out of hand. I think the risk is high and I have to be cautious. I am worried about my safety, and my family, friends and neighbors are no exception" (Respondent, FGD Traders – Eastern region, Male).

On the other hand, some people believed that they had already suffered from this disease and recovered, thus they were not at risk. Some believed whatever happens to them is God's plan, therefore is no need to worry about this disease spreading.

"...COVID-19 can't spread throughout the country because people can identify sick people and avoid them. I know, I am at risk and afraid because don't know what God planned for me". (KII, Cultural Leader, Western Region, Male).

"2 Chronicles 7:14 says if people who are calling my name repent, I will be able to heal the disease of their land". (KII - Religious Leader - Northern Region, Male).

Risk perception among some respondents was dropping because community members had a very low perception of contracting COVID-19. Some thought that they were not at risk and saw it as a political issue. They had been getting flu and cough which could come and go. Risk perception among actors in informal employment was also dropping due to personal experience with COVID-19 and the impact of mitigation measures on their businesses and livelihoods. They thought that the measures such as lockdown were affecting them economically, and it was poverty not COVID-19 killing them.

"COVID-19 is for the whites-only, doesn't affect Africans. It is a biological tool that powerful countries are using to fight economic wars. It is as a political tool used to gauge opposition while giving an advantage to incumbency as seen in the selective application and enforcement of guidelines". (KII – Trader, Northern Region, Male).

Source and channels for disseminated messages on COVID-19 control

Assessment of disseminated messages on control of COVID-19 by; source, preference, and trust. Participants indicated that they saw and heard a lot of information concerning COVID-19. The common source of information was the Ministry of Health through the following channels; Radio (by the majority), television stations, phones, VHTs, health workers, local and traditional leaders. The information was trusted because they identified with the authority and opinion leaders such as the President, Kabaka, Katikkiro (cultural leaders), Bishops, L.C. 1, Sheiks, and others.

"Major sources of Covid-19 information are MOH, Presidential speeches, TV, and radio. Other sources & Channels included SMS messages on phones, Social media (WhatsApp, Twitter, Facebook) Village Health Team (VHT), Health workers, Newspapers, LCs using megaphones in Villages". (FGD - Eastern Region, Female).

Willingness to adhere to preventive measures

We defined willingness to adhere as "a state of a person being prepared to commit to a cause or belief or change in behavior towards COVID-19 preventive measures". All participants indicated a willingness to adhere to the preventive measures including hand washing, social distancing because these were not harmful to their health, upon assessment on the readiness to accept the measures put in place to control COVID-19 and how comfortable they were in using them. However, some participants were not comfortable with wearing masks continuously. They believed that masks could lead to heart disease, cough, and worsening asthma.

"We are not comfortable with some measures like wearing masks because they may bring us heart problems. The air we breathe out is the same air we breathe in, and I cannot use it when doing heavy work. Masks cause headaches and make asthma patients feel bad. (FGD - Southern Region, Female).

Respondents indicated a willingness to accept the vaccine as long as it is tested and approved by the Ministry of Health. They recommended vaccine trials be done on the first people who got the disease and health workers due to the high risk.

"Haa... I think Vaccines will be accepted if well studied and after a long time. Let it be administered first in China and other countries, for us see to what happens". (Respondent KII - Eastern Region, Female).

In addition to the categories presented above, several themes were deduced from the data through analysis of word repetitions, compare and contrast of regions and transitions as described previously. During the engagements with some school heads, they believed that as long as schools continued to be locked down, there is a likelihood that the spread of COVID-19 will escalate.

"During the Ebola outbreak, I made sure that I acquired age-appropriate IEC materials for all my classes and school notice boards. At the start of the assembly, I would talk about Ebola and in the meetings with parents; they confessed that they learned about Ebola from their children" This approach could be replicated, with success for COVID-19 risk communication". (FGD - Head Primary School, Northern Region - Female)

Disbelief in the existence and severity of the disease

A significant proportion of the respondents especially from informal employment believed COVID-19 was “political” and did not exist. Truck drivers, *Boda Boda* (commercial motorcycle riders), and taxi drivers wondered why there was the selective application of preventive measures. For example, they wondered why it was common among truck drivers yet the general population they interacted with was not affected. Employment sources for some groups were interrupted, due to travel restrictions. In addition, some noted that signs and symptoms were not common among those identified as being positive (cases), there were no deaths at the time and this caused confusion. In the Southern region, participants mentioned that neighboring Tanzania had a different policy and approach to COVID-19 management and thus wondered why. In the Northern region, due to the previous experiences with the Ebola Virus Disease outbreak, some participants thought they had better solutions to sensitization through educational institutions. Participants also wondered how infected people (with or without signs and symptoms) isolated in health facilities for 14 days were discharged as healed yet the disease had no cure.

"Since you make sanitizers out of alcohol, then I can prevent it by drinking my waragi (locally distilled ethanol) and I will never contract the disease". (Male Respondent KII – Boda boda Cyclist – Southern Region)

Non-Adherence to NPIs

In general, the majority of the participants had adequate knowledge of the cause, transmission, and were less willing to follow preventive measures of COVID-19. Data revealed several reasons why there was less adherence namely: sanitizers were expensive, the Government had not fulfilled the promise of giving

masks to every household, Muslims felt uncomfortable with the alcoholic-based sanitizers, and market vendors found it expensive to keep hand-washing facilities, buy enough soap and water. Some respondents were confused and wondered how handwashing could kill a virus with no cure. Equally, some participants felt repetitive washing of hands at every point of service was an inconvenience. Largely, open political campaigns attended by large crowds going on in all parts of the country yet mass gathering banned. Some segments of the communities felt helpless and this lowered adherence to preventive measures.

"Our people here no longer adhere to measures for COVID-19 put in place by Government; we fear to contract the disease because cases are now increasing with even some deaths in Uganda. People no longer wash hands with soap; there is no social distancing, no consistent wearing of masks at social gatherings. Political rallies are ongoing and others do not mind interactions. There is the use of contaminated money to do business". (KII – Religious Leader, Eastern – region, Male).

Fear

Due to perceived susceptibility and severity based on information received by the communities, data revealed fear among respondents. For instance, while respondents used masks, some feared that their continued use could cause other health problems due to difficulty in breathing while heavy doing exertive work. Accordingly, some segments of the study populations felt preventive measures were not effective. Truck drivers and market vendors in the Northern and Eastern regions indicated they practiced all the COVID-19 SOPs, they became sick. In the Eastern region, the outbreak was viewed as an interruption of cultural “*Embalu*” ceremonies (circumcision of males held during even years from June to December). By the time of the study, there were no specific messages to guide such functions, since they attract crowds. The majority of the respondents showed a lack of willingness to vaccination. There was misinformation that after vaccination, one dies within two years and that the vaccine developed to decrease the number of Africans. Most of the respondents were skeptical about the possible availability of a vaccine since no cure was available.

DISCUSSION

This qualitative survey among 392 participants from 12 districts in four regions of Uganda provided evidence-based recommendations to the risk communication and social mobilisation (RCSM) intervention for control of COVID-19. It explored knowledge, risk perception, trust in COVID-19 messages, preferred communication channels, and willingness to adhere to preventive measures among most-at-risk communities during the early phase of the COVID-19 pandemic. This was a practical and participatory way of collecting community feedback on disseminated messages since March 2020 to guide the development of new approaches. This is important as RCSM programs need to be trusted and relevant information to influence personal and community behaviour change (1), (13), (8), (9). Therefore, communication in health must be meaningful and understandable by the targeted audience (14), (15),

(16). The findings demonstrate that although awareness and knowledge about COVID-19 were generally high across the four regions, this did not consistently translate into high-risk perception or sustained adherence to preventive measures. The study highlights the complex interaction between trust, socioeconomic realities, political context, cultural beliefs, and communication approaches in shaping public responses during epidemics.

The study found that respondents had substantial knowledge regarding the signs and symptoms, modes of transmission, and preventive measures for COVID-19. Most participants identified the disease as viral in origin and recognized preventive strategies such as mask wearing, handwashing, and social distancing. These findings are consistent with studies conducted in Saudi Arabia (6), (9), other African countries including Ghana, Nigeria, and Ethiopia, where high awareness levels about COVID-19 were reported during the early stages of the pandemic (4), (10). High awareness may be attributed to intensive national and global media coverage, daily presidential addresses, and widespread public health messaging by the Ministry of Health and partners. A high level of knowledge about an issue demonstrates possible increase in risk perception, improvement in self-efficacy and cue to action (17). However, despite adequate knowledge, misconceptions and misinformation persisted in some communities. Several respondents believed that COVID-19 was political, affected only foreigners or white populations, or was linked to economic or political manipulation. Others believed that alcohol consumption could prevent infection or that vaccines were intended to reduce the African population. Similar misconceptions have been documented in several low- and middle-income countries where misinformation spread rapidly through informal communication networks and social media platforms (1), (18). Behavioural change among individuals and society affects other social determinants of health (16), (19), (11), (20) which are essential for the control of the pandemic. These findings underscore the fact that knowledge alone is insufficient to achieve behavioural change, particularly when misinformation competes with official public health communication.

Risk perception varied substantially between respondents in formal and informal employment sectors. Participants in formal employment, such as health workers, teachers, and NGO staff, generally perceived COVID-19 as a serious public health threat and acknowledged personal susceptibility to infection. In contrast, many participants in informal employment perceived themselves to be at low risk despite frequent interpersonal interactions. It was shown that the community's perceptions, concerns, and responses in the recent past had changed due to the selective lockdown of some hotspot border districts while others were left open. The political climate that selectively enforced adherence to COVID-19 preventive measures led to the drifting away from the actual scientific facts in the communities among which the survey was carried out. This caused a lot of communication misconceptions and myths that hinder the effective prevention, management, and control of COVID-19. In Uganda, this resulted in the negative aspects of social mobilization (4). The reduced perception of risk was influenced by several factors, including selective mitigation measures and no deaths reported in Uganda at the time of the survey. Also, economic hardships associated with lockdown measures, selective enforcement of preventive measures, and comparison with neighbouring countries such as Tanzania that had adopted different response strategies.

The findings support the Health Belief Model, which suggests that adoption of preventive behaviour is influenced by perceived susceptibility and perceived severity of disease (21). Communities that did not perceive themselves to be vulnerable were less likely to consistently adhere to preventive measures. Similar observations were reported in Finland and China, where lower perceived susceptibility was associated with reduced compliance with public health recommendations (22), (23). In Uganda, declining risk perception appeared to coincide with increasing political activities, inconsistent enforcement of regulations, and the absence of visible severe disease outcomes within local communities. These factors likely weakened public confidence in the seriousness of the pandemic. Furthermore, given the social and the economic setting of communities in Uganda, taking COVID-19 as a risk is challenging as people live among congested settlements and the affordability of preventive essentials may be very difficult. This was also evidenced in asserting that the population in Sub-Saharan Africa has a high perception of the risk to COVID-19 though they take ineffective alternative preventive measures (5). A small portion of the respondents from formal employment believed that they were at risk due to the continued interactions and the presence of asymptomatic people among the communities. Therefore, adopting a risk communication strategy needs emphasis on community engagement systems and structures for COVID-19 prevention as reported in other settings (9).

Trust emerged as a central determinant of public acceptance of COVID-19 messages. Participants largely trusted information disseminated by the Ministry of Health, health workers, Village Health Teams (VHTs), and national leaders, particularly the President. Trust was reinforced by repeated messaging through multiple communication channels and by the perceived credibility of health professionals (6) and local leaders. Previous studies have similarly shown that trust in authorities and public institutions is strongly associated with adherence to preventive measures during public health emergencies (6, 9), (19), (24). Trust is particularly important during epidemics because uncertainty and fear can increase vulnerability to misinformation and rumours. Nevertheless, trust was not uniform across all communities. Some respondents, especially among transport operators and border communities, expressed scepticism toward government actions due to perceived inconsistencies in policy implementation. Selective lockdowns, continued operation of truck drivers during restrictions (25), and political gatherings that violated public health guidelines contributed to perceptions of unfairness and reduced confidence in official messaging. This finding highlights the importance of transparency, consistency, and equity in outbreak response strategies. Risk communication efforts are less effective when public health measures appear politically motivated or inconsistently enforced (24).

Trust plays an integral part in influencing risk perception and the willingness to adhere to preventive measures. For example, studies have shown a positive connection between the trust of information from relevant authorities and the communities' ability to adopt preventive measures (6), (26). The qualitative survey was designed to understand and explore the extent to which the local communities in Uganda trust messages on the control of COVID-19. Government agencies, health workers, and health-related institutions were rated as more trusted sources of COVID-19 information. Respondents of informal employment had more trust in the disseminated messages on COVID-19 because it was from a trusted source, MOH. More to this, they believed that they were at a high risk of contracting the disease as

compared to respondents from informal employment, which aligns to the health belief model (21). Therefore, the RSCM strategy should put into consideration the different social structures while developing messages on pandemics.

The study also demonstrated that communication preferences differed across communities and settings. Radio remained the most preferred and accessible communication channel in rural areas, while urban populations relied more on television and social media platforms such as WhatsApp and Facebook. Importantly, participants expressed high levels of trust in messages delivered through VHTs, religious leaders, cultural leaders, and local council leaders. These findings emphasize the importance of community-based communication approaches in epidemic preparedness and response. Community leaders often serve as trusted intermediaries who can contextualize health information within local social and cultural realities (27, 28). Similar findings have been reported in previous Ebola and COVID-19 outbreaks in Africa, where community engagement improved trust and adherence to public health interventions (1), (11), (29).

Language barriers also emerged as an important challenge. Participants noted that many written materials were only available in English and a limited number of local languages despite Uganda's linguistic diversity. Limited translation likely reduced comprehension and inclusiveness, particularly among populations with lower literacy levels. Tailoring communication materials to local languages and cultural contexts is therefore essential for effective risk communication. Studies on health communication consistently demonstrate that culturally appropriate messaging enhances comprehension, trust, and behavioural uptake, (28), (30).

While willingness to adhere to COVID-19 measures was high among the formal sector, in the informal sector was low due to inadequate understanding of the knowledge regarding COVID-19. The difference may be due to higher knowledge and the availability of items used. There were inadequate preventive measures put in place to fight the spread of viral infection. This possibly contributed to laxity in the willingness to adhere to preventive measures. Although respondents generally expressed willingness to adhere to preventive measures, several barriers hindered actual compliance. Economic constraints limited access to masks, soap, sanitizers, and clean water, particularly among participants in informal employment. Continuous mask wearing was also associated with discomfort and fears of breathing difficulties or other health problems. These findings illustrate the gap between intention and practice, particularly in resource-limited settings. Similar barriers have been reported across sub-Saharan Africa, where poverty, overcrowding, and inadequate infrastructure constrained implementation of recommended preventive measures (5). Public health recommendations that do not account for socioeconomic realities may therefore be difficult to sustain.

Vaccine hesitancy was another important emerging issue. Although many participants indicated willingness to receive a vaccine if approved by the Ministry of Health, others expressed fear and scepticism regarding vaccine safety and motives. Misconceptions about vaccines causing death or targeting African populations reflected broader global concerns related to vaccine misinformation during

the pandemic (31). These findings suggest that early community engagement and transparent communication about vaccine development, safety, and effectiveness are critical to improving vaccine confidence.

The study has several important implications and recommendation shared with the risk communication and social mobilization sub-committee during the emergency. First, risk communication strategies should move beyond one-way dissemination of information toward participatory and community-centered engagement approaches. Communities need opportunities to ask questions, express concerns, and provide feedback to public health authorities. Second, communication strategies should be tailored to specific populations based on occupation, literacy level, language, cultural beliefs, and perceived vulnerability. Third, trusted community structures such as VHTs, religious leaders, and local leaders should be strengthened and integrated into epidemic response systems. Finally, public health messaging should be accompanied by practical support measures such as improved access to masks, handwashing facilities, soap, and clean water to enable communities to comply with preventive recommendations.

This study had several limitations. Being a baseline before another intervention within a response period, fear and anxiety may have affected the perceptions and experiences of some participants. However, the credibility of the findings was ensured through validation meetings and triangulation of data from the four different regions. The qualitative design limits generalizability of the findings to the entire Ugandan population. In addition, most respondents had attained secondary education and above, which may not reflect the broader population. Back translation of interviews from local languages into English may also have influenced interpretation of some responses. Nevertheless, the study provides important contextual insights into community perceptions and experiences during the COVID-19 response in Uganda. The use of multiple participant groups across four regions and triangulation through stakeholder validation meetings strengthened the credibility of the findings. Real-time translation during the interviews could have affected the meaning and quality of the data collected. About nine in ten of the survey respondents had reached secondary education and above. This is a possible confounder of the information generated because the documented level of education in Uganda is lower. This, therefore, may have been a highly selected population, mostly comprised of leaders in their communities thus can affect the representativeness of these findings.

In conclusion, community members had a lot of information about COVID-19 from several sources especially MOH via radio, television, and social media. Communities trust messages on COVID-19 disseminated to them from MOH. The risk perception about COVID-19 was low in the informal employments across the four regions compared to those in formal employment. The study demonstrated that while knowledge and awareness of COVID-19 were high among most-at-risk communities in Uganda, adherence to preventive measures was undermined by low-risk perception, misinformation, socioeconomic constraints, and inconsistent trust in public health interventions. This, therefore, calls for more vigorous planning, printing, and creation of dissemination messages to cater to every societal aspect of a country to effectively manage epidemics and future pandemics.

ABBREVIATIONS

COVID-19 Coronavirus disease 2019

DHEs District Health Educators

DHOs District Health Officers

DRC Democratic Republic of Congo

SOPs Standard Operating Procedures

FGD Focus Group Discussion

IEC Information Educational Communication

KII Key Informant Interview

MOH Ministry of Health

NGO Non-governmental organisation

NPIs Non-pharmaceutical Interventions

RCCE Risk Communication and Community Engagement

RCSM Risk Communication and Social Mobilisation

RDCs Resident District Commissioners

VHTs Village Health Teams

WHO World Health Organization

DECLARATIONS

Ethics approval and consent to participate

Being an outbreak setting, the need for approval from an institutional Review Board was waived. Ethics approval was obtained from the National Task Force on Epidemics, for guidance to the response activities under the Risk Communication and Community Engagement pillar. Participants gave informed consent prior to informant interviews or group discussions. All data was anonymised during the interviews.

Consent for publication

Not applicable.

Data and materials

The data and materials from the field interviews that support the findings of this study are available from the corresponding author. Restrictions apply to the availability of these data to the public. Data are however, available from the authors upon reasonable request and with permission of Ministry of Health, Uganda.

Competing interests

The authors declare that they have no competing interests.

Authors' contributions

Authors' contributions varied as below: NI, LM, KR, LM and KS conceived the idea, designed the tools, analysed the data and developed the manuscript framework. RL, AMI, BJ, NL, AD, OJO, KA, TB, NM, SV, KP, MR collected the data, supported data analysis and manuscript writing. All authors read and approved the final manuscript for publication. NL, BJ, LR, TB, and LM had left the organisations at the time this manuscript was submitted for publication.

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REFERENCES

1. WHO. Risk communication and community engagement readiness and response to coronavirus disease (COVID-19). Geneva 2020.
2. MoH U. Situation updates on COVID-19 in Uganda. COVID-19 Response Info Hub. 2020.

3. Zhang L, Li H, Chen K. Effective Risk Communication for Public Health Emergency: Reflection on the COVID-19 (2019-nCoV) Outbreak in Wuhan, China. *Healthcare*. 2020;8(1):64.
4. Serwaa D, Lamptey E, Appiah AB, Senkyire EK, Ameyaw JK. Knowledge, risk perception and preparedness towards Coronavirus disease-2019 (COVID-19) outbreak among Ghanaians: a quick online cross-sectional survey. *Pan African Medical Journal*. 2020;35(2):44.
5. Ufuoma AC, Folayan MO, Afe A, Augustine Anayochukwu Onyeaghala IOA, Coker M, Tebeje YK, et al. Risk perception, public health interventions, and control of COVID-19 in sub-Saharan Africa. *Journal of Public Health in Africa*. 2021.
6. Mushi A, Yassin Y, Khan A, Yezli S, Almuzaini Y. Knowledge, Attitude, and Perceived Risks Towards COVID-19 Pandemic and the Impact of Risk Communication Messages on Healthcare Workers in Saudi Arabia. . *Risk Manag Healthc Policy* 2021;14:2811-24.
7. Ssebuufu R, F S, SM B, L W, Nganza SK, B I, et al. Awareness, knowledge, attitude and practice towards measures for prevention of the spread of COVID-19 in the Ugandans: A nationwide online cross-sectional Survey. *Frontiers in Public Health*. 2020.
8. Nalunkuma R, Abila DB, Ssewante N, Kiyimba B, Kigozi E, Kisuza RK, et al. Double Face Mask Use for COVID-19 Infection Prevention and Control Among Medical Students at Makerere University: A Cross-Section Survey. *Risk Manag Healthc Policy*. 2022;15:111-20.
9. Almuzaini Y, Abdulaziz M, Alhanouf A, Yara Y, Fahad A, Ahmed A, et al. Risk Communication Effectiveness During COVID-19 Pandemic Among General Population in Saudi Arabia. . *Risk Manag Healthc Policy*. 2021;14:779-90.
10. Bekele D, Tolossa T, Tsegaye R, Teshome W. The knowledge and practice towards COVID-19 pandemic prevention among residents of Ethiopia. An online cross-sectional study. *PLoS ONE* 2021;16(1).
11. Infanti JJ, J S, MM B, J N-C, C O-O, F G-G. A literature review on effective risk communication for the prevention and control of communicable diseases in Europe. Stockholm: ECDC. 2013.
12. Oluyemi AP, Adepoju-Olajuwon F, Ojomo OA, Oladeji AO, Oripeloye OB, Osinowo KA, et al. Knowledge, attitude and adherence to COVID-19 prevention among community health workers in Nigeria. *Pan African Medical Journal*. 2022;42:307.
13. Filho LW, A.M A, L B, Özuyar, P.G. W, T. (Eds.). *Social Mobilization: People's Process in Post-disaster and Post-conflict Recovery and Reconstruction needs*. 2020:657–.
14. Finucane ML, Holup JL. Risk as value: combining effect and analysis in risk judgements. *J Risk Res*. 2006;9(2):141-64.
15. French DP, Stephen S, Louise KA, Theresa MM. Assessing perceptions of risks due to multiple hazards. *J Risk Res*. 2006;9(6):657-82.
16. Rohrmann B. Risk perception, risk attitude, risk communication, risk management: a conceptual Appraisal. The International Emergency Management Society (TIEMS) Annual Conference in Prague. 2008;Prague, Czech Republic.

17. Jiang YN, Park H. Citizens' engagement in health risk communication and preventive behaviors: the mediating role of perceived shared responsibility in the COVID-19 pandemic. *J Commun Healthc*. 2025;18(1):55-64.
18. Ali SH, Foreman J, Capasso A, Jones AM, Tozan Y, DiClemente RJ. Social media as a recruitment platform for a nationwide online survey of COVID-19 knowledge, beliefs, and practices in the United States: methodology and feasibility analysis. *BMC Med Res Methodol*. 2020;20(1):144.
19. Glik DC. Risk communication for public health emergencies. *Annu Rev Public Health*. 2007;28:33-54.
20. Murray SA, Manktelow K, Clifford C. The interplay between social and cultural context and perceptions of cardiovascular disease. *J Adv Nurs*. 2000;32(5):1224-33.
21. Rosenstock IM. Historical origins of the Health Belief Model. *Health Education Monographs*. 1974;2(4):328–35.
22. Lohiniva A-L, Sane J, Salminen M. Understanding Coronavirus disease (COVID-19) risk perceptions among the public to enhance risk communication efforts: a practical approach for outbreaks, Finland, February 2020. *Eurosurveillance*. 2020;2(25):13.
23. Zhong B-L, Luo W, Li H-M, Zhang Q-Q, Liu X-G, Li W-T, et al. Knowledge, attitudes, and practices towards COVID-19 among Chinese residents during the rapid rise period of the COVID-19 outbreak. *International Journal of Biological Science*. 2020;16:1745–52.
24. Figueiras MJ, C M. The role of risk perceptions and knowledge in SARS preventive behaviors. *International Journal of Behavioral Medicine*. 2010;17(4):331–8.
25. Nsawotebba A, Ibanda I, Ssewanyana I, Ogwok P, Ocen F, Okiira C, et al. Effectiveness of thermal screening in detection of COVID-19 among truck drivers at Mutukula Land Point of Entry, Uganda. 2021.
26. Murakawa S, Izumi U. Experiences of risk communication among managers of home-visit nursing agencies during the COVID-19 pandemic: a qualitative descriptive study. *BMC Nurs*. 2025;24(1):1024.
27. Tucker SG, May B, Liversedge M, Berry S, Keck JW, Hoover AG. COVID-19 Risk and Crisis Communication Challenges and Opportunities: Qualitative Insights from Rural Wastewater Surveillance Partners. *Disaster Med Public Health Prep*. 2025;19:e41.
28. Maganga CF, Kambalame L, Nahuku AMA, Chikoti VL. Lessons learned from approaches in COVID-19 risk Communication and community engagement in Malawi: an exploratory study. *Int J Qual Stud Health Well-being*. 2025;20(1):2516356.
29. Frost M, Houssiere V, Dore L, Kerba S, Liu S, Guth JA, et al. WHO Headquarters Risk Communication and Community Engagement (RCCE) Response to COVID-19 - Leadership. *Health Commun*. 2026;41(3):398-404.
30. J Y, H L, YA S, B H. Cultural approaches to crisis management. In: Farazmand A (ed). *Global encyclopedia of public administration, public policy, and governance*. Cham: Springer. 2017.
31. Binder MJ, Murray M, Mc Namara K, Townsin L, Versace V, Rolf F. Role of health communication on perceived risk and influence on preventative behaviours during the COVID-19 pandemic: a qualitative

Figures

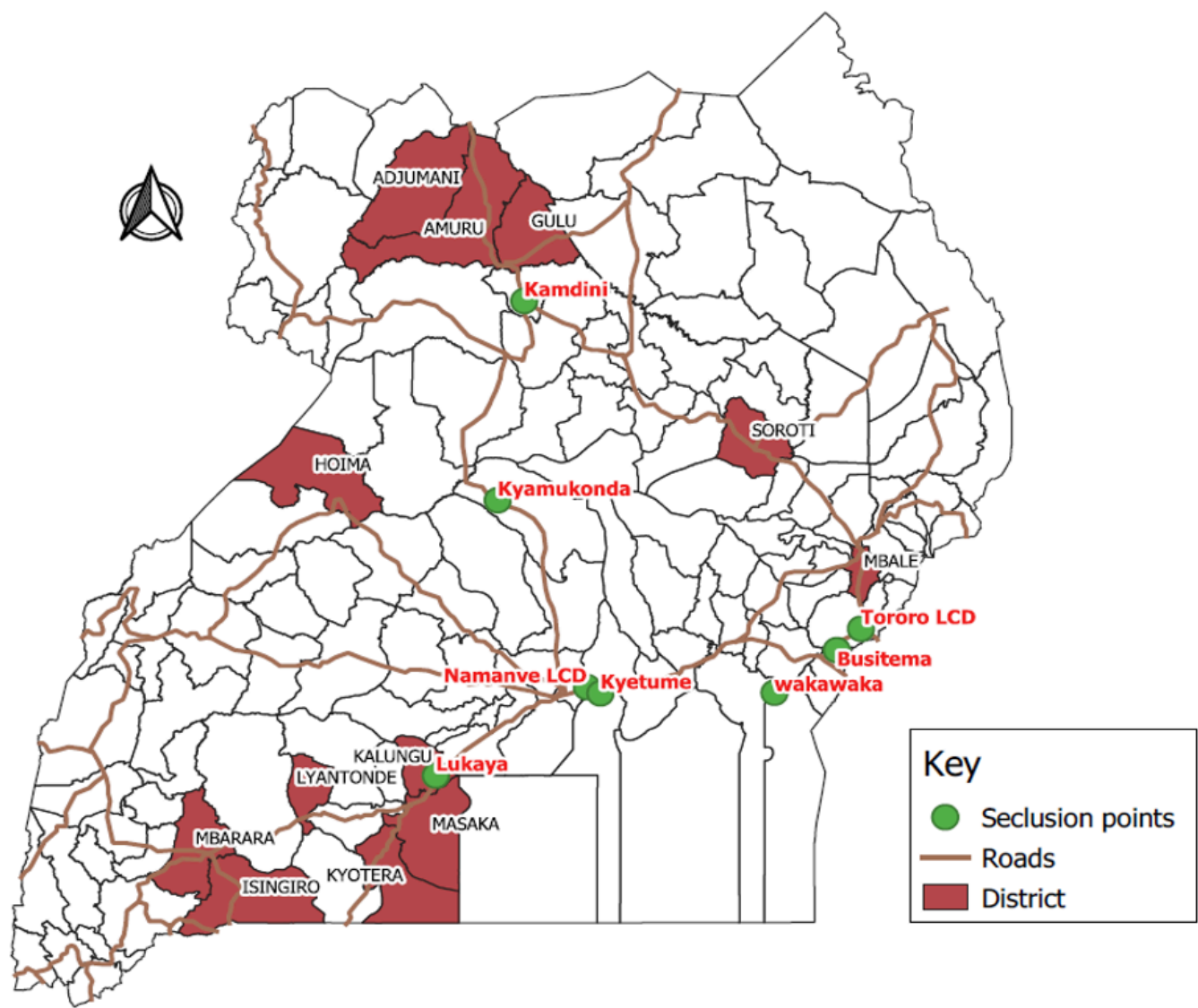


Figure 1

Map of Uganda showing the study area