



# A Situation Assessment of Community Health Workers' Preparedness in Supporting Health System Response to COVID-19 in Kenya, Senegal, and Uganda

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## Abstract

**Background:** Coronavirus disease (COVID-19) caused socio-economic disruptions across the globe. The pandemic disrupted the health system (HS) calling for reengineering in response to high infection rates, deaths, and resultant containment measures. To deal with COVID-19 and promote resilience, community health workers (CHWs) were engaged across countries. **Objective:** Assess the preparedness of CHWs in supporting health system response in prevention and management of COVID-19 in Kenya, Senegal, and Uganda. **Methods:** A mixed methods design study involving national and subnational jurisdictions in the 3 countries. Key informant interviews were conducted with policy actors (16) and health care workers (24) while in-depth interviews involved CHWs (14) and community members (312) subjected to survey interviews. **Results:** Most (>50%) households survived on <USD 100/month during COVID-19 announced in March 2020 through national TV (57%), FM (42%), and radio station (27%). Community members interactions with CHWs increased during the pandemic through home visits as health educators, basic counseling providers and distributors of pandemic information tools, personal protective equipments, and social support commodities. The CHWs faced challenges during pandemic prevention and management including lack of: protective gear, salary, refresher courses, and identification tools; limited supervision and training; hostile reception during home visits; misconception and politicking about the pandemic. To effectively support prevention and manage of COVID-19, priority needs for CHWs were identified namely: provision of resources, protective gear, transport reimbursement, stipends, identification cards, and tools for recording and reporting; empowerment with adequate skills, trainings on provision of psychosocial support, first aid, and sensitization on policies. **Conclusion:** COVID-19 linked disruptions to optimal functioning of HS necessitated engagement of CHWs in the pandemic prevention and management. Findings underscore the important role CHWs play in supporting HS during crisis like COVID-19 to mitigate disruptions and stabilize the system for effective response. The CHWs can improve resilience of social and HS during unplanned disruptions for optimal functioning and attainment of universal health care. Policy makers should develop structured mechanisms for engaging CHWs while committing resources to address challenges that affect seamless synergy between health and CHWs Systems.

## Keywords

COVID 19, community health workers, functions, challenges, priority needs, Kenya, Senegal, Uganda

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## Introduction

The world has experienced and adapted to the new normal occasioned by disruptions associated with pandemic linked to Corona virus disease discovered in 2019 (COVID-19). The pandemic has caused unprecedented deaths, suffering, and serious socio-economic impacts as a result of disruptions to families, communities, and societal systems.<sup>1,2</sup> Systems such as health have equally been affected, yet they have to play the dual role of responding to COVID-19 prevention and management including dealing with escalating infections, complications, and deaths.<sup>1,2</sup> The health sector has had a huge task of providing leadership in dealing with the pandemic including devising ingenious ways of dealing with an ever mutating Corona virus.<sup>3</sup>

To mitigate and respond to the pandemic and its impacts, governments mounted aggressive interventions for example, developing and dissemination of COVID-19 prevention measures namely: social distancing, personal hygiene (hand washing, respiratory etiquette, wearing of masks in public); case detection through testing, tracking, isolation, quarantine, and infrastructure support for clinical management; lockdowns, containment, outlawing public gatherings through closure of educational institutions, and places of worship among others.<sup>4,6</sup> However, the pandemic has been linked to social-economic disruptions characterized by lost income, escalation of poverty, powerlessness, and intolerance that may have profound effect on access to health services namely reproductive, counseling, and mental health.<sup>7,8</sup>

The impact of COVID -19 and the disruptions thereof in terms of number of infections, patients, health personnel requirements, and mitigation measures disproportionately affected the health systems in Sub-Saharan Africa. This is despite the region's health system having been already struggling with shortage of health care personnel (doctors, nurses, and midwives),<sup>9</sup> underfunding, lack of resources, and inefficiency before the pandemic.<sup>10</sup> To successfully respond to the pandemic, countries were required to devise ingenious strategies to win community trust, support, and cooperation while harnessing available human and other resources. Such strategies involved engaging the community health workers (CHWs), a cadre of human resource for health that successfully helped address outbreaks involving HIV/AIDS, Malaria, diarrhea, and Ebola despite health workforce shortages.<sup>10</sup>

The involvement of CHWs in provision and support for health services include: health education, identification of cases, referrals for a wide range of services, support and assistance to communities, families and individuals with preventive measures, and facilitating access to appropriate curative and social services. The CHWs act as a bridge between health/social care system and communities in accessing various services. They also contribute to

community development by improving access to basic health services.<sup>11-13</sup> The CHWs are strategically positioned to collect useful data on vital events in the community as well as influence behavior change for seeking services leading to improved health outcomes. Notably, CHWs mobilize the community by organizing meetings, providing door-to-door advice, and conduct peer discussions. As a trusted voice in the communities, CHWs promote hygiene practices, innovative interventions, infection prevention and control.<sup>13</sup> They raise awareness on sexual and reproductive health/rights and HIV/AIDS. They also visit, advise families and pregnant mothers to attend antenatal clinics, as well as encourage them to deliver at the health facilities.<sup>14</sup> The CHWs are effective because the communities they serve: have shared experiences, language, and understanding with their clients that allow for real trust to flourish. Experience from Kenya show that CHWs work best when linked to administrative structures and health system and when they are in control of tangible decisions, guided by clear guidelines defining their roles. Although the CHWs have a greater role in health promotion, they face a number of challenges including lack of: compensation for work they do, proper direction, supervision, and training.<sup>10</sup>

To quickly and effectively respond to the COVID-19, countries like Kenya and South Africa mobilized CHWs to support implementation of pandemic-related prevention and control measures.<sup>10</sup> The World Health Organization (WHO) prescribed the criteria for an effective CHWs programs which include: integration at all levels such as the emergency response forums; equipping them with essential knowledge and skills; clarification of their roles and responsibilities; and provision of essential tools for prevention and protection from COVID-19 virus.<sup>10,11</sup> However, challenges have been identified to affect motivation of CHWs namely; inadequate training, supervision, and support, lack of compensation that need to be addressed.<sup>10,13</sup> This far, although the need for CHWs in response to COVID-19 is undisputed, their role in supporting the health system respond to COVID pandemic burden is not well documented. We conducted a multi-country situational assessment to determine the preparedness of community health workers' in supporting health system response to prevention and management of COVID-19 in Kenya, Senegal, and Uganda.

## Methods

### Study Design and Participants

We conducted a cross sectional mixed methods study involving qualitative and quantitative data collection approaches. Qualitative data were collected using key informant interviews with actors in health at national level and health care workers (HCWs) at sub-national level in Kenya, Senegal, and Uganda (Table 1). The actors were identified

**Table 1.** Summary of Data Gathering Activities and Their Corresponding Sample Size.

S/N	Data gathering activity	Study population	Sample size	Study location
1	Key informant interviews	Representatives from the government (Ministry of health in the national and subnational level that deal with disease management and prevention, NGOs, development partners in Health)	16	National and county/Sub-national levels
2	Key informant interviews	Health care providers (doctors, nurses/midwives, clinical officers) working in selected service delivery points	24	County/sub national level health facilities
3	In-depth interviews	Community health workers	14	County/sub national level health facilities

and interviewed to determine knowledge, experiences, and views on what should be done to strengthen CHWs work in supporting health system response in prevention and management of COVID-19. The actors included representatives from governments (Ministry of health at the national and subnational level that deal with disease management and prevention), NGOs, and development partners in health.

In addition, interviews were held with HCWs to assess their understanding of the roles of CHWs, working process with CHWs during pandemics like COVID-19, and knowledge of existing policies and guidelines for the CHWs. The interviews strived to determine the type of support, training, and supervision offered by HCWs to the CHWs. The interviews involved doctors, nurses, midwives, medical assistants/clinical officers who were recruited from service points that routinely interface with CHWs.

Moreover, in-depth interviews were conducted with CHWs to obtain information on their roles and responsibilities, experiences in supporting health system during COVID 19, needs/challenges in training, supervision, and support obtained from HCWs as well as proposals for improvements. We also strived to determine awareness of policies that regulate functioning of CHWs. The interviews also sought to determine how CHWs identified community members who were at risk, those sick and decisions making process regarding referrals. The quantitative data were collected using survey interviews involving community members identified through households across the 3 countries. The interviews were held with community members to obtain information on the functioning of CHWs in response to COVID-19 prevention and management.

### Study Sites

This study was conducted at national and subnational levels including households within selected communities in Kenya, Senegal, and Uganda. The sub national sites included: Kajiado in Kenya, Kawempe in Uganda, and Sédhiou in Senegal. The sites were purposively selected

with consideration for specific criteria that entailed: presence of AMREF Health Africa programs for logistical support; existence of functional CHWs and community units; availability of support mechanism for CHWs; and logistical feasibility and safe environment for the study teams. In Kenya, Kajiado County was targeted which is among the 47 counties of Kenya, its headquarters is in Kajiado town and neighbors Nairobi city. A highly cosmopolitan County with every ethnic group represented with a projected population of 1 112 823 as of 2018.<sup>15</sup> The county has rapid urbanization due to increased migration. The County borders Nairobi County to the North East, Narok County to the West, Nakuru and Kiambu Counties to the North, Taita Taveta County to the South East, Machakos and Makueni Counties to the North East and East respectively, and the Republic of Tanzania to the South. It covers an area of 21 900.9 square kilometers (km<sup>2</sup>). The County is divided into 5 sub-counties namely Kajiado: Central, West, East, South, and North which double up as constituencies and 25 Wards. This study was conducted in Kajiado East in Kitengela area and Isinya as well as Kajiado North in Ongata Rongai, Ngong, and Ololua. The county has 4 sub county hospitals; Kajiado, Loitokitok, Ngong, and Kitengela; 16 health centers and 78 dispensaries that are government run. The private/faith based/NGO run health facilities include: 6 hospitals, 13 nursing homes, 7 health centers, 27 dispensaries, and 101 clinics. The county has 92 community health units initiated out of which only 78 are active. The doctor population ratio is 1:26 094, Public Health Staff is 1: 7619, and the nurse population ratio is 1:1068. The average distance to a health facility is 14.3 km with only 9.9% of the population within a distance of less than a kilometer to a health facility.<sup>15</sup>

In Senegal we sampled Sédhiou region which is located in the South-West of Senegal in Casamance between Kolda region in the East and the Ziguinchor in the West and shares borders with the Gambia in the North and Guinea-Bissau in the South. The population of Sédhiou is approximately 45 000 inhabitants. It covers an area approximately 7341 km<sup>2</sup>. The structure of health system in the district of

**Table 2.** Sample of Survey Interviews With Community Members in Selected Countries.

S/N	Country	Population	Sample size	Study site (County/ Sub-national)
1	Kenya	47 000 000	112	Kajiado
2	Uganda	42 000 000	100	Kawempe
3	Senegal	16 000 000	100	Sédhiou

Sédhiou is composed of 1 health center type 2, 14 *postes de Sante*, and 39 *cases de Santé*. The *Cases de Santé*, represent the first official level of the Senegalese health system. These have very important role, because they offer the first aid to the population in a wide range of problems, like diarrhea, malaria, headaches among others and are managed by Community Health Workers.<sup>16</sup>

In Uganda we sampled Kawempe division among the 5 division that make up Kampala city, located in the Northern Western part of Kampala. It is bordered by Nabweru to the north, Kisaasi to the east, Bwaise to the south, Kazo to the South West, and Nansana in Wakiso District to the west. The road distance between Kampala's central business district and Kawempe is approximately 8.5 km.<sup>17</sup> Administratively, the division is made of 19 parishes—of which 18 have informal settlements. The division is politically headed by a Mayor and an Urban council whilst the technical team is headed by the Town Clerk. There are approximately 377 700 people in Kawempe with approximately 290 500 living in informal settlements of Kawempe division. The division is served by 297 health facilities mainly privately owned.<sup>18,19</sup>

### Sampling and Sample Size

The participants for the policy-relevant interviews were purposively recruited based on knowledge and experience on legal-policy and guidelines regarding CHWs. The HCWs were purposively recruited to have a mix of providers who worked in service points that interacted, provided support, training, and supervision to the CHWs. The CHWs were purposively identified through selected health facilities, NGOs, and community leaders within the study sites across countries. The sample size for KII and IDI were informed by representation across actors, thematic saturation, and geographic locations. A multistage sampling strategy was used to sample respondents for quantitative data through households (Table 2). The target communities were selected through consultation with in-country AMREF Health Africa focal persons, local administration, and community leaders. The plan was to have a representative sample as possible from the in-country subnational study sites. The survey involved interviews with household heads. We randomly selected the lowest administrative units and equally divide the total number of expected respondents as per the number

of selected units. By creating awareness, with assistance and guidance from in-country AMREF health Africa focal persons and social mobilizers among the target populations, data collectors were then deployed to the selected units for data collections until the required size was achieved. Within each household 1 eligible head was selected and interviewed using a survey questionnaire. In selecting households for interview, research assistants employed a systematic skip pattern so that households were randomly selected. For example, a skip pattern of 2 households was adopted where research assistants were expected to interview the third household that met the inclusion criteria. The Kish formula<sup>20</sup> was used for sample size calculation since the population of community members was considered more than 10 000. Based on the formula a sample size of 384 was arrived at and to get the sample size per country, we used proportionate calculation based on the total population in the target countries (Table 2). We had planned to include 2 more Sub-Saharan countries but because of logistical challenges, they were dropped at the last minute.

### Study Instruments

The instruments for obtaining qualitative and quantitative data were developed accordingly. The KII guide focused on events that triggered the agenda-setting for CHWs with inputs from different stakeholders implementing CHWs-related policies and guidelines. The guide for HCWs focused on eliciting responses regarding experiences with support, training, and supervision they provide the CHWs. The in-depth interview guide for CHWs had questions on their roles and responsibilities, experiences in supporting health system during COVID-19, needs and challenges for training and supervision, and support received from HCWs as well as proposals for improvements. The guide had questions on community member identification, monitoring, and referral processes during pandemic and awareness on policies that govern functioning of CHWs.

For quantitative data, an open data kit GPS enabled phones with inputted structured questions were used to obtain information from community members at house hold level. The phones determined location of families, demographic characteristics of each family member, whether any member had contracted COVID-19, measures taken to prevent pandemic, experiences with CHWs-led pandemic interventions such as hand washing, masking, social distancing, referral, health messages, and health seeking since COVID-19.

### Recruitment and Interview Procedures

The identified national level actors were contacted by phone and/or a letter informing them about the study and a request for their permission to participate in an interview. A letter



describing the study objectives and research authorization permit from the national government was submitted to the government representatives. We obtained written or verbal informed consent from all participants. For the KIIs and IDIs, we obtained permission to audio record the interview deliberation. The participants were assured of confidentiality of the information they provided. The interviews were conducted in private spaces that offered privacy and were convenient to the participants. The interviews involving national actors were conducted in English by the PI and the project coordinator. Locally recruited and trained research assistants conducted interviews with the subnational actors. The interviews commenced with general statements followed with specific questions as the participant got settled and comfortable. The interviews lasted for about 45 minutes. The survey questionnaires were conducted in English and the information inputted into the phone enabled google forms by the research assistants.

### **Data Analysis**

Qualitatively, digital audio recordings of the interviews were subjected to transcription process to ensure data quality. First, recordings were transcribed verbatim by experienced transcribers. Second, the anonymized transcripts were independently reviewed, checking the transcripts against the original audio recordings for accuracy and content. The finalized versions were then subjected for qualitative data coding and analyses. Data were first coded with descriptive labels, then categorized into “code families” based on identified patterns. The emerging themes from the coding were addressed until the process was complete. The quantitative data were coded and entered into excel and cleaned. The cleaned data was then analyzed using Microsoft Excel. Frequencies and proportions were reported for categorical variables. Some continuous variables were also categorized and presented as proportions. The data summaries are presented in tables. The data generated from the qualitative and quantitative approaches were triangulated to form the narrative of this report.

### **Ethical Considerations**

Ethical approval for this study was sought and concurrent clearance were granted by in country ethical committees from Kenya, Senegal, and Uganda. The permission to carry out the study was granted by sub national authorities in Kajiado, Kawempe, and Sédhiou across Kenya, Uganda, and Senegal, respectively. The study participants provided informed consent. The participants were informed and taken through the study protocol including measures to ensure confidentiality of the information shared and their rights to withdraw from the study at any time. The COVID-19 prevention and control protocols were observed throughout the

study to protect the participants and the research assistants. Consent was obtained from participants to allow for audio recording during the interviews.

## **Results**

### ***Socio-Demographic Characteristics of Respondents Across the 3 Countries***

The characteristics of respondents who participated in the house hold survey are presented in Table 3. Of the respondents, slightly over a third (39.6%) of Kenyans and 62.0% Senegalese were aged 31 to 40 years, while 37.0% of Ugandans were  $\leq 30$  years old. Most of the respondents from Kenya (79.3%), Senegal (93.0%), and Uganda (71.0%) were married. Most Kenyans (96.4%) and Ugandan (82.0%) belonged to Christian faith, while 67.0% of Senegalese were Muslims. Those from Kenya (43.2%), Senegal (44.0%), and Uganda (52.0%) had attained primary level education. In terms of employment status, those from Kenya (56.8%), Senegal (35.0%), and Uganda (55.0%) were self-employed with reported monthly income of USD  $\leq 100$  (Kenyans = 49.5%, Senegalese = 78.0%, Ugandans = 89.0%), respectively.

### ***Respondents' Source of COVID-19 Information and Interaction With CHWs During the Pandemic***

The source of COVID-19 information and interaction with CHWs during the pandemic among the respondents in Kenya, Senegal, and Uganda are presented in Table 4. Those from Kenya (99.1%), Senegal (93.0%), and Uganda (100.0%) received information on COVID-19 in March 2020 (70.9%, 66.7%, and 59.0%). The information was mainly communicated through the national TV (80.2%, 28.4%, and 60.0%), local FM radio stations (50.5%, 21.0%, and 53.0%), and national radio stations (47.7%, 12.3%, and 20.0%) in the 3 countries. Most Kenyans (70.3%), Senegalese (57.0%), and Ugandans (57.0%) expressed having interacted with CHWs during the pandemic. The interaction had happened 2 weeks to 3 months prior to the study. Of the Kenyan respondents, 52.6% had related with CHWs in their capacity as health educators (84.6%), COVID-19 information tools distributors (48.7%), and basic counseling providers (38.5%). Those from Senegal (53.2%) interacted with them in their capacity as health educators (68.4%), basic counseling providers (8.8%), and COVID-19 information tools distributors (5.3%). The Ugandans (66.7%) had interfaced with the CHWs in their capacity as health educators (71.9%), personal protective equipment (PPE) distributors (70.2%), social support commodities distributors (63.2%), and COVID-19 information tools distributors (42.1%), respectively.

**Table 3.** Socio-Demographic Characteristics of Respondents Across 3 Countries.

Characteristic	Kenya (N= 111)	Senegal (N= 100)	Uganda (N= 100)	Total (N= 311)	
<b>Age (years)</b>					
≤30	36 (32.4)	38 (38.0)	37 (37.0)	111 (35.7)	
31-40	44 (39.6)	62 (62.0)	35 (35.0)	141 (45.3)	
Above 40	31 (27.9)	0 (0.0)	28 (28.0)	59 (19.0)	
Total	111 (100.0)	100 (100.0)	100 (100.0)	311 (100.0)	
<b>Marital status</b>					
Married	88 (79.3)	93 (93.0)	71 (71.0)	252 (81.0)	
Single-never married	16 (14.4)	7 (7.0)	11 (11.0)	34 (10.9)	
Divorced/separated/widowed	7 (6.3)	0 (0.0)	18 (18.0)	25 (8.0)	
Total	111 (100.0)	100 (100.0)	100 (100.0)	311 (100.0)	
<b>Religion affiliation</b>					
Christianity	107 (96.4)	33 (33.0)	82 (82.0)	222 (71.4)	
Islam	4 (3.6)	67 (67.0)	18 (18.0)	89 (28.6)	
Total	111 (100.0)	100 (100.0)	100 (100.0)	311 (100.0)	
<b>Education level</b>					
None-Primary	48 (43.2)	44 (44.0)	52 (52.0)	144 (46.3)	
Secondary	39 (35.1)	32 (32.0)	35 (35.0)	106 (34.1)	
Tertiary	24 (21.6)	24 (24.0)	13 (13.0)	61 (19.6)	
Total	111 (100.0)	100 (100.0)	100 (100.0)	311 (100.0)	
<b>Employment</b>					
Self-employed	63 (56.8)	35 (35.0)	55 (55.0)	153 (49.2)	
Employed	27 (24.3)	36 (36.0)	14 (14.0)	77 (24.8)	
Unemployed	21 (18.9)	29 (29.0)	31 (31.0)	81 (26.0)	
Total	111 (100.0)	100 (100.0)	100 (100.0)	311 (100.0)	
<b>Monthly income</b>					
USD ≤100	55 (49.5)	78 (78.0)	89 (89.0)	222 (71.4)	
USD 101-500	32 (28.8)	22 (22.0)	11 (11.0)	65 (20.9)	
USD above 500	24 (21.6)	0 (0.0)	0 (0.0)	24 (7.7)	
Total	111 (100.0)	100 (100.0)	100 (100.0)	311 (100.0)	
<b>Ethnic groups</b>					
	Senegal (ethnicity, n, %)	Kenya (ethnicity, n, %)	Uganda (ethnicity, n, %)		
Manding	37 (37.0)	Kikuyu	32 (28.8)	Bantu	94 (94.0)
Ballante	20 (20.0)	Kamba	12 (10.8)	Others	6 (6.0)
Diola	18 (18.0)	Maasai	38 (34.2)		
Mankagne	10 (10.0)	Others	29 (26.1)		
Peuls	9 (9.0)				
Others	6 (6.0)				
Total	100 (100.0)		111 (100.0)	100 (100.0)	

The information regarding functioning and interactions with CHWs during the pandemic in Kenya and Uganda was corroborated by interview responses involving HCWs. The responses suggested that, CHWs were working way before the pandemic struck. For example, the CHWs conducted referrals and submission of reports on public health challenges in the community to the health system as noted by HCW from Uganda, “yes, because I have been seeing the CHWs even before COVID-19, they have been very, very active referring clients and cases they get in the

community, and they have to submit their reports monthly to us.” The engagement and interactions with CHWs was claimed to have escalated during the pandemic in Kenya, as expressed by a policy maker, “in Kajiado county eeh . . . we are the owners (origin) of COVID 19 (both laugh) because the first case was reported in Ongata Rongai which is in Kajiado County, so we started engaging our community health workers immediately.” These responses were reinforced by suggestions by a policy maker from Uganda, “well, I may not give the exact time, but I can say

**Table 4.** Respondents' Source of COVID-19 Information and Interaction With CHWs During the Pandemic in Kenya, Senegal, and Uganda.

Characteristic	Kenya (N, %)	Senegal (N, %)	Uganda (N, %)	Total (N, %)
Have you heard of COVID-19	N = 111	N = 100	N = 100	N = 311
Yes	110 (99.1)	93 (93.0)	100 (100)	303 (97.4)
No	1 (0.9)	7 (7.0)	0 (0.0)	8 (2.6)
Total	111 (100.0)	100 (100.0)	100 (100.0)	311 (100.0)
When did you hear about COVID-19				
Before January, 2020	8 (7.3)	3 (3.2)	1 (1.0)	9 (4.3)
January-February, 2020	5 (4.5)	12 (12.9)	25 (25.0)	30 (14.3)
March, 2020	78 (70.9)	62 (66.7)	59 (59.0)	137 (65.2)
After March, 2020	19 (17.3)	16 (17.2)	13 (13.0)	32 (15.2)
I can't remember	0 (0.0)	0 (0.0)	2 (2.0)	2 (0.1)
Total	110 (100.0)	93 (100.0)	100 (100.0)	210 (100.0)
Source of COVID 19 information	Multiple responses	Multiple responses	Multiple responses	Multiple responses
National TV	89 (80.9)	23 (28.4)	60 (60.0)	172 (56.8)
Local FM station	56 (50.9)	17 (21.0)	53 (53.0)	126 (41.6)
National radio station	53 (48.2)	10 (12.3)	20 (20.0)	83 (27.4)
Announcement from administrators	21 (19.1)	0 (0.0)	12 (12.0)	33 (10.9)
Church announcement	20 (18.2)	0 (0.0)	6 (6.0)	26 (8.6)
Community health workers	14 (12.7)	7 (8.6)	7 (7.0)	28 (9.2)
Healthcare workers	9 (8.2)	8 (9.9)	1 (1.0)	18 (5.9)
Messages passed through school going children	0 (0.0)	6 (7.4)	8 (8.0)	14 (4.6)
Social support commodities distributors	0 (0.0)	9 (11.1)	5 (5.0)	14 (4.6)
Others	1 (0.9)	1 (1.2)	25 (25.0)	27 (8.9)
Ever interacted with CHWs during COVID-19	N = 111	N = 100	N = 100	N = 311
Yes	78 (70.3)	57 (57.0)	57 (57.0)	192 (64.0)
No	33 (29.7)	43 (43.0)	43 (43.0)	119 (36.0)
Total	111 (100.0)	100 (100.0)	100 (100.0)	311 (100.0)
How long ago did you interact with CHWs during COVID-19	N = 78	N = 57	N = 57	N = 192
Within the last 2 weeks	41 (52.6)	22 (46.8)	11 (19.3)	74 (38.5)
Within the last 1-3 months	32 (41.0)	25 (53.2)	38 (66.7)	95 (49.5)
Before 3 months	5 (6.4)	10 (0.0)	8 (14.0)	23 (12.0)
Total	78 (100.0)	57 (100.0)	57 (100.0)	192 (100.0)
In what capacity were CHWs functioning when you interacted with them during COVID-19	Multiple responses	Multiple responses	Multiple responses	Multiple responses
Health educators	66 (84.6)	39 (68.4)	41 (71.9)	146 (76.0)
COVID 19 information tools distributors	38 (48.7)	3 (5.3)	24 (42.1)	65 (33.9)
Basic counseling provider	30 (38.5)	5 (8.8)	7 (12.3)	42 (21.9)
PPE distributors	13 (16.7)	8 (14.0)	40 (70.2)	61 (31.8)
Home based care providers	9 (11.5)	0 (0.0)	1 (1.8)	10 (5.2)
Health team guide	2 (2.6)	0 (0.0)	3 (5.3)	5 (2.6)
Social support commodities distributors	0 (0.0)	0 (0.0)	36 (63.2)	36 (18.8)
Others	2 (2.6)	2 (3.5)	4 (7.0)	8 (4.2)

*it was not right at the start, at the start the fight seemed to be more national and upwards but as the fight of COVID-19 got underway as we moved on about one month or two we realized that actually community health workers are really important.”* (KII with Policy actor, Ministry of Health Kenya, Kajiado County).

### **Functions of Community Health Workers During COVID 19 Pandemic**

Interviews with policy actors and HCWs showed that there has been interaction with CHWs and they were aware about what functions and roles they played. Participants noted that the CHWs were critical in implementing activities that were relevant in prevention and management of the COVID-19 in the community. The following narrative and quotes support the aforementioned assertions regarding CHWs.

**Identified and referred clients with COVID-19.** In concurrence with the quantitative data on the functions performed by the CHWs during COVID-19, participants highlighted the pandemic mitigation activities. The CHWs were noted to identify and refer clients with COVID-19 to health facilities for further management as suggested by a HCW from Uganda, *“the CHWs have been taught on the signs and symptoms of COVID 19 and that in case there is someone with such signs, they can quickly refer that person to the health facility and also to follow the standard operating procedures.”* (KII with HCW, Ministry of Health, Kawempe, Uganda).

**Conducted surveillance and linkage with health system.** The participants noted that CHWs conduct surveillance of COVID-19 in the community to identify new cases and alerted health system for further action as suggested by a Kenyan health worker, *“the CHWs also alert us in case there is a suspected case of COVID in the community – they raise the alarm and we get to act; we work very fast, in line with the direction of the alarm.”* These responses were corroborated by a policy actor from Kenya, *“basically, what would happen is that CHWs would give us calls and tell us “Hey, we have somebody with symptoms” because that is part of their routine job. Any alert of any kind of disease. They used to receive call and tell us “there’s this suspect here.”* (KII with policy maker, Ministry of Health, Kajiado, Kenya).

The CHWs were also noted to act as a link between the community and the health facilities, sentiments expressed by a HCW from Kenya, *“and if there is something that we should know about the community concerning matters of health, then they escalate it to us as well, and of course being the link between the facility and the community even on matters health”* (KII with HCW, Kajiado County).

**Conducted contact tracing and monitoring.** The Kenyan policy actor in the Ministry of Health suggested that the CHWs were very critical in contact tracing and monitoring, *“we began engaging them to do contact tracing, so we have been engaging our community health volunteers routinely.”* The sentiments were corroborated by responses from a health worker, *“like the first COVID 19 client that was in this area (Kajiado) though he was from Aga Khan, he just lives near here, one of them called me and said that there was a woman who was coming on a Wednesday like this and she is one of the people who come into contact with that client.”* (KII with HCW, Ministry of Health, Kajiado). The responses were echoed by a Ugandan policy actor, *“so, CHWs play a key role in identifying, investigating and also contact tracing which all covers community-based surveillance.”* (KII with Policy actor, Ministry of Health, Kawempe Uganda).

**Provided home based care.** The CHWs were involved in provision of home based care for clients who contracted COVID-19 disease but whose condition was fair and did not require hospitalization according to a Kenyan policy maker, *“the CHWs are also very important in-home based care. Once we are finished with a patient and send them back to the community, they monitor this particular individual for any other kind of a disease. This is something continuous that they are used to and that is a key role which also helps us to achieve our health targets. For instance, they would tell us ‘today the patient developed difficulty in breathing’ So, they were able to give us prompt feedback which we would not have done by ourselves. We really thank our CHVs for the good work that they did in matters of COVID.”* (KII with Policy actor, Ministry of Health, Kajiado).

**Distributed materials for personal protective equipment (PPEs) for example sanitization and masking.** The CHWs were noted to have been involved in distribution of personal protective equipment namely sanitizers and masks to the community members as suggested by a Kenyan policy actor, *“we are using our very own community health volunteers to reach the households: distribution of masks and even sanitizers for the more vulnerable groups and even distribution of hand washing stations”* (KII with policy actor, Ministry of Health, Kajiado, Kenya). These sentiments were expressed from Uganda as well, *“I emphasize hygiene and there even those I give soap where they tell you they don’t have soap and you go on giving a piece of soap from house to house so that they can bath”* (IDI with CHW, Kawempe, Uganda).

**Spearheaded COVID-19 pandemic related health talks and sensitization.** The CHWs were credited for being effective in giving COVID 19-related health talks and raising awareness as they conveyed messages in local dialect since they



were part of the community Kenya, “*even as we aim towards Universal Health Coverage; without them it would be impossible to achieve that fully – they are an integral part of the entire system. I have worked with them. I would say they act as our ambassadors, or is it agents at the community level. They propagate the message we may have to pass from the facility to the community, they come in handy to propagate that message*” (KII with HCW, Ministry of Health, Kajiado, Kenya). Sentiments that were supported by a health care worker from Kenya, “*they’ve been involved in health promotion, sensitization of the Community of what COVID-19 actually is, the signs and symptoms and how to go about in case you have any signs and symptoms, they been, involved in.*” “*First of all they disseminate the right information to the community just like a bush fire, you know when outbreak like COVID-19 there were a lot of rumors so we use them to disseminate the right information, they use to identify the those who are at a risk, under 5, pregnant women. We also use them in disseminating the information to churches, schools, ensuring that the community is observing the ministry COVID-19 regulations*” (KII with HCW, Ministry of Health Kajiado Kenya).

**Conducted monitoring of clients in COVID-19 isolation centers.** The CHWs were noted to be helpful in monitoring people in quarantine facilities to ensure they completed the mandatory 14 days’ quarantine period as suggested by CHW from Kenya, “*when he or she says that the symptoms are getting serious, he or she is not feeling any improvement after 14 days they still do not feel better; that one, we can refer him or her further. But when he or she is getting better we can just tell them not to leave, they just sit inside till the 14 days is over.*” (IDI with CHW, Kajiado County, Kenya). Sentiments corroborated by a policy actor from Kenya, “*So, they were able to give us prompt feedback which we would not have done by ourselves. We really thank our CHVs for the good work that they did in matters COVID 19.*” (KII with policy actor, Ministry of Health, Kajiado, Kenya).

**Demystified myths around COVID-19 in the community.** The CHWs have been critical in clarifying facts about the pandemic because a lot of community members lacked information as noted by a policy actor from Kenya, “*actually, they are like our rumor book, they collect all the rumors and with the help of the CHWs they disseminate the right information to the community,* (KII with policy actor, Ministry of Health, Kajiado, Kenya). These responses were echoed by a health care worker from Kenya, “*the CHWs have been very useful because they are able to, you know the COVID 19 came with a lot of fear, a lot of rumors and a lot of things that needed somebody to truly clear to them and give scientific facts about the disease.*” (KII with HCW, Ministry of Health, Kajiado, Kenya).

**Provided psychosocial support.** The participants noted that the CHWs played important role in psychosocial support for the families and community during the pandemic as expressed by a health care worker from Kenya, “*they even had to remind the patient that, ‘remember you are supposed to stay in your compound for 10 days’ and also offer the psychosocial support to other family members. So, I feel they were very useful, they can be used and so effectively manage because they are trusted by persons in the community.*” (KII with HCW, Ministry of Health, Kajiado, Kenya).

**Engaged in burying those who succumbed to COVID-19.** Furthermore, it was suggested that the CHWs participated in burying the bodies of those who had died of COVID-19 as expressed by a policy actor from Kenya, “*at some point we trained these CHVs how to do burials when we were overwhelmed and we would give them full PPEs and they would do the burial for us*” (KII with policy actor, Ministry of Health, Kajiado, Kenya).

### **Home Visits and Pandemic Prevention Activities Implemented by CHWs During COVID-19**

Most of the respondents from Kenya (57.7%), Senegal (81.0%), and Uganda (53.0%) reported to have been visited at home by CHWs during COVID-19 as shown in Table 5. Most respondents from Kenya (79.7%), Senegal (63.8%), and about a quarter (28.3%) of Ugandans described an increase in the frequency of visits during the pandemic. The respondents from Kenya and Uganda acknowledged the visits involved demonstration on: wearing of masks (95.3% vs 58.5%), social distancing (92.2% vs 43.4%), and hand washing (87.5% vs 52.8%) as preventive measures for COVID-19. Those from Senegal detailed that CHWs distributed masks (85.2%), communicated the government/MOH measures for prevention of COVID-19 spread (37.0%) and assessed community members to rule out COVID-19 (12.3%), respectively.

The quantitative data on COVID-19 preventive activities implemented during home visits by CHWs were corroborated by responses adduced through interviews with policy actors and HCWs in the following narrative.

**Conducted demonstration of hand washing, masking, and social distancing in the community.** The CHWs were noted to conduct demonstration on hand washing, masking, and social distancing to individuals, families, and communities to reduce transmission of COVID-19 as suggested by a health worker from Uganda, “*prevention services, of course we have sensitization where community health workers have been sensitized and equipped with information on what they should tell people. This includes; wearing masks, regular washing of hands, and making sure that they keep the social*

**Table 5.** Home Visits and COVID-19 Prevention Activities Implemented by CHWs.

Characteristics	Kenya (N, %)	Senegal (N, %)	Uganda (N, %)	Total (N, %)
Have CHWs visited your house during COVID-19	N = 111	N = 100	N = 100	N = 311
Yes	64 (57.7)	53 (53.0)	81 (81.0)	198 (63.7)
No	47 (42.3)	47 (47.0)	19 (19.0)	113 (36.3)
Total	111 (100.0)	100 (100.0)	100 (100.0)	311 (100.0)
How many times have CHWs visited your house in the last 1 month	N = 64	N = 53	N = 81	N = 198
One time	12 (18.8)	28 (52.8)	76 (93.8)	116 (58.6)
Two times	34 (53.1)	18 (34.0)	5 (6.2)	57 (28.8)
Three or more times	18 (28.1)	7 (13.2)	0 (0.0)	25 (12.6)
Total	64 (100.0)	53 (100.0)	81 (100.0)	198 (100.0)
Have the CHWs increased the frequency of visits with COVID-19	N = 64	N = 53	N = 80	N = 197
Yes	51 (79.7)	15 (28.3)	51 (63.8)	117 (59.4)
No	13 (20.3)	35 (66.0)	25 (31.3)	73 (37.1)
I don't know	0 (0.0)	3 (5.7)	4 (5.0)	7 (3.6)
Total	64 (100.0)	53 (100.0)	80 (100.0)	197 (100.0)
When the CHWs visited your house, what did they share, tell or do in relation to COVID 19	Multiple responses	Multiple responses	Multiple responses	Multiple responses
Demonstrated wearing masks	61 (95.3)	31 (58.5)	0 (0.0)	92 (46.5)
Demonstrated social distancing	59 (92.2)	23 (43.4)	0 (0.0)	82 (41.4)
Demonstrated hand washing	56 (87.5)	28 (52.8)	0 (0.0)	84 (42.4)
How COVID is transmitted	31 (48.4)	25 (47.2)	0 (0.0)	56 (28.3)
Features of COVID-19				
Distributed masks	29 (45.3)	44 (83.0)	69 (85.2)	142 (71.7)
What to do if a member of family has COVID-19 features	24 (37.5)	10 (18.9)	0 (0.0)	34 (17.2)
Answered questions on COVID-19	14 (21.9)	14 (26.4)	0 (0.0)	28 (14.1)
Communicated the government/MOH measures for prevention of spread of COVID-19	10 (15.6)	11 (20.8)	30 (37.0)	51 (25.8)
Assessed members to rule out COVID-19	0 (0.0)	0 (0.0)	10 (12.3)	10 (5.1)

distance of at least two (2) meters.” (KII with HCW, Ministry of Health, Kawempe, Uganda).

**Shared messages on COVID-19 prevention and management.** The CHWs were also noted to conducted home visits during which they shared COVID-19 prevention messages and monitor progress of those who had been sick and were on home based care as expressed by a Kenyan health worker, “they make the nurses work easier because they go to visit the households and do health talks, health education and they know those households better than us. . .they know the people. . .they can communicate with them and they open up very well.” (KII with HCW, Ministry of Health, Kajiado, Kenya). These sentiments were supported by a

Kenyan CHW, “what happens when the patient is home is that every day, I will go to the person's house first thing in the morning. I will find out how they are doing, how they slept, how they are now feeling – record and then report that.” (IDI with CHW, Kajiado, Kenya).

### Challenges Faced by CHWs While Implementing COVID-19 Prevention and Management

Despite the important role played by CHWs in prevention and management of COVID-19 including increased home visits to support households with pandemic issues, a number of challenges were identified to impede on their effectiveness as follows.

**Lack of protective gear.** The CHWs lacked protective gear which hindered them from accompanying patients to the health facilities, sentiments expressed by policy actor from Uganda, “*if the CHVs have the right PPEs they may accompany the COVID patients to the facility but if they lack, we encourage them to just give them the emergency number to go to the link facility.*”

**Lack of salary/stipends.** The participants expressed lack of budget line to cater for the compensation of CHWs, while in some instances the payments were noted to be inconsistent and unreliable as expressed by a policy maker from Uganda, “*so, most resources are not there because most organizations do not have budgets for CHVs.*” These sentiments were also raised by community health volunteer from Kenya, “*It is a challenge because sometimes there is no payment. Sometimes you are paid, sometimes it takes long till you forget. When you start following up that is when you are paid.*” (KII with policy actor, Ministry of Health, Kawempe, Uganda).

**Limited supervision associated with lack of manpower.** A Ugandan policy actor noted that limited supervision of CHWs was associated with inadequate manpower in the health sector, “*even in supervision, we do not have enough manpower to supervise them*” These sentiments were confirmed by a community health volunteer from Uganda, “*supervision is another one thanks for reminding me it’s a major gap we are supposed to be supervised by the health workers that are based at the facility and other networks attached but I can say it is never done.*” (KII with policy actor, Ministry of Health, Kawempe, Uganda).

**Lack of refresher courses.** The policy actors from Uganda noted that there were no refresher courses for the CHWs, “*much as we go on, these people (CHWs) need refresher courses which are in most cases not facilitated. When you look at COVID 19, there are new emerging things that are coming in. For example, the people we trained last time, the trends of COVID have changed we have not sensitized again about the changes that have happened.*” (KII with policy actor, Ministry of Health, Kawempe, Uganda).

**Lack of work identification or cards.** Some CHWs expressed lack of identification documents hindering movement and entry into families and communities, sentiments suggested by a policy actor from Uganda. “*we also realized some did not have identification or cards so even when we were saying that you present an ID some of these CHWs don’t have ID’s and therefore it was a challenge in terms of ensuring that they continue their work during this period of time.*” (KII with policy actor, Ministry of Health, Kawempe, Uganda).

**Limited training.** Moreover, the CHWs were noted to have limited opportunities for training especially regarding COVID-19 as expressed by the policy actors from Kenya, “*some are not well trained, we realize that yes much as some are trained in case management some are not trained in surveillance so there was a gap in terms of capacity building.*” (KII with policy actor, Ministry of Health, Kajjado, Kenya). The community health workers also expressed the lack of training relevant to handling COVID-19 cases, “*I have not been trained so I cannot treat a COVID 19 patient.*” (IDI with CHW, Kajjado County, Kenya).

**Hostile reception during home visits.** There was reportedly hostile reception of CHWs because of the stigma associated with COVID-19 and the notion that the CHWs were assumed to work in hospitals thus capable of transmitting the disease to homes/families, “*because even if you go to someone’s home, especially us that are known to be working in the hospital, you hear someone telling you not to enter his or her home because you have Corona. Because for them they believe that Corona comes from where? the hospital. So, it is a very huge challenge for us to deal with these people.*” (IDI with CHW, Kajjado County, Kenya). However, some CHWs noted that some community members got frustrated because of the economic impact of COVID-19 where some members would express that they have not had food to eat as expressed by CHW in Kenya, “*when you go for door to door, some of them refuse to talk to you, some assume. Someone leaves you in their home, some call each other and start insulting you. Some tell you that before they talk to you give me food to eat, give me money for tea. There are many challenges. Some tell you, even yesterday I never eat, for today I do not have. Many things.*” (IDI with CHW, Kajjado County, Kenya).

**Misconceptions about COVID 19 pandemic.** Some CHWs noted that community members expressed that COVID-19 does not exist and this made their work really difficult as expressed by a CHW from Kenya, “*Challenges are there, because there are people that believe that this disease is not there, that it is for the rich. People are saying that this disease does not exist, this disease is a government scam, COVID is not there. Some are saying that this disease only infects the rich, it came with the aeroplane, so for us, where do we board a plane? So those people have no enough information concerning COVID 19.*” (IDI with CHW, Kajjado County, Kenya).

**Politics made CHWs related COVID 19 pandemic interventions cumbersome.** The political activities during COVID 19 negated and made the work of COVID 19 prevention by CHWs very difficult, sentiments expressed by a CHW from Kenya, “*you find people are overcrowded, for you to talk to them, the importance of keeping social distance, we hear*



*them say that we even watch politicians on TV, they do not have social distance, so what are you telling us. So, it is a huge challenge for us.”* (IDI with CHW, Kajiado County, Kenya).

### **Priority Needs and Support Required for CHWs to Effectively Work With Health System in Prevention and Management of COVID-19**

**Provision of resources.** There was a suggestion for availing resources to support CHWs work with health system in response to COVID-19 as suggested by health care worker from Uganda, *“first, the health worker gave them knowledge about COVID19. After getting this knowledge, they were provided with protective gears like face masks, aprons, gumboots, and sanitizers. So, this protective equipment’s have helped the community health workers not to contract the virus themselves”* (KII with policy actor, Ministry of Health, Kawempe, Uganda).

**Empowering of CHWs with adequate skills.** Equipping CHWs with adequate skills through capacity building could help them respond to COVID-19 as expressed by a policy actor in the ministry of health from Kenya, *“we need to train our community health volunteers on mental health and psychological first aid because when it comes to out breaks, there is a lot attached into it and so we need empower our CHVs with such information.”* These responses were supported by those of a policy actor from Ministry of Health from Uganda, *“AMREF, had identified some of the CHWs and trained them, and we have those community surveillance persons.”* The need for training was considered critical in empowering the CHWs to be more effective as per sentiments of a policy actor from Kenya, *“if our CHVs could also be trained – the training was not very sufficient because if you go to a unit and train two and leave twenty . . . then that is quite limited as most of the other volunteers have not yet been sensitized on COVID-19. . . yeah. . . generally that. . . but so far. . . so good.”* (KII with policy actor, Ministry of Health, Kajiado, Kenya). The Kenyan health care workers from Kenya also emphasized the need for training the CHWs, *“The issue of knowledge is very important. You find that they don’t know exactly what they are supposed to be doing, it will affect their impact or the outcome.”* The sentiments were strongly supported by health care workers from Uganda, *“they are trained but may be what they need is the ongoing training given to them because if you give them information after sometime, the person ignores the information but if you keep updating, following up and supervising the person, that person is likely to be giving out the right information.”*

**Provision of personal protective equipment to CHWs.** The participants noted that provision of PPEs such as aprons, masks, gloves, sanitizers and thermo guns were important

in enabling the CHWs implement interventions for addressing the prevention and response to COVID-19 as expressed by a policy actor in the Ministry of Health from Kenya, *“AMREF has provided PPEs for CHVs; they have overalls, aprons, gloves, gumboots which help them in prevention of the diseases.”* These sentiments were supported by health care worker from Kenya, *“yes, I have seen them providing sanitizers to the CHWs to move with them as they do their work in the community and masks.”* Additionally, the policy actor from Kenya supported the sentiments, *“but at times you see PPEs were running out of stock so we’d actually tell them ‘don’t go there, wait for us to come.’ You see it was a challenge because again we don’t have enough PPEs for the health workers. If they are to deal with a COVID positive patient, they need full PPE This CHV needs a full PPE”* (KII with policy actor, Ministry of Health, Kajiado, Kenya).

**Provision of transport reimbursement.** It was noted that transport costs were an impediment to realizing the potential for CHWs. Reimbursement or provision of means of transport was proposed as a mechanism to address this challenge as per the insights from a policy actor from Uganda, *“if the CHV needs to go to a certain area and they need some transport refund they have that bit of collaboration and also working together in terms of supervision to ensure they are able to monitor and understand what is happening on ground.”* (KII with policy actor, Ministry of Health, Kawempe, Uganda). These sentiments were supported by health care worker from Kenya, *“there was, so many issues with transport and even right now without the lockdown there is still some issues transport, it is twice as much so you find that sometimes the money that was being given to these CHW’s, It is not adequate because, if this CHW’s used to use 1000 from Komamboga to Mpererwe, now they are to pay 2000, All that is from their pocket.”* (KII with policy actor, Ministry of Health, Kajiado, Kenya).

**Training of CHWs on provision of psychosocial support and first aid.** The CHWs noted that they encountered substantial members of community who required psychosocial support but they lacked the capacity to assist them, *“We were doing like psychosocial support. We were getting counsellors from the County, we were getting the counseling and also ensuring that they had every equipment that they needed”* (IDI with CHW, Kajiado, Kenya).

**Sensitization on policies.** The Ugandan policy actor identified the need to sensitize CHWs on the existing policies and their contents so that they can be more efficient, *“policy makers, and they should actually engage the reliable people from the planning when they are developing it as it should be a participatory thing not sit in the office and develop a policy without consulting the CHVs the community and the*



community health strategy department.” (KII with policy actor, Ministry of Health, Kawempe, Uganda).

**Provision of stipends.** The participant identified the need to motivate CHWs with a token of appreciation in form of stipends. This would go a long way to defray the high cost of living, as well as the expectation from the community as expressed by policy actors from Uganda, “*the issue of stipend, they have families, they need to live at the end of the day, they need a living so they cannot just go and you see now this disease is also contagious they cannot involve themselves at the end of the day.*” (KII with policy actor, Ministry of Health, Kawempe, Uganda). The sentiments were consistent with those expressed by Kenyan CHWs, “*Unfortunately, for you, you have not eaten a thing. You stay hungry till when you get back to your home because you are wearing the gowns, gloves and masks – went to advise him and then come back home empty handed; with the used masks, gowns and gloves. So that is a challenge.*” (IDI CHWs, Kajiado County, Kenya). In line with the support for the CHWs, there were suggestions from policy actors for the establishment of county budget line for CHWs resource allocation and financial support. The budget line should address CHWs transport, stipend, supervision and training, “*The county should allocate a specific budget to run the community health service program.*” (KII with policy actor, Ministry of Health, Kajiado, Kenya).

**Provision of tools for identification.** The policy actors noted the importance of identification document for CHWs to promote identity, and accountability as expressed by a policy actor from Uganda, “*incentives such as may be shirts for identification. Really these are some of the resources that are required to ensure that they perfectly do their work*” (KII with policy actor, Ministry of Health, Kawempe, Uganda).

**Provide tools for recording and reporting.** The participants proposed the provision of tools for documentation, recording and reporting for the CHWs for efficiency as expressed by a policy actor from Uganda, “*I think they also need resources like information, education and communication (IEC) materials because they need to go and educate the community. Although everything is on toll free lines, but they also need some Airtime to call. At times they need to bring reports,*” (KII with policy actor, Ministry of Health, Kawempe, Uganda). These sentiments were supported by health care worker from Kenya, “*they were given allowances, notebooks, pens; they were supplied with IEC material to go and distribute in the community. They were also given sanitizers – if I’m not wrong. So we are seeing some but I think they can do more.*” (KII HCW, Ministry of Health, Kajiado, Kenya).

## Discussion

A substantial proportion of residents of Kenya, Senegal, and Uganda who participated in this study were married, probably with families and survived on less than USD 100 per month. This level of income is insufficient for meaningful living, with COVID-19 and the associated socio-economic disruptions having worsened households’ income pushing them into poverty. This assertion has been postulated by World Bank that estimated 2 million people could have been driven into poverty because of social and economic disruptions associated with COVID-19 in Kenya.<sup>21</sup> Indeed, although the COVID-19 impacts were global, developing countries have been severely affected by the disruptions with more families falling into poverty.<sup>22,23</sup> To survive, families adopted some mechanisms including exhaustion of savings, readjustment on budget including quantity and quality of meals and taking loans from saving cooperatives and friends for survival. Although these options were necessitated by limited or lack of government-led social protection mechanisms, Nations like Kenya attempted to cushion families through removal of V.A.T (value added tax) on some essential goods for example food stuffs.<sup>21</sup> These interventions were however temporary based on assumption that falling into poverty by households was transitional.<sup>22</sup> However, evidence showed the pandemic continue to persist and some households have permanently fallen into poverty. Therefore, this require governments to take audit of the newly impoverished households with a view to establishing social protection system for them.<sup>21</sup> Obviously, resilience is required for the households to survive the pandemic and related social economic disruptions, but this need to be supported through practical interventions by the government protecting the most vulnerable families while providing a conducive environment for gainful economic undertakings.

Our findings showed COVID-19 information was communicated in March 2020 mainly through the national TV, local FM stations, and national radio stations. The communication coincided with the World Health Organization declaration of COVID 19 as a pandemic.<sup>24</sup> The decision by WHO signified that COVID-19 had reached a global public health problem of concern triggering urgent, deliberate interventions, and unlocking of resources to mitigate the disruptions associated with the pandemic.<sup>25</sup> Among the interventions implemented by governments were health system preparedness to cope with escalating infections to avoid overrun and unnecessary deaths. In addition, the interface between health systems and community needed to be streamlined and seamless to improve efficiency in identification, tracking, and management of clients with COVID-19. A cadre of health resource for health notably the community health workers/volunteers were identified to play this critical role very effectively.<sup>10,26,27</sup> Indeed, this

study's respondents expressed having interacted with CHWs during the pandemic in their capacity as health educators, COVID-19 information tools distributors, basic counseling providers, personal protective equipment (PPE) distributors, and social support commodities distributors in the target countries. Notably, responses showed households engagement with CHWs escalated during the pandemic in Kenya and Uganda in response to the demand for COVID-19 related prevention and response. The increased interactions between households and CHWs underscored the urgency for COVID-19 related prevention and management response an issue of national and international importance. The increased uptake of CHWs services to support health system response to COVID-19 is consistent with documented evidence of the involvement and the important role played by the CHWs in response to the pandemic<sup>26-28</sup> an intervention critical for communities appreciation of their role in response to COVID 19.<sup>29</sup>

Moreover, while supporting the health system response to prevention and management of COVID-19, the CHWs executed several activities consistent with evidence adduced from literature: identification and referral of clients; conducting surveillance and linkage with health system,<sup>29</sup> contact tracing and monitoring of clients isolated in quarantine facilities<sup>30</sup>; provision of home based care; distribution of materials for personal protective equipment (PPEs) including sanitization and masking; provision of pandemic related health talks and sensitization; demystified myths around the pandemic; provision of psychosocial support<sup>30</sup>; and engaged in burying those who succumbed to the disease. The implementation of the aforementioned functions was effected through home visits as well as leveraging on other platforms like community meetings. Indeed, findings show there was increased frequency of home visits during the pandemic in Kenya and Uganda. During the home visits the CHWs demonstrated wearing masks, social distancing, and hand washing in Kenya and Uganda, while in Senegal they distributed masks, communicated the government measures for prevention of pandemic, and assessed community members to rule out COVID-19. These activities have been deemed critical in the prevention of the pandemic.<sup>26,31</sup> These functions attributed to CHWs stress the important role played by this cadre of human resource and the need for a structured mechanism of engaging them.

However, the study findings brought to the spotlight numerous challenges faced by CHWs while they respond to prevention and management of COVID-19. These challenges included the lack of: protective gear, salary/stipends, refresher courses, and work identification cards; limited training and supervision associated with lack of manpower; hostile reception during home visits; misconceptions about COVID-19 pandemic as well as politics which made CHWs related COVID-19 interventions cumbersome. These challenges are similar to what CHWs faced in India where

COVID-19 had very severe ravaging effects on people and livelihoods<sup>32</sup>—a lesson African continent policy makers, programmers and implementers ought to learn to mitigate the impact of future COVID-19 waves. The challenges were consistent with identified needs that included lack of utility for digital tools, connectivity problems, and lack of support for CHWs in Ethiopia and Uganda.<sup>33</sup> These findings underscore the need to prioritize mitigation of the challenges by the state and non-state actors for the CHWs to be more effective and efficient in supporting health system respond to prevention and management of COVID-19.

This study identified priority needs and support required by CHWs to effectively synergize health system-led prevention and management of COVID-19. These included the provision of: resources, personal protective equipment (PPEs) to CHWs, transport reimbursement and stipends, tools for identification, recording and reporting; empowering of CHWs with adequate skills; training of CHWs on provision of psychosocial support and sensitization on policies. The importance of addressing these needs has been highlighted by the Centers for Disease Control and Prevention (CDC) which include; supporting the CHWs to implement home based care, provision of training, and PPEs, as well as strategies for prevention of COVID-19<sup>34</sup> In addition, there is need to equip the CHWs with digital tools and skills to use them for community data collection<sup>33,34</sup> that can facilitate policy making, programming, and investment in times of COVID-19.

The study findings should be interpreted in light some limitations. First, data were collected in 1 geographic setting in each study country hampering generalizability of the findings. However, with the robustness of both quantitative and qualitative data collection methods involving a wide range of respondents, the weakness is neutralized. Second, qualitative data from Senegal are lacking affecting concrete conclusions on CHWs issues in that country. The data provide a strong foundation for understanding the CHWs support for health system response in prevention and management of COVID-19 relevant for policy making, programming, and investments.

In conclusion, COVID-19 resulted in disruptions to optimal functioning of health systems necessitating engagement and involvement of CHWs in prevention and management of the pandemic across countries. The findings underscore the important role played by CHWs in supporting health system during crisis situation for example, COVID-19 to mitigate disruptions as well as stabilize the system for effective response. The CHWs can improve resilience of social and health systems during unplanned disruptions for sustained optimal functioning and attainment of universal health care. Policy makers should develop structured mechanisms for engage CHWs while committing resources to address challenges that affect seamless synergy between health and CHWs Systems.

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## Ethical Considerations

Ethical approval for this study was granted by AMREF Health Africa Ethics and Scientific Review Committee (Ref: AMREF-ESRC P832/2020; dated: August 11, 2020).

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