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COVID-19 prevention measures in Ethiopia

Current realities and prospects

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ABSTRACT

Immediately after the first confirmed case of COVID-19 in Ethiopia in March 2020, the Government of Ethiopia took several public health measures to prevent increased levels of infection These included closing all schools and restricting large gatherings and movements of people. Hand-washing and social distancing were the main prevention measures that government has communicated to the general public through various media platforms.

Using the latest round of the Ethiopian Demographic and Health Survey, COVID-19 relevant indicators related to household access to communication platforms; access to water, sanitation, and hygiene (WASH); and characteristics of the home environment were assessed. The analysis shows that a sizeable proportion of the rural population does not have access to the media platforms used to publicize COVID-19 prevention measures. Moreover, without aggressive interventions, current levels of access to water and soap are suboptimal to adopt the hand-washing recommendations, particularly in rural areas. The low proportion of households with electricity, refrigeration, or internet connection and the relatively high prevalence of partner violence suggest that implementing the stay and work from home measures will be challenging.

Public health measures that slow down the transmission of the virus should be continued and efforts to prevent transmission to rural areas should be prioritized. Communication platforms and messaging will need to be adapted to different local realities to make any COVID-19 containment recommendations operational. WASH-related support should be ramped-up, and addressing barriers to staying at home, such as the risk of partner violence, should be considered. The efforts needed to end the current pandemic in Ethiopia, as well as similar pandemics in the future, illuminates the serious challenges related to WASH and to the inequalities between rural and urban areas that need urgent attention.

Keywords: COVID-19 prevention, water, hygiene, sanitation, Ethiopia, inequalities

1. BACKGROUND

The outbreak of coronavirus disease 2019 (COVID-19) started in late 2019 in Wuhan, China. The virus causing the disease is now found throughout the world and continues to spread at an alarming rate. In the absence of a vaccine, non-pharmaceutical interventions have been the mainstay of countries' efforts to prevent new infections. Classic public health interventions are being applied to slow down transmissions and to avoid overstretching health systems. Isolation, quarantine, social distancing, and community containment are being rapidly implemented (Cohen & Kupferschmidt 2020). These actions have been shown to successfully slow down transmission and, as seen in China and South Korea, has led to containment of the virus (Maier & Brockmann 2020).

The following basic measures to reduce transmission of COVID-19 have been recommended by the World Health Organization (WHO) and have been adopted by the Ethiopian Government:

- Wash hands frequently using soap;
- Maintain social distancing;
- Stay informed and follow advice given by your healthcare provider;
- Stay at home if you begin to feel sick; and
- If you develop fever or cough or experience difficulty breathing, seek medical advice and call in advance the center assigned for COVID-19 response

At the end of April 2020, the confirmed cases of COVID-19 in Ethiopia were less than 150 (MoH & EPHI 2020). At current levels of infection, public health measures still hold promise to slow and ultimately contain the spread of COVID-19. If effective, such measures can prevent a partial or total shutdown of economic activities in the country (Wilder-Smith & Freedman 2020). In response to COVID-19, the Government of Ethiopia has been taking a series of policy actions beyond public health initiatives alone (IMF 2020). These include closing schools, restricting use of public transportation, banning large meetings, and suspending sporting and religious gatherings. A state of emergency has been put in effect and staying at home and working from there has been strongly advised (OPM 2020). Moreover, three-month advance payments have been provided to beneficiaries of the Urban Productive Safety Net Program (UPSNP), the number of beneficiaries has been increased, and handouts of food and hygiene supplies have been provided them (IMF 2020; Terefe 2020). To further bridge inequalities, a national resource mobilization initiative has been established with the aim of supporting the most vulnerable. While these efforts are commendable, their sustainability over an extended partial or full lockdown period is uncertain.

A number of viewpoints have been recently published on the potential impact of COVID-19 in Ethiopia on the economy (Geda 2020; UNICEF 2020), agricultural value chains (Tamru et al. 2020), and food security and nutrition (HLPE 2020). All of these suggest that extended restrictions on movement and other lockdown measures can lead to a major social and economic crisis (Loayza & Pennings 2020). While global discussions have focused on the trade-offs between health and wealth, rapid and effective public health interventions are part of the solution to the economic hardships that may result from any extended lockdown, if basic prevention measures fail. However, there is limited information on the extent to which basic public health measures, such as hand-washing and social distancing, can be adopted in different parts of Ethiopia. What is the level of preparedness needed? Which communication platforms are likely to be most effective in providing guidance to all Ethiopians on how best to prevent COVID-19 transmission? Answering these questions is important to guide current public health interventions, to increase preparedness, and to inform how best to implement any relaxation to restrictions.

2. METHODS

The 2016 Ethiopia Demographic and Health Survey (DHS) was used to aggregate COVID-19 relevant indicators. The DHS is a cross-sectional survey that is representative at national and regional levels. The 2016 round is the most recent round of the survey in Ethiopia.

Several groups of indicators related to COVID-19 prevention were examined in the DHS data. Descriptive statistics on these indicators are presented in Table 1.

Table 1; Potential enablers and barriers for social distancing to contain COVID-19

	Total	Rural	Urban
Access to water			
Water piped into dwelling, % of population	0.7	0.1	4.1
Water piped into yard/plot, % of population	10.2	1.5	58.0
Use a public tap or standpipe, % of population	17.8	18.6	13.4
Water source 30 minutes or more round trip travel time from home, % of population	47.6	53.9	13.8
Sanitation			
Use open defecation, % of population	32.9	37.7	6.8
Use unimproved toilet facility, % of population	87.3	94.3	49.0
Use shared improved toilet facility, % of population	6.7	1.4	30.9
Use soap and water for washing, % of population	13.0	7.4	27.8
Home environment			
Households with one room for sleeping, % of households	70.3	71.6	65.2
Persons per sleeping room, mean	3.4	3.6	2.4
Household members, mean	4.6	4.9	3.5
Own a refrigerator, % of households	5.3	0.4	24.4
Have electricity in home, % of population	20.8	7.7	92.2
Men with internet access in the last 12 months, % of men	11.4	4.0	44.9
Women with internet access in the last 12 months, % of women	-	0.7	17.5
Have members aged 65+ years, % of households	18.3	19.8	12.3
Have only members age 65+ years, % of households	1.9	2.0	1.3
Have members from three generations, % of households	11.6	12.5	7.9

Source: Analysis by author of 2015/16 Ethiopia Demographic and Health Survey.

- **Access to timely information** – As access to timely information is critical for the adoption of recommended prevention practices, the proportion of households possessing a television, radio, mobile phone, or individuals having access to newspaper, radio, or television at least once a week were assessed by gender and rural-urban. Mobile phones served as a radio, but also gave access to COVID-19 related messages on prevention that were disseminated by Ethio telecom every time a user called a number.
- **Access to water and sanitation** – A basic prevention measure is to wash hands with soap frequently or use alcohol-based sanitizers. Hand-sanitizers are not routinely available and thus have not been captured in the DHS. However, indicators on access to safe water, toilet facilities, and hand-washing facilities are available and their availability and accessibility calculated to highlight WASH status and potential gaps.
- **Enablers and barriers to social distancing** – Indicators captured by the DHS that may be relevant proxies to assess the feasibility of social distancing include a number of home environment indicators, including the number of household members, the mean number of people per sleeping room, and the proportion of households with only one room for sleeping. The proportion of households with access to refrigeration, electricity, and internet also were calculated, as these may enable those staying at home to avoid frequent visits to shops or to work from home.

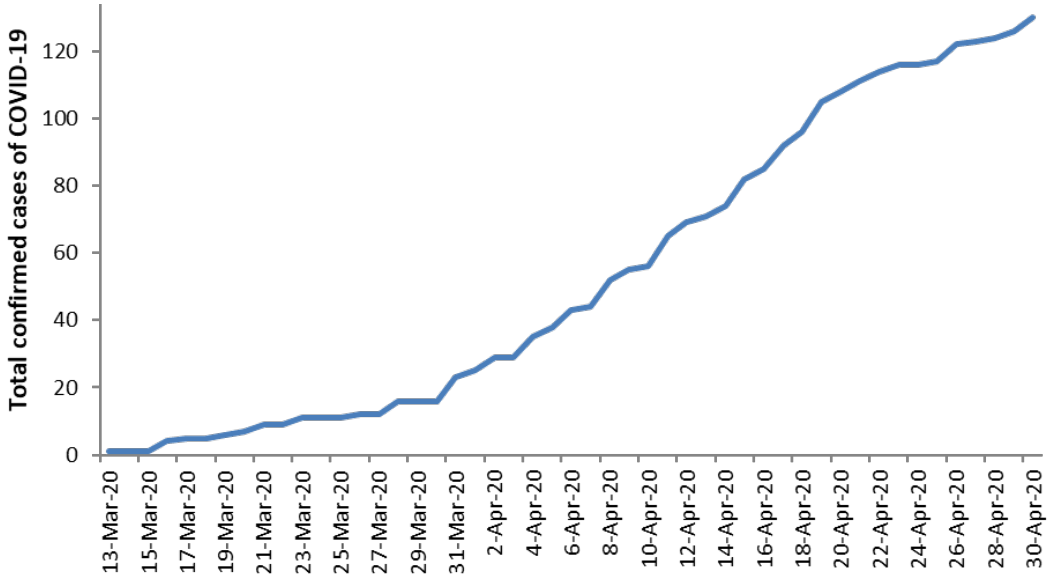
The proportion of individuals experiencing any partner violence in the last 12 months prior the survey also was calculated. This indicator highlights a potential barrier to staying at home and a potential risk that needs to be evaluated if staying at home measures are strictly adopted. Although this survey analysis presents conditions at the time of the last DHS survey in 2016, the indicator can still be of use considering that there is a high likelihood of recurrence of partner violence (Abeya et al. 2011).

The 48 situational update reports on COVID-19 issued jointly by the Ministry of Health and the Ethiopian Public Health Institute from 16 March to 30 April 2020 also were reviewed for this paper. These reports continue to be issued. The content and information provided in the reports has grown with time, including details on the number of samples tested, location of cases, number of deaths and recoveries, the travel history of cases, and history of contact with a COVID-19 patient. Other COVID-19 related responses publicly made available by the Ministry of Health also have been reviewed.

3. RESULTS

As of 30 April 2020, Ethiopia had confirmed 130 cases of COVID-19 (Figure 1), with a large majority being imported cases. The distribution of cases by region was: Addis Ababa, 100; Oromia, 10; Amhara, 5; Dire Dawa, 5; Somali, 4; and Afar, 1.

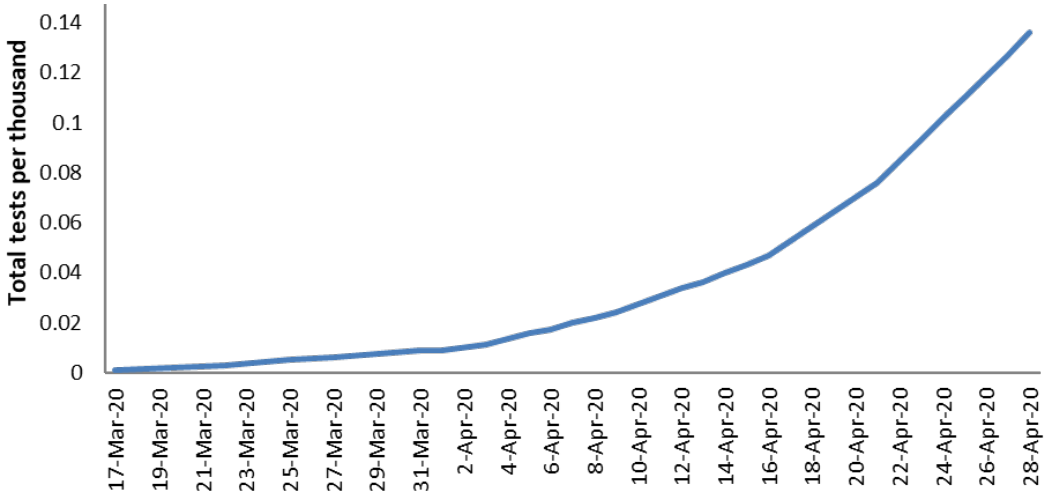
Figure 1: Number of confirmed COVID-19 cases in Ethiopia, March and April 2020



Source: Compiled by author.

The number of tests performed has steadily increased, reaching 16,434 tests by end-April, a figure that represents the administration of more than 1,000 tests per day (Figure 2). COVID-19 testing was done outside the country in much of March, but thereafter testing has been done at the Ethiopian Public Health Institute, the Armauer Hansen Research Institute, the National Livestock Research Institute, and the Tigray Health Research Institute (Table 2). By the third week of April, 12 more testing centers were operational, bringing the total number of testing centers to 20 and increasing the national capacity to more than 5,000 tests per day. Nine of the testing centers are in Addis Ababa with the rest in different locations across the country. Testing is performed on suspect cases, people with travel history, or those identified through contact-tracing.

Figure 2: Number of COVID-19 tests in Ethiopia per thousand, March and April 2020



Source: Compiled by author.
Note: Tests conducted per 1,000 members of the Ethiopian population.

Table 2: Selected actions taken since the confirmation of the first COVID-19 case in Ethiopia, March and April 2020

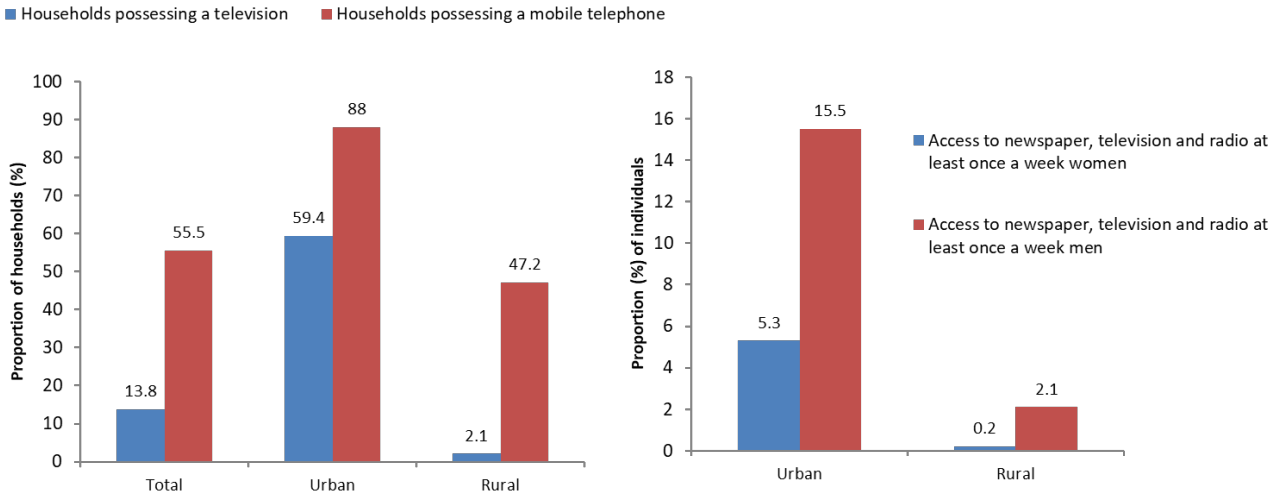
Date	Action/response to COVID-19
13-Mar	First confirmed COVID-19 case: a Japanese that came from Burkina Faso
16-Mar	Schools, large gatherings, sporting events suspended for 15 days
	Free call-center announced
18-Mar	Higher education task force established to work on COVID-19 related issues
19-Mar	Experience sharing from China
19-Mar	Testing kits received from WHO, CDC, and BGI-a Chinese genomic company
20-Mar	All travels entering the country are now required to remain in quarantine at selected hotels for 14 days at their own expenses
22-Mar	Ethio telecom providing information on the outgoing call and text messaging 444
22-Mar	Support from Jack-Ma Foundation and the Alibaba group arrived
25-Mar	42 percent of Ministry of Health staff asked to work from home
25-Mar	COVID-19 national resource mobilization-bank accounts announced
31-Mar	Recruitment of volunteers for COVID-19 response
02-Apr	Expansion of lab testing-AHRI, National Livestock Research Institute, and Tigray Health Research Institute
03-Apr	World Bank approved 82.6 M for COVID-19 response for Ethiopia
04-Apr	641 tests conducted in Adama and Addis Ababa in random samples consisting community members, health workers, and persons with direct contact with passengers
08-Apr	Religious gatherings are not anymore allowed; 1 months' prayer diffused through media is announced
12-Apr	National comprehensive COVID-19 management handbook for Ethiopia has been published
	Hawassa industrial park producing 10K masks/day to increase to 50K/day
13-Apr	United Arab Emirates supported 15 tons of COVID-19 prevention medical supplies
16-Apr	Ethio telecom has put stay home packages+ donated 100 million ETB
16-Apr	The Chinese Anti-pandemic Medical Expert Team to Ethiopia to share lessons and deliver urgent medical supplies
18-Apr	UNICEF provided medical supplies through DFiD funding
19-Apr	Makeshift of the millennium hall to a COVID-19 treatment center, designed to accommodate 1000 patients
27-Apr	3rd round of essential medical supplies received from Jack Ma Foundation

Source: Compiled by author.
Note: Some of the dates may not be accurate as they reflect the time they were publicly announced

The proportion of households with access to types of media that could be potential vehicles for COVID-19-related messaging are presented in Figure 3. Among potential media outlets, mobile phones were the most accessible, but significant differences in access were observed between rural and urban areas. Not surprisingly, urban areas had the highest access to mobile phones. Access to

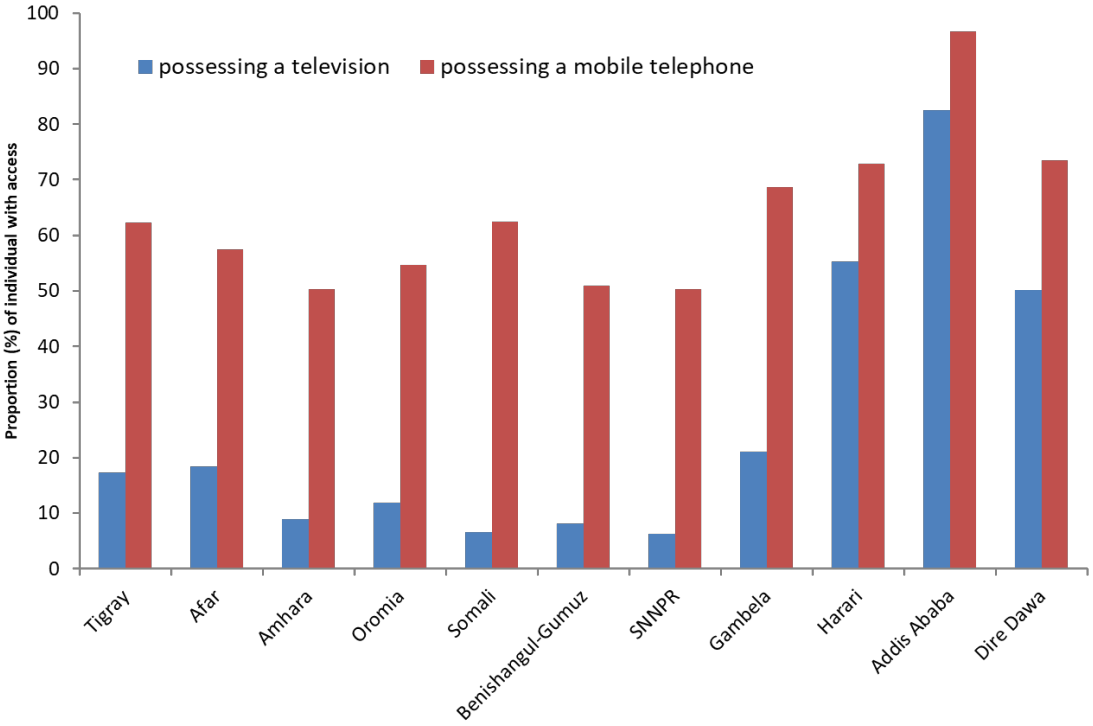
television, although higher in urban areas, is generally low. Gender differences in access to TV, radio, or newspapers are observed. Men had generally higher access to media than women. The proportion of households with access to mobile phones ranged between 50 percent in Amhara to 97 percent in Addis Ababa (Figure 4). Considering that mobile phones are also used as radios, radio programming on COVID-19 can be obtained by those with access to mobile phones. In contrast, access to television was less than 20 percent in all regions, except Dire Dawa, Harari, and Addis Ababa.

Figure 3: Access to communication platforms related to COVID-19 health messaging



Source: Analysis by author of Ethiopia DHS 2016.

Figure 4: Access to television and mobile phone in Ethiopia, by region

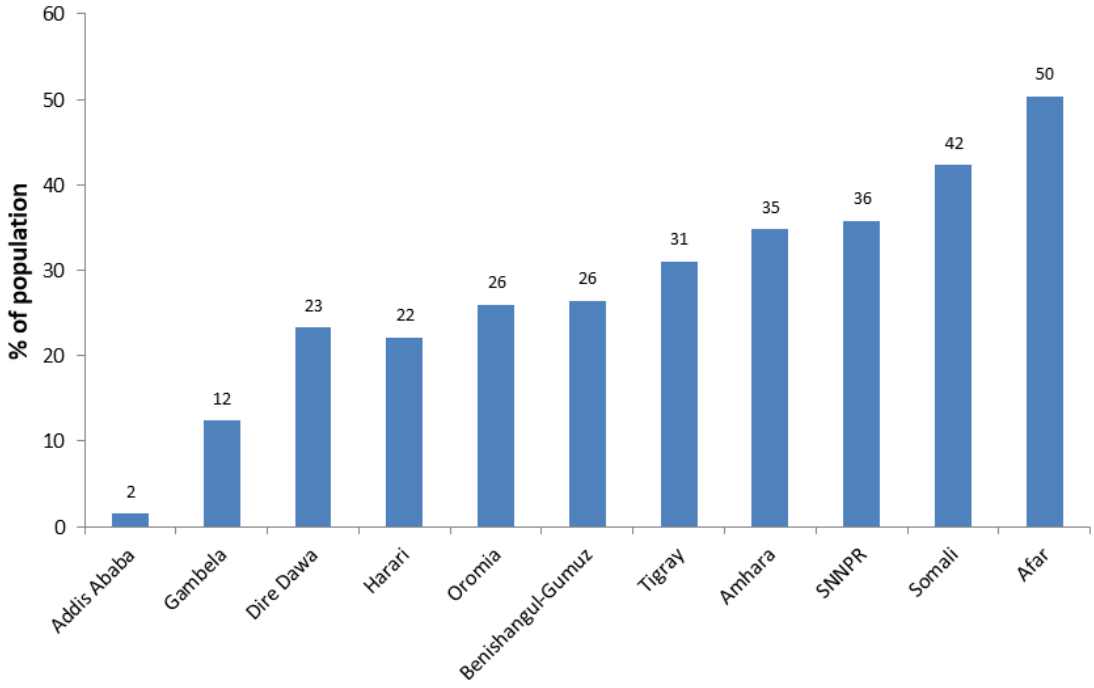


Source: Analysis by author of Ethiopia DHS 2016.

Figure 5 shows the proportion of the population that relies on a water source that is more than 30 minutes round-trip travel time away from their households, by region. More than a third of the populations in Afar; Somali; Southern Nations, Nationalities, and People's (SNNP); and Amhara; rely on water sources located more than 30 minutes round-trip travel time from their household (Figure 5). This is particularly the case for rural households (Table 1). About 18 percent of the

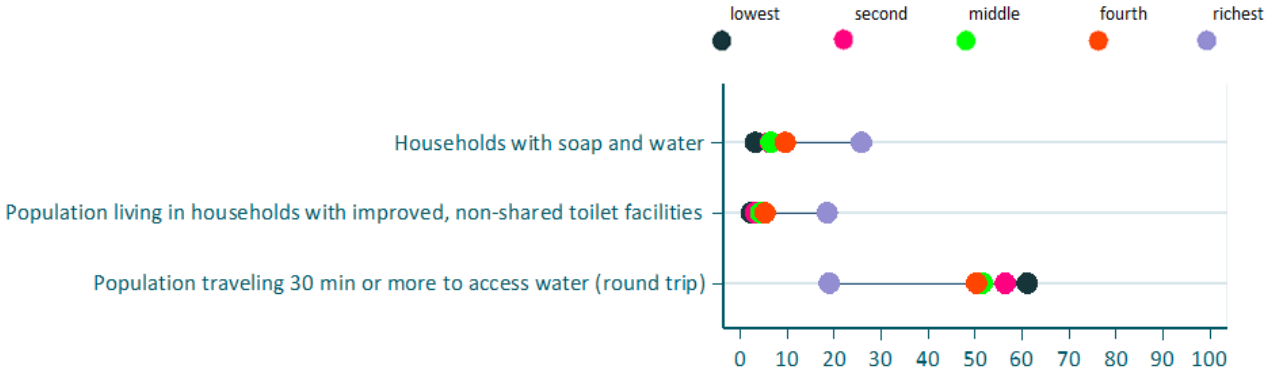
population use public standpipes or taps. The proportion of households with soap and water for hand-washing was 13 percent in 2016, with 31 percent of urban households, but only 1.4 percent of rural households (Table 1). Apart from households in the wealthiest wealth quintile, most Ethiopian households have poor WASH conditions (Figure 6).

Figure 5: Population living in households that relies on a water source more than 30 minutes round-trip travel time away, by region



Source: Analysis by author of Ethiopia DHS 2016.

Figure 6: Household water, sanitation and hygiene (WASH) characteristics, by wealth quintile

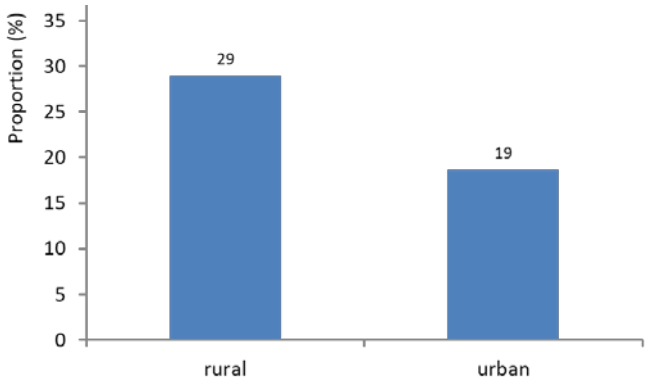


Source: Analysis by author of Ethiopia DHS 2016.

Home environment-related indicators that can help assess the possibility of social distancing are presented in Table 1. A large proportion of rural households use unimproved toilet facilities, while sharing of improved toilet facilities was more common for urban households. About 70 percent of households had only one room for sleeping, with relatively small differences between rural (71.6 percent) and urban (65.2 percent) households. Only a fifth of households in Ethiopia have access to electricity. However, access to electricity is disproportionately an urban phenomenon – 92 percent of urban households have access to electricity, while only 8 percent of rural households do. Ownership of a refrigerator is almost nonexistent in rural areas, while a quarter of urban households own a refrigerator.

The proportion of households with members aged 65 years and older is 18.3 percent at national level, with slightly higher figures in rural areas (19.8 percent) than in urban areas (12.3 percent). About 2 percent of the households were composed of only members' aged 65 years and older.

Figure 7: Partner violence in the last 12 months, by rural and urban



Source: Analysis by author of Ethiopia DHS 2016.

Partner violence is also common in both urban and rural areas – 29 percent of women in rural households and 19 percent in urban households reported having been a victim of partner violence in the 12 months preceding the survey (Figure 7).

4. DISCUSSION

Since the first case of COVID-19 was confirmed in Ethiopia, the number of cases has been increasing steadily, but at a slower pace than earlier estimates. The distribution of cases has also been growing, with more regions reporting their first cases. The Government has been taking swift actions to contain the virus and prevent transmission. Basic prevention measures such as hand-washing and social distancing have been advised and prevention methods are being constantly communicated to the public through media platforms. However, a sizeable proportion of the rural population may not have access to the media platforms. Moreover, current levels of access to water and hand-washing facilities, and characteristics of the home environment are not conducive for effective implementation of basic prevention measures, including social distancing.

Just two days after the confirmation of the first COVID-19 case, the Government ordered the closing of schools. Additional measures such as halting the movement of people across all borders and advice to work from home were put in place a week after (OPM 2020). Isolation of suspect cases, testing, and contact tracing are performed routinely, guided by a COVID-19 management handbook (MoH 2020). These swift actions might have contributed to the lower number of cases registered relative to expectations from various models (EPHI 2020). Indeed, countries that acted quickly and implemented public health preventive measures with aggressive testing, isolation, and contact tracing have managed to contain the spread of COVID-19 reasonably well without lockdowns (Lee et al. 2020). Countries that had wider community transmission, like China, required more stringent actions to contain the virus (Fisher & Wilder-Smith 2020).

During pandemics, such as that of COVID-19, the importance of continued information dissemination on symptoms, mode of transmission, and treatment modalities is unquestionable. The analysis here suggests that access to information platforms currently being used to transmit COVID-19 related preventive messages, such as mobile phones, newspapers, and television and radio transmissions, reach a significant proportion of the population in urban centers, but many rural households are not reached. The effort of the Ethio telecom to provide preventive messages during phone calls is strategic and likely to reach a larger segment of the population than, for example, television transmissions. This is supported by findings from a recent qualitative study in Ethiopia

among urban and rural adolescents which found that the main and often only source of information they received on COVID-19 prevention were the messages from Ethio telecom (Jones et al. 2020). Expanding communication platforms through community sensitization and conveying messages through religious leaders and health extension workers would be needed to ensure that the most vulnerable segments of the population are reached with these messages. While reach is important, a health risk communication strategy is also critical – effective interventions can fail if messaging is not adapted to local context and culture or does not meet specific information needs (Vaughan & Tinker 2009).

A first line of prevention against COVID-19 is to frequently wash hands with soap. Access to water and soap is, however, a limiting factor as traveling long-distances to access water is common and only a small proportion of the Ethiopian rural population has routine access to soap. A significant segment of the population uses shared stand pipes and toilets. Without adequate preventive measures, these water sources and sanitation facilities can constitute a channel of transmission. Public health messages need to be adapted to be considerate of this reality and to guide citizens on what to do in such circumstances (WHO 2020a). Concerted efforts will also be needed to make soap and water accessible in both rural and urban areas through resource mobilization, increased local production and distribution of soap, and the use of water trucks to distribute water in areas with limited access to water so as to prevent crowding at water sources and support social distancing measures.

The findings here also highlight several barriers to social distancing measures. For example, the limited number of sleeping rooms in most households illustrates the difficulty of self-isolating in cases where a family member is suspected of possibly being infected by COVID-19. Limited access to electricity and internet connection discourages work from home, and may also widen inequalities between children while home-schooling (Masters et al. 2020). Poor access to electricity also means difficulties in charging phones, further preventing regular access to COVID-19 prevention messages disseminated during phone calls and through radio. The fact that very few households have a refrigerator means that households cut down on the consumption of perishables, which often are nutrient-dense foods, or visit wet markets more frequently, compromising the effectiveness of social distancing measures.

Further complicating the situation is the high levels of partner violence within households in both urban and rural areas. Indeed, reports of child and partner violence have been increasing in other countries during the COVID-19 lockdowns (Bradbury-Jones & Isham 2020). Lockdown relaxation measures seen in some European countries have advised that the young restart working, while those aged 65 years and older are advised to stay at home (WHO 2020b). Some Government offices in Ethiopia have used this strategy to limit the transmission of COVID-19. However, this is unlikely to be of much significance in the Ethiopian context given that less than 2 percent of households are solely composed of members aged 65 years and older.

Using the latest round of DHS, this study show that the basic COVID-19 prevention measures like hand washing and social distancing are associated with significant challenges. Although the latest round of DHS was used, some of the indicators might have evolved since then. However, the conditions described using the 2016 survey are likely still relevant for informing current realities.

5. RECOMMENDATIONS

Aggressive attempts to slow down the transmission of the COVID-19 virus in Ethiopia should continue, particularly those efforts to prevent the transmission of the virus to rural areas, where basic prevention measures are harder to implement and access to health care is the lowest. Rural areas will require exceptional support to make water and soap accessible to implement the “basic”

COVID-19 prevention strategies. Communication platforms should be adapted to different local realities and ensure that the messages are not solely on “what needs to be done”, but also on “how it can be done”, even in the most difficult places and at the most difficult time.

In the face of a pandemic, focus should be on what needs to be done urgently to flatten the curve of infections due to the pandemic. However, attention must also be paid to what can be done to avoid a resurgence of COVID-19 infections and of similar pandemics in the future. The current pandemic illuminates the serious challenges related to WASH and inequalities between rural and urban areas. The COVID-19 pandemic can serve as an awakening to invest more in WASH, in improving the home environment, and in improved food and nutrition to protect the health and wellbeing of Ethiopia’s citizens.

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