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# COVID-19-related knowledge, attitudes, and practices in urban slums in Nairobi, Kenya<sup>1</sup>

## Study Description

May 18, 2020

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<sup>1</sup> This document is evolving due to the nature of the COVID-19 response and will be updated as needed.

## **Abstract:**

To control the spread of coronavirus, the Kenyan Ministry of Health COVID-19 Taskforce has implemented initial prevention and mitigation measures. Of concern are the densely overcrowded, poor urban slums where sanitation and social distancing measures are near impossible. COVID-19 would spread rapidly and be devastating under these conditions. To inform the Taskforce strategy, the Population Council COVID-19 study team utilizes rapid phone-based surveys to collection information on knowledge, attitudes and practices among a longitudinal cohort of heads of household sampled from existing prospective cohort studies across five Nairobi urban slums. Iterations of the survey will be conducted every 2-4 weeks. The baseline survey (n=2,009) was conducted March 30-31 with subsequent follow-up surveys conducted April 13-14 (n=1,764) and May 10-11 (n=1,750). Findings on awareness of COVID-19 symptoms, perceived risk, awareness of and ability to carry out preventive behaviors, misconceptions, and fears will inform Taskforce interventions. In subsequent rounds, behavior change messages will be randomly assigned to measure effectiveness, or if randomization is not feasible, survey questions on exposure and response to government campaigns will be evaluated using causal inference approaches. We are committed to openly sharing the latest versions of the study description, questionnaires, datasets, and preliminary results.

## **I. Background**

In the initial stage of the pandemic, sub-Saharan Africa reported some of the lowest [infection rates of COVID-19](#). Numbers began to rise in late March 2020, with confirmed cases increasing across the continent, however, this number may reflect a shortage of tests (“John Hopkins Coronavirus Resource Center,” 2020). By March 2020, the WHO [detected community transmission](#) in some African countries (including Kenya) and the risk to spreading coronavirus is due in large part to deep challenges in practicing social distancing and frequent handwashing in settings of high population density and lack of running water, as well as the non-specific symptoms of COVID-19 that make it difficult to differentiate from endemic illnesses such as malaria and influenza. Global health experts and African governments have expressed concern about the spread of COVID-19 and potential for more than 2 million deaths in sub-Saharan Africa if no action is taken (Walker et al, 2020).

Urban slums are at particularly high risk of transmission. They are densely populated, with small informal dwellings, lack of access to clean water, comprised of multi-generational households with shared sanitation facilities, high level of social mixing, and transient residents (Ezeh et al, 2017; Johnstone-Roberston et al, 2011; le Polain de Waroux et al, 2018; Winter et al, 2019). Fragile health systems will exacerbate the impact of the outbreak and limit the ability to conduct adequate surveillance and control (Makoni, 2020). Implementing personal hygiene and public health behaviors are necessary to curb the spread of coronavirus, such as handwashing and social distancing, will be challenging if not impossible in these settings (Dahab et al, 2020). Without sustained bans on large gatherings (including specific cultural and faith practices such as mass prayer gatherings, large weddings and funerals), these may create super-spreading events that accelerate transmission (Wong et al, 2015). This situation is compounded by the spread of COVID-19 misinformation including unsupported

treatments or promotion of ineffective preventive behaviors (Ioannidis, 2020; Vigdor, 2020). To prevent the devastating health, social and economic impact of a COVID-19 outbreak, containment is an important first step and extensive mitigation efforts will be required. In order for these efforts to be effective, health authorities will need timely and actionable data to design policies and interventions that are easily understood and relevant to the lives of urban slum inhabitants.

The Kenyan Ministry of Health (MOH) has launched its COVID-19 Taskforce to implement initial prevention and mitigation measures. The Taskforce is collaborating with the Population Council-Kenya to rapidly gather information on the knowledge, attitudes, and practices of households in urban slums in Nairobi in a series of phone-based surveys. This will inform the development and planning of behavior change campaigns, COVID-19 tracking, and other interventions as needed throughout the pandemic.

## **II. Research Questions**

Collecting knowledge, attitudes, and practices (KAP) surveys among at-risk populations is useful to inform prevention, control and mitigation measures during epidemics. A recent example is from the Ebola response, where KAP surveys yielded critical information to guide response and recovery efforts, health education, and social mobilization. KAP surveys during Ebola identified the prevalence of misconceptions about Ebola transmission and prevention, the need to prevent stigmatization of Ebola survivors, and to foster safer case management and burial practices (Jalloh et al, 2017). Information from these surveys is pivotal for policymakers and program implementers to use only during the outbreak and the recovery stages. We are undertaking a series of KAP surveys among people living in Nairobi urban slums to answer the following questions:

1. What is the current knowledge, attitudes, and practices reported by households related to COVID-19? How do these change over time?
2. What are the main barriers to adoption of key behaviors for COVID-19 prevention (handwashing, social isolation)?
3. What behavior change messages are the most effective at increasing knowledge related to COVID-19 prevention?
4. What behavior change messages promoted in new interventions are the most effective at changing the behaviors adopted in these households?

## **III. Research Design**

To inform the Kenya COVID-19 Taskforce strategy, this study will deploy rapid phone-based KAP surveys of households sampled from participants from the Population Council existing prospective cohort studies across five Nairobi urban slums (n=7,084). Iterations of the survey will be conducted every 2-4 weeks, beginning in late March 2020. Each survey will last 10-15 minutes and be conducted on the phone with a Nairobi-based research assistant. Baseline findings on awareness of COVID-19 symptoms, perceived risk, awareness of and ability to carry out preventive behaviors, misconceptions, and fears will inform Taskforce interventions. In subsequent rounds, behavior change messages may be randomly

assigned to measure effectiveness, or if randomization is not feasible, survey questions on exposure and response to government behavior change campaigns will be evaluated using causal inference approaches. Additionally, by embedding these surveys in our existing prospective cohort randomized controlled trial (RCT), we may explore if the AGI-K randomized interventions have an impact on the COVID-19 outcomes (AGI-K interventions were related to economic and social empowerment and violence prevention for adolescent girls).

After the outbreak, to complement these self-reported data, we can potentially conduct antibody testing to see if the behavior-change messaging actually reduced exposure to COVID-19. Future surveys can assess how the specific mitigation measures, and duration of these measures, impact a range of indicators including health, mental health and well-being, educational attainment and literacy, and economic status. For example, how social distancing influences household consumption patterns and the impacts on income generated.

#### *Target population*

Our target population is households enrolled in the [Adolescent Girls Initiative – Kenya \(AGI-K\)](#) and [NISITU: Engaging Men and Boys in Girl-Centered Programming](#) studies in five urban slums in Nairobi. AGI-K was comprised of adolescents from 2,565 households in Huruma and Kibera, and NISITU was comprised of adolescents from 4,519 households in Dandora, Kariobangi, and Mathare. In this study, we are collecting data from heads of household. These five study sites are representative of the diversity of slums in Nairobi, although our sample is not fully representative; to be eligible for AGI-K or NISITU, households had to have at least one adolescent residing there (therefore, households with only older residents or only very young children are not included). The last round of data collection for AGI-K was conducted in mid-2019 and for NISITU in late 2019, so phone numbers are up to date.

#### *Survey instrument*

The first survey will serve as a baseline, asking participants about their awareness of COVID-19, perceived risk of infection, identification of high risk groups, awareness of promoted behaviors, misconceptions regarding treatment and disease spread, and will ask questions about channels through which they receive information, trust in those sources, and perceived ability to carry out preventive behaviors by themselves and their community. The COVID-19 Taskforce has requested questions focused on myths, misconceptions and fears. Our much larger datasets from AGI-K and NISITU data collection in 2019 (and prior) can complement these rapid phone-based surveys, adding additional context (such as household location, household socio-economic status, household composition, cooking indoors, transportation options, and gender perceptions). Subsequent rounds of data collection will ask some of the same questions to see how knowledge, attitudes and practices change over time, and may include additional modules related to exposure to behavior change messaging and responses to these campaigns.

#### *Social mixing module*

In the third round of data collection we administered an extended survey module on social mixing to a subset of survey participants (n=214) in order to inform Centers for Disease Control and Prevention – Kenya (CDC-Kenya) and the Kenya Medical Research Institute (KEMRI)/London School of Hygiene and Tropical Medicine (LSHTM) models.

#### *Limitations*

During the COVID-19 outbreak, it will not be possible to collect data or conduct behavior change campaigns in person, to protect health workers and field-based staff. Behavior change messages will have to rely on channels that do not require face-to-face interaction, such as SMS/WhatsApp, phone calls, radio, television, and social media. Working with the COVID-19 Taskforce, we will investigate the potential to randomly assign these behavior change messages and quickly evaluate self-reported reactions to these messages (including understanding of the message, changes in behavioral intentions) to help tailor the next iteration of the campaign. However, due to the urgency around the COVID-19 response, there may not be time to randomize these messages. Randomization requires extensive coordination that may not be a priority for the Taskforce at this time. For example, the MOH may push out one general behavior change message to the whole country, or the whole city of Nairobi at once. In this case, we cannot compare the effectiveness of one type of message to another. However, we can still conduct additional rounds of rapid surveys to assess exposure to and awareness of government messaging campaigns (and campaigns run by other public health partners) and we can use causal inference statistical approaches (propensity score matching, potentially others) to determine the effectiveness of that campaign. Baseline responses can be analyzed cross-sectionally, but longitudinal approaches will be applied to evaluate changes in individuals over time. The outcomes explored in early stages will be self-reported awareness and self-reported uptake of promoted behaviors.

#### **IV. Progress to date**

The baseline survey was conducted March 30-31 and included a cohort of 2,009 individuals (63% female) evenly distributed across the five slum locations. Baseline findings were written into a [short brief](#), presented to the Ministry of Health and the COVID-19 Taskforce, and written into a manuscript submitted for peer-reviewed publication.

The COVID-19 Taskforce requested that the second round of data collection measure information on changes from COVID-19 on daily life, and adjustments to prevention behaviors. The second iteration of the survey added questions about barriers and facilitators to implementation of handwashing, hand sanitizer, and mask-wearing behaviors. Additional questions regarding changes to daily life included whether the household had received assistance in the form of cash vouchers, hand sanitizer, or food, accessed health services, and fears of future disruptions due to COVID-19.

The second survey was conducted April 13-14 and reached 1,764 respondents from the initial cohort (88% response rate).

The third survey was conducted May 10-11 and reached 1,750 respondents from the initial cohort (87% response rate).

## V. Contribution to Response

### *Partnership with MOH*

The MOH in Kenya has created a COVID-19 Response Taskforce, and Population Council-Kenya has been approached as an evidence partner to gather critical information to support prevention and mitigation policies and interventions. Specifically, the Taskforce is requesting data on COVID-19 related knowledge, attitudes, and practices of urban slum dwellers. The Taskforce requires rapid, actionable data in near real-time. We will continue to work with the COVID-19 Response Taskforce to ensure our work is accessible and useful to their planning.

### *Other partnerships*

The CDC-Kenya and KEMRI/LSHTM are developing epidemiological models that project the trajectory of COVID-19 transmission, morbidity and mortality in Kenya. Some of the data in these models is based on assumption from non-African settings. Therefore, we are collaborating with CDC-Kenya and KEMRI/LSHTM<sup>2</sup> to provide social mixing data to inform their modeling efforts in the Kenyan setting. We adapted a social mixing module with input from these groups. Together, these efforts aim to produce more accurate models for Kenya that can inform decision-making.

### *Gender lens*

Women and girls are highly vulnerable during an epidemic or crisis, it is critical to disaggregate by gender in all of our analyses. In many settings, women and girls are at increased risk during an epidemic because they are responsible not only for caring for the elderly and children, but because they often make up more than half of the healthcare workforce (Wenham et al, 2020). Financial opportunities and access to resources, information, and support will be severely affected as schools and businesses close and social distancing measures are put in place. Sexual and gender-based violence is already very prevalent in these communities. In humanitarian emergencies and noted in China after COVID-19 lock down, risk of gender-based violence increases (Wanqing, 2020). Our ongoing evaluations in Nairobi, AGI-K and NISITU, are both designed to address gender specific needs.

### **Open access**

We are committed to openly sharing the latest version of this study description, questionnaires, datasets, and preliminary results. Please visit the Population Council COVID-19 Research & Evaluations [page](#) on Dataverse regularly for updates.

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<sup>2</sup> See more information on LSHTM's Centre for the Mathematical Modelling of Infectious Diseases <https://cmmid.github.io/topics/covid19/>



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