



**ASSESSING THE LEVEL AND DETERMINANTS OF ADHERENCE TO  
COVID-19 PREVENTION STANDARD OPERATING PROCEDURE  
AMONG HEALTH WORKERS IN KCCA-SUPPORTED HEALTH  
FACILITIES IN KAMPALA, UGANDA**

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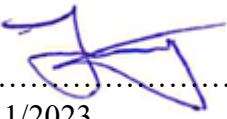
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FULFILMENT OF THE AWARD OF MASTER  
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**DECLARATION**

I, **GERALD Kato**, declare that this dissertation is my effort and personal initiative and that it has never been submitted before to any university or institution of the same setting for any academic award of this kind. Where someone else’s work has been used it has been acknowledged.

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## OPERATIONAL DEFINITIONS

**Adherence** is adhering to a particular rule, agreement, belief; or standard operating procedure.

**Adherence to SOPs.** Practicing at least three out of four primary preventive measures such as hand hygiene, physical distancing, wearing masks, and wearing protective gowns/medical/laboratory coats or uniforms.

**COVID-19:** This is a new virus that causes a respiratory illness in people and animals and can spread from person to person through sneezing and coughing droplets.

**Health care workers.** Health workers are all people engaged in work actions whose primary intent is to improve health, including doctors, nurses, midwives, public health professionals, laboratory technicians, health technicians, medical and non-medical technicians, personal care workers, community health workers, healers and traditional medicine practitioners.

**Standard operating procedure:** A standard operating procedure (SOP) is a set of written instructions that describes the step-by-step process that must be taken to properly perform a routine activity



## ABBREVIATIONS AND ACRONYMS

<b>COVID-19:</b>	Coronavirus disease-2019
<b>DHO:</b>	District Health Officer
<b>IPC:</b>	Infection prevention control and
<b>KCCA:</b>	Kampala capital city authority
<b>MOH:</b>	Ministry of Health
<b>NGO:</b>	Non-government organization
<b>SOP:</b>	Standard operating procedure
<b>WHO:</b>	World Health Organization?

## ABSTRACT

### Background

The COVID-19 pandemic continues to affect millions of people globally including healthcare workers. Given the pandemic and the absence of effective treatment, authorities across the globe have designed various mitigation strategies to combat the spread of COVID-19. Although adherence towards preventive measures is one of the means to tackle the virus, reluctance to do so has been reported to be a major problem everywhere including in hospital settings. Therefore, this study was aimed at assessing the level and determinants of adherence towards COVID-19 standard operating procedures (SOPs) and its associated factors among the healthcare workers within the KCCA-supported public health facilities.

### Methods

A cross-sectional study was employed among 435 respondents from March 2022 to May 2022. Cluster sampling technique was used to select the study participants. Data were collected using an interviewer-administered structured questionnaire. Excel and STATA version 14 were used for data entry and analysis. Modified Poisson logistics regression (Bivariate and multivariate) were adopted to identify statistically significant variables. Adjusted prevalence ratios ratio with 95% CI was used to declare statistically significant variables based on  $p < 0.05$  in the multivariable logistic regression model. The level of adherence of the participant was practicing at least three of four primary preventive measures such as washing hands many times, physical distancing, wearing masks and wearing protective gear.

### Results

The overall prevalence of good adherence towards COVID-19 mitigation measures was 54.83% while non-adherence was 45.27%. Age group above 50 years [APR: 1.86(1.225, 2.819)], previous experience about COVID-19 [APR: 1.386(1.139, 1.687)], Profession [APR: 1.494(1.184, 1.885)] and having training on IPC [APR: 3.560(2.139,5.926)] were significantly associated with good adherence towards COVID-19 mitigation measures.

### Conclusions

The findings have indicated that nearly half of the study participants had poor adherence towards COVID-19 mitigation measures. Age, profession, previous experience with COVID19, and training in IPC were factors which significantly influenced the adherence of the healthcare workers towards COVID-19 preventive measures. Therefore, it is crucial to track adherence responses towards the COVID-19 preventive measures and scale up the training and awareness of COVID-19 prevention to healthcare workers about COVID-19.

**KEYWORDS:** COVID-19, Standard operating procedures, Infection prevention and control, adherence, healthcare workers, Kampala capital city authority.



## **CHAPTER 1: BACKGROUND TO THE STUDY AND INTRODUCTION**

### **1.1 Introduction**

Novel-coronavirus 2019 disease is currently a worldwide health risk and public health emergency concern (Asemahagn, 2020). The outbreak was first reported in late December 2019 in Wuhan of China, Hubei Province, when groups of pneumonia cases of unknown etiology were found to be closely related to epidemiologically linked exposure to the seafood market and untraced exposures (Wu, Chen, and Chan 2020). According to the World Health Organization (WHO) daily situation report, after the coronavirus disease 2019 outbreak, 22,073 cases were reported to the WHO as of April 2020 among healthcare workers (WHO 2020b) (WHO 2020). In early March 2020, this number increased to 3300 and a minimum of 22 died in China, over 2600 infected with 13 deaths in Italy (Zhang et al. 2020).

Though the disease was initially slow to reach African countries, it's currently rising exponentially on the continent and is probably going to cause severe illness and death (Chan et al. 2020). In Uganda, as of 23<sup>rd</sup> July 2021, there have been 91,162 confirmed COVID-19 cases since the primary case on 21<sup>st</sup> March 2020 (MOH 2021). According to the available evidence, the virus is transmitted from an infected person to another person through close contact and droplets, and so those most at risk of infection are frontline healthcare workers (HCWs) caring for COVID-19 patients (WHO 2020a). Evidence shows that proper infection prevention and control (IPC) measures and adherence to COVID-19 Standard operating procedures (SOPs) during outbreak management could change the course of the outbreak (Huang et al. 2020). However, the present behaviors to adhere to the SOPs are sub-optimal.

A study on the Lassa Fever outbreak among Health care workers (HCWs) showed that none of them met the minimum standards of infection prevention practices during the first contact with fever cases (Huang et al. 2020). Occurrence of an epidemic, contact with confirmed and suspected cases, and key clinical departments (such as ICU and emergency unit) influence the infection prevention and control behaviors and critical risk factors in the pandemic outbreak and are always cited as important causes of high healthcare associated prevalence worldwide (Olum et al. 2020). Years of experience and preparedness are other factors related to healthcare workers' infection prevention and control behaviors (Spiteri et al. 2020). Owing to the current pandemic, an urgent interim guidance document was issued by the World Health Organization (WHO) which underscores the importance of proper adherence to SOPs for COVID-19 prevention in healthcare settings (Ayinde et al. 2020). The guideline builds on and further emphasizes the prevailing standard infection prevention and control guidelines for health facilities. Frontline Healthcare workers are at an increased risk of acquiring the virus owing to

overcrowding and lack of sanitary facilities which can be compounded by inadequate PPE and poor adherence to the SOPs for COVID-19 prevention (CDC 2020).

While Health care workers play important in the prevention and treatment of diseases such as COVID-19, they can also be a source of infections and transmit them to patients and their family members. Some healthcare workers contract the diseases and become symptomatic hence can transmit it to their fellow workers and their clients unknowingly. Therefore, healthcare workers must adhere to the set SOPs for the prevention of COVID-19 pandemic. It is imperative to ensure the safety of healthcare workers not only to safeguard continuous patient care but also to ensure they do not transmit the virus (4) as well as another study represented that, infected healthcare workers were an important group involved in disease spread. WHO confirmed 1279722\_cases and 72614\_deaths during the COVID-19\_outbreak in 2020.

## **1.2 Background**

The novel coronavirus disease (COVID-19), defined as an illness caused by severe acute respiratory syndrome coronavirus 2 (SARS-Cov-2), was first identified as an outbreak of respiratory illness cases and first confirmed in December 2019 in Wuhan, Hubei Province, China. Astonishingly, in the first three months after COVID-19 emerged, a devastating number of new cases were reported across China and several countries around the world (Jernigan, 2020) and it was finally declared a global pandemic by the World Health Organization (WHO) on March 2020 (WHO, 2020). Evidence indicates that COVID-19 is transmitted through respiratory droplets via contact routes such as the mouth, nose, and conjunctiva or eyes (UNICEF, 2020).

According to the (Worldometer, 2020) report, the outbreak has been confirmed in over 21,628,638 individuals worldwide and resulted in more than 769,128 deaths as of August 16, 2020, of which 99% cases were found in mild condition. More than 213 countries reported laboratory-confirmed coronavirus cases. In Africa, 1,113,246 confirmed cases and 25,385 deaths were reported. In Uganda, as of 23<sup>rd</sup> July 2021, there have been 91,162 confirmed COVID-19 cases since the primary case on 21<sup>st</sup> March 2020 (MOH 2021). Even though the outbreak is a global pandemic, it is important to note that the problem needs more attention in Africa because the African countries have limited healthcare system capacity to control the pandemic (ECDC, 2020).

Measures to prevent transmission in healthcare settings are an immediate priority to slow down the demand for specialized healthcare such as intensive care unit beds, safeguarding risk groups, protecting healthcare workers, and minimizing the export of the cases to other

healthcare facilities and the wider community. Healthcare workers (HCWs) are at a high risk of exposure to COVID-19 due to their direct contact with patients, so the triage of the patient with acute respiratory symptoms should be determined, the contact distance should be arranged to be at least 2 meters, and patients should wear face masks. During the care of these patients, the HCW should wear the necessary personal protective equipment (PPE) and keep hand hygiene (C. Agalar and D. O. Engin, 2020) since , poor and infection prevention and control (IPC) lead to hospital-acquired infections and transmission of disease from health facilities to the community that will exacerbate the outbreak and spread.

## **CHAPTER 2: LITERATURE REVIEW**

### **2.1 Knowledge towards COVID-19.**

A study conducted by (Amanya et al. 2021) Showed greater part (93.3%) of the respondents demonstrated self-reported good knowledge towards COVID-19. According to the study, more than 90% of HCWs were well aware of the route of transmission of the virus. A similar proportion were also aware that frequent handwashing with soap and water or alcohol-based hand rub, and using face masks can help in the prevention of disease transmission. The above study reported that healthcare workers are at a higher risk of infection with 88.2% of the respondents correctly identifying the isolation period to be 2 weeks.

A study from the Middle East found out that 42.9% of health professionals were not sure that the standard surgical mask would protect them from H1N1 while 22.1% did not believe that washing hands with water and soap is protective, and 27.3% were undecided (Evirgen et al. 2014). A survey on healthcare workers' knowledge, attitudes, and practices regarding COVID19 in China noted that at least 89% of the majority had sufficient knowledge and followed correct practices regarding COVID-19(Zhang, 2020) While a similar study from Pakistan noted comparable levels of knowledge and practice which were at 93.2% and 88.7% respectively (Saqlain et al. 2020). There was another study from Uganda conducted at Makerere University teaching hospitals which noted lower levels of knowledge and practices at 69% and 74% respectively (Olum et al. 2020).

### **2.2 Training and availability of hygiene facilities**

Most health workers in Uganda have not been trained well in infection prevention and SOP adherence at their workplaces. A study conducted in northern Uganda by (Amanya et al. 2021) about the knowledge and practices of health workers revealed that more than half of the study participants which accounted for 59.1% did not receive training related to infection prevention. 53.6% of the study participants reported that the institution does not have an infection prevention program and 60.9% did not have an active infection prevention team. 65.8% and 54.5% of the health workers reported the availability of water and soap at their work unit respectively. It was also found that 75.2% of health workers reported the availability of alcohol or hand sanitiser, and two-thirds reported adequate availability of the necessary personal protective equipment (PPE) at their facility. 42.4% of the respondents reported the availability of coloured dust bins to segregate medical waste at their work unit. 38.8% of the health workers reported that their place of assignment at the time of data collection was at the outpatient department (Amanya et al. 2021).

According to a study done in Nigeria, it was discovered that insufficient personal protection equipment for HCWs and isolation facilities, environmental contamination and overcrowding have worsened COVID-19 response and management strategies in various local communities hence HCWs are required to adhere to the standard infection prevention procedures in order to lessen the rising number of COVID-19 cases (Ejeh et al. 2020). Understanding the knowledge, attitude, and practice of healthcare professionals towards the prevention of COVID-19 is essential to maintain a sustained change in behavior and improving practices when designing setting preventive interventions (TsigaAhmed et al. 2021). Kampala being one most populous district in Uganda, stands at higher risk if healthcare workers fail to comply with infection prevention and control measures set in place.

### **2.3 Compliance with COVID-19 infection prevention and control**

According to Amany, Nyeko et al. 2021, most of the health workers associated compliance to sops with having received training in COVID-19 IPC, having COVID-19 IPC guidelines at workstations and sufficient institutional support in a study conducted in Northern Uganda among health workers. One of the main reasons for non-compliance has been inadequate PPE for example, only 18.7% of the participants reported always being availed of adequate personal protective equipment (PPE) by their hospitals, while 50.5% reported always having access to handwashing facilities and products, and 49.3% reported always being availed sufficient supplies for the collection of medical waste (Amany et al. 2021) Only 29% adhered to all preventive measures of interest, although adherence to some measures was very high. Another study which was conducted in the early stages of the pandemic in Uganda found that while nearly all participants (96%) reported frequent handwashing with soap, only 33% reported wearing a face mask when going out (Amodan et al. 2020). It has been estimated that proper masks use with a coverage of 80% would halt the transmission of the virus (Ngonghala et al. 2020) which would in turn reduce the infections and deaths among healthcare workers.

### **2.4 COVID-19 vaccination status**

Since the outbreak of the pandemic in Uganda several interventions have been put in place including the discovery of vaccines such as Astra-Zeneca, Pfizer and Johnson and Johnson. Proactively identifying vulnerable populations with co-morbidities to be prioritized for vaccination, and conducting surveys to understand barriers to uptake are currently among the priority actions for improving vaccination uptake.

However, the uptake of such vaccines including the healthcare workers in Uganda has been very low due to vaccine hesitancy and misconceptions Up to 82.4% of the high-risk population



including healthcare workers had e heard negative information on the COVID-19 vaccine (Bongomin, 2021) hence the there was a chance of COVID-19 spreading if the SOPs were not enforced. H

## **CHAPTER 3: PROBLEM STATEMENT, JUSTIFICATION, CONCEPTUAL FRAMEWORK AND RESEARCH QUESTIONS**

### **3.1 Problem statement**

The government of Uganda /MOH put in place several COVID-19 preventive measures to curb COVID-19 disease including frequent hand washing, avoiding crowded places, wearing a mask when in public places observing social distancing of at least 2m apart, sanitizing often, reporting suspicious people and always using personnel protective equipment for all the health care givers and yet uptake of these measures was relatively unknown due to limited data. Therefore, there is a great concern about the uptake of Ugandan MoH COVID-19 public health preventive measures among healthcare givers while going about their duties.

According to (Amodan et al. 2020), it is anticipated that only 29% of the population was adhering to all the preventive measures which were studied namely; the set preventive guidelines, citing having no access to sanitizers as their potential reason for not sanitizing often and some also citing the frequent stock out of personnel protective equipment such as masks, disposable gowns and gloves as the reason for not always adhering to the SOPs. However, evidence on factors that determine adherence to the standard operating procedures, particularly in a Ugandan context is limited.

Increasingly the government has put in place several strategies to improve adherence to the standard operating procedures for example sensitization of the health workers through presidential COVID-19 addresses using both radios, TVs, provision of masks, travel restrictions, screening, contact tracing, among others.

Despite all these efforts, COVID-19 cases and mortality rates among the health workers continue to escalate which is believed to be caused by abuse of COVID-19 standard operating procedures. currently, there is little information known on the uptake rates for any of the set COVID-19 preventive measures, factors that determine adherence and factors associated with nonadherence. Therefore, this study sought to determine the level and determinants of adherence to COVID-19 preventive behavioral measures, potential reasons for non-adherence and associated factors.

### **3.2 Study justification**

Kampala district has a projected population of 4.8million people (UBOS, 2022) and these have access to public health facilities for medical care. Most of the public healthcare facilities are under KCCA hence the healthcare workers are more exposed to COVID-19 infections than the private health facilities.

Many health workers have been infected with COVID-19 since April 2020. This has reduced the efficiency and effectiveness of the health workers with the country already grappling with a low doctor-to-patient ratio. Determining factors associated with adherence to COVID-19 SOPs as well as exploring health systems challenges among health workers is critical in designing interventions for future management and handling of future outbreaks.

This study was used to point out the importance of research focusing on the overall uptake of COVID-19 preventive measures, potential reasons for non-adherence and associated factors and hence will guide behavioral adoption in large-scale pandemics. Findings are expected to aid in the development of public health messages focused on increasing the uptake of preventive measures among the healthcare workers in the future. The people who will benefit from this study include the Kampala capital city authority, the Ministry of health, the national COVID-19 task force, health workers and patients.

### **3.3 Research questions**

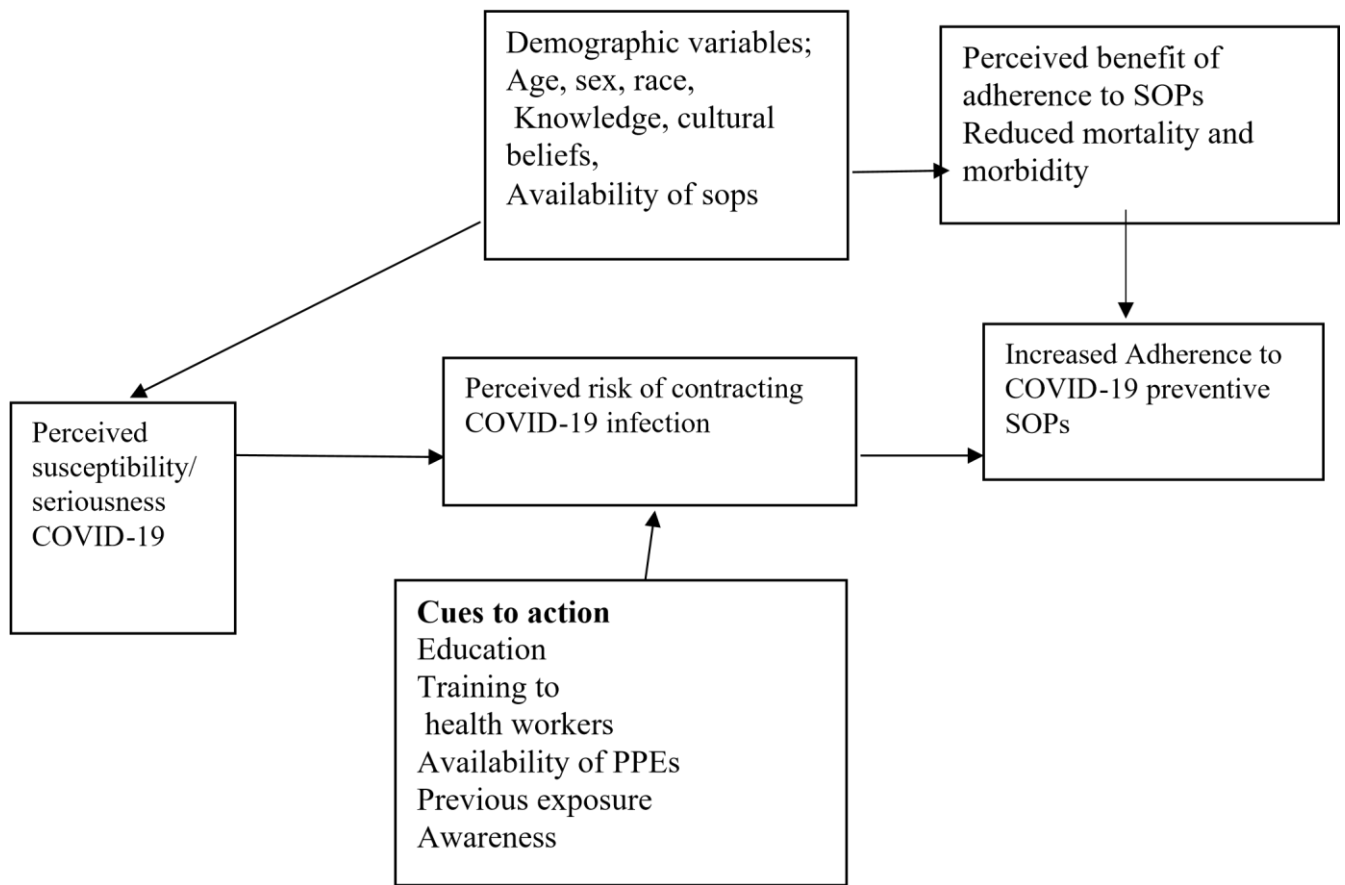
1. What is the level of adherence to COVID-19 SOPs within the KCCA-supported facilities?
2. What are the factors that affect adherence to the SOPs among the health workers in the KCCA-supported facilities?

### 3.4 Conceptual framework

#### Individual perception

#### Modifying factors

#### Likelihood of action



Adapted from the health belief model

#### 3.4.1 Narrative of the conceptual framework

This study used some of the element's health belief model of health, which highlights the interplay of individual perception of the threat, modifying factors for behavior change, the cues to action and the likelihood of the action.

Perceived susceptibility or seriousness of the COVID-19 disease is affected by modifying factors such as social demographic, cultural Knowledge, cultural beliefs, Availability of sops

Socio-demographic factors such as religion, sex, age, education level, and marital status are modifying factors which indirectly affect adherence to the COVID-19 SOP by influencing the individual's perceived benefits to adherence to the SOP.

Cues to action are external events that prompt a desire to make a health change. These include Education Training for health workers Availability of PPEs Previous exposure and Awareness which indirectly changes the adherence to the COVID-19 SOPs among healthcare workers by changing their perception f contracting the disease.



## **CHAPTER 4: GENERAL OBJECTIVE AND SPECIFIC OBJECTIVES**

### **4.1 General objective**

To study the level and determinants of adherence to COVID-19 prevention SOPs among health workers in KCCA-supported health facilities in Kampala, Uganda

### **4.2 Specific objectives**

1. To assess the level of compliance with the set SOPs within the KCCA-supported facilities
2. To determine the factors for adherence to the SOPs among the healthcare workers within the KCCA-supported facilities

## **CHAPTER 5: METHODOLOGY**

### **5.1 Study Design**

This was a cross-sectional study employing quantitative methods of data collection.

### **5.2 Study site and population**

#### **5.2.1 Study site**

The study was conducted among the KCCA-supported public facilities. These facilities were evenly distributed within the 5 divisions that make up the Kampala capital city namely; Kisenyi is found in the central division, Kiswa in the Nakawa division, Kisugu in Makindye, Komamboga within Kawempe, and both Kawaala and Kitebi are found in the Rubaga division

Kampala, the capital city of Uganda, has an estimated resident population of about 1.6 million people. The day population attracted by services and various economic activities nearly doubled the resident population. The city is divided into five administrative divisions. Kisugu, Kawaala Komamboga Kitebi, Kisenyi and Kiswa are the six-primary health centres operated by the Kampala Capital City Authority (KCCA), offering mainly outpatient services including Antenatal care, eye care, ART services, TB, Laboratory and immunization programs

These centers were purposefully chosen considering geographical representation. Komamboga health centre is located in a semi-rural residential area. Kisenyi health centre is located in the middle of a densely populated low-income area. Kiswa health centre is located in an industrial area of the city. Each study site is located in a separate division of the city. Kitebi and Kawaala are located in the semi-rural and densely populated division of Lubaga While Kisugu is located in the Makindye division near the slums of Numuwongo. These centres are level III health centres and are primary health care outlets. The health centres are faced with the challenges of heavy patient load, understaffing and periodic stock-outs of different commodities including the basic PPE

#### **5.2.2 Study Population**

The study population was healthcare workers at 6 KCCA-supported health facilities. The KCCA-supported health facilities are at levels III and IV hence they have several cadres including medical Doctors, laboratory personnel, Nurses and midwives, counsellors, dentists, opticians, clinical officers and pharmacists. All above were part of the study to ensure that results included all categories of the respondents

## 5.2 Inclusion criteria

A person was included in the study if:

All the healthcare workers who have consented to participate in the study

The participant had to be working within one of the KCCA health centres

## 5.3 Exclusion criteria

A person was excluded from the study if:

The participant does not work within one of the KCCA health centres.

Is not a health worker or supports health services within the district.

## 5.4 Study unit

The study units were individual health workers from different health facilities including medical Doctors, laboratory personnel, Nurses and midwives, counsellors, dentists, opticians, clinical officers and pharmacists

## 5.5 Sample size calculation

The sample size was calculated according to the formulae by (Kirkwood and Sterne 2010)

$$n > \frac{[u\sqrt{\pi(1-\pi)} + v\sqrt{\pi_{null}(1-\pi_{null})}]^2}{(\pi - \pi_{null})^2} \times DESIGN\ EFF$$

Where,  $n$  = required minimum sample size,  $\pi_{null}$  = null hypothesis proportion which will be 29% as the level of adherence according to (Amodan et al. 2020).

$\pi$  = 10% minimum difference of interest which the study will measure from the null proportion which will give 39%

$u$  = one-sided percentage point of the normal distribution corresponding to 100-80%, (100 % - power) = 20 % and  $u = 0.842$   $v$  = percentage of the normal distribution corresponding to the required (two-sided) significance level at 5 %,  $v = 1.96$ .

Considering since there is no established interclass correlation coefficient from similar studies a design effect, the sample size is multiplied (Bante et al. 2021) by 1.5.

$$n = \frac{[0.842\sqrt{0.39(1-0.39)} + 1.96\sqrt{0.29(1-.29)}]^2}{(0.39-0.29)^2} \times 1.5$$

$n = 253$

## 5.7 Sampling procedure

Simple random sampling was used to select the study participants from all the facilities.

The list of the health workers was generated. Then a code was issued against the name of the health workers. These were generated from the computer Excel office



Proportionate sampling was used to ensure that all the facilities were evenly distributed.

## 5.8 Study variables

### 5.8.1 Dependent variables

The dependent variables included the level of adherence to the COVID-19 SOPs among the health workers. This was measured by considering the participant either adhering or nonadhering.

To be considered adhering the participant was practicing at least three of four primary preventive measures such as washing hands many times, physical distancing, wearing masks and wearing of protective gown/medical/laboratory coats or uniform. The participant who was adhering to two or one of the four was considered non-adhering. The respondents were interviewed using a semi-structured questionnaire on whether they practice the above four primary preventive measures.

### 5.8.2 Independent variables

Independent study variables-included; Age, Education, profession, availability of PPE, training of the health workers and availability of handwashing facilities, the department where one works, and vaccination status.

- **Sex:** sex was classified as either male or female.
- **Age:** Age was reported in completed years, with significant previous political or social local events used as a proxy to estimate the ages of those who did not know their age. Age was made an age group variable with three categories: 18-24 years, 25-29 years, and 30-35 years.
- **Marital status:** There were three types of marital status: married, never married, and currently not married.
- **Educational level:** This metric determined how long a person had been in school and what level of education they possessed. It was divided into three categories: none, primary, and post-primary education.
- **Religion:** Catholicism, Anglican or Pentecostal Christianity, and Islam were among the various religions represented.

### Availability of PPE

This was measured through the following ways;

How accessible the PPE were to the participants i.e. They were categorized into three categories namely; always available, sometimes and no. The PPE assessed included the use of gloves, gowns, eye protection, face mask/ N95 respirators

### **Training**

Training was measured by asking the participants whether they had been trained on the COVID-19 preventive SOPs or not. Those who had received training were further asked about the last time they trained which was categorized into <3 months, < 6months and those who were trained over a year ago.

### **Availability of handwashing facilities.**

This included the availability of water, soap and alcohol-based hand sanitizer. The participants were asked whether they washed their hands or sanitized after every patient or worked on their respective duties. These were categorized into always, sometimes or no.

### **The profession of the participant**

The profession included the following: Nursing officer Clinical officer Counsellor Data officer Dentist Lab personnel, medical doctor, Midwife, Nutritionist, Pharmacist, Radiologist and Support Staff

### **Previous experience with COVID-19 disease**

The participants were asked about their previous COVID-19 status and if they had been infected or not. This is because the experience of the disease is likely to determine the adherence to the COVID-19 SOPs among health workers. These were also asked about whether their experience has changed their level of adherence to the set standards and the response was either yes or no.

## **5.9 Data Collection Procedure**

The data were collected between October 2021 to May 2022 among the healthcare workers from six KCCA-supported facilities. For quantitative data, health workers who satisfied the inclusion criteria were interviewed from their health facilities by research assistants using interviewer-administered questionnaires. The questionnaire was written in English since most health workers were educated. The questionnaire included all the variables needed for analysis. For questions that required observation, this was made from the time when the interviewer entered and until the time, they left the health worker's place

## **5.10 Data Management and Quality Assurance**

### **5.10.1 Data Management.**

Quantitative data were sorted, cleaned, edited, coded and double entered in Excel 16 and exported to STATA version 14 statistical packages for analysis.

### **5.10.2 Data quality assurance**

For quality assurance and control pre-visits to the study area were done for formal discussions with the health administrators and familiarization with the population dynamics. Selection and training of data collectors was done followed by pretesting of tools in other hospitals in Kampala district to establish their capacity to collect the required data. The Field editing was done each day to clear consistencies and missing data. Data-were stored in both soft and hard copies under a lock system and accessed by only authorized persons. Coding was done to identify the required variables for analysis.

## **5.11 Statistical analysis plan**

Data analysis was done using STATA version 15 after importing it from Excel. Data editing was performed during and after data entry to identify missing, inconsistent and out-of-range values. Descriptive statistics including frequencies and percentages were used for the assessment of the level of adherence to SOPS and presented in tables and graphs. A bivariate analysis of the dependent and independent variables was performed to determine the association between the dependent and independent variables. During bivariate analysis the primary independent factors which include the availability of PPE, Level of training, availability of hand washing facilities such as Soap, water and hand-based sanitiser and the participant's attitude towards adherence to the COVID-19 SOPs. Other factors included in the model were age, sex, vaccination status, religion and residence.

The univariate and bivariate analyses were conducted and the results were presented in the form of cross-tabulation tables through modified Poisson regression with one independent variable at a time. Categories that had zero or few observations were combined at bivariate analysis. During multivariate analysis, the factors that showed interaction were included in the multivariate analysis the forward model building was used whereby one variable was added at A time until the best model was obtained. These were selected based on the P value of <0.1 or less for them to be included in the model. The purpose of the multivariate analysis was to control for any confounders and be included in the model. Statistical significance and strength of association were determined using prevalence ratios and 95% confidence intervals.

To cater for the clustering effect, the command “cluster (cluster var name)” was added at the end of the command in STATA.

### **5.12 Ethical considerations**

Ethical approval was sought from Makerere University School of Public Health Higher Degrees, Research and Ethics Committee.

Permission to carry out the research was sought from the concerned KCCA Authorities and the facility in charge. Informed written consent was sought from all respondents that were eligible to participate in the study. The respondents were informed about the risks and benefits of the study, and how the study would cause no harm other than the inconvenience in terms of time spent answering questions.

The respondents were informed about their voluntary participation. In case they were not interested in the study, they would not participate and no benefits would be lost to them if they chose not to participate and they had to withdraw anytime they wanted to.

Confidentiality will be maintained throughout the study and the information will only be used for the study and unique identification codes on the questionnaires will be used instead of respondents’ names.

### **5.13 Study limitations**

Reporting bias may have arisen from health workers wanting to provide socially desirable responses.

Being a cross-sectional study, we were unable to establish the causal relationship between the outcome and the exposure.

Susceptible to bias due to low response and misclassification due to recall bias.

Only represent a one-time measurement of both the alleged cause and effect.

The level of adherence to SOPs of HCWs may have been overestimated since they may have answered the questions in a way that they believe was socially acceptable rather than being completely accurate. To make the self-reported compliance closer to the actual, the researcher trained all the staff in the research group carefully to orient the HCWs to complete the questionnaires based on the actual situation.

The lack of adequate similar studies also limits the comparison of the findings

## CHAPTER 6: RESULTS

### 6.1 Respondents' Socio-demographic Characteristics

Of the overall sample required (N = 435), 348 participants were included in the study, giving a response rate of 80%. The mean ( $\pm$ SD) age of the respondents was 36.3 ( $\pm$ 13.2) years, ranging from 21 to 59 years. The majority of the respondents were females (234, 67.24%) compared to males (114, 23.76%) Above half of the respondents, 57.18% were in the age group of 21-29 years while the age group above 50 had the lowest respondents 2.01%. Around two-thirds of the study participants were single (209, 60.06%) compared to married (139, 30.94%). Three hundred (86.21%) were Christians whereas the rest of the respondents were Muslims (48, 13.79%). Those who had tertiary education were 307(88.22%) compared to 23 (6.61%) and 18 (5.17%) for primary and secondary levels, respectively. The Baganda tribe had the highest number of respondents 105(30.17%) followed by other tribes at 77(22.13%) while the Bagisu had the lowest number of respondents. As per profession, the leading respondents were nursing officers and lab personnel at 117(33.62%) and 68(19.54%), respectively. The results for social demographics are in the table1 below.

**Table 1: Socio-demographic and personal characteristics of the study participants among the healthcare workers within the KCCA facilities in 2021 (N=348)**

<b>Variables</b>	<b>Frequency</b>	<b>Percentage (%)</b>
<b>Age (in years)</b>		
21-29	199	57.18
30-39	122	35.06
40-49	20	5.75
Above 50	07	2.01
<b>Sex</b>		
Female	234	67.24
Males	114	32.76
<b>Marital status</b>		
Married	139	30.94
Single	209	60.06
<b>Religion</b>		
Christians	300	86.21
Moslems	48	13.79
<b>Education level</b>		

Primary	23	6.61
Secondary	18	5.17
Tertiary	307	88.22
<b>Tribe</b>		
Alur	12	3.45
Acholi	30	8.62
Karamajong	7	2.01
Muganda	105	30.17
Mugisu	10	2.87
Mukiga	16	4.60
Munyankole	50	14.30
Musoga	25	7.18
Mutooro	16	4.60
Others	77	22.13
<b>Profession</b>		
Nursing officer	117	33.62
Clinical officer	33	9.48
Counsellor	7	2.01
Data officer	5	1.44
Dentist	20	5.75
Lab personnel	68	19.54
Medical doctor	41	11.78
Midwife	2	0.57
Nutritionist	2	0.57
Pharmacist	3	0.86
Radiologist	17	4.89
Support Staff	33	9.48
<b>Level of adherence</b>		
Adherence	189	54.31
Non-adherence	159	45.69

## 6.2 Adherence Towards COVID-19 Mitigation Measures

The findings of this study indicated that over half of the study participants (54.83% had a good adherence towards COVID-19 mitigation measures. Among the mitigation strategies, hand washing was the commonest one practiced by the respondents (79.89%), while few (33.33%) of the respondents failed to keep the recommended distance of at least 2m. wearing the masks had 66.95% where as the general PPE compliance was at 65.80% as shown in the Table 2 below

**Table 2: Adherence to COVID-19 SOPs by the healthcare workers among KCCAsupported sites within Kampala.**

Variable	Frequency	Percentage
<b>Do you feel you keep the recommended distance by the Ministry of Health of 2m</b>		
Yes	116	33.33
Sometimes	191	54.89
No	41	11.78
<b>Do you practice hand hygiene with soap and water or hand-based sanitiser before and after handling the clients?</b>		
Yes	278	79.89
Sometimes	4	1.15
No	66	18.97
<b>Do you use or wear a mask every time you are with a client or while on the way to and from work?</b>		
Yes	233	66.95
Sometimes	111	31.90
No	4	1.15
<b>Do you use appropriate PPE such as gloves, gowns, overalls, face shields or any other whenever possible</b>		
Yes	229	65.80
Sometimes	110	31.61
No	9	2.59
<b>Overall adherence</b>		
Adherence	189	54.31
Non-adherence	159	45.69

**Note:** The level of adherence of the participant was practicing at least three of four primary preventive measures such as washing hands many times, physical distancing, wearing masks and wearing of protective gear.

### **6.3 Factors Associated with Adherence to COVID-19 SOPs Among the Health Care Workers Within KCCA Supported Sites**

The association between all potential independent variables and adherence towards COVID-19 mitigation measures were analyzed using modified Poisson prevalence ratios. Accordingly, on bivariate binary Poisson regression analysis, predictor variables such as age group, marital status, previous exposure, vaccination status, IPC Training on COVID-19 prevention, profession and tribe were found to significantly influence the adherence of the healthcare workers towards mitigation measures against COVID-19 such as the standard operating procedures. After controlling for confounders in a multivariable modified Poisson regression analysis, age group, profession, tribe previous experience with COVID-19 disease and IPC training were found to significantly affect COVID-19 adherence among the healthcare workers. Hence, respondents aged above 50 years were 1.86 times more likely to adhere to the COVID19 prevention measure compared to other age groups than males towards COVID-19 mitigation measures APR:1.86(CI% 1.225, 2.819).

According to profession data officer's APR:2.36(CI%1.703, 3.288), lab personnel APR:1.494(CI%1.184, 1.885), midwives APR:9.271(CI%5.254, 16.35), nutritionists APR:1.59(CI%1.255, 2.014) and Radiologists APR:1.74(CI%1.171, 2.604) were more likely to adhere to the COVID-19 mitigation measures than the nursing officers. AS per tribe, Acholi APR 0.460(%CI 0.283, 0.748), Karamajong APR 0.275(%CI 0.119, 0.632), Muganda APR:0.616(%CI 0.486, 0.781), Mukiga APR: 0.365(%CI 0.150, 0.886), Musoga APR: 0.401(%CI 0.255, 0.633) and others APR:0.708(%CI 0.553, 0.905). And also, study participants who had previous experience with COVID-19 preventive measures were 1.36 times more likely to adhere towards the mitigation measures against COVID-19 than respondents who had not experienced the disease APR: 1.386(%CI 1.139, 1.687) Furthermore, respondents who had had training in infection prevention were 3.56 times more likely to have good adherence towards mitigation measures against COVID-19 than their counterparts APR:3.560 (%CI 2.139, 5.926). All the results are indicated in the table 3.

**Table 3: Bivariate and multivariate analysis results showing factors associated with adherence to COVID-19 SOPs among healthcare workers within KCCA sites**



Variable	Crude PR(%CI) P-value	Adjusted PR (%CI) P-value
<b>Age group (YEARS)</b>		
21-29	1.0	1.0
30-39	0.75(0.593, 0.940) 0.013*	0.847(0.672, 1.067) 0.159
40-49	1.01(0.694, 1.474) 0.951	1.25(0.877, 1.771) 0.220
>50 years	1.20(0.743, 1.953) 0.450	1.86(1.225, 2.819) 0.004*
<b>Marital status</b>		
Single	1.0	1.0
Marital	0.70(0.562, 0.870) 0.001**	
<b>Religion</b>		
Christians	1.0	1.0
Muslims	1.086(0.837, 1.412) 0.531	
<b>Education level</b>		
Primary	1.0	1.0

Secondary	0.745(0.3702, 1.500) 0.411	
Tertiary	1.061(0.708, 1.590) 0.773	
<b>Profession</b>		
Nursing officer	1.0	1.0
Clinical officer	0.734(0.450, 1.195) 0.213	0.837(0.523, 1.339) 0.458
Counsellor	1.153(.591, 2.248) 0.667	1.156(0.747, 1.787) 0.514
Data officer	2.017(1.679, 2.422) <0.001**	2.36(1.703, 3.288) <0.001**
Dentist	1.008(0.627, 1.622) 0.972	1.475(0.921, 2.363) 0.105
Lab personnel	1.512(1.203, 1.902) <0.001**	1.494(1.184, 1.885) 0.001**
Medical doctor	1.082(0.772, 1.518) 0.647	0.997(0.739, 1.344) 0.985
Midwife	2.017(1.679, 2.422) <0.001**	9.271(5.254, 16.35) <0.001**

Nutritionist	2.017(1.679, 2.422) <0.001**	1.59(1.255, 2.014) <0.001**
Pharmacist	0.672(0.134, 3.374) 0.630	0.98(0.464, 2.087)0.998
Radiologist	1.305(0.878, 1.940) 0.188	1.74(1.171, 2.604)0.006*
Support Staff	0.672(0.401, 1.127) 0.132	0.99(0.640, 1.551)0.989
<b>Tribe</b>		
Alur	1.0	1.0
Acholi	0.4(0.223, 0.705) 0.002*	0.460(0.283, 0.748)0.002*
Karamojongo	0.342(0.103, 1.138) 0.08	0.275(0.119, 0.632)0.002*
Muganda	0.64(0.469, 0.872) 0.005*	0.616(0.486, 0.781) <0.0001**
Mugisu	0.96(0.643, 1.433)0.842	0.784(0.484, 1.269) 0.322
Mukiga	0.30(0.123, 0.728)0.008**	0.365(0.150, 0.886)0.026*
Munyankole	0.792(0.573, 1.093)0.156	0.803(0.613, 1.053)0.114
Musoga	0.528(0.316, 0.879)0.014***	0.401(0.255, 0.633) <0.001**
Mutooro	0.900(0.615, 1.316)0.587	0.951(0.712, 1.269) 0.733
Others	0.670(0.485, 0.924)0.015***	0.708(0.553, 0.905)0.006*
<b>Vaccination status</b>		
Yes	1.0	1.0
No	0.967(0.624, 1.499)0.88882	0.994(0.735, 1.661)0.534
<b>Previous experience to COVID-19</b>		
Had COVID-19	1.0	1.0
No	0.967(0.623, 1.499)0.88	1.386(1.139, 1.687)0.001*
<b>IPC training</b>		
Yes	1.0	1.0
No	3.228(1.96, 5.306)0.001**	3.560(2.139,5.926) <0.0001**

## **CHAPTER 7: DISCUSSION**

### **7.1 Introduction**

This study assessed the adherence of the healthcare workers among the KCCA facilities towards COVID-19 mitigation measures since the beginning of the outbreak in Uganda on March 21<sup>st</sup>, 2020. Since the emergence of the COVID-19 pandemic, there is no definitive treatment found although the vaccination has been discovered. Therefore, the best alternative to control the spread of this pandemic is adherence towards the COVID-19 preventive measures such as the SOPs put by the Ministry of Health.

### **7.2. Adherence to COVID-19 SOPs among the healthcare workers**

Accordingly, the study revealed that the overall adherence to the COVID-19 mitigation measures was 54.31%. Of the specific mitigation measures, 79.89% of the respondents reported that they had been frequently washing their hands with water and soap, which is comparable with the two studies conducted in Jimma, Ethiopia (76%) (Assefa, Melaku et al. 2020) and (77.3%) (Kebede, Yitayih et al. 2020). However, the result of our study is lower than studies carried out in China (79.44%) (Zhou, Lai et al. 2020), Kansans, USA, (97%) (Geana 2020), Egypt (87.6%) (Mansuri, Zalat et al. 2020), and Malaysia (87.8%) (Miguel and González). The possible explanation may be due to the differences in the study population, socio-demographic characteristics and the measurement tools used across the studies. Also, the study participants of the study conducted in China had taken education about hand hygiene and other infection control measures (Zhou, Lai et al. 2020). As a result, the healthcare workers who have prior knowledge and experience as well as the training might increase their adherence towards mitigation measures against COVID-19. Furthermore, there is intermittent water supply in most parts of Uganda and limited hand washing facilities which in turn negatively affected the adherence of the healthcare workers towards hand hygiene in Uganda.

As such, this study noted that 33.33% of the respondents reported that they had been keeping the recommended social distancing of 2m in the health facilities or while at their homes. This finding is higher than a study conducted in Uganda in May 2020 (90%) on physical distancing (Amodan, Bulage et al. 2020). The reason for the difference in the findings is that at the beginning the government had imposed a lockdown where the people were not allowed to move and public transport was not allowed while at the time of conducting this study, the restrictions

had been relaxed hence the difficulty in keeping social distance. Nevertheless, this finding is lower than studies done in Egypt (87.1%) (Mansuri, Zalat et al. 2020) and Malaysia (83.4%) (Miguel and González). The possible explanation for the difference might be the living conditions in our study setting, there is mostly high social and physical interaction leading to overcrowding. Moreover, the infection emerged earlier in Egypt than in Uganda which forced the Egyptians to put up the preventive measures and ensure social distancing to its population. Hence, our study participants were negatively influenced by the above conditions regarding the adherence to keeping the recommended social distance of at least 2m.

This study found that the adherence of healthcare workers towards wearing a facemask as a mitigation measure was, 66.95% of the study participants used a face mask while at worker going out of their homes which is lower than studies conducted in the USA (77%) (Geana 2020) and Egypt (71%) (Mansuri, Zalat et al. 2020). The possible reasons could be that the two studies were conducted in different countries with the different economic power where the health care workers relied on the masks from the Ministry of Health Uganda since most of the respondents might not afford facemasks to use daily when compared to residents of the USA and Egypt.

### **7.3 Factors Associated with Adherence to COVID-19 SOPs Among the Health Care Workers Within KCCA.**

This study identified that age group, profession, tribe, previous experience with COVID-19 disease and training in infection control and prevention had statistically significant associations with good adherence towards COVID-19 mitigation measures while sex, religion, Marital status and vaccination status were not statistically significantly associated with adherence to COVID-19 SOPs among the healthcare workers.

Accordingly, female respondents were 2.39 times more likely to have good adherence towards the mitigation measure for COVID-19. This finding is in line with studies conducted in the Netherlands (Nivette, 2021), Cyprus (Solomon, 2020, and the United States (Van Rooij, 2020) which found that female health workers were more likely to adhere to the preventive measures for COVID-19 Compared to males. The possible justification might be the majority of males work outside their homes by moving from one place to another place. As a result, mitigation measures might not be available and suitable for each place. In addition to this, because males move from place to place more often, they use transportation services, which will be difficult to comply with physical distancing. On the other hand, in our context, females bear a huge burden of childcare, so they may fear transmitting the disease to their children if they didn't

adhere towards the proper mitigation measures. Therefore, females might implement greater adherence towards mitigation measures for COVID-19.

This study showed that the respondents who had training in infection control and prevention were 3.5 times more likely to have good adherence towards COVID-19 mitigation measures than their counterparts. This finding is similar to a study conducted in the Netherlands ((Nivette, 2021) which revealed that healthcare workers who had had training in infection control and prevention were more likely to adhere to the COVID-19 sops than their counterparts.

This study found that the respondents aged above 50 years were 1.86 times more likely to adhere to the COVID-19 measures compared to other age groups of health workers. This finding agrees with the finding from Ghana (Ashinyo, 2021), which indicated that health workers above the age of 49 were more adherence to COVID-19 IPC than the younger healthcare workers. The explanation for this is that adults where are more likely to get the severe effects of COVID-19 disease hence the need to protect themselves. Healthcare workers above 50 years also have more experience and were more likely to adhere to the Standard operating procedures than their counterparts.

According to the profession, the Data officer, lab personnel, midwife and nutritionists and radiologists were 2.36, 1.49, 9.27, 1.59 and 1.74 were more likely to adhere to the COVID-19 measures and SOPS compared to the nursing officers. This finding contradicts the study done in Ghana where they indicated those midwives had lower odds of adherence to the COVID-19 SOPs than the nursing officers. The explanation could be the difference in the time of studies and also the KCCA facilities are smaller hence all the healthcare workers could have been trained in the Prevention of the disease since they are all exposed equally.

The other significant factor affecting the adherence of the healthcare workers towards COVID19 mitigation measures in this study was the attitude towards COVID-19 and their previous experience with COVID-19 disease. In this regard, the respondents who had not had the disease or had a relative with the disease were 1.386 times more likely to adhere towards the mitigation measures than respondents who had suffered from the disease. This result agrees with a study carried out in Uganda during the first outbreak of COVID-19 (Amodan, 2020) which indicated that being worried and not having the disease were more likely to adhere to preventive measures than those who had experienced it the plausible explanation might be due to the link between the high-risk perception of COVID-19 and anxiety. This finding is in

contrast with a study conducted in the United States (Wise, 2020) which revealed that as individuals' perception of risk increases, they highly engage in risk prevention behaviors. Additionally, this finding is also in contrast with a study done in the United Kingdom (Brooks, 2021) and Slovenia which showed that desensitization to risk or genuine reductions in risk might lead to a reduction in mitigation measures utilization.

### **7.3 Contextualizing the results to current times and future policy implications.**

Since the vaccination for COVID-19 started in March 2021 coupled with intermittent lockdowns in the country, the prevalence of the infection has been on average below 5% among the general population.

However, for future outbreaks and epidemics there should be a policy on ensuring implementation of the infection control and prevention, developing a strong surveillance system and support the facilities with enough PPE for protection.

### **7.4 Conclusions**

Findings have indicated that nearly half of the study participants had poor adherence towards COVID-19 preventive measures across all the six KCCA-supported facilities within Kampala. The study further found out that age group, professional previous experience and training on IPC were factors which significantly influenced the adherence of the healthcare workers towards COVID-19 Preventive measures and SOPs.

### **7.5 Recommendations**

The following are the main recommendations based on the study findings.

#### **To the MoH Uganda**

1. The Ministry of Health should ensure they develop policy on future outbreaks prevention and keep track of adherence responses to COVID-19 measures.

#### **To KCCA**

1. Increase awareness of COVID-19 prevention and mitigation strategies through appropriate information outlets such as mainstream media on prevention strategies of COVID-19, and rely on updating information from TV, radio, and healthcare workers about COVID-19.

#### **To healthcare workers**

2. healthcare workers should ensure the use of PPE all the time while working to avoid hospital-acquired infections and future outbreaks since most healthcare workers are at risk.
3. Ensure every healthcare worker gets immunized against COVID-19 disease
4. Develop and functionalize IPC committees in all health facilities to reduce the chances of infections within the hospital.

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## APPENDICES

### Appendix I: Consent Form

#### Introduction

Good morning/afternoon Sir/Madam. My name is....., from Makerere University School of Public Health in collaboration with the Health Team. We are conducting a study to assess the level of compliance with the SOPs for COVID-19 prevention among health workers. You have been chosen to take part in the study to give your opinion and views.

#### Procedure

A questionnaire will be administered to you by the research assistant who will read to you the questions. A question can be read again if it is not clear to you. You will tell the researcher your answer to the question. The interview will take not more than 20 minutes. We shall be grateful for your participation. **Benefits and risks**

The information provided by you will be used only for this study and will also be used to come up with appropriate recommendations concerning the adherence to COVID-19 SOPs and coming up with proper policies. Apart from the extra time you will spend with the research assistant for the interview, there are no risks expected. **Confidentiality**

All the information obtained from you during the study will remain confidential and only accessed by the principal investigator. Your name will not be recorded anywhere during the study or report findings. So please feel free to answer the questions.

#### Voluntary consent.

Your participation in this study is completely voluntary. Feel free to ask any questions before or after the interview. You are also free to withdraw from the study at any time or decline to participate in the study and you will not be penalized if you decide to do so.

I have read the above or the above has been read to me and I have understood it. I hereby do agree to participate in the study.

Respondent's signature: \_\_\_\_\_ Date: \_\_\_ / \_\_\_ / \_\_\_

Interviewers Signature: \_\_\_\_\_ Date: \_\_\_ / \_\_\_ / \_\_\_

For more information about the study, please contact **Kato Gerald on**

0774041240/0706733703

### Appendix II: Questionnaire

**ASSESSMENT OF PREVALENCE AND LEVEL OF COMPLIANCE TO THE COVID-19 SOPS AMONG THE HEALTH WORKERS IN THE KCCA SUPPORTED PUBLIC HEALTH FACILITIES.**

**1. Respondent’s socio-demographic characteristics**

No	Question	Response	Code
1	Age category	20-24	1
		25-29	2
		30-34	3
		>35	4
2	For how long have you worked?	less than 1 year	1
		1 - 5 years	2
		6 - 10 years more	3
		than 10 years	4
		None	5
3	What is your marital status?	Married/ cohabiting	1
		Single widowed	2
		Divorced/	3
		separated	4
5	What is your religion	Anglican	1
		Catholic	2
		Moslem	3
		Born again	4
		Others	5
6	What is your highest level of education attained?	None	1
		Primary	2
		Secondary	3
		Tertiary	4
7	What is your tribe	Muganda	1
		Musoga	2
		Munyankole	3
		Mukiga	4
		Mutooro	5
		Acholi	6
		Alur	7
		Karamajongo	8
		Mugisu	9
		Others	10
8	Profession	Medical doctor	1
		Laboratory personnel	2

		Nursing officer	3
		Dentist	4
		Radiologist	5
		Clinical officer	6

## 2. PPE Availability

No	Question	Response	Code
201	Do you have access to gloves when required	Yes No	1 2
202	If yes how often do you wear the gloves	Always Sometimes	1 2
203	Do you have access to face shield/goggles/eye protection	Yes No	1 2
204	If yes how often do you wear the eye protection	Always Sometimes No	1 2 3
205	Do you have access to Gown that befits your role in the facility	Yes No	1 2
	If yes how often do wear a gown	Always Sometimes No	1 2 3
206	Do you have access to enough masks?	Yes No	1 2
207	If yes how often do you use masks	Always Not always No	1 2 3 3
	Which type of mask do you use	N95 Respirator mask Surgical mask Cotton masks Others	1 2 3 4
	Which type of mask do you feel is appropriate for your job at the facility during COVID-19 outbreak?	N95 Respirator mask Surgical mask Cotton masks Others	1 2 3 4
	Are you satisfied with the use of PPE in your area	Yes No Somehow	1 2 3

### 3 training on adherence to SOPs to prevent COVID-19

No	Question	Response	Code	Skip
301	Have you been trained on the adherence to SOPs for the prevention of COVID-19?	Yes No	1 2	If No go to 304
302	If yes, when were you last trained	< 3 months ago <6 months ago 1 year ago,		
303	Do have CME on how to practice and follow the SOPs on COVID-19 prevention	Yes No		
304	Have you been trained on how to handle the COVID-19 suspects at your facility?	Yes No		If No go 313
	Have you been trained in infection control and prevention	Yes No		
	If yes, when were you last trained	< 3 months ago <6 months ago 1 year ago		

### 4. Availability of hand washing facilities

4.01	Do you have water,	Yes No	1 2	
	How often is water available at your facility	Always Sometimes No	1 2 3	
	Do you have Soap?	Yes No	1 2	
	How often is soap available for use at your facility	Always Sometimes No	1 2 3	
	Is alcohol-based hand sanitizer available at your workstation	Yes No	1 2	
	Do you wash hands while at work or use alcohol-based sanitizer after every client or activity?	Always Sometimes No	<b>1</b> <b>2</b> <b>3</b>	
	Did you receive formal training in hand hygiene in the last three years?	Yes No	<b>1 2</b>	

	Do you routinely use an alcohol-based hand rub for hand hygiene?	Yes No	<b>1</b> <b>2</b>	

	Which of the following is the main route of cross-transmission of potentially harmful germs between patients in a healthcare facility? ( <i>tick one answer only</i> )	Healthcare workers' hands when not clean Air circulating in the hospital Patients' exposure to colonized surfaces (i.e., beds, chairs, tables, floors) Sharing non-invasive objects (i.e., stethoscopes, pressure cuffs, etc.) between patients	<b>1</b> <b>2</b> <b>3</b> <b>4</b>	
	What is the most frequent source of germs responsible for healthcare-associated infections? ( <i>Tick one answer only</i> )	The hospital's water system The hospital air Germs already present on or within the patient The hospital environment (surfaces)	1 2 3 4	
	Which of the following hand hygiene actions prevents the transmission of germs <u>to the patient</u> ?  Before touching a patient  Immediately after a risk of body fluid exposure  After exposure to the immediate surroundings of a patient  Immediately before a clean/aseptic procedure	Yes No  Yes No  Yes No  Yes No		
	What is the minimal time needed for alcohol-based hand rub to kill most germs on your hands? ( <i>Tick one answer only</i> )	20 seconds 3 seconds 1 minute 10 seconds	<b>1</b> <b>2</b> <b>3</b> <b>4</b>	

	Which of the following should be avoided, as associated with increased likelihood of colonization of hands with harmful germs?  Wearing jewelry Damaged skin	Yes No		
	Artificial fingernails  Regular use of a hand cream	Yes No  Yes No  Yes No		

### 5. Previous experience with the COVID-19 Disease

No	Question	Responses	Code	Skip
1	Have you had the disease before or do you have a relative who has been sick from COVID-19	Yes No	1 2	
2	Did the above experience change your level of adherence to the set SOPs for COVID-19 prevention?	Yes No	1 2	

### 6. Respondents 'Attitudes

**Note: Interviewer read out:** In the next couple of statements, I am interested in hearing your opinion on adherence to COVID-19 SOPs. Please tell me your opinion, whenever I say 'I' I am referring to 'YOU'. On a scale of 0 to 3 where 0= strongly disagree; 1= disagree; 2= agree and 3= strongly agree, what is your opinion on the following statements on adherence to COVID-19 prevention SOPs

NO	ITEM	Strongly agree	Slightly agree	Slightly disagree	Strongly disagree
1	I have been given enough training on the COVID-19 prevention within health centres	3	2	1	0



2	I have been well facilitated with the guidelines on the Sops for COVID19 prevention.	3	2	1	0
3	When fully implemented the COVID SOPS can greatly reduce the infections	3	2	1	0
4	I am fully responsible for implementing the COVID-19 in the hospital	3	2	1	0
5	It is very hard to implement the guidelines and SOPs	3	2	1	0
6	I have been given enough PPE during the working hours.	3	2	1	0

#### 7. Vaccination status

No	Question	Responses	Code	Skip
1	Have you been vaccinated	Yes No	1 2	
	Have you completed the doses?	Yes No	1 2	

#### 8. Adherence to SOPs

No	Question	Responses	Code	
1	Do feel you keep the recommended distance of at least 2m as recommended by the Ministry of Health	Yes Sometimes No	1 2 3	
2	Do you practice hand hygiene with soap and water or alcohol-based hand rub before and after handling a client?	Yes Some times No	1 2 3	

3	Do you use or wear a mask every time you are with a client or while on the way to and from work?	<p style="text-align: center;">Yes</p> <p style="text-align: center;">Sometimes</p> <p style="text-align: center;">No</p>	<p style="text-align: center;">1 2</p> <p style="text-align: center;">3</p>	
4	Do you use appropriate PPE such as gloves, gowns, overalls, face shields or any other whenever possible	<p style="text-align: center;">YES</p> <p style="text-align: center;">Sometimes</p> <p style="text-align: center;">NO</p>	<p style="text-align: center;">1</p> <p style="text-align: center;">2 3</p>	

### Appendix III: Budget

Budget line	Budget item	Number	Unit cost (UGX)	Total cost (UGX)	Justification
<b>Supplies</b>	Flip charts	4 charts	20,000	80,000	Training research assistants, 2 flip charts per day for 2 days,
	Flip stand	1 stand	10,000	10,000	For holding the flip charts
	Markers	1 box	20,000	20,000	For use during training
	Pens	1 box	15, 000	15,000	For research assistants, and PI. To be used in training, data management and analysis
	Pencils	1 box	5,000	5,000	For research assistants, and PI. To be used in training, data management and analysis
	Notebooks	5 books	6,000	30,000	1 for PI, 1 for supervisor, and 3 for research assistants.
	File folders	4 folders	5,000	20,000	for filing documents including completed questionnaires
	Clipboards	4	2,500	10,000	To be used by the research assistants during data collection.
	Bunching machine	1	10,000	10,000	To be used by the research assistants during data collection.
	Stapling machine	1	5,000	5,000	To be used by the research assistants during data collection.
	Duplicating paper	7 reams	21,000	147,000	5 copies of the research proposal, 428 copies of the questionnaire & consent form, & 15 copies of the study report
	<b>Personnel (allowances)</b>	trainer	1	45,000	90,000
Trainees		4	25,000	200,000	Research assistants and a
					supervisor to be trained on how to collect data and enter data for 2 days.
Research assistants		3	30,000	630,000	They will help in data collection and data entry for 7 days.

	Principal investigator	1	65,000	455,000	coordinates the whole process of data management for the 7 days
<b>Transport &amp; communication</b>	Field trips during data collection	48 trips	20,000	480,000	3 Research assistants will make one trip each day for 7 days and the PI will make 3 supervision trips
	Trips to Mulago	3 trips	60,000	180,000	Seeking technical advice from supervisors and other supporters
	Air time	3 months	60,000	180,000	for consultations and coordination of activities
	Internet	3 months	180,000	540,000	Literature search/review
<b>Facilities</b>	Training venue	1	100,000	200,000	Training of research assistants for 2 days
	Dissemination venue	1	150,000	150,000	The community will be informed about the findings of the study
<b>Services</b>	Typing and printing		30,000	150,000	1 copy of the proposal, questionnaire, consent form, and research report
	Photocopying			500,000	454 copies of the consent form, 454 copies of the questionnaire, and 15 copies of the study report.
	Break tea and lunch	5	20,000	200,000	Both the trainer and the trainees will be provided with break tea and lunch during training which will take 2 days
	Data analysis and interpretation	2 persons for 5 days	70,000	700,000	Technical input from a statistician for analysis and interpretation
<b>Total</b>				<b>5,007,000</b>	

#### Appendix IV: Workplan

Tasks and Responsible Person (s)	March-April	June 21 Feb 22	March – November 2022 (10 weeks)										
			Wk 1	Wk 2	Wk 3	Wk 4	Wk 5	Wk 6	Wk 7	Wk 8	Wk 9	Wk 10	
Developing concept paper													
Developing full proposal													
IRB approval													
Training research assistants													
Pre-testing tools and modification (PI & RA)													
Data collection and entry (PI & RAs)													
Data analysis & interpretation													
Report writing													
Submission of findings													

PI=Principal investigator. RAs=Research assistants. WK= Week

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**SCHOOL OF PUBLIC HEALTH**

Department of Disease Control & Environmental Health

31<sup>st</sup> October 2023

The Director

Directorate of Research and Graduate Training

Makerere University

Kampala, Uganda

Dear Sir / Madam,

**RE: CORRECTION OF THE DISSERTATION BY KATO GERALD (2018/HD07/3153U) FOR  
MASTER OF PUBLIC HEALTH DEGREE**

Kato Gerald was recently examined on his research titled “ASSESSING THE LEVEL AND DETERMINANTS OF ADHERENCE TO COVID-19 PREVENTION STANDARD OPERATING PROCEDURE AMONG HEALTH WORKERS IN KCCA-SUPPORTED HEALTH FACILITIES IN KAMPALA, UGANDA”.

I was subsequently appointed by the committee to oversee corrections as suggested by the examiners. This is now to confirm that Kato Gerald has made all the corrections as stipulated to my satisfaction hence he may go ahead and submit the final report for the award of the Master of Public Health degree of Makerere University.

Yours sincerely,

A handwritten signature in blue ink, appearing to read "Musoke", with a horizontal line underneath.

Dr. David Musoke

**Senior Lecturer, Department of Disease Control and Environmental Health**