MAKERERE UNIVERSITY

COLLEGE OF HEALTH SCIENCES

SCHOOL OF PUBLIC HEALTH

FACTORS ASSOCIATED WITH STUDENTS' ADHERENCE TO COVID-19 STANDARD OPERATING PROCEDURES AFTER THE SECOND WAVE PEAK OF 2021 IN SECONDARY SCHOOLS IN MALABA, TORORO DISTRICT

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DECLARATION

I Wanzira Deborah, declare that the information given in this dissertation is the original of my own and has never been submitted to any other institution for consideration, publication, or other use.

Signature:  Date: 02/12/2023

Wanzira Deborah

APPROVAL

We do acknowledge that the dissertation was written under our guidance and supervision, and is therefore, ready for submission to Makerere University School of Public Health as partial fulfilment of the requirement for the award of a Master of Public Health.

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DEDICATION

This dissertation is dedicated to my late father Dr. Wanzira Joshua who was glad to have seen me start this journey. To my big brother Dr. Wanzira Humphrey for believing in me and to my loving mother Mrs. Wanzira Mary for her continuous support. To my dear brother Wanzira Joshua Junior for walking the journey with me in class and for the continuous support.

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ACRONYMS AND ABBREVIATIONS

CDC	Centre for disease control and prevention
COVID-19	Coronavirus disease
Dhis2	District health information system
IHR	International Health Regulations
MoES	Ministry of Education and Sports
MOH	Ministry of Health
NGOs	Non-governmental organizations
RAs	Research Assistants
SARS-CoV-2	Severe acute respiratory syndrome coronavirus 2
SOPs	Standard Operating Procedures
UNICEF	United Nations International Children's Fund
UV	Ultra-Violet
WHO	World Health Organization

OPERATIONAL DEFINITIONS

Adherence: the action of continuing to obey rules or guidelines.

COVID-19: an acute respiratory illness in humans caused by a coronavirus, capable of producing severe symptoms and in some cases death, especially in older people and those with underlying health conditions.

Face masks: A protective mask covering the nose and mouth or nose and eyes.

Hygiene: The maintenance of hand hygiene by washing with soap and water or using alcohol-based hand sanitizer.

Physical distance: Maintaining at least 2-meter distance between students.

Respiratory etiquette: Covering mouth and nose opening with clean personal cloth or using an elbow whencoughing or sneezing.

Stakeholder: A person who is affected or impacted by COVID-19 in schools.

Standard operating procedures: These are a specific set of practices that are required to be initiated and followed when specific circumstances arise.

Surveillance: The continuous, systematic collection, analysis, and interpretation of health-related data.

ABSTRACT

Background

In June 2020, standard operating procedures (SOPs) for COVID-19 were released by Ministry of Health. Understanding how schools in Malaba Town Council, Tororo district handled preventative measures was essential given the likelihood that Malaba border served as a significant entry point for new COVID-19 cases entering Uganda.

Objective

To determine the factors associated with students' adherence to COVID-19 SOPs after the second wave of 2021 in secondary schools in Malaba town council,Tororo district with an aim of providing feasible recommendations for improving adherence to the SOPs among students

Methodology

A cross-sectional mixed methods study design was conducted in Malaba town council, Tororo district, with 386 participants chosen through simple random sampling. Adherence to COVID-19 SOPs was the outcome variable categorized into good and poor adherence. Quantitative data were analyzed in STATA version 14.0 to obtain school factors associated with adherence to COVID-19 SOPs. Stakeholders were chosen for one-on-one interviews where purposive sampling was used to select key informants. Thematic analysis was performed on the qualitative data collected in ATLAS.ti.

Results

Adherence to COVID-19 SOPs was 73.8% overall. Students were 2.36 times more likely to follow the SOPs if there were hand washing facilities at the entrances, exits, within classrooms, and within 5 meters of toilets/latrines (aPR = 2.36; 95% CI 1.28-4.38). The significance of clear communication and guidance from school leadership about COVID-19 SOPs was stressed by key informants in ensuring smooth implementation of COVID-19 SOPs in schools. They emphasized that with more COVID-19 information given to students, there was better adherence to SOPs and to supervise implementation, active observation of behaviors, practices and routine inspections were required. The fear of infection was found to be an important factor in adherence coupled with peer pressure and social norms. Additionally, insufficient resources were a great setback in implementation of COVID-19 SOPs as observed by stakeholders.

Conclusion

After the second wave peak in 2021, the study discovered that the majority of students followed COVID-19 SOPs. This was mostly so because of the availability of hand washing facilities at

entrances and exits, supervision through active observations of student behaviors and continuously giving COVID-19 related information to students. The fear to get infected with COVID-19 among students also further contributed to adherence to COVID-19 SOPs. From the findings, resource unavailability in form of money, personnel and equipment played a big role in limiting students from adhering to COVID-19 SOPs.

CHAPTER 1: INTRODUCTION AND BACKGROUND

1.1 Introduction

Coronavirus disease (COVID-19) is an infectious disease caused by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) virus. On 31 December 2019, the World Health Organization (WHO) China Country Office learnt of cases of pneumonia of unknown etiology (unknown cause) detected in Wuhan City, Hubei Province of China (Who, 2020). The WHO declared COVID-19 a global pandemic on 11 March 2020 (Cucinotta and Vanelli, 2020). The Government of Uganda thereafter instituted strict restrictions and diverted personnel and resources to minimize the spread of SARS-CoV-2 and mitigate the economic burden of the pandemic. On 18 March 2020, mass gatherings were suspended, and a 14-day quarantine was imposed on all travelers arriving in Uganda (Namuganga et al., 2021) because the risks of getting COVID-19 are higher in crowded and in inadequately ventilated spaces where infected people spend long periods close together. In the first wave in Uganda, most COVID-19 cases were mild and the mortality rate was extremely low. In mid-April 2021, Uganda started facing the second wave of the Covid-19 pandemic, mainly driven by the delta (B.1.617.2) variant which was more fatal (Bongomin et al., 2021).

Combatting a virus to which the population at large had no immunity, which is highly contagious forced countries to recognize the importance of foundational measures of disease control. 'Physical distancing' and 'physical isolation, accompanied by hand washing and infection prevention and control measures like wearing face masks became the main responses. Hands offer a conducive environment for virus survival as they contain creases that protect against exposure to viricidal ultra-violet (UV) light, specifically UV-C (Howard et al., 2020). According to infectious disease expert and senior scholar at the Johns Hopkins Centre for Health Security, Amesh A. Adalja, MD, "Face masks can help protect against many respiratory infections that are spread through the droplet route, and that includes coronavirus and the flu" (Humphreys, 2020).

In the absence of a vaccine or effective therapeutic drugs for school children, preventive measures such as good hygiene practices — hand washing, cough etiquette, disinfection of surfaces and social distancing represent the major weapons against COVID-19 (Gray et al., 2020). These are the means of preventing and controlling infectious diseases which have the advantages of simple operation, strong sustainability, high health benefits, and good health economic benefits, especially

in schools (Chen et al., 2020). Messaging precisely targeting children who may well be acting as "silent" transmitters of COVID-19 was put in place. This is important now during the time of learning to live with COVID-19 and, most importantly, to reinforce and habituate good hygiene practices long-term to avoid rebound infections, given the pandemic is still present. Targeting secondary schools with COVID-19 prevention measures helps generate feasible recommendations for improving influenza prevention and considerably helps reduce COVID-19/Influenza co-morbidity; in addition, it helps provide a targeted explanation to help minimize fear and anxiety in school children (Gray et al., 2020).

The Ministry of Education and Sports (MoES) developed "Guidelines for the phased re-opening of education institutions" that required the Ministry of Health (MoH) to provide complimentary Standard Operating Procedures (SOPs) outlining the mechanisms for maintaining sustained risk communication, infection prevention, surveillance in education institutions, psychosocial support, and linking the education institution COVID-19 control activities to the District Task Force (Ministry of health, 2021b).

1.2 Background

In 2019, the coronavirus disease (COVID-19) started affecting life around the globe and schools were no exception. Worldwide school closures, alongside other secondary impacts of the COVID-19 pandemic, were anticipated to have far-reaching implications in the short and the long term for children, their families, and their communities. Education has been a particularly challenging issue in the context of the pandemic. On the one hand, school environments risked high rates of COVID-19 transmission, and closures were perceived as necessary measures to protect public health. On the other hand, the linkages between schools and children's health, safety, and life prospects were significant (Acaps, 2020). Nearly every country executed full or partial school closures in 2020 as part of social distancing and lockdown efforts to decrease the transmission of SARS-CoV- 2 during the COVID-19 pandemic.

Globally, an estimated 1.5 billion children and adolescents below 20 years were out of school in early 2020 during the first COVID-19 wave (February/March to May/June 2020). Some countries did not fully go back to in-person learning in 2020, and many closed schools again in early 2021 in response to new SARS-CoV-2 variants (Viner et al., 2022).

School settings bring children and young adults of different age groups together in close quarters;

they share teaching rooms, sports, and other community facilities. It has been revealed that children have a higher number of social contacts than adults, which is also related to school settings. Similarly, school staff have a large number of contacts with pupils as well as other staff. These contacts may result in the transmission of infectious diseases (Cornelia Adlhoch, 2020). Measures that could be taken by schools to prevent the entry and spread of COVID-19 by students and staff who may have been exposed to the virus as recommended by WHO, United Nations Children's fund (UNICEF) and the International Federation of Red Cross and Red Crescent Societies (IFRC) , while minimizing disruption and protecting students and staff included; promote and demonstrate regular hand washing and positive hygiene behaviors and monitor their uptake, post signs encouraging good hand and respiratory hygiene practices, introduce the concept of social distancing (standing further away from friends, avoiding large crowds, not touching people if you don't need to, etc.) and wearing a well-fitting face mask to cover the mouth and nose.(Control and Prevention, 2022)

Education is considered to be a powerful tool for growth throughout many sectors in Uganda. The country has even labeled education as a key factor for driving social growth, economic development, and transformation since it gained political independence, as well as helping to achieve a more united nation and democratic reforms (Fanelli et al., 2020). On March 21, 2020, Uganda confirmed its first SARS-CoV-2 infection in a Ugandan traveler from the United Arab Emirates. By April 15, 2020, 54 cases had been reported in the country (Migisha et al., 2020). The COVID-19 pandemic has greatly affected the education sector in Uganda. The initial lockdown that was instituted in March 2020 saw over 15 million learners kept out of school for over 5 months. Despite government interventions that included the distribution of self-study materials and the use of online, televised, and radio classes, most learners especially in rural areas could not access these learning alternatives due to limited availability of power and internet connectivity, as well as engagement of learners in domestic work during school hours (Amuha, 2021).

SOPs on COVID-19 prevention were introduced in June 2020 and by 15th Oct 2020, the SOPs had been revised to suit the phased re-opening especially since cases had been registered by type of school that included: primary school-180.17%, secondary school-275.27%, nursing school-402.40%, institute-75.7%, and university-67.7% between 15 October 2020 to 05 June 2021.

Schools that teach foreign/international syllabuses were allowed to re-open to all learners with precaution. Likewise, schools that teach the local syllabus were allowed to re-open for candidate classes and final-year learners (Ministry of health, 2021a).

In this regard, the re-opening of schools was tied to the establishment of strict adherence to standard operating procedures for learning institutions for preventing the spread of COVID-19, such as social distancing, the mandatory wearing of masks, hand hygiene, and surveillance mechanisms like reporting, response, and monitoring (Dhis2.org, 2021). These SOPs involved correct wearing of recommended face masks by those inside and outside the education facility, promoting physical distancing at school to maintain at least two meters distance apart at all times within and outside classrooms, post signs with visual cues and school-wide announcements on how COVID-19 is transmitted, encouraging the use of hand sanitizer and washing hands with water and soap, screening and managing sick students and allowing only essential visits by parents or other outsiders to the education facility.(Ministry of health, 2021b)

Since the emergence of the delta (B.1.617.2) variant in the country, there was an exponential increase in the number of COVID-19 cases, with a substantial proportion of cases requiring hospitalization and some dying of the disease (Bongomin et al., 2021). MOH, in collaboration with MoES, developed SOPs for institutions of learning during the COVID-19 pandemic to provide practical guidance on establishing and operating a safe learning environment in educational institutions in the context of the ongoing COVID-19 pandemic. Surveillance in schools was introduced to monitor illness symptoms among learners and staff, detect outbreaks of COVID-19 and monitor progress toward measures to prevent transmission of the disease. The surveillance activities were integrated into the broader Health Information System (Dhis2.org). At the time schools reopened, these measures were very strict and kept by all stakeholders to make the school environment safe (Ministry of health, 2021b).

The protection of children and educational facilities was been important and precautions were necessary to avert the likely spread of COVID-19 in school settings. Therefore, it was crucial to understand how schools coped with the continuity of operations with surveillance and prevention measures. Education Institutions have multiple points of interaction and activities that expose learners and staff to the risk of infection. Such points of crowding and high interaction among

persons of unknown risk profiles include; day scholars, suppliers, teachers, cooks, cleaners,security personnel, visitors, and strangers. The community transmission and risk of transmission from asymptomatic (60-80%), day schooling, and the resultant interactions among learners from multiple households could amplify transmission in a silent outbreak to other people (Ministry of health, 2021a). Since the support system is not enough to sustain investment in public health capacity and health system capacity in terms of facilities, supplies, and workforce (Han et al., 2020). It is therefore important to keep the risk of contracting COVID-19 at a minimum and the safety and well-being of the children at the center (Ministry of health, 2021a).

Tororo district hosts the Malaba border point of entry which is the doorway from the Republic of Kenya to South Sudan, Rwanda, Burundi, and the Democratic Republic of Congo. It also hosts several cement industries and food stores of the World Food Programme among others. The Malaba border could potentially be the main entry point for a new variant of COVID-19 into Uganda. This geographical location and the economic and social interactions were sufficient to cause anxiety and worry for public health experts dealing with a very unpredictable disease (Who, 2021).

CHAPTER 2: LITERATURE REVIEW

2.1 Why COVID-19 SOPs in schools

In school settings there is usually heavy human traffic and congestion is high which may be a challenge and therefore increase the risk for transmission of COVID-19 infections since there are still many unanswered questions concerning children and COVID-19. Therefore, institutions, teachers, and students continue to look for flexible ways to repair the damage caused by COVID-19's interruptions to learning trajectories. Moreover, the return to normality is not a simple one-time transition to life as it used to be. All institutions are deriving benefits from the mechanisms that have been put in place to continue their education and training missions in a time of crisis (Daniel, 2020). The return of most students to school in countries with higher levels of community transmission (Germany) was accompanied by increased transmission among students. After reopening schools in Israel, there were several outbreaks of SARS-CoV-2 in schools that resulted in those schools being closed (Guthrie et al., 2020).

2.2 Adherence to COVID-19 SOPs by students

In a study by (Kaiser et al., 2021), leaders reported that removing masks sometimes persisted after eating or drinking and also occurred during circumstances in which children were more physically active. Frequent reminders facilitated masking, including both verbal and visual reminders like post signs. Staff also provided education on the consequences of not wearing masks and on hub policies regarding masking. These efforts prompted a feeling of collective responsibility, with children sometimes reminding each other to mask. When children's masks became soiled, it was also helpful to have extra supplies on hand (Kaiser et al., 2021). In addition, a study by (Kumar et al., 2021) ascertains that the majority of students (49.78%) had the higher level of knowledge of COVID-19 guidelines while 26.67% and 23.55% of students had a moderate and lower level of knowledge, respectively which influenced their compliance to COVID-19 guidelines (Kumar et al., 2021). A study conducted by (Mwesige et al., 2021) also went ahead to recommend more studies on; Adherence to facemask use in education institutions including qualitative studies to understand the salient issues that could explain the adherence levels (Mwesige et al., 2021).

2.3 Factors that determine student's adherence to COVID-19 standard operating procedures in secondary schools

COVID-19 prevention and control measures are well recognized to be cornerstones for the prevention of transmission of infectious respiratory diseases such as COVID-19. In a study conducted by (Olaimat et al., 2020) on a student population in Jordan, it was observed that the acceptable risk of infection varies according to gender and age, with men and younger people being more likely to engage in not observing SOPs. The study goes on to show that a significant proportion (35.1%) of the students were not washing their hands before touching their eyes or nose, after shaking hands with others (18.1%), or after touching common contact surfaces such as doorknobs or elevator buttons (16.8%). These practices could play a significant role in the transmission of COVID-19 because they were confirmed as factors contributing to its transmission (Olaimat et al., 2020). Evidence from (Chen et al., 2020) postulated that females are less willing to take risky activities, and thus more likely to follow hand-washing recommendations. He also found that children's behavior of hand-washing was closely related to their grade/class. Another study by (Berhanu et al., 2022) found a statistical association between hand washing practices and students' level, residence, referents (role models) for hand washing, the presence of a hand washing facility and access to water and soap.

According to previous research, organizational factors within the public sector play a vital role in the prevention and control of epidemics. Researchers have also provided ample empirical evidence for the relationship between institutional factors and numerous kinds of individuals' health-related behaviors (Li et al., 2021). The response and support of universities combating COVID-19 amplified the subjective well-being of Asian students at a predominantly white university during the COVID-19 crisis in the United States. Trust in organizations (i.e school institutions and the government) may influence the public's attitudes, which are the students in this study toward pandemic preventive measures. It can further indicate support for its actions, which may motivate individuals to overcome barriers to engage in a behavior or cooperate as an expression of support (Tausen et al., 2020). In a study by (Olum et al., 2020), the main sources of information about COVID-19 among its participants were information from international health organizations like the CDC and WHO, the Ministry of Health, Uganda media sites, News Media, and social media such as WhatsApp and Facebook. The mean knowledge score was 82.4 (SD: 11.2) percent. Sixty-

nine percent (n = 94) of the participants scored 80% or more and were considered to have sufficient knowledge (Olum et al., 2020). Furthermore, another study found that fitting hand sanitisers at the school entrance for all classes was among the most commonly reported measures by staff of both primary and secondary schools (Amin-Chowdhury et al., 2022). According to a report by Uganda Radio Network on 28th-05-2021, they visited a number of schools within Kampala and Wakiso districts to know the likely sources of infection in institutions. The report indicates that despite the increase in cases, many schools were not observing hand washing, wearing face masks and two-metre social distance during classes. For example, the report shows that at St Joseph Primary School, Nansana in Wakiso district the hand washing facility placed at the gate was not functioning and the school no longer took the temperature of persons entering as required by the guidelines.(Pamela Mawanda and Kisekka, 2021)

2.4 Stakeholders' perspectives and roles on adherence to COVID-19 SOPs

Shifting into the "new normal" in the course of the ongoing COVID-19 pandemic is not as easy as providing technology for everyone, especially in the education system(Morales, 2020). In a study by (Ubaidah et al., 2021) teachers proposed an alternative strategy, which would involve creating a rotation system for pupils, to improve safety and decrease overcrowding in classrooms. When lower secondary students go to school, for instance, upper secondary students would participate in remote learning from their homes (Ubaidah et al., 2021). During the examination of the feasibility of implementing COVID-19 prevention measures in a primary school in England, head teachers found it useful to have received government guidance to make sense of what was required. Various schools drew on diverse material, financial, and information resources for the implementation of recommended guidelines alongside relational resources that supported implementation. A major key tool used was communication with staff, listening, and responding to concerns which were considered necessary for building confidence and encouraging staff to work. The study also reported that the unavailability of material resources limited the implementation of COVID-19 prevention measures, and low economic resources were also seen as a limiting factor in the context of already-tight budgets. Concerns regarding the unavailability of human resources were also critical (Sundaram et al., 2021).

Head teachers in England also reported that consistent handwashing for staff and installation of hand sanitisers at school entrances were considered easy to implement. Another preventive

measure that was considered easy to implement by many headteachers in secondary schools was staff wearing face-coverings in corridors and staffrooms. Still, secondary schools tended to report more challenges than primary schools while implementing measures to reduce mixing between bubbles and potential for contamination (Sundaram et al., 2023).

According to Ibrahim, 2020, efficient surveillance is highly needed for collecting information, doing an action, and hence controlling the COVID-19 pandemic. Surveillance data gives us pictures of reality and informs policy and decision-makers about the situation. It is useful for the early detection of COVID-19 cases, the application of case management protocol, and containment measures. Such early detection is successful for the treatment and prevention of further transmission. This can slow COVID-19 growth, or even end the pandemic (Ibrahim, 2020).

CHAPTER 3: PROBLEM STATEMENT, JUSTIFICATION, AND CONCEPTUAL FRAMEWORK

3.1 Problem statement

According to UNICEF, about 13.6% of confirmed cases of COVID-19 in Uganda between January-February 2022 were children (Unicef, 2020). COVID-19 had a severe impact on education in Uganda, with children being out of school for over two years, threatening to reverse years of educational progress. Nearly 15 million children were locked out of school during the lockdown, exacerbating existing challenges in childcare and learning (Unicef, 2021). MOH reported 803 positive cases of COVID-19 and one death in schools nationwide during a single week in May 2021 (Pamela Mawanda and Kisekka, 2021). The lack of information regarding adherence to COVID-19 SOPs in schools particularly in hotspot areas like Malaba town council which had a majority of the confirmed imported cases by travelers and cross-border truck drivers from Kenya, raised a concern about the potential risks of another outbreak and the subsequent closure of schools (Unicef, 2020). The pandemic having caught Uganda off guard without means of curbing the spread in schools, adherence to COVID-19 SOPs in schools near cross-border communities remains unknown and poses a risk of another outbreak. This could negatively impact the health and safety of students, teachers, and the wider community despite MOH and MoES, rolling out standard operating procedures and disease surveillance mechanisms for all schools in re-opening for full functionality

Studies have been done on facemask use in primary schools and secondary schools (Mwesige et al., 2021) and universities (Nyeko et al., 2021), most of which highlight a reluctance in adherence to COVID-19 SOPs but none has been done to assess COVID-19 SOPs in secondary schools near cross-border communities. Malaba town being an international point of entry also enables students to access quality schools cross-border and such interaction if not closely monitored increases the risk of recording a high number of COVID-19 cases (Francis et al., 2022). Majority of the students in these schools are day schooling students making disease transmission from the outside school community highly possible. COVID-19 is a new infectious disease that has had several variants over time, its epidemiology is still undergoing study, and therefore, negligence in surveillance will create perfect conditions for a new variant to emerge which could cause significant mortality. A study conducted by (Mwesige et al., 2021) recommended more studies on; adherence to facemask

use in education institutions including qualitative studies to understand the salient issues that could explain the adherence levels (Mwesige et al., 2021). However not much is known about how secondary schools adhered to COVID-19 SOPs when schools re-opened during the second wave peak of 2021(Unicef, 2021). Therefore, it is prudent to assess how secondary schools in Malaba town council adhered to COVID-19 SOPs after the second wave peak of 2021 and stakeholders' perspectives and roles on adherence in preventing another outbreak.

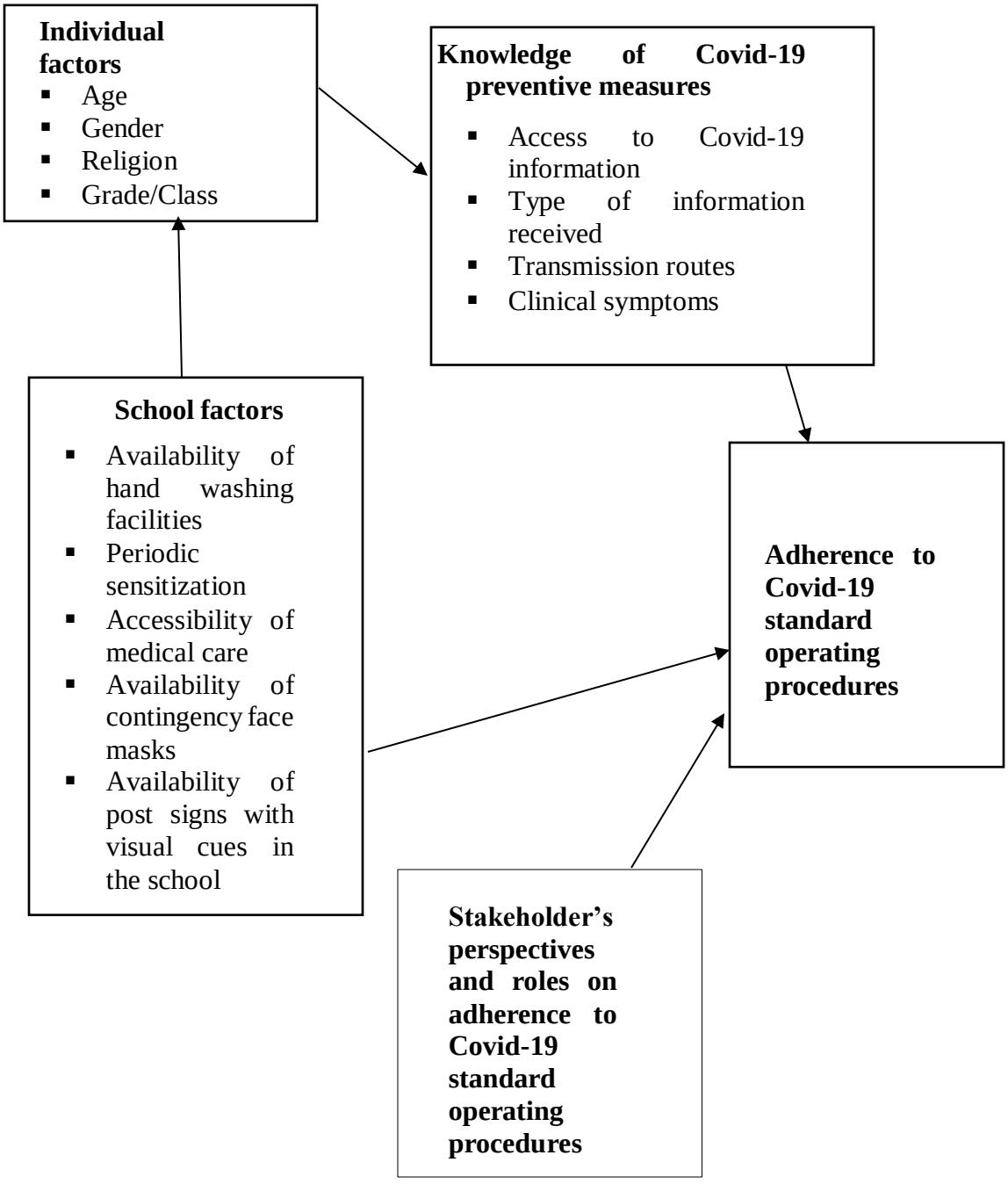
3.2 Justification

The cross-border movement largely contributes to infectious disease transmission in Uganda and many COVID-19 cases gained entry through Malaba. Despite having COVID-19 SOPs in place, it was unknown how schools responded to the new guidelines and implemented them as a way of living with the virus (Muhuzuma, 2022). In the absence of strong scientific evidence on student and staff adherence to recommended measures in schools which included; maintaining a safe distance between students in classrooms, during breaks, and in common areas, the mandatory use of masks by students and staff in school premises and handwashing or sanitizing among students, as well as the availability of handwashing facilities or hand sanitizers in schools. (Ministry of health, 2021b). This study investigated factors associated with adherence to COVID-19 SOPs by students and it also explored stakeholders' perspectives on adherence to COVID-19 SOPs. The information generated may inform policymakers on the status of adherence to COVID-19 SOPs, challenges, necessary recommendations and opportunities to assist in the formulation of evidence-based decisions.

This information may be important for the Ministry of Health, Ministry of Education and Sports, teachers, students, researchers, public policymakers, health providers, parents, and guardians to devise mechanisms that go beyond practical guidelines to ensure children’s safety in schools in any disease crisis.

3.3 Conceptual framework:

Figure 1: Conceptual framework showing adherence to COVID-19 standard operating procedures in secondary schools.



Narrative:

The primary outcome of the study is adherence to COVID-19 standard operating procedures. This study assesses factors associated with students' adherence to COVID-19 SOPs after the second wave peak of 2021 in secondary schools which include: individual factors, school factors, and knowledge of COVID-19 preventive measures. The framework helps highlight the dynamics that schools are facing as they comply with the SOPs that were given to them to operate during the pandemic. At the Individual level, factors such as age, gender, grade/class, and religion influence a student's adherence to SOPs. School factors that also contribute such as availability of hand washing facilities, periodic sensitization, accessibility of medical care, availability of contingency face masks, and availability of post signs with visual cues in the school are linked to individual factors in influencing a student's adherence to SOPs. Further still, knowledge of COVID-19 preventive measures like access to COVID-19 information, type of information received, transmission routes, and Clinical symptoms can inspire students to adhere to COVID-19 SOPs in schools. Furthermore, stakeholders' perspectives and roles on adherence to COVID-19 SOPs were explored qualitatively by interacting with some stakeholders who were knowledgeable on the management and enforcement of the SOPs. Stakeholders like school head teachers, the district health officer, health workers etc.

CHAPTER 4: RESEARCH QUESTIONS AND OBJECTIVES

4.1 Research questions

i. How did students adhere to COVID-19 standard operating procedures after the second wave peak of 2021 in secondary schools?

ii. What are the factors associated with students' adherence to COVID-19 standard operating procedures after the second wave peak of 2021 in secondary schools?

iii. What are the stakeholders' perspectives and roles on adherence to COVID-19 standard operating procedures in secondary schools?

4.2 General objective

To determine the factors associated with students' adherence to COVID-19 SOPs after the second wave peak of 2021 in secondary schools in Malaba town council, Tororo district with an aim of providing feasible recommendations for improving adherence to the SOPs among students.

4.2.1 Specific objectives

i. To assess student adherence to COVID-19 standard operating procedures after the second wave peak of 2021 in secondary schools.

ii. To determine the factors associated with students' adherence to COVID-19 standard operating procedures after the second wave peak of 2021 in secondary schools.

iii. To explore stakeholders' perspectives and roles on adherence to COVID-19 standard operating procedures in secondary schools.

CHAPTER 5: METHODOLOGY

5.1 Study area

The study was carried out in Malaba town council which is located in Tororo District in the Eastern Region of Uganda. The town shares a border with Kenya and sits adjacent to Malaba, Kenya, across the Malaba River that marks the border between Uganda and Kenya. In 2020, UBOS the population agency estimated the mid-year population of the town at 20,800. Of these, 10,800 (51.9 percent) were female and 10,000 (48.1 percent) were male (Wikipidea, 2022). Since the town shares a border with Kenya with Malaba town on the other side, students can easily move and attend any of the schools between the two countries depending on their preferences and the quality of education offered. According to MoES 2020, Tororo district has 51 secondary schools and three secondary schools are located in Malaba town council. The study focused on these three schools which include; Malaba secondary school- a privately owned day school, He reigns secondary school-privately owned day and boarding school, and Malaba seed secondary school- government owned day school (Unser, 2022).

Effects of intense mobility of populations like students, migrants in search for better jobs between the border communities, and the lack of effective frontline reporting increase the likelihood of any emerging disease spreading faster and far and this can increase the risk of importing infectious diseases with a high degree of uncertainty. The first two COVID-19 -positive cases among transnational cargo were confirmed on 14th April 2020 at the Malaba borders between Kenya and Uganda (one case Ugandan and One Kenyan) (Martini et al., 2022). Therefore, day schooling and the resultant interactions among learners can amplify transmission in a silent outbreak. In addition, despite efforts to maintain strict border security measures akin to a closed border regime by African governments, the people of the border communities ensure an open border system. Border communities such as Malaba carry out intense informal cross-border trade, festivals, schools, and traditional rites and share an affinity that is not broken irrespective of the border regions' official state policies in this case COVID-19 restrictions (Ikotun et al., 2021).

5.2 Study design

This was a cross-sectional study design that applied both quantitative and qualitative methods of data collection.

5.3 Study population

The study targeted secondary school students in Malaba town council.

5.4 Inclusion and exclusion criteria

5.4.1 Inclusion

Students studying in the school and were fully registered by the school administration were included in the study.

5.4.2 Exclusion

Students who were sick while the study was being conducted were excluded from the study.

5.5 Sample size calculation

The sample size was determined using the Kish Leslie (1965) formula used for cross-sectional studies (Kish, 1965).

$n = Z^2 * pq * 1.5/e^2$

Where n = the sample size, Z = critical value at 95% confidence level= 1.96, e = level of precision = 5^2, p = estimated proportion of an attribute that is present in the population = 50, q = 1-p=50, and 1.5 is the design effect.

Therefore, the sample size was $1.96*50*50*1.5/5^2=576.24$= 577 students

But the sample size was adjusted since the total number of students in the three schools was known. From the school registers in these specific schools, the average number of students was as follows; He reigns secondary school had 277 students (Males 101, Females 176), Malaba secondary school had 173 students (Males 78, Females 95), and Malaba seed secondary school had 713 students (Males 354, Females 359). Since the schools provided the number of students who were registered and attending school, this means the total number of students in these schools; approximated 1163 students.

The total population of students being known, correction of a finite population was done using the Cochran formula which is, the adjusted sample size is: $\frac{n_0}{1+(n_0-1)/N}$

Where n_0 = sample size = 577, N = population size = 1163

The adjusted sample size will therefore be: $\frac{577}{1+577/1163}$ = 385,6 = 386 students were the minimum

sample size for the study. Using sampling proportionate to size, the number of students that were selected in each of the three schools was distributed as follows.

Table 1: Illustration of sampling proportionate to size.

Stratum	**Population/Stratum**	**Proportion to size**	**Sample/ Stratum**
He reigns secondary school	277	(277/1163) *386	92
Malaba secondary school	173	(173/1163) *386	57
Malaba seeds secondary school	713	(713/1163) *386	237

5.6 Sampling procedure

5.6.1 Quantitative data

Selection of participants

Sampling proportionate to size was used to determine the number of students to interview from each school. From each class, S1-S6 the total number of students per class were obtained from the school. Each class was assigned a code and each student in the class got a number i.e. SA for Senior 1, SB for senior 2, SC for senior 3, SD for senior 4, SE for senior 5, and SF for senior 6. For each student in each class, a number was assigned to them for example SA1 represented the first student on the class list to SA40 which represented the last student on the class list, etc. These numbers were selected using research randomizer which randomly generated the students to be interviewed. After the random selection, with the available student numbers class teachers were asked for their student lists for comparison so that students who bore the numbers on the generated list were the ones interviewed for the study.

5.6.2 Qualitative data

Selection of key informants

Nine key informant interviews were purposively selected from stakeholders about their perspectives and roles on adherence to COVID-19 SOPs management and enforcement in schools. The key stakeholders selected included: the district health officer, district health educator, inspector of schools, school head teachers, and school nurses. The key informants stated above were the

stakeholders at the center of implementing the COVID-19 SOPs as indicated by MOH and MoES, they were contacted by phone to schedule interviews. Whereas the intended key informants to be reached were 12, the actual number was determined by data saturation.

5.7 Study variables

5.7.1 Dependent variable

Adherence to COVID-19 standard operating procedures was the main outcome of the study. These SOPs included wearing facial masks, physical distancing, respiratory etiquette, and hand hygiene. The questions used to assess adherence included; "How often did you wear a face mask after the second wave of 2021", How often did you avoid overcrowding and maintain at least a 2-meter distance between you and your classmates (class, library, dining room, etc.) after the second wave of 2021", "How often did you cover your mouth and nose with a clean personal cloth or use an elbow when coughing or sneezing after the second wave of 2021", How often did you wash your hands especially before and after eating, after blowing your nose, coughing or sneezing, or using the toilet/latrines after the second wave of 2021", and "How often did you sanitize your hands between lessons after the second wave of 2021". For these five questions, each question had a score of 4 and the total score for all was 20. These were recorded on a 4-point Likert scale with responses such as: "Rarely", "Sometimes", "Many times" and "Frequently". One point (1) was given for each rarely answer, two points for sometimes, three points (3) for many times and four points (4) for Frequently. Responses for each variable were scored and a median value that were used as a threshold was obtained that is 12.5. Adherence to COVID-19 SOPs was categorized into two; where if a student's median score was ≥12.5 it indicated "good adherence" and if a student's median score was <12.5, it indicated "poor adherence".

5.7.2 Independent variables

The independent variables were founded on the conceptual framework and categorized into individual factors, school factors, and knowledge of COVID-19 prevention measures. Individual factors included; age, gender, religion, and grade/class.

School factors: These variables were; the availability of hand washing facilities, periodic sensitization, accessibility of medical care, availability of contingency face masks, and availability of post signs with visual cues in the school. These variables were assessed using closed ended

questions.

Knowledge of COVID-19 preventive measures: These variables were; access to COVID-19 information, type of information received, transmission routes, and clinical symptoms. They were assessed using closed ended questions.

5.8 Data collection

5.8.1 Training of research assistants

Research assistants were trained for two days on the scope of the study, how to administer consent, install Open Data Kit platform (ODK) on their mobile phones, and interview respondents at the proper time and privately. On the 3rd day, a pre-test followed to make sure that RAs understand the tools better practically. The tools included; the consent forms, questionnaire for assessment of factors associated with students' adherence to COVID-19 SOPs and the KI interview guides. The 3 RAs were involved in the data collection for students and the PI for the qualitative component of the study. The training was concluded with a practical session in one school.

5.8.2 Quantitative data collection

At the study sites, using a semi structured questionnaire uploaded on an android mobile phone device for the RAs, quantitative data was collected. The study purpose was explained to all study participants where either an assent form or consent form was signed for and by each of them. Data was collected every day for a period of 6 days.

5.8.3 Qualitative data collection

Qualitative data was collected using key informant guides where interview scripts with open-ended questions guided the discussions concerning the stakeholders' perspectives and roles on adherence to COVID-19 SOPs during the second wave peak of 2021 in secondary schools. All discussions were recorded with a digital recorder and notes were taken during the interview.

5.8.4 Tools

Quantitative data was collected using interviewer-administered smartphone-based questionnaires using the Open Data Kit platform (ODK). The questionnaire was prepared in line with literature (Health, 2021b) (Olaimat et al., 2020) and therefore was validated by pre-testing and refining the

tool. From the COVID-19 SOPs, the questionnaire was made suitable for this study. Primary data consisted of semi-structured interviews which were conducted with students. The semi-structured questionnaire captured data on individual factors (age, gender, religion, grade/Class), school factors (the availability of hand washing facilities, periodic sensitization, accessibility of medical care, availability of contingency face masks, and availability of post signs with visual cues in the school) and knowledge of COVID-19 preventive measures (access to COVID-19 information, type of information received, transmission routes, and clinical symptoms). They were assessed using closed ended questions.

Data on student adherence to COVID-19 SOPs using a 4-point Likert scale was also collected from students.

Qualitative data was collected using key informant guides where interview scripts with open-ended questions guided the discussions concerning the stakeholders' perspectives and roles on adherence to COVID-19 SOPs during the second wave peak of 2021 in secondary schools. All discussions were recorded with a digital recorder and notes were taken during the interview.

5.8.5 Pre-testing of the questionnaire

The tools were pre-tested before the actual data collection to make sure that all research objectives were covered. The questionnaires were offered to the research team for review, to examine if questions were language and content appropriate. The questionnaire was pre-tested on 12 students in Tororo girls' school who were conveniently selected. The school was conveniently selected from the district. The KI questionnaire was pre-tested in an interview with the HMIS focal person from the district health team. The answers helped identify questions that needed clarification and those that had to be improved further or removed from the questionnaires.

5.8.6 Data management and analysis quantitative data

Using a kobo collect account, questionnaires were submitted after data collection by research assistants. These were downloaded from the server and imported to STATA 14.0 for data management and analysis. Data in general was assessed for any missing information or any other irregularities. Data was analyzed using univariable for the descriptive statistics in form of frequencies and percentages, the relationship between the dependent variable and the independent variables was determined using a regression model; bivariate modified poisson analysis was stated in unadjusted

prevalence ratios at the 95% confidence level. The cut-off values for the variables included in the multivariable analyses was set at $P < 0.20$. Potential factors were checked for multicollinearity where variables were selected whenever a pair-wise correlation coefficient of less than 0.4 was observed and included in the final multivariable modified poisson model. The stepwise elimination technique was adopted for the study where potential variables were added or removed one at a time. The variables were tested for their importance using Wald's test and those that had P-values that were in the scope of the inclusion criteria were maintained in the model. The findings of the multivariable modified poisson model were provided in the form of adjusted prevalence ratios (aPRs) with 95% confidence intervals.

5.8.7 Qualitative data

For qualitative data, audio recordings were played, raw data was transcribed verbatim in Microsoft word and read through repeatedly using the ATLAS.TI software to ensure content is fine with the help of research assistants. Furthermore, responses were verified for completeness, accuracy, quality of transcripts, and uniformity of patterns. Texts from the transcripts, documents, and field notes were read then later, each occurrence in the data was compared with other occurrences to check for similarities and differences in the key informant interviews. Words and sentences with similar meanings were identified, coded into themes and entered into a master sheet were themes based on perspectives and roles on adherence to COVID-19SOPs. Developed codes with similar meaning were classified into subthemes which were further grouped into themes that reflect their central content. Coded quotations that described and represented the substance of a given category were selected and integrated into the report writing in form of quotes by summarizing and interpreting the results.

5.9 Ethical considerations

Permission to conduct the study was sought from the Higher Degrees and Ethics Research Committee of the School of Public Health-Makerere University, Tororo district Health Officer and from the school directors and head teachers to interview teachers and students. The research anticipated no foreseeable risks of harm to participants other than the time used. No student was discriminated against based on their sex, race, religion, abilities, or any other social or political characteristics, students had access to advice and support from teachers in terms of their participation in the study. All students had the right to exercise their rights as study participants and

participation was voluntary. Written informed consent was obtained from students who were above 18 years and for those below 18, each participant's teacher and the participant signed an assent form before participating in the study. Data was kept confidential and anonymous using serial numbers and not names.

CHAPTER 6: RESULTS

6.1 Adherence to COVID-19 SOPs

Out of 386 study participants, 285 (73.8%) had good adherence to COVID-19 SOPs and 101 (26.2%) had poor adherence. Therefore, the proportion of secondary students who adhered to COVID-19 in Malaba town council was 73.8%.

6.2 Characteristics of the study participants

A total of 386 participants took part in this study with a response rate of 100%. Majority of the study participants 264 (68.4%) were aged between 16-19 years. Of all the study participants, 211 (54.7%) were female, 115 (29.8%) were of Anglican religion, and 103 (26.7%) were from senior two. Three hundred twenty-four (83.9%) of the study participants knew that wearing a well-fitting face mask is effective in preventing COVID-19 and three hundred fifty-six (92.2%) of them were using water and soap to protect themselves from COVID-19.

Most of the participants (83.2%) reported having supplies of hand sanitizer in the school and having a foot-operated hand-washing water facility (79.0%). Three hundred forty-seven (89.9%) of the study participants reported having hand washing facilities at entrances, exits, within classrooms and within 5 meters of toilets/latrines while 62.7% sought medical attention when they got flu symptoms. A high number of the participants (82.1%) got information relating to COVID-19 daily, 89.1% reported having signposts instructing them on how to wear face masks, and 91.5% reported having signposts instructing them on how to wash their hands.

Two hundred forty-seven (64%) participants stated that schools had contingency face masks in case learners and teachers or non-teaching staff lost masks and 43.8% stated that they rarely got reminders currently from teachers to wash their hands. Then 70.2% of the participants currently got reminders from teachers to wear face masks and 55.7% stated that there are currently hand washing facilities at entrances, exits, within classrooms and within 5 meters of toilets/latrines. Lastly, 56% of the participants perceived COVID-19 kills; 38.6% of the participants obtained information about COVID-19 from television; 47.4% received information on prevention measures about COVID-19; 91.9% of the participants were motivated to wash their hands due to fear of contracting the disease, and finally 47.4% were challenged with washing hands due to forgetfulness (Table 2).

Table 2: Characteristics of participants

Characteristic	Frequency (n = 386)	Percentage (%)
Age of participants (years)		
Below 16	57	14.8
16-19	264	68.4
20 and above	65	16.8
Gender		
Male	175	45.3
Female	211	54.7
Religion		
Anglican	115	29.8
Catholic	104	26.9
Muslim	61	15.8
Others	106	27.5
Wearing well-fitting face mask		
No	62	16.1
Yes	324	83.9
Using to wash hands		
Water and soap	356	92.2
Disinfectant/hand gel/sanitizer	30	7.7
Supplies of hand sanitizer		
No	65	16.8
Yes	321	83.2
Foot-operated handwashing		
No	81	21.0
Yes	305	79.0
Handwashing facilities at entrances, exits & toilets		
No	39	10.1
Yes	347	89.9
Seek medical attention		
No	144	37.3
Yes	242	62.7
Getting COVID-19information		

Daily	317	82.1
Weekly/monthly/termly	69	17.9
Signposts on wearing face masks		
No	42	10.9
Yes	344	89.1
Signposts on handwashing		
No	33	8.6
Yes	353	91.5
School contingency masks		
No	139	36.0
Yes	247	64.0
Current reminders to wash hands		
Rarely	169	43.8
Sometimes	134	34.7
Many times	42	10.9
Frequently	41	10.6
Current reminders to wear face masks		
Rarely	271	70.2
Sometimes	37	9.6
Many times	34	8.8
Frequently	44	11.4
Current handwashing facilities at entrances, exits & toilets		
No	171	44.3
Yes	215	55.7

6.3 Factors associated with students' adherence to COVID-19 SOPs after the second wave peak of 2021 in secondary schools

Supplies of hand sanitizer, foot-operated hand-washing water facility, hand-washing facilities at entrances and exits, within classrooms and within 5 meters of toilets/latrines, seeking medical attention when got flu symptoms, getting information relating to COVID-19, sign posts instructing students on how to wash their hands, school contingency masks, current reminders from teachers to wash hands, and current availability of handwashing facilities at entrances, exits, within classrooms and within 5 meters of toilets/latrines were found to be statistically significant because they had a p-value of less than 0.2. Thus, these variables were considered for the multivariable modified poisson regression analysis. In the multivariable analysis, factors that were found to be associated with students' adherence to COVID-19 SOPs were; hand-washing facilities at entrances, exits, within classrooms and within 5 meters of toilets/latrines and current hand-washing facilities at entrances, exits, within classrooms, within 5 meters of toilet/latrines.

The prevalence of adherence to COVID-19 SOPs was 2.36 times higher (aPR = 2.36; 95% CI 1.28-4.38) among students that used hand-washing facilities at entrances, exits, within classrooms and within 5 meters of toilets/latrines compared to the proportion of those that did not use hand-washing facilities at entrances, exits, within classrooms and within 5 meters of toilets/latrines. The prevalence of adherence to COVID-19 SOPs among students that were currently using hand washing facilities at entrances, exits and within classrooms and within 5 meters of toilets/latrines was 40% higher (aPR = 1.40; 95% CI 1.09-1.81) compared to those who were not currently using hand washing facilities at entrances, exits, within classrooms and within 5 meters of toilets/latrines (Table 3).

Table 3: Bivariate and multivariable analysis of factors associated with students' adherence to COVID-19 SOPs

Factors	Adherence		Unadjusted PR	Adjusted PR
	Good N=285(73.8%)	Poor N=101 (26.2%)	PR (95% CI)	PR (95% CI)
Individual factors				
Age of participant (years)				
Below 16	44 (79.2)	13 (20.8)	ref	
16-19	189(71.6)	75(28.4)	0.92(0.78-1.08)	
20 and above	52(80.0)	13(20.0)	1.03(0.86-1.24)	
Gender				
Male	127(73.0)	48(27.4)	ref	
Female	158(74.9)	53(25.1)	1.03(0.91-1.16)	
Religion				
Anglican	87(75.6)	28(24.3)	ref	
Catholic	72(69.2)	32(30.8)	0.91(0.77-1.07)	
Muslim	48(78.7)	13(21.3)	1.04(0.88-1.22)	
Others	78(73.6)	28(26.4)	0.97(0.88-1.13)	
Knowledge related to COVID-19				
Wearing well-fitting facemask				
No	50(80.6)	12(19.3)	ref	
Yes	235(72.5)	89(27.5)	0.89(0.78-1.03)	
School factors				
Handwashing				
Water and soap	265(74.4)	91(25.6)	ref	
Disinfectant/hand gel/sanitizer	20(66.7)	10(33.3)	0.89(0.69-1.16)	
Supplies of hand sanitizer				
No	33(50.8)	32(49.2)	ref	
Yes	252(78.5)	69(21.5)	1.54(1.20-1.97) **	
Foot-operated handwashing				
No	45(55.6)	36(44.4)	ref	
Yes	240(78.7)	65(21.3)	1.41(1.15-1.73) **	
Handwashing facilities at entrances, exits & toilets				

No	11(28.2)	28(71.8)	ref	ref
Yes	274(79.0)	73(21.0)	2.79(1.69-4.63) ***	2.36(1.28-4.38) **
Seek medical attention				
No	95(66.0)	49(34.0)	ref	
Yes	190(78.5)	52(21.5)	1.19(1.04-1.36) *	
Getting COVID-19information				
Daily	249(78.5)	68(21.4)	ref	
Weekly/monthly/termly	36(52.2)	33(47.8)	0.66(0.52-0.83) **	
Signposts on wearing face masks				
No	26(61.9)	16(38.1)	ref	
Yes	259(75.3)	85(24.7)	1.21(0.95-1.55)	
Signposts on handwashing				
No	18(54.5)	15(45.4)	ref	
Yes	267(75.6)	86(24.4)	1.38(1.09-1.90) *	
School contingency masks				
No	89(64.0)	50(35.0)	ref	
Yes	196(79.3)	51(20.6)	1.23(1.07-1.42) **	
Current reminders to wash hands				
Rarely	115(68.0)	54(31.9)	ref	
Sometimes	118(88.0)	16(11.9)	1.29(1.14-1.46) ***	
Many times	32(76.2)	10(23.8)	1.11(0.91-1.36)	
Frequently	20(48.8)	21(51.2)	0.71(0.51-0.99) *	
Current reminders to wear face masks				
Rarely	211(77.9)	60(22.1)	ref	
Sometimes	30(81.1)	7(18.9)	1.04(0.880-1.23)	
Many times	21(61.8)	13(38.2)	0.79(0.60-1.04)	
Frequently	23(52.3)	21(52.3)	0.67(0.50-0.89) **	
Current handwashing facilities at entrances, exits & toilets				
No	96(56.1)	75(43.9)	ref	
Yes	189(87.9)	26(12.1)	1.56(1.35-1.80) ***	1.40(1.09-1.81) **

6.4 Stakeholders' perspectives and roles on adherence to COVID-19 standard operating procedures (SOPs) in secondary schools

Nine key informant interviews were conducted with stakeholders in Tororo district. The stakeholders interviewed as key informants were: the district health team members, inspector of schools, school head teachers, nurses and their age ranges were 25-57 years. Five themes were identified from the key informant interviews: preparations to receive students in schools; COVID-19 awareness in schools; students' conduct and attitude; supervising implementation of COVID-19 SOPs in schools and insufficient resources for implementation of COVID-19 SOPs.

Preparations to implement COVID-19 SOPs in schools

Stakeholders had to develop a well-organized and coordinated strategy for putting COVID-19 SOPs in place in schools. Planning, coordination, and communication were all included in preparation. According to stakeholders, there was good collaboration, including frequent task force or committee meetings to streamline procedures and address any issues preventing students from adhering to COVID-19 SOPs. Stakeholders also stressed that because this incident occurred for the first time, district and school administration needed to make preparations at all levels in order for students to find a setting that would allow them to quickly comply to the SOPs.

> *"We were prepared, we had teachers trained on SOPs e.g managing students in classes by spacing, we had facilities maintained, then the teachers were encouraged to go for vaccination. At least funds were made available for schools to purchase the SOP materials."* (Inspector of schools)

Stakeholders had an understanding of expectations and responsibilities as a means of preparing to ensure student adherence to COVID-19 SOPs for example staggering lessons.

> *"We also enrolled some few classes so we ensured that we create for them more space and we constructed two more rooms for other classes so that population of the students would fit while social distancing with a gap one or two meters."* (Director of studies).

COVID-19 awareness in schools

Schools were aware of the COVID-19 disease and stakeholders believed that the more students were informed, the more likely they were to follow COVID-19 SOPs. Constant reminders, external teams performing sensitization, COVID-19 fear, stigma fear, putting signs with instructions, and

running sensitization campaigns were all included in this. The purpose of these exercises was to increase student and teacher awareness of the value of following COVID-19 SOPs. Students were reminded about handwashing, social distance, and other SOPs via post signs. These signs were posted openly across the school's premises.

> *"One, we had to come up with a talking compound to see that as you enter this compound, you see so many post signs all over the wall talking about COVID-19 and also…"* (Head teacher)

Stakeholders remarked that continued engagement with students and frequent reminders to implement COVID-19 SOPs during assemblies encouraged students to do so. Additionally, involving outside groups like radio stations and health officers in educating students about COVID-19 and the value of adhering to SOPs inspired students.

> *"I think we also had external teams that came in to speak to the students about COVID-19 from the radio stations, we had health officers from Tororo district and as a school..."* (Director of studies)

Students' conduct and attitude

The various ways in which students conducted themselves and their attitudes about the COVID-19 SOPs that they were required to adhere to after schools resumed. This theme covers a variety of behaviors, with a primary emphasis on handwashing, disliking face masks, punishments for violations, student stubbornness, and bad perceptions of COVID-19, particularly among religious groups. Along with the difficulties and problems encountered, these actions and attitudes had an impact on the overall adherence to COVID-19 SOPs in schools.

> *"The teachers were trying their level best to make sure that the students follow the SOPs but most students would behave in the presence of the school staff. They were so stubborn and they had the idea of the government wanting money yet COVID-19 is not there and so they felt like their lives were being tightened because they want to make their own money."* (Nurse)

Stakeholders went on to note that despite some students' worries about a repeat lockdown, they understood the need to modify their behaviour and put others' safety ahead of their own, and they continued to follow the COVID-19 SOPs.

"Some adhered because they were tired of staying at home and so they felt like if they didn't adhere, they would be forced to go back home for another lockdown." (Nurse)

Strict measures were used in cases when students displayed extreme stubbornness and disobedience in order to preserve a secure and healthy learning environment and to encourage cooperation among their peers.

"Two, we put up some tough measures for those who were indiscipline. If we found that a student was not putting on a face mask, we sent them home so the SOPs were part of the rules and regulations because since it was a national guideline, we took it as a seriously as we could in school, so learners feared going back home to bring their parents." (Deputy head teacher)

Supervising implementation of COVID-SOPs in schools

According to stakeholders, supervision was a top concern for all parties as they followed up and checked on the COVID-19 SOPs' implementation in order to ensure that they were correctly followed in schools. To make sure that students and staff were correctly adhering to the COVID-19 SOPs, active observation and assessment of behaviors, practices, walkthroughs, and routine inspections were required.

"The school had to employ more than two askaris. one at the gate and the others monitored class rooms to ensure that students and teachers in class rooms were wearing face masks, washed hands and also kept social distance." (Nurse)

"We had to put restricted movement in the compound by learners and visitors. We also ensured that coming to school was subject to seeking permission first and after communicating to the learners and parents, they were able to adhere to that." (Head teacher)

While providing clear rules and instructions, regular reminders, and updates on any SOP modifications were all part of supervision, there were some difficulties as revealed by stakeholders.

"The district health team and school inspectors could not do the continuous supervision because of the resource constraints. They were constrained financially and so they could not move on daily or weekly basis because Tororo district is very big for the few district staff to supervise." (Head teacher)

Insufficient resources for implementation of COVID-19 SOPs

The necessity for sufficient funding to successfully implement and maintain the COVID-19 SOPs in schools was lacking as acknowledged by stakeholders. Sanitizers, face masks, temperature guns, money, soap, water, and facilities for washing hands were examples of tangible resources that were insufficient in supply. Human resources were an example of intangible resources that were also lacking. Additionally, stakeholders looked for additional partnerships and collaborations to work with local nonprofits and community organizations like Tororo cement to obtain extra resources to add to the few which had been provided by the government. Since the COVID-19 SOPs were the basis for both adherence and successful enforcement, the insufficiency of resources had a significant impact on student adherence to them. A stakeholder said;

> *"Ahh…There was not enough human resource because first of all were taking temperature at the gate as the students enter schools, we needed people, trained people especially guarding schools in form of askaris yet most schools don't even have a gate. So, we didn't have enough for the implementation of the guidelines. We were actually relying on the school administrators so that those guidelines are implemented because for us as a district, it is very difficult to go and enforce although once in a while, we would visit the schools to see whether they were adhering to those guidelines."* (District health team member)

CHAPTER 7: DISCUSSION

7.0 Discussion

This study sought to assess student adherence to COVID-19 standard operating procedures after the secondwave peak of 2021in secondary schools. Findings from this study show that students in Malaba Town Council adhered to COVID-19 SOPs. Students' adherence was greatly influenced by the presence of hand-washing facilities at the entrances, exits, classrooms, and toilets. Stakeholders emphasized the value of authorities providing clear instructions and communication on SOPs. Additionally, they underlined that adherence was found to be influenced by things like insufficient resources and fear of infection.

7.1 Objective 1: Proportion of students adhering to COVID-19 standard operating procedures after the secondwave peak of 2021 in secondary schools.

According to the study, 73.8% of secondary school students in Malaba Town Council, Tororo District, adhered to COVID-19 SOPs which means that majority of the students were keen on adhering to COVID-19 SOPs. This finding may be linked to the student knowledge related to COVID-19 such as perceiving that COVID-19 kills, obtaining information about COVID-19 from different sources, receiving information on prevention measures about COVID-19, motivation to wash hands due to fear of contracting the disease, wearing face masks, among others. This is in line with a study by (Kumar et al., 2021) which found that majority of students (49.78 percent) had higher level of knowledge of COVID-19 guidelines and therefore showed a strong compliance to COVID19 guidelines (Kumar et al., 2021). Therefore, relevant authorities should continually ensure that students are well informed about the epidemiology of a disease so that they also contribute to the prevention of morbidity and mortality rates of infectious diseases through adherence.

7.2 Objective 2: Factors associated with students' adherence to COVID-19 standard operating procedures after the second wave peak of 2021 in secondary schools.

Of all the sociodemographic variables investigated in the study, none had a significant association ($P > 0.05$) with adherence to COVID-19 SOPs which is similar to a study by (Olaimat et al., 2020). In this study, having hand washing facilities at entrances, exits, within classrooms and within 5 meters of toilets/latrines was statistically significant with 89.9% participants adhering to COVID-

19 SOPs in schools during the second wave peak of 2021. The result indicates that majority of the students who adhered to COVID-19 SOPs did so because there were hand washing facilities at entrances and exits. This finding is similar to a study by (Berhanu et al., 2022) which revealed that presence of hand washing facilities led students to wash their hands. Proximity of hand washing facilities to students played a major role in their adherence to COVID-19 SOPs since each turn they made, they were able to access and wash their hands to prevent transmission. It is further supported by a study in Ghana where availability and easy access to hand washing facilities was found to be a significant predictor for students to practice proper hand washing in schools (Monney et al., 2014). Hand washing facilities in schools were many possibly because there was organization support from partners like UNICEF and Tororo cement who purchased them and distributed to schools as their contribution to fight COVID-19 and the reopening of schools (Ntabadde, 2021). In addition, findings by (Kaiser et al., 2021) found that most (94%) had hand hygiene supplies available in the room and this was central in preventing transmission of COVID-19 in education settings. Therefore, the installation, upkeep, and accessibility of hand washing facilities must be given priority by schools and other relevant authorities. By encouraging students to practice good hand hygiene and other measures such as wearing face masks, physical distancing among others, schools can help prevent and control infections like COVID-19 and other illnesses.

7.3 Objective 3: Stakeholders' perspectives and roles on adherence to COVID-19 standard operating procedures in secondary schools.

It is clear that according to the stakeholders' perspectives, there were various factors that played a crucial role in adherence to COVID-19 SOPs among students. In general, stakeholders revealed that there were not enough resources (funds, human resources, equipment) that could be used to ably ensure that students adhere to COVID-19 SOPs. This finding is in harmony with a study by (Sundaram et al., 2021) which reported that availability of material resources restricted the implementation of COVID-19 prevention measures. This is further supported by another study in England where there were staff and family concerns about hand-hygiene/infection control, availability of resources like; sanitizer/soap, sinks, cleaners. One school estimated 40,000 pounds cost of hand sanitizer; time for handwashing and effective use of measures (Lorenc et al., 2021). Therefore, it is important to emphasize the necessity for the government, educational institutions, and other key stakeholders to give schools priority when allocating resources. In order to create an

environment that promotes and facilitates adherence to COVID-19 SOPs, adequate resource allocation is crucial.

In this study stakeholders stated that students did not like wearing face masks and if they had them on, they would put them on their chins and only pulled them to the nose upon being reminded. In addition, stakeholders highlighted that there were students who had illnesses relating to breathing like asthma who found it hard to wear face masks for long periods of time. While some students were cooperative and adhered to the SOPs, others were resistant and believed that COVID-19 was not a threat. A study conducted among primary and secondary school students in Eastern Uganda reported that majority of the students indicated that face masks were uncomfortable for use and also close to half of them believed that they were not vulnerable to COVID-19 (Mwesige et al., 2021). Students' resistance to wearing face masks appropriately and consistently presented a risk for the COVID-19 virus to spread to schools and the general public, especially in an environment where physical distance was difficult. Schools may therefore make a major difference to stopping the spread of diseases like COVID-19 and others by addressing this issue and encouraging appropriate mask usage.

Stakeholders indicated that mobilization and sensitization of students regarding COVID-19 was mainly used in and outside the schools to ensure that there is behavioral and social change among the school community. Multiple stakeholders such as health workers, district health team were brought on board to sensitize students on the risks of contracting COVID-19 and the dangers that could arise if COVID-19 SOPs are not adhered to. This finding relates to that done by (Lorenc et al., 2021) which discovered that it was better for staff to inform students of the significance of the new rules and to further promote a "we culture" where there is a sense of joint responsibility through a helpful and respectful approach. This emphasizes how important accurate and timely data is in promoting behavioral change and increasing adherence to preventive interventions. Students are more likely to adopt responsible actions that could stop the spread of diseases when they are informed about the new rules and realize how important it is to abide by them.

Stakeholders in this study reported that being prepared within the school and outside entities like having teachers trained, staggering lessons, etc helped to influence student adherence to COVID-19 SOPs. This tendency was found in a study by (Brivio et al., 2021) where stakeholders reported that maintaining and fostering good collaborations with local entities and organizing weekly

meetings between school administrators and local organizations was favorable for schools in implementing COVID-19 SOPs (Brivio et al., 2021). In addition, a study by (Ubaidah et al., 2021) goes on to say that the rotating model that had been implemented to reduce the danger of COVID-19 transmission when schools had just started was a good method in lowering the number of students present in the school at any given time, allowing for better physical distance and adherence to SOPs. This illustrates how essential good preparation and readiness are at the district and school levels for responding to events such as the COVID-19 pandemic.

7.4 Limitations

This study has some limitations:

- The study being dependent on participant's self-report, it was likely to overestimate actual adherence in the results. This could have been due to social desirability and recall bias.
- The study did not include stakeholders such as parents and other school staff who could have played a role in students' adherence to COVID-19 SOPs.
- The study did not assess for functionality of washing facilities in schools. This omission prevented an evaluation of the effectiveness and adequacy of the available facilities in promoting proper hand hygiene practices among students.
- The study did not include an observation checklist which would have captured real-time observations and assessment of students' behavior.

CHAPTER 8: CONCLUSIONS AND RECOMMENDATIONS

8.1 Conclusion

The study found that majority of the students adhered to COVID-19 SOPs after the second wave peak of 2021. The results also emphasized the value of the availability of hand washing facilities in schools as being important in encouraging schools to implement and students to follow COVID-19 SOPs. Stakeholders' promotion of adherence to SOPs required constantly reminding students about COVID-19 and an increased presence of watchful, proactive supervisors who continuously monitored the implementation of SOPs were also noteworthy coupled with students' fear to contract the disease. In making preparations; the planning, coordination, and communication were the foundation to creating a supportive atmosphere for students to find an organized system for them to comply to SOPs but insufficient resources to support all the schools stood in the way of implementation of COVID-19 SOPs. Therefore, partners supporting disease epidemiology in schools can use this information to cover existing knowledge gaps on adherence to SOPs relating to infectious diseases.

8.2 Recommendations

To the schools

- Schools should continue to maintain items that were acquired to manage COVID-19 SOPs by providing comprehensive training on proper care, storage and maintaining a detailed inventory of all equipment and supplies because it is a prudent step towards preparedness, cost-effectiveness and the overall safety and well-being of the school community during any potential future disease pandemic.
- Schools should prioritize prompt exchange of information with all stakeholders including, the district health team, school staff, parents and students through effective and transparent communication channels like use of messaging applications and meetings with stakeholders. This is crucial for immediate response, collaboration, trust-building, and preventive measures regarding possible exposures to diseases or disease outbreaks.
- It is important for school staff to continue conducting health education and sensitization efforts to address cultural and religious myths surrounding infectious diseases. This can be done by organizing seminars and information sessions for parents which are culturally sensitive, respectful of religious beliefs, and tailored to address specific concerns and

misconceptions in collaboration with local health authorities, community leaders and healthcare professionals to boost the credibility and effectiveness of these programs.

To the district

- Regular training and providing materials to school personnel like guidelines and handbooks are crucial in ensuring their preparedness to address potential health crises. This can be done through initiatives that focus on enhancing their ability to identify symptoms, implement preventive measures and adhere to correct protocols in the event of a disease pandemic in order to strengthen the overall readiness of schools and contribute to the health and well-being of school staff and students alike.
- The district should continue supervising schools and encourage them to consistently submit health-related reports for proactive monitoring of student health status. This is vital in identifying potential issues early, analyzing data, promoting collaboration and improving emergency preparedness for the district to effectively prioritize student health and well-being.

REFERENCES

ACAPS 2020. GLOBAL ANALYSIS. COVID-19: Impact on education(thematic series on education). . *In:* ACAPS (ed.) *thematic series on education.*

AMIN-CHOWDHURY, Z., BERTRAN, M., KALL, M., IRELAND, G., AIANO, F., POWELL, A., JONES, S. E., BRENT, A. J., BRENT, B. E. & BAAWUAH, F. 2022. Parents' and teachers' attitudes to and experiences of the implementation of COVID-19 preventive measures in primary and secondary schools following reopening of schools in autumn 2020: a descriptive cross-sectional survey. *BMJ open,* 12**,** e052171.

AMUHA, M. 2021. Linking school-based and national covid-19 Surveillance Uganda.

BERHANU, A., MENGISTU, D. A., TEMESGEN, L. M., MULAT, S., GUTEMA, G. D., ALEMU, F. K., MANGASHA, A. E., GOBENA, T. & GEREMEW, A. 2022. Hand washing practice among public primary school children and associated factors in Harar town, eastern Ethiopia: An institution-based cross-sectional study. *Frontiers in Public Health***,** 4182.

BONGOMIN, F., FLEISCHER, B., OLUM, R., NATUKUNDA, B., KIGULI, S., BYAKIKA-KIBWIKA, P., BALUKU, J. B. & NAKWAGALA, F. N. High mortality during the second wave of the coronavirus disease 2019 (COVID-19) pandemic in Uganda: experience from a national referral COVID-19 treatment unit. Open Forum Infectious Diseases, 2021. Oxford University Press US, ofab530.

BRIVIO, F., FAGNANI, L., PEZZOLI, S., FONTANA, I., BIFFI, L., MAZZAFERRO, A. D., VELASCO, V. & GRECO, A. 2021. School health promotion at the time of COVID-19: An exploratory investigation with school leaders and teachers. *European Journal of Investigation in Health, Psychology and Education,* 11**,** 1181-1204.

CHEN, X., RAN, L., LIU, Q., HU, Q., DU, X. & TAN, X. 2020. Hand hygiene, mask-wearing behaviors and its associated factors during the COVID-19 epidemic: A cross-sectional study among primary school students in Wuhan, China. *International journal of environmental research and public health,* 17**,** 2893.

CONTROL, C. F. D. & PREVENTION 2022. Operational guidance for K-12 schools and early care and education programs to support safe in-person learning. *Updated August,* 11.

CORNELIA ADLHOCH, E. B., STEFANIA DE ANGELIS, JOANA GOMES DIAS, ERIKA DUFFELL, MARIA KERAMAROU, PETE KINROSS, CSABA KODMON, KATRIN LEITMEYER, HANNA MERK, ANGELIKI MELIDOU, LINA NERLANDER, PASI PENTTINEN, EMMANUEL ROBESYN,GIANFRANCO SPITERII & WALLE., I. V. 2020. Objectives for COVID-19 testing in school settings – first update. European Centre for Disease Prevention and Control.

CUCINOTTA, D. & VANELLI, M. 2020. WHO declares COVID-19 a pandemic. *Acta bio medica: Atenei parmensis,* 91**,** 157.

DANIEL, S. J. 2020. Education and the COVID-19 pandemic. *Prospects,* 49**,** 91-96.

DHIS2.ORG 2021. Linking school-based and national COVID-19 surveillance in Uganda.

FANELLI, D., CAJUSTE, F., CETTA, D. & AMANYA, E. 2020. Effect of COVID-19 on the educational sector in Uganda. *Retrived from https://www. globallivingston. org/dir/research/effect-of-COVID-19-on-the-educational-sector-in-uganda*.

FRANCIS, G. M., IHAHI, J. W., BUUL, A. A., MUGO, F. W., KURIA, R. M., KORIR, K. K., BIID, S. J., OTWABE, J. S., MOHAMED, A. A. & BORU, W. 2022. Epidemiological Description of COVID-19 Cases at selected Counties in Kenya that border Uganda and Tanzania, March-July 2020. *Journal of Interventional Epidemiology and Public Health,* 5.

GRAY, D. J., KURSCHEID, J., MATIONG, M. L., WILLIAMS, G. M., GORDON, C., KELLY, M., WANGDI, K. & MCMANUS, D. P. 2020. Health-education to prevent COVID-19 in schoolchildren: a call to action. *Infectious diseases of poverty,* 9**,** 142-144.

GUTHRIE, B. L., TORDOFF, D. M. & MEISNER, J. 2020. Summary of school re-opening models and implementation approaches during the COVID 19 pandemic.

HAN, E., TAN, M. M. J., TURK, E., SRIDHAR, D., LEUNG, G. M., SHIBUYA, K., ASGARI, N., OH, J., GARCÍA-BASTEIRO, A. L. & HANEFELD, J. 2020. Lessons learnt from easing COVID-19 restrictions: an analysis of countries and regions in Asia Pacific and Europe. *The Lancet,* 396**,** 1525-1534.

HOWARD, G., BARTRAM, J., BROCKLEHURST, C., COLFORD JR, J. M., COSTA, F., CUNLIFFE, D., DREIBELBIS, R., EISENBERG, J. N. S., EVANS, B. & GIRONES, R. 2020. COVID-19: urgent actions, critical reflections and future relevance of 'WaSH': lessons for the current and future pandemics. *Journal of water and health,* 18**,** 613-630.

HUMPHREYS, J. 2020. The importance of wearing masks in curtailing the COVID-19 pandemic. *Journal of Family Medicine and Primary Care,* 9**,** 2606.

IBRAHIM, N. K. 2020. Epidemiologic surveillance for controlling Covid-19 pandemic: types, challenges and implications. *Journal of infection and public health,* 13**,** 1630-1638.

IKOTUN, O., AKHIGBE, A. & OKUNADE, S. 2021. Sustainability of borders in a post-COVID-19 world. *Politikon,* 48**,** 297-311.

KAISER, S. V., WATSON, A., DOGAN, B., KARMUR, A., WARREN, K., WANG, P., CAMANO SOSA, M., OLARTE, A., DORSEY, S. & SU, M. 2021. Preventing COVID-19 transmission in education settings. *Pediatrics,* 148.

KISH, L. 1965. Sampling organizations and groups of unequal sizes. *American sociological review***,** 564-572.

KUMAR, B., PINKY, S. D. & NURUDDEN, A. M. 2021. Knowledge, attitudes and practices towards COVID-19 guidelines among students in Bangladesh. *Social Sciences & Humanities Open,* 4**,** 100194.

LI, J., LIU, X., ZOU, Y., DENG, Y., ZHANG, M., YU, M., WU, D., ZHENG, H. & ZHAO, X. 2021. Factors affecting COVID-19 preventive behaviors among university students in Beijing, China: an empirical study based on the extended theory of planned behavior. *International Journal of Environmental Research and Public Health,* 18**,** 7009.

LORENC, A., KESTEN, J. M., KIDGER, J., LANGFORD, R. & HORWOOD, J. 2021. Reducing COVID-19 risk in schools: a qualitative examination of secondary school staff and family views and concerns in the South West of England. *BMJ Paediatrics Open,* 5.

MARTINI, M., SINA-ODUNSI, A., DACHE, J. J., WEKESA, J. & MZOZO, T. 2022. Epidemiological progression of COVID-19 positive cases among transnational truck drivers in the East African Region. *The Pan African Medical Journal*, 41.

MIGISHA, R., KWESIGA, B., MIREMBE, B. B., AMANYA, G., KABWAMA, S. N., KADOBERA, D., BULAGE, L., NSEREKO, G., WADUNDE, I. & TINDYEBWA, T. 2020. Early cases of SARS-CoV-2 infection in Uganda: epidemiology and lessons learned from risk-based testing approaches–March-April 2020. *Globalization and Health,* 16**,** 1-9.

MINISTRY OF HEALTH, U. 2021a. MODULE TWO: THE EPIDEMIOLOGY OF COVID-19 AND THE COVID-19 STANDARD OPERATING PROCEDURES (SOPs) FOR INSTITUTIONS OF LEARNING. Ministry of health. *In:* MINISTRY OF HEALTH, U. (ed.).

MINISTRY OF HEALTH, U. 2021b. STANDARD OPERATING PROCEEDURES FOR RE-

OPENING LEARNING INSTITUTIONS IN THE CONTEXT OF COVID 19. *In:* MINISTRY OF HEALTH, U. (ed.).

MONNEY, I., MARTINSON, O. S., ASAMPANA, A. M. & ALBERT, M. 2014. Assessing hand hygiene practices in schools benefiting from the Ghana school feeding programme. *Science Journal of Public Health,* 2**,** 7-14.

MORALES, M. P. E. 2020. Sustaining Quality in the New Normal. *The Normal Lights,* 14.

MUHUZUMA, R. 2022. Ugandan schools are back in session after world's longest closure *The Christian science monitor*.

MWESIGE, D., NALUGYA, A., BULAFU, D., TIGAIZA, A., NAGAWA, B. T., BALINDA, E. & WALEKHWA, A. W. 2021. Face mask use and associated factors among students in rural Eastern Uganda amidst the COVID-19 pandemic. *medRxiv***,** 2021.06. 27.21259131.

NAMUGANGA, J. F., BRIGGS, J., ROH, M. E., OKIRING, J., KISAMBIRA, Y., SSERWANGA, A., KAPISI, J. A., ARINAITWE, E., EBONG, C. & SSEWANYANA, I. 2021. Impact of COVID-19 on routine malaria indicators in rural Uganda: an interrupted time series analysis. *Malaria Journal,* 20**,** 1-11.

NTABADDE, C. 2021. UNICEF distributes WASH supplies to schools and health centres to contain spread of COVID-19 *In:* UNICEF (ed.).

NYEKO, R., AMANYA, S. B., ALENI, M. & AKELLO, F. 2021. Unsatisfactory COVID-19-related knowledge, attitudes and practices among undergraduate university students in Uganda: An online cross-sectional survey.

OLAIMAT, A. N., AOLYMAT, I., ELSAHORYI, N., SHAHBAZ, H. M. & HOLLEY, R. A. 2020. Attitudes, anxiety, and behavioral practices regarding COVID-19 among university students in Jordan: a cross-sectional study. *The American journal of tropical medicine and hygiene,* 103**,** 1177.

OLUM, R., CHEKWECH, G., WEKHA, G., NASSOZI, D. R. & BONGOMIN, F. 2020. Coronavirus disease-2019: knowledge, attitude, and practices of health care workers at Makerere University Teaching Hospitals, Uganda. *Frontiers in public health,* 8**,** 181.

PAMELA MAWANDA & KISEKKA, C. 2021. City Schools Fail to Implement SOPs Amidst Covid-19 Surge.

SUNDARAM, N., ABRAMSKY, T., OSWALD, W. E., COOK, S., HALLIDAY, K. E., NGUIPDOP-DJOMO, P., STURGESS, J., IRELAND, G., LADHANI, S. N. & MANGTANI, P. 2023. Implementation of COVID-19 Preventive Measures and Staff Well-Being in a Sample of English Schools 2020-2021. *Journal of School Health,* 93**,** 266-278.

SUNDARAM, N., BONELL, C., LADHANI, S., LANGAN, S. M., BAAWUAH, F., OKIKE, I., AHMAD, S., BECKMANN, J., GARSTANG, J. & BRENT, B. E. 2021. Implementation of preventive measures to prevent COVID-19: a national study of English primary schools in summer 2020. *Health Education Research,* 36**,** 272-285.

TAUSEN, B. M., JIN, J., KIM, P. Y., LAW, K. & KENDALL, D. 2020. Academic community support, campus racial climate, and subjective well-being during the coronavirus outbreak among Asian American college students. *Journal of Asian American Studies,* 23**,** 367-385.

UBAIDAH, A., MANSOR, A. N. & HASHIM, H. 2021. Challenges of COVID standard operating procedure compliance in a secondary private school. *Creative Education,* 12**,** 1881-1890.

UNICEF 2020. Humanitarian Situation Report No. 9. . *Humanitarian situation.* unicef.

UNICEF 2021. The socioeconomic impact of COVID 19 on children Unicef.

UNSER 2022. 51 Secondary Schools in Tororo (Uganda national schools electronic registry.

VINER, R., RUSSELL, S., SAULLE, R., CROKER, H., STANSFIELD, C., PACKER, J., NICHOLLS, D., GODDINGS, A.-L., BONELL, C. & HUDSON, L. 2022. School closures during social lockdown and mental health, health behaviors, and well-being among children and adolescents during the first COVID-19 wave: a systematic review. *JAMA pediatrics*.

WHO. 2020. *COVID-19-China*. [Online]. Available: https://www.google.com/url?sa=i&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=0CAIQw7AJahcKEwj44_XsraL_AhUAAAAAHQAAAAAQAg&url=https%3A%2F%2Fcovid19.who.int%2Fregion%2Fwpro%2Fcountry%2Fcn&psig=AOvVaw1KxabNFTHakjB2T7sXkZaG&ust=1685718701340641 [Accessed].

WHO, A. 2021. COVID-19 Vaccination in Tororo District: Ensuring that No one is Left Behind. .

WIKIPIDEA. 2022. *Malaba, Uganda [Online]*. [Online]. Available: https://en.wikipedia.org/wiki/Malaba [Accessed 12 September 3 August 2022, at 20:38 (UTC)]. 12 September 3 August 2022, at 20:38 (UTC)].].

APPENDICES

Appendix 1: Information sheet, consent form, and assent form (by adults on behalf of participants, aged 12-17)

Title of the proposed study: Factors associated with student's adherence to COVID-19 standard operating procedures after the second wave peak of 2021 in secondary schools in Malaba town council, Tororo district:

Introduction

This study is about assessing adherence to COVID-19 standard operating procedures after the secondwave peak of 2021 in secondary schools of Malaba town council, Tororo district. The Principal Investigator of the study is Wanzira Deborah, a student of Master of Public Health. After the purpose of the study has been explained and your questions answered and you have decided to participate, you will be asked to sign a consent form and you will be given a copy to keep. It should be remembered that participation is voluntary and you can withdraw anytime you wish to. The interview will take about 30 minutes.

Purpose of the Study

The ultimate goal of this study is to determine the factors associated with student's adherence to COVID-19 standard operating procedures after the second wave peak of 2021 in secondary schools in Malaba town council, it will also help the ministry of health, ministry of education and sports, and other partners to plan better for schools regarding disease outbreaks.

Risks

This research may cause negligible risk which will not be more than an inconvenience in terms of time spent. No risk of harm or discomfort that will impact the participant is foreseen.

Benefits

The information given will help to improve the planning activities by the ministry of health, ministry of education and sports, and other partners. In addition, findings from the study will be used for further research and academic purposes.

Alternatives to participation

In case you are not interested in the study, you do not have to participate and the school authorities will not be informed. Your mere participation in this study will not affect your position as a student. This study honors your right to participate voluntarily. However, you can withdraw from this study

at any time if you feel uncomfortable. But the information you give is essential for improving the quality of school health in Uganda.

Confidentiality

The answers you give us will only be known to us and will be kept confidential. The information you give us will only be used for this study. You do not need to give us your name; we shall use the number of the questionnaire.

In case of technical questions, please contact the Principle Investigator: Wanzira Deborah– 0708162007/0779494805. For ethical issues, please contact the chairperson of Makerere School of Public Health Higher Degrees Research Ethics Committee (email: jkagaayi@musph.ac.ug tel: 0393291397, P.O.Box 7072)

Authorization to use and disclosure of your information

Signature: Signing below indicates that you have been informed about the research being done, in which you volunteer to participate; that you asked the questions about the study, and that the information given to you has permitted you to make a fully informed decision to participate in the study. By signing this consent form, you, do not waive any legal statement/issue in a copy of this consent form will be provided to you.

I voluntarily agree to allow my student to take part in the study

Name: …….

Child's Teacher: ……. Date: ……

Signature/thumbprint of teacher: ……

Certification of consent:

The teacher that has provided consent for his/her student's participation in the study has done so voluntarily.

Name of witness to the consent process: ……..

Signature/thumbprint: ……..

Name of the person obtaining consent: ……

Signature:……. Date:……..

Appendix 2: Information sheet and consent form (students 18 years and above)

Title of the proposed study: Factors associated with student's adherence to COVID-19 standard operating procedures after the second wave peak of 2021 in secondary schools in Malaba town council, Tororo district**:**

Introduction

This study is about assessing adherence to COVID-19 standard operating procedures after the secondwave peak of 2021 in secondary schools of Malaba town council, Tororo district. The Principal Investigator of the study is Wanzira Deborah, a student of Master of Public Health. After the purpose of the study has been explained and your questions answered and you have decided to participate, you will be asked to sign a consent form and you will be given a copy to keep. It should be remembered that participation is voluntary and you can withdraw anytime you wish to. The interview will take about 30 minutes.

Purpose of the Study

The ultimate goal of this study is to determine the factors associated with student's adherence to COVID-19 standard operating procedures after the second wave peak of 2021 in secondary schools in Malaba town council, it will also help the ministry of health, ministry of education and sports, and other partners to plan better for schools regarding disease outbreaks.

Risks

This research may cause negligible risk which will not be more than an inconvenience in terms of time spent. No risk of harm or discomfort that will impact the participant is foreseen.

Benefits

The information given will help to improve the planning activities by the ministry of health, ministry of education and sports, and other partners. In addition, findings from the study will be used for further research and academic purposes.

Alternatives to participation

In case you are not interested in the study, you do not have to participate and the school authorities will not be informed. Your mere participation in this study will not affect your position as a student. This study honors your right to participate voluntarily. However, you can withdraw from this study at any time if you feel uncomfortable. But the information you give is essential for improving the quality of school health in Uganda.

Confidentiality

The answers you give us will only be known to us and will be kept confidential. The information you give us will only be used for this study. You do not need to give us your name; we shall use the number of the questionnaire.

In case of technical questions, please contact the Principle Investigator: Wanzira Deborah– 0708162007/0779494805. For ethical issues, please contact the chairperson of Makerere School of Public Health Higher Degrees Research Ethics Committee (email: jkagaayi@musph.ac.ug tel: 0393291397, P.O.Box 7072)

Authorization to use and disclosure of your information

Signature: Signing below indicates that you have been informed about the research being done, in which you volunteer to participate; that you asked the questions about the study, and that the information given to you has permitted you to make a fully informed decision to participate in the study. By signing this consent form, you, do not waive any legal statement/issue in a copy of this consent form will be provided to you.

I voluntarily agree to allow to take part in the study.

Student's Name: …….

Date: ……

Signature/thumbprint: ……

Researcher's name: ……

Researchers signature…… Date: ……

Appendix 3: Questionnaire for assessment of factors associated with students' adherence to COVID-19 standard operating procedures after the second wave peak of 2021 in secondary schools

Date of interview:……/……/……*dd/mm/yyyy* Name of school: …….

Participant code: ……. Age……. Gender……...

Religion: …..…… Grade/Class …….……

	KNOWLEDGE RELATED TO COVID-19	
No.	**QUESTIONS**	**RESPONSE CATEGORIES**
1	Have you ever heard about COVID-19 disease? **(Single answer)**	0= No 1= Yes
2	How dangerous do you think COVID-19 is? **(Multiple answers possible)**	0. Not Dangerous 1. Dangerous 2. Very dangerous 3. Killers 4. Others/specify____
3	Source of information about COVID-19. **(Multipleanswers possible)**	0. Radio 1. TV 2. Other social media 3. Government sites and media e.g MOH 4. School Staff 5. Family members 6. Friends
4	What kind of information have you received about COVID-19**? (Multiple answers possible)**	0. Prevention measures 1. Symptoms 2. Transmission

		3. Self-care 4. Risks/complications 5. Others/specify___
5	Does COVID-19 virus spread via respiratory droplets of infected individuals? **(Single answer)**	0. No 1. Yes
6	The main clinical symptoms of COVID-19 are fever, fatigue, dry cough, and myalgia. **(Single answer)**	0. No 1. Yes
7	Is wearing a well-fitting face mask effective in preventing COVID-19? **(Single answer)**	0. No 2. Yes
8	Does hand washing prevent you from getting COVID-19? **(Single answer)**	0. No 1. Yes 2. Don't know
9	There is no effective cure for COVID-19 currently, but can early symptomatic and supportive treatment help patients recover from the infection? **(Single answer)**	0. No 1. Yes 2. Don't know
	SCHOOL FACTORS	
10	What were you using to wash your hands to protect yourself from COVID-19 after the second wave of 2021? **(Single answer)**	0. Water and soap 1. Disinfectant 2. Hand gel 3. Hand sanitizer 4. Only water
11	How often did you wash your hands especially before and after eating, after blowing your nose, coughing or sneezing, or	0. Rarely 1. Sometimes

	using the toilet/latrinesafter the second wave of 2021? **(Single answer)**	2. Many times 3. Frequently
12	Did the school have a steady water supply after the second wave of 2021? **(Single answer)**	0. No 1. Yes
13	Did the school have supplies of soap after the second wave of 2021? **(Single answer)**	0. No 1. Yes
14	Did the school have supplies of hand sanitizer after the second wave of 2021? **(Single answer)**	0. No 1. Yes
15	What motivated you to wash your hands/ use hand sanitize after the second wave of 2021? **(Multiple answers possible)**	0. Fear of contracting the disease 1. Culture/habit 2. Disgust of filthy environment 3. Visual post signs 4. Continuous reminders from teachers
16	What challenges did you face while practicing hand washing/ use of hand sanitizer after the second wave of 2021? **(Multiple answers possible)**	0. Lack of water 1. Lack of time 2. Forgetfulness 3. Lack of soap 4. Lack of motivation
17	Did the school have a foot-operated hand-washing water facility after the second wave of 2021? **(Singleanswer)**	0. No 1. Yes
18	Were there hand washing facilities at entrances, exits, within classrooms, and within 5 meters oftoilets/latrines after the second wave of 2021? **(Single answer)**	0. No 1. Yes

19	How often did you sanitize your hands between lessons after the second wave of 2021? **(Single answer)**	0. Rarely 1. Sometimes 2. Many times 3. Frequently
20	How often did you wear a face mask after the secondwave of 2021? **(Single answer)**	0. Rarely 1. Sometimes 2. Many times 3. Frequently
21	Did you seek medical attention when you got flusymptoms after the second wave of 2021? **(Single answer)**	0. No 1. Yes
	If yes, where did you go?	0. School nurse 1. Heath center near the school 2. Heath center near home
22	How often did you avoid overcrowding and maintain at least a 2-meter distance between you and your classmates (class, library, dining room, etc.) after thesecond wave of 2021? **(Single answer)**	0. Rarely 1. Sometimes 2. Many times 3. Frequently
23	How often did you get information relating to COVID-19 in your school after the second wave of 2021? **(Single answer)**	0. Daily 1. Weekly 2. Monthly 3. Every term
24	Did the school have sign posts instructing students on how to wear masks after the second wave of 2021? **(Single answer)**	0. No 5. Yes

25	Did the school have sign posts instructing students on how to wash their hands after the second wave of2021? **(Single answer)**	0. No 1. Yes
26	Did the school have contingency masks in cases learners and teachers or non-teaching staff lose masks after the second wave of 2021? **(Single** **answer)**	0. No 1. Yes
27	How often did you cover your mouth and nose witha clean personal cloth or use an elbow when coughing or sneezing after the second wave of 2021? **(Single answer)**	0. Rarely 1. Sometimes 2. Many times 3. Frequently
28	How often are you getting reminders currently fromteachers to wash your hands? **(Single answer)**	0. Rarely 1. Sometimes 2. Many times 3. Frequently
29	How often are you getting reminders currently fromteachers to wear a face mask? **(Single answer)**	0. Rarely 1. Sometimes 2. Many times 3. Frequently
30	Are there hand washing facilities at entrances, exits, within classrooms, and within 5 meters oftoilets/latrines currently? **(Single answer)**	0. No 1. Yes

Appendix 4: Consent form for the key informants

Study Title: Factors associated with students' adherence to COVID-19 SOPs after the second wave peak of 2021 in secondary schools in Malaba town council, Tororo district.

Introduction

We expect to interview the school head teachers, the district health officer, the district health educator, the inspector of schools, the school head teachers, and school nurses. This is because they are directly responsible for the COVID-19 SOPs enforcement and management.

You are invited to volunteer for this academic research survey. The information below will help you to decide if you would like to participate. Before you decide to participate you should understand what it involves and ask us to explain any words or information that you may not understand.

Purpose of the study

To determine the factors associated with students' adherence to COVID-19 SOPs after the second wave peak of 2021 in secondary schools in Malaba town council.

Ethical approval

Please note the study is purely academic and is a dissertation supposed to be done by all Year II students of Makerere University as part of the Masters in Public Health Full-time package.

Procedure

A questionnaire will be administered by the researcher during a face-to-face session, to which you will be requested to honestly and diligently share responses. Questions will cover stakeholders' perspectives on adherence to COVID-19 SOPs after the second wave peak of 2021 in secondary schools.

Your rights as a participant in this study

Your participation in this study is entirely voluntary and you can refuse to participate or stop at any time without reason. Your withdrawal will not affect you in any way.

This questionnaire will take approximately 20 minutes to complete and will be administered by the researcher. There will be no procedures or interventions that could be uncomfortable for you. The questions will also be asked in the language that you understand.

What are the risks involved in this study?

No risk is expected on any participant. All information will remain completely confidential. There will be no penalty whatsoever for anyone who declines to take part in the survey.

Confidentiality

All information gathered during this survey is confidential and strictly for academic purposes. Data will not include any information that could identify you as a participant in this study.

In case of technical questions, please contact the Principle Investigator: Wanzira Deborah– 0708162007/0779494805. For ethical issues, please contact the chairperson of Makerere School of Public Health Higher Degrees Research Ethics Committee (email: jkagaayi@musph.ac.ug tel: 0393291397, P.O.Box 7072)

Confirmation of your consent to participate

Do you understand the survey details and allow to participate in the survey? (Participation is purely voluntary)

If Yes…….you will need to sign this form as confirmation of consent

If No. ..... Stop

Informed Consent

I hereby confirm that the researcher has informed me, about the nature, conduct, and risks of the study. I have also received, read, and understood the above-written information.

I am aware that the results of the study, including details regarding my educational level and other characteristics will be anonymously processed into a survey strictly for academic purposes.

I may, at any stage, without prejudice, withdraw my consent and participation in the study. I declare myself prepared to participate in the study.

Participant's Name: …….

Participant's signature: ……Date .....dd/mm/yy

Researcher's name: ……

Researchers signature…… Date: ……

Appendix 5: Key informant guide for key stakeholders directly responsible for COVID-19 SOPs enforcement and management

Research question: Stakeholders' perspectives on adherence to COVID-19 SOPs in secondary schools.

DATE: …… **DISTRICT: ……**

MUNICIPALITY/ VILLAGE: ……

NAME OF RESPONDENT: …….....

AGE OF RESPONDENT: …… SEX: ……

DESIGNATION OF RESPONDENT: ……

NAME OF INTERVIEWER: ……

TIME INTERVIEW STARTED: …… TIME ENDED……..

Question 1

When schools re-opened after the second wave peak of 2021, how prepared were you to receive students and implement the COVID-19 guidelines that were put in place by the ministry of health and ministry of education and sports?

Probe for the availability of space, training attended, and equipment like water, soap, hand washing facilities, face masks, temperature guns, and staff.

Question 2

In your view, what COVID-19 SOPs were practiced after the second wave peak of 2021 in schools?

Probe for hand hygiene, face mask use, physical distance, and respiratory etiquette.

Question 3

Which strategies were put in place to encourage adherence to COVID-19 SOPs after the second wave peak of 2021?

Probe for peer-to-peer champions, availability of post signs on face mask use, physical distance, respiratory etiquette, hand washing, constant reminders in class and any school communication, reporting any flu-like cases, and ensuring availability of water and soap.

Question 4

What do you think facilitated the school community in adhering to COVID-19 SOPs after the second wave peak of 2021?

Probe for the availability of post signs, availability of material resources, economic resources,availability of human resources, training attended, and support supervision

Question 5

What challenges were faced by schools in enforcing the COVID-19 SOPs after the second wave peak of 2021?

Probe for unavailability of material resources, budget constraints, limited human resources, and poor supportive supervision.

Question 6

What was done after the second wave peak of 2021 to address these challenges?

Probe for strategies that have been so far used/are using like availing contingency face masks, lobbying for resources from partners, and ensuring enough water supply.

Question 7

In your view, what is being done now in regards to adherence to COVID-19 SOPs in the schoolcommunity?

Probe for the availability of equipment like water, soap, hand washing facilities, face masks, temperature guns, and staff for peer-to-peer champions, availability of post signs on face mask use, physical distance, respiratory etiquette, hand washing, constant reminders in class and any school communication and reporting any flu-like cases.

Question 8

From your experience, what challenges are being faced by schools now in enforcing COVID-19 SOPs? What is being done to address these challenges?

Probe for unavailability of material resources, budget constraints, limited human resources, and poor supportive supervision. Strategies that are being used like availing contingency face masks, lobbying for resources from partners, and ensuring enough water supply.