

**ADHERENCE TO COVID-19 PREVENTION PROTOCOLS AMONG ADULTS
RESIDING IN KITUI CENTRAL SUB-COUNTY, KITUI COUNTY, KENYA**

FAITH NGUI

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**A THESIS SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR
THE AWARD OF MASTER OF SCIENCE DEGREE IN EPIDEMIOLOGY OF SOUTH
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APRIL, 2023

DECLARATION

Student's declaration

I understand that plagiarism is an offence and I therefore declare that this thesis report is my original work and has not been presented to any institution for any other award.

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ABBREVIATIONS AND ACRONYMS

ANOVA	:	Analysis of Variance
COVID-19	:	Corona Virus Diseases of 2019
DRC	:	Democratic Republic of Congo
ERC	:	Ethics Review Committee
KNBS	:	
MoH	:	Ministry of Health
NACOSTI	:	
SEKU	:	South Eastern Kenya University
SPSS	:	Statistical Package for Social Sciences
SSA	:	Sub-Saharan African
USA	:	United States of America
WHO	:	World Health Organization

OPERATIONAL DEFINITIONS

Adherence : Refers to being in strict follow up on guidelines or any instructions or rules stated or given for a desired outcome

Adults : A person of either gender who is above 18 years according to the laws of Kenya

Prevention: Is the act of averting the process likely to cause an issue or a problem

Measures: An action prescribed to be followed by a population with an intention to avert a likely occurrence

Perception: Is an inner feeling quite intrinsic of a person towards adherence to COVID-19 prevention protocols

ABSTRACT

COVID -19 is an infectious respiratory disease caused by the newly discovered corona virus (SARS-CoV-2). In Kenya, the national government through the Ministry of Health in conjunction with the World Health Organization (WHO) laid out behavioral and social mitigation approaches such as social distancing, wearing face mask in public, movement restrictions, working from home, hand washing with soap and sanitizers and vaccination among others in order to control the spread of COVID-19. The implementation of these measures was downscaled to all counties with more enforcement on the ones severely affected. Despite the government enforcement mechanisms to ensure adherence to these measures, non-adherence to some of the measures was reported. Additionally, hesitancy to uptake of the COVID-19 vaccine was widely reported in most parts of Kenya. This study aimed to determine community knowledge, attitude and practices on the adherence to COVID-19 mitigation measures among adults residing in Kitui Central Sub-County. The study adopted a descriptive cross-sectional study design, with data collected using semi-structured questionnaires. A sample of 384 respondents was calculated using Fishers formula. Data were analyzed using descriptive and inferential statistics using SPSS version 25.0 software. On the knowledge about COVID-19, 96.6% had heard about COVID-19 with majority (53.7%) getting the information from Television. Majority of the respondents (52.5%) knew COVID-19 is a killer disease while 48.2% knew it is a highly infectious disease. Among the participants, 66.9% knew the signs of COVID-19 and 80.7% knew putting of facemask as a prevention method. On the attitude, 50.9% adhere to COVID-19 prevention protocols because they fear it is very infectious. On the practices, the results showed that 59.5% always adhered, 38.0% sometimes adhered while 2.5% never adhered to handwashing with soap and running water. About 51% of respondents were vaccinated for Covid-19. Those who reported to always adhere to wearing of face mask as recommended were 50.6%, while 38.0% reported to adhere sometimes to face mask wearing. Chi-square was used to assess association and causation using SPSS for windows version 25. Results revealed a significant difference ($p < .05$) between respondents who had knowledge on the COVID-19 prevention protocols and those who did not ($\chi^2 = 0.10$; $df = 1$; $p = .00$). From the multiple regression analysis, knowledge, perception and practices were statistically significant ($p < .05$). From the principal component analysis on knowledge, attitude, or practises, the first component had the highest variance 4.284 explains with the highest Eigen value of 30.601%. This implies that the 30.601 of variation in attitude is influenced by hand washing as the first component and consequently adherence to COVID-19 protocols.

CHAPTER ONE

INTRODUCTION

1.1 Background to the study

It was observed to spread rapidly in gatherings (Hammer, *et al.*, 2020), and in social places (Hu, Zhao, & Wang M, *et al.*, 2020) through respiratory droplets produced during coughing or sneezing and coming into contact with infected surfaces and objects (Lu, 2020). The droplets cannot go more than two meters and would remain in air for up to three hours (Lotfi, Hambli, M. R, & Rezaei, 2020). In the face of the pandemic, behavioral and social approaches have been found to be the most effective strategies in prevention and transmission of this disease (Maier & Brockmann, 2020).

Adherence to COVID-19 prevention protocols including hand washing; physical distancing, confinement protocols and respiratory hygiene have been reported to be effective strategies in the prevention of transmission of the disease. Thus most people have been satisfied with the COVID-19 prevention protocols. However, these measures have over the time been perceived as significantly constrictive and to larger extent, affecting people's professional and daily routines (Faria, Lopez, & Sato, 2021). Health messages on COVID-19 are anticipated to place a stronger emphasis on helping people understand why the prevention protocols are helpful and how they can be practiced more than increasing on fear appeals.

In Africa, the first case of COVID-19 was reported in mid-February, 2020 in Egypt (Pullano, *et al.* 2020), then the disease continued to spread to other African countries and by January 2022, there were over 9 million cases with over 200,000 deaths (WHO, 2022). Thus the concept of adherence has become paramount in the prevention of transmission. On the contrary, most of the

sub-Saharan African (SSA) countries found difficulties in adequately responding to COVID-19 crisis. The result was a rapid human-to-human transmission due to resource-poor settings with weak health care systems (Gandhi, Yokoe, & Havlir, 2020). This significantly contributed to an increase in community transmission of the disease.

These would be coupled with targeted efforts directed towards increasing compliance with preventive interventions amongst young people. Consequently, improving the level of knowledge and the subsequent application of the prescribed interventions would reduce on the incidence of COVID-19 in the community and improve on personal protection.

From the time first case of COVID-19 was reported and validated in Kenya, the president has been addressing the nation on an interval of between one and two months on the pandemic issuing discrete preventive measures. There were also prescribed mitigation measures such a closure of places of worship, learning institutions, curfews and lockdowns which the citizens were to strictly adhere to.

Kitui County had reported more than five thousand (5,000) cases of COVID-19 with close to two hundred deaths as at January 2022. Kitui Central Sub-County had recorded the highest number of cases as compared to other sub-Counties in Kitui County. Most of these cases were locally transmitted (Kitui County MOH Report, 2022).

Problem

COVID-19 is a global pandemic that continues to cause morbidity and mortality despite having simple behavioral and social measures to halt the spread. It is presently a leading cause of death globally with adverse effects on the global economy as well as severing social relationships. Globalization of this disease has been accelerated by the increased movement of people locally

and internationally (Centre for Infection and Immunity, 2020, May 5). About 5% of COVID-19 patients who had multi-organ failure required invasive mechanical ventilation to prevent the high mortality rates. Besides, almost half of the patients with underlying co-morbidities experience a severe form of the disease with high mortality rates (Kordzadeh-Kermani, Khalili, & Karimzadeh, 2020).

Due to the fact that COVID-19 is a relatively new phenomenon, there exist limited empirical data on adherence to COVID-19 prevention protocols on a local, regional or even global scale. Studies on COVID-19 have shown varying adherence levels in various regions. A study among the Vietnamese people found that 88.2% of the participants adhered to physical distancing while 99.5% put on facemask, 94.9% practiced cough hygiene and 97.4% washed hands with soap and water (Nguyen, *et al.*, 2020).

In Africa an adherence survey conducted in DRC found out that only 45.3% of the participants wore facemask, 59.3% adhered to physical distancing while 74.7% washed hands regularly (Ditekemena, Nkamba, & Mahindo , 2021). Studies have reported a perception that people living in cities and big towns have a higher adherence due to fear of contracting COVID-19 because a larger proportion, around 70% of the COVID-19 cases have been diagnosed in the cities. This has to some extent made populations in the rural cities and countryside to take lightly the prevention measures (Nguyen, *et al.*, 2020).

A survey conducted in Kenya by the Ministry of health indicated that less than half of the respondents were practicing social distancing and hand washing and with only 50% wearing face masks by August, 2020. A follow-up survey a year later in August, 2021 reported an improvement on use of face masks up to 98% and 69% adhering to social distancing with 24% having no hand washing facilities (MOH Kenya, Knowledge, Attitude and Practice Survey: Assessing Progress in

Adherence to Preventive Measure and Vaccine Hesitancy in community, April, 2021)

Although over 5000 cases have been recorded in Kitui County, with half of the recorded cases being from Kitui Central Sub-County (refer to table 1.1). Kitui County case fatality rate was at 3.8% compared to the national case fatality rate of 1.7%. In Kitui Central Sub-County the case fatality was 3.16% as of January 2022. Most of the cases were local transmission as indicated in the situation report number 261 of the ministry of health Kitui County. Moreover, no study on adherence to COVID-19 prevention protocols had been conducted in the area. Therefore, this study was carried out to determine the levels of adherence to the COVID-19 preventive protocols among adult residents of Kitui Central Sub-County.

Table 1.1: Showing distribution of COVID-19 cases within Kitui County (As at January 2022)

Sub-County	Positive tests	Case Fatality Rate (%)	Attack Rate (x100,000)	Positivity rate (%)
Kitui Central	2000	3.16%	1470.65	21.14
Mwingi Central	644	2.49%	415.97	25.46
Kitui rural	374	5.61%	327.45	20.33
Kitui East	486	5.43%	341.61	29.22
Kitui West	521	4.61%	446.56	24.64
Mwingi West	324	6.79%	285.21	24.38
Kitui South	466	1.72%	255.72	32.64
Mwingi North	149	4.70%	97.24	13.81

Source: Kitui County Situational Report Number, January 18, 2022

1.3.2 Specific objectives

1. To assess prevention
2. To establish the practices of the COVID-19 prevention protocols among adults residing in.

3. To determine the attitude on adherence to COVID-19 prevention protocols among adults residing in Kitui Central Sub-County.

1.4 Research questions

1. What is the level of knowledge on the COVID-19 prevention protocols among adults residing in Kitui Central Sub-County?
2. What practices of COVID-19 prevention protocols were used by adults residing in Kitui Central Sub-County?
3. What is the attitude on adherence to COVID-19 prevention protocols among adults residing in Kitui Central Sub-County?

1.5 Justification

COVID-19 is a rapidly spreading global pandemic that is continuing to cause morbidity and mortality among different population subsets despite having simple behavioral and social measures which are aimed at breaking the infection cycle in order to eventually stop the spread. With creation of awareness, attitude change and modification of behavioral practices associated with COVID-19 prevention, the community will appraise the prevention strategies.

This study aims to generate credible information on level of adherence to COVID-19 prevention protocols. Thus, the findings will be used by policy makers to formulate healthy public health policies on community tailor-made strategies to improve on adherence to the protocols. Findings from this study will as well guide future researchers interested in the same area or methodologies used in conducted their studies. It will also form a basis for future researches on COVID-19.

1.6 Significance of the study

It is anticipated that findings from this study will constitute significant information on the adherence to COVID-19 prevention protocols. This information will be used by opinion shapers and government agencies such as the Ministry of Health to formulate policies and update

1.7 Scope of the study

This study was confined within Kitui Central Sub-County within -sectional study design was used. The study applied the following sampling methods; convenience, cluster sampling and simple random sampling in the selection of study subjects. Questionnaires and observation checklists were used for data collection. Data analysis was by use of SPSS and generated results presented in tables and figures

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

Coronavirus disease (COVID-19) is a highly infectious disease that affects the respiratory system caused by the newly discovered Corona virus (SARS-CoV-2) which was initially discovered in Wuhan, China in December, 2019. The disease was noted to spread rapidly in gatherings (Hammer, *et al.*, 2020) and in social places (Hu, Zhao, & Wang M, *et al*, 2020) through respiratory droplets produced in coughing or sneezing and coming into contact with infected surfaces and objects (Lu, 2020). Droplets produced cannot go more than two meters and would remain in air for up to three hours (Lotfi, Hambli, M. R, & Rezaei, 2020). Thus social distancing becomes critical in prevention of contact with droplets from infected persons

Coronavirus disease continues to cause morbidity and mortality globally despite having simple behavioral and social measures found to break the chain of transmission and eventually contain the disease. Clinically, COVID-19 presents with fever, dry cough, sore throat, headache, fatigue, myalgia and breathlessness with a majority experiencing mild pneumonia symptoms and about a fifth experiencing severe complications that require hospitalization and mechanical ventilation. About 5% require invasive mechanical ventilation and have multi organ failure with high mortality rates. Almost half of the patients with underlying co-morbidities such heart related diseases, chronic kidney disease, chronic lung disease, diabetes and malignancy have been found to experience severe forms of this disease and have high mortality rates (Kermani, Khalili, & Karimzadeh, 2020).

2.2 Levels of knowledge on the COVID-19 prevention protocols among adults

Knowledge of COVID-19 is of paramount importance in the wake of holistic prevention, control

and eradication of the disease. To a larger extent, populations should be aware of the condition in terms of its causation factor, modalities of transmission between and among people, the varied clinical presentation of, the disease progression in infected persons, management interventions and prevention measures (Ditekemena, Nkamba, & Mahindo, 2021). It is quite notable that awareness of the disease is important in promoting the uptake of prevention protocols among populations.

Awareness that COVID-19 is a viral disease and therefore difficult to treat to eradication due to mutational nature of the viral strains is important in increasing the uptake of prevention measures. This has been achieved through continued campaigns and health messaging to the communities though unable to reach the very remote areas. Persons suffering from COVID-19 usually present with features including fever, a dry cough and sore throat, headache, fatigue, myalgia and breathlessness with a majority experiencing mild pneumonia symptoms. It has as well been observed that about a fifth of infected persons experience severe complications that require hospitalization and mechanical ventilation. Thus anyone presenting with these signs should be referred to a COVID-19 center for testing to confirm the condition, possible isolation and timely institution of management interventions (WHO, 2020).

Research conducted about the disease confirms causative agent, a virus, indicated that its majorly transmitted through respiratory droplets produced when an infected person sneezes or coughs with an estimated incubation period of between 1 - 14 days with an average rate of 5 days (WHO,2020) The virus has active transmission during the incubation period when signs are not observable yet a person is infected. The common clinical features have been reported to range from mild common cold-like illness to a severe viral pneumonia leading to acute respiratory distress syndrome which is potentially fatal (Ditekemena, Nkamba, & Mahindo, 2021). People can very easily get infected with COVID-19 when they come into contact with infected surfaces or objects and later touching

their nose, mouth or possibly their eyes.

A study conducted by the WHO in DRC, reported that for preventive hygiene practices, it is advisable that people wash hands after touching surfaces or coming from public places or handling objects like money (WHO, 2020). Similarly, the Kenyan Ministry of health rolled out advertisements in both print and electronic media urging the citizens to follow COVID-19 basic infection prevention guidelines as per WHO protocols such as frequently washing hands with soap and running water, use of alcohol based hand sanitizers, coughing into the elbow, keeping a safe social distance and not to touch the face mouth, nose or the eyes and vaccination with the COVID-19 vaccine (Q, Guan, & Wu, 2020). In spite of the national guidelines recommended for practice by the government of Kenya, to prevent and control the spread of COVID-19, the success or failure has largely depended on the public behavior (MOH, 2021)

Adherence to Covid-19 aversion strategies is influenced by peoples' knowledge about the disease. Therefore, by assessing public awareness about Corona virus helps to gauge the people's deeper understanding and insight into their perception and practices. This will in turn help identify their attributes that influence the public in taking up healthy practices and responsive behaviors including physical proximity to infected persons (WHO, 2020). The pandemic requires a total change to the way of living that rural populations have to learn and adhere to.

Awareness that a small proportion may suffer severe form of the disease to extents of requiring assisted breathing, and possibly have multi-organ failure with high mortality, helps change people's perception to adhere to the prevention strategies. The knowledge that persons with underlying co-morbidities like cardiovascular disease, chronic kidney disease, chronic lung disease, diabetes and malignancy experience severe form of the disease and have an increased probability of high mortality rates has gradually promoted the desired behavior rates (Kermani,

Khalili, & Karimzadeh, 2020). The cost of managing COVID-19 patients is quite high, therefore prevention is better than the whole treatment and uncertain prognosis.

2.3 Practices of the COVID-19 prevention protocols among adults

Nevertheless, different people have been found to have different levels of adherence to these behavioral and social preventive measures (Tong *et al.*, 2020). A study conducted by Nguyen, *et al.*, (2020) indicated that, 88.2% of the participants adhered to physical distancing while 99.5% put on face mask, 94.9% practiced cough hygiene and 97.4% washed hands with soap and water. A recent survey conducted in DRC also found out that only 45.3% of the participants wore face mask, 59.3% adhered to physical distancing while 74.7% washed hands regularly in survey conducted in DRC. This discrepancy is largely due to community and country's economic differences especially on affordability of the interventions as well as their accessibility and acceptability (Ditekemena, Nkamba, & Mahindo, 2021).

According to a survey conducted in Kenya under the ministry of health, less than half of the respondents were practicing social distancing and hand washing and with only 50% wearing face masks by August, 2020. A follow-up survey a year later in August, 2021 establishes an improvement on use of face masks up to 98% and 69% adhering to social distancing with 24% having no hand washing facilities (MOH, 2021). This was as a result of continued creation of awareness via varied media though not adequate and diverse enough to reach and persuade masses to take up the measures. This inaccessible population by these diverse media has led to the recent upsurges in COVID-19 cases even in the rural Kenya. It is thus imperative to continually reassess the levels of adherence and actual practice of the prevention measures to ensure the community is protected. On the contrary, deficiencies in hand cleanliness supplies, testing packs, personal protective equipment (PPE), failure to adhere to the recommended prevention strategies and low

socio-economic status have been found to be critical barriers in the breaking of the chain of transmission of COVID-19 at its naïve stages.

2.4 Attitude towards adherence to COVID-19 prevention protocols among adults

With the changes in economic status due to lost jobs and income generating engagements, many people are unable to and consistently acquire sanitizers, water and soap for hand washing as well keeping the required social distancing. People have not yet positively perceived the directive to stay at home as an act of obedience and being patriotic and only walk out of their houses when necessary. However, due to economic strains, many have opted to violate the law and move out of their homes, re-use masks not reusable and crowd as they fend for their families. Many have indicated that this confinement is meant to disadvantage the low-income earners or those without formal employments. This has gradually led to challenges with prevention of the disease especially in the communities living in rural areas and within slums in the cities and towns.

In Kenya, a survey done in 21 counties, including Kitui County established that most respondents did not observe COVID-19 preventive measures at all times. People all over the world have reported worries about their health status in the advent of COVID-19 disease. A survey conducted in Vietnam revealed that the participants were moderately to severely worried about their health and concerned that their elderly family members would suffer the disease due to their perceived higher risk of contracting it. This was mainly attributed to their multi-generational extended households (MOH, 2020).

However, it is a common feeling that it is easy for everyone to adhere to the COVID-19 prevention measures such as wearing a mask, hand washing or sanitizing as recommended which is not the prevailing uptake at the community level. In china and Japan, due to the prevalence of the disease,

the rate of putting on facemask especially when going out of the house is at 99.5%. This has been attributed to the perception that the mask will effectively prevent contracting the disease (Ditekemena, Nkamba, & Mahindo, 2021). There have been lots of negative social interactions around the wearing of facemasks in many parts of the world, which is the inverse of what is happening in the rest of the world. This shift to a more widespread wearing of mask in response to COVID-19 has greatly affected the normal presentation, with a huge cost implication and sometimes has caused conflict between the populations and institutions implemented the rule within the country.

Studies have reported a perception that majority of persons residing in cities and major town shave a high adherence index to COVID-19 prevention strategies. This is due to an observation that, globally, a proportion of about 70% of the COVID-19 cases have been diagnosed in the cities. This has to some extent made populations in the rural cities and countryside to take lightly the prevention measures (Nguyen *et al.*, 2020). From a different perspective, most of those working as health care services providers have an increased exposure rate that the rest of the population as they constantly interact with the COVID-19 patients. This has been perceived to have made them more compliant to the COVID-19 preventive measures thus more protected

Globally, studies have indicated that deficiencies in hand hygiene supplies, testing packs, personal protective equipment (PPE), laxity of the public to adopt the recommended prevention strategies and poor socio-economic status have enabled the chain of transmission of COVID-19 even at its initial stages when 100% prevention is almost wholly attainable (Tong *et al.*, 2020).

2.5 influence of Socio-Demographic

The young have been found to be protected from the infection compared to the elderly who are

more vulnerable to contracting and suffering the severe form with many succumbing to the disease. Males, younger adults and persons with higher education exhibited better behaviours with regards to uptake of prevention strategies (Zhan, Yang, & Fu, 2020). This indicates the need for strengthening health education for more awareness among persons living in the rural areas where access to information and medical services is a great challenge.

A study conducted in Iraq among university students indicated that they perceived the risk of contracting COVID-19 disease, seriousness of the illness and death as threats to life thus taking up and being adherent to the prevention measures (Shabu, Amen, Mahmood, & Shabila, 2020).

2.6 Gaps in Knowledge

Reviewed literature indicates that COVID-19 is a very infectious disease of the respiratory system caused by a newly discovered strain of Corona virus (SARS-CoV-2) discovered in Wuhan, China in December 2019. The disease was declared a pandemic in March 2020 by the World Health Organization (WHO, 2020). It was observed to spread rapidly in gatherings and in social places through respiratory droplets produced in coughing or sneezing and coming into contact with infected surfaces and objects. It was also discovered that droplets cannot go more than two metres and would remain in air for up to three hours. There still exist gaps in awareness about the disease among different population subsets in both rural urban area, various levels of education and age brackets. The knowledge of causes, modalities of transmission and prevention has overtime been affected by misconceptions and misinformation still in the public domain.

Knowledge of prevention interventions and adherence are still barred by multiple factors including socio-economic factors due to job losses, reduced incomes due to changed modes of work etc. These have pushed many people in the community into ignoring or taking lightly the

prevention of COVID-19. COVID-19 has been associated with a wide array of factors not leaving out socio-demographic characteristics. These have been found to influence differently the uptake of COVID-19 preventive measures and adherence.

2.7 Theoretical framework

The intrapersonal factors are centred on major a variety of elements such as health beliefs and disease related fear and anxiety (Harper & Rhodes, 2020).

These perceived statuses help in explaining the assumed form of human behaviour in diverse cultural backgrounds including human health and safety behaviours.

Personal level of perception Intervening variables Independent variable

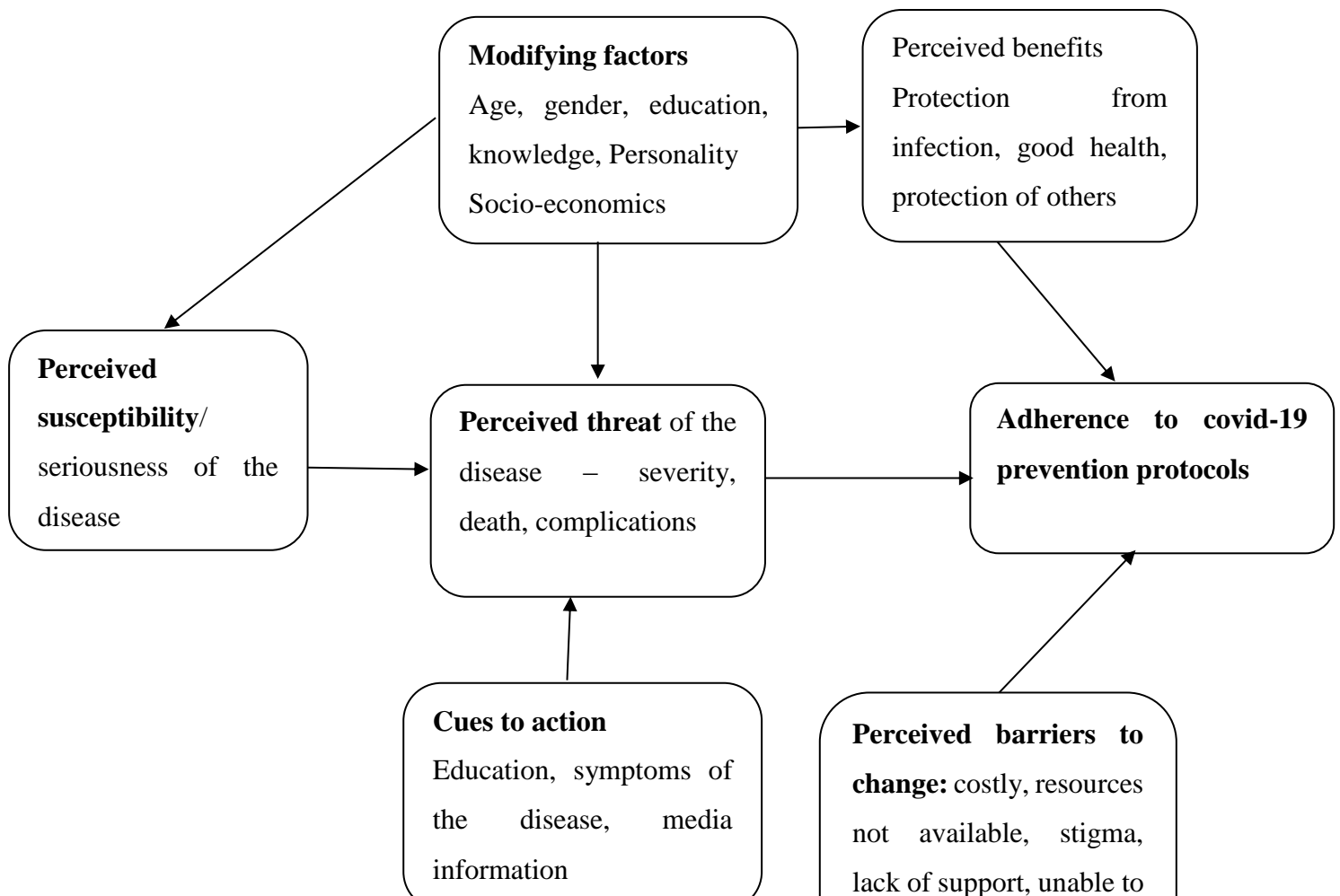


Figure 2.1: The Health Belief Model

Source: Tong, *et al.*, (2020).

This model is based on the premises that; for a behavioural change to succeed, individuals must have the incentive to change, feel threatened by their current behavior, and feel that a change is beneficial and be at an acceptable cost. They must also feel competent to implement that change.

2.8 Social-behavioural model

people are likely to perceive and respond to threat and risks during pandemic and downstream consequences for decision making and intergroup relations. Accompanying negative emotions resulting from threat can be contagious and make threats appear more imminent. In addition, strong fear appeals produce the greatest behaviour change only when people feel a sense of efficacy contexts influence the extent and speed of behaviour change, thus slowing viral transmission during the pandemic requires a significant shift in behaviour. Social norms, inequalities, culture and polarization may help decision makers identify risk factors and effectively intervene since peoples' behavior is greatly influenced by their social norms. Therefore, they can under-estimate health promoting behavior such as hand washing and inversely over-estimate unhealthy behaviours. Providing accurate information about what most people are doing is likely to be helpful if what most of them are doing is desirable. Social inequalities to access resources affect all population subsets and compromise on adopting of any recommendations to slow the spread of the disease (Kramer, Guillory, & Hancock, 2014)

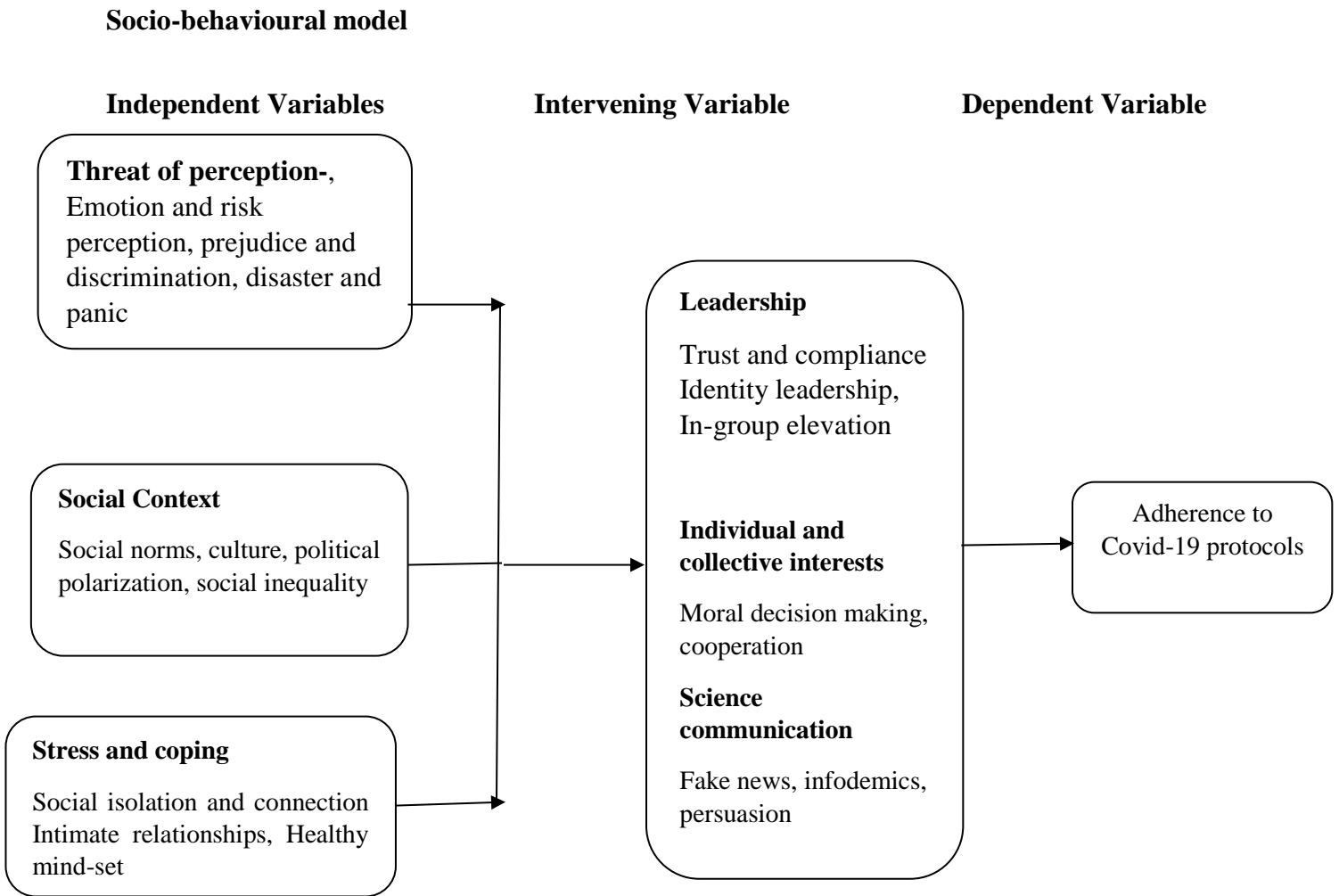


Figure 2.2: Socio-behavioural model

Source: (Kramer, Guillory, & Hancock, 2014)

2.9 Conceptual framework

This study aimed at establishing adherence to the preventive measures among adult residents of Kitui Central Sub-County. The variables derived from the reviewed literature have been categorized into socio-demographic characteristics (age, sex, marital status, education status, religion, residence, occupation, income level), knowledge (causes, exposures, source of information, channels, effectiveness of medium used, transmission modes, signs and symptoms,

services available) , practices for adherence (wearing facemask, hand washing, avoid physical greetings and handshaking, avoid crowded places, working from home, social distancing, disinfecting frequently touched surface/objects, use of sanitizer) and perception of adherence measures (whether it is curable, how to end the pandemic, commonly infected, disease process, handling of victims, those infected, threat from disease).

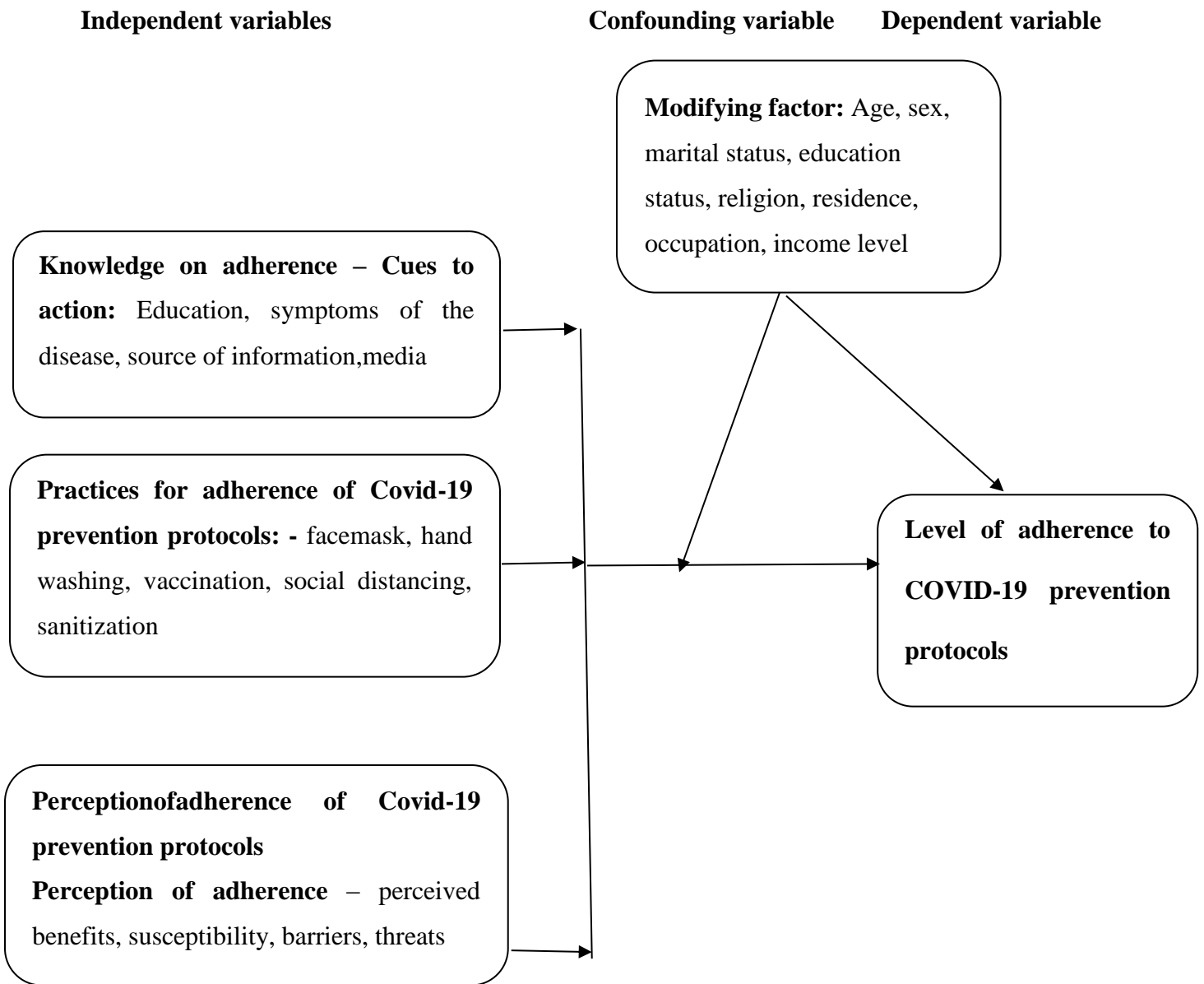


Figure 2.3: Conceptual framework showing relationship between study variables

Source: (Ditekemena, Nkamba , & Mahindo , 2021)

2.10 Association of health belief model and concepts of the conceptual framework

Perceived susceptibility has been cited as the belief that one is at risk of contracting the disease was assessed by the subjects' perception of the seriousness of the disease and its associated severity upon getting infected. Aspects of this component that was assessed will include causes, exposures, available information to increase on awareness, effectiveness of medium used, transmission modes, signs and symptoms, services available, having cared or lost a close relative or friend to the disease (Tong *et al.*, 2020). Perceived severity of the disease was assessed by variables examining a subjects' perception of the resulting consequences of acquiring it including death and complications. Perceived benefits imply a person's certainty that if they will practice the preventive strategies they will be advantaged by not suffering from the disease and incur associated cost.

In this study, these concepts will include subject's perception of protection from infection, good health, protection of others. These perceived benefits will trigger the practice of adherence interventions including consistency in proper wearing of facemask, hand washing, avoid greeting and handshaking, avoid crowded places, working from home, social distancing, disinfecting frequently touched surface/objects and use of alcohol based hand sanitizers to eliminate the virus.

Perceived barriers include aspects of one's belief about the tangible and psychological hindrances such as the cost of proposed and advocated protocols for their protection against the disease. For this study, they will include costly, resources not available, stigma, lack of support, unable to practice the interventions. Cues to action imply the intensity of the indicators that will stimulate the uptake of intervention or action for prevention of the disease. Assessment of a subject's

perception of adherence such as whether it curable, how to end the pandemic, commonly infected, disease process, handling of victims, those infected, threat from disease. These will have coupled with education, symptoms of the disease, media information.

CHAPTER THREE

METHODOLOGY

3.1 Study area

The study was conducted in Kitui Central Sub-County, which is in Kitui County, which harbors Kitui town and has majority of its parts as rural residences. The town serves as a regional hub for majority of Kitui county residents. According to the 2019 Kenya population Housing Census (KPHC) Survey, the county has a population of 1.136 million people. Kitui central sub-county has a population of 105,991 a population of 1.136 million people (KNBS, 2019)making it densely populated compared to other Sub-Counties. The study area had registered many cases of COVID-19 according to the reviewed records.

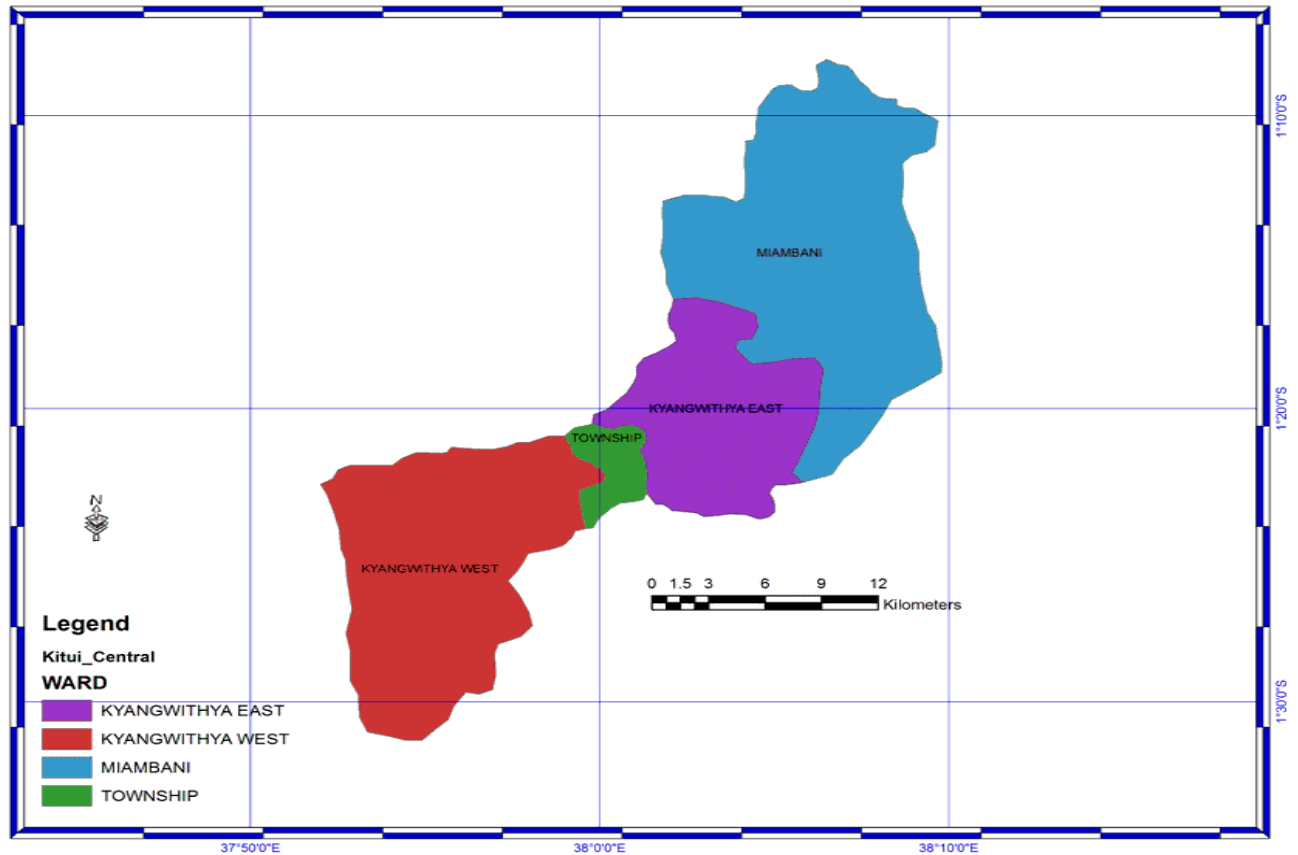


Figure 3.1: Map of study the study area

Source: Researchgate.net

3.2 Study design

3.4 Study Population

People residing both in rural and urban areas. The researcher only included male and female adults aged above 18 years.

In this study, it was estimated at 50% (0.5) since the proportion was unknown.

$$q=1-p \text{ (that is, } 1-0.5=0.5)$$

d= is the desired degree of accuracy at 95%, CI which is 5%=0.05

Therefore,

$$n = \frac{1.96^2 0.5(1 - 0.5)}{0.05^2}$$

$$n = \frac{1.96^2 0.5(1 - 0.5)}{0.05^2} = 384$$

n=384

3.7 Sampling techniques

This study first used convenience sampling technique for the selection of the study location which had recorded majority of the COVID-19 cases. Further, cluster sampling was used whereby clusters for this study included bus stops, supermarkets, households and learning institutions. For the bus stop and supermarkets the researcher applied convenient sampling to select the participants. At the household's level, the researcher applied systematic random sampling to select a member of the household to participate in the study. At the learning institutions simple random sampling was applied to select one institution out of the four (4) institutions of higher learning in Kitui central Sub-County then clustered the students and applied simple random sampling to get the study subjects.

3.8 Instrumentation

of questions to sufficiently address all the study variables. The questionnaire was administered to all consenting and they were observed recording their responses. The respondents were allowed to ask questions for any clarification needed. For those who could not read/or write the researcher or the research assistants helped in reading the questions to the respondents and recording the responses.

3.9 Pre-testing

A pre-test of the data collection tool was conducted in Mwingi Central Sub-County which is in the

same county and had similar characteristics as those in the proposed study area. This allowed for amendments on the data collection instruments for feasibility in readiness for the actual data collection. Any ambiguous or sensitive questions were eliminated from the tool.

Valid

had adequate questions for all variables. The tool was as well discussed with the supervisors for suitability and adequacy to ensure it gathered the intended information.

3.9.2 Reliability

Reliability of the collected information was ensured by pre-testing the questionnaire and training of research assistants on the data collection procedures. This ensured collection of comprehensive data answering all the study objectives.

3.10 Data collection procedure

headquarters to seek approval to conduct the study. The researcher identified the consenting respondents who met the set criteria and administered the questionnaires (Appendix 1). The respondents were given time to go through the instructions, the body of the instrument and allowed to ask questions for any clarification needed. This enabled the researcher explain the contents of the instrument and clarified any ambiguities raised by the respondents. Respondents who were unable to read, research assistants read them and interpreted the questions in a language they best understood then recorded their responses as they gave. The questionnaires were collected after filling, packed and kept in a lockable cabinet for safe keeping in readiness for data analysis later.

3.12 Presentation of the results

The results were presented in tables, figures and a narrative explanation accompanying each form of presentation.

3.13 Dissemination of results

Findings from the study was compiled and presented to SEKU and a copy of the same delivered to the Kitui County Referral Hospital. Besides articles for publication was compiled and processed for publication in various esteemed journals

3.1.4 Ethical Considerations

conduct the study was sought from The National Commission for Science Technology and Innovation (NACOSTI), No NACOSTI/P/22/17832. Administrative authorization was also sought from the County commissioner Kitui County, Kitui Central Sub-County commissioner and the area administration in order to conduct the study within their area of jurisdiction.

Results

with semi-structured questionnaires and observation checklist. This study administered 384 questionnaires. The response rate was 85% with 326 questionnaires completed, processed and analyzed. The collected quantitative data were analyzed using SPSS version 25 and qualitative data analyzed by grouping into themes and observed patterns from the tools. Chi-square was used to test associations. The findings of the study have been presented in the subsequent sections.

4.1 Socio-demographic characteristics of the respondents

On their marital status, 50.9% (n=165) of the respondents were married while 43.3% (n=141) were single. Based on their income, majority of the respondents (34.0%, n=111) earned less than Ksh. 10,000 with the fewest respondents (2.8%, n=9) earning between Ksh. 40,000-49,999. Results on the employment status of the respondents show that more respondents were unemployed (43.3%, n=141) compared to those who were employed (33.4%, n=109) (Table 4.1)

Table 4.1: Socio-Demographic Characteristics of the the respondents

Variable	Categories	(n = 326)	%
Age of the respondent in years	Less than 20	30	9.2
	20-29	113	34.7
	30-39	92	28.2
	40-49	48	14.7
	Above 50	38	11.7
	Missing	5	1.5
Gender	Male	190	58.3
	Female	136	41.7
Level of education	Tertiary level	167	51.2
	Secondary	93	28.5
	Primary	54	16.6
	No formal education	12	3.7
Marital status	Single	141	43.3
	Married	165	50.9
	Widowed/Separated	18	5.8
Religion	Christian	278	85.3
	Muslim	20	6.1
	Others (Hindu)	28	8.6

Income	Below Ksh. 10,000	111	34.0
	Ksh. 10,000-19,999	52	16.0
	Ksh. 20,000-29,999	22	6.7
	Ksh. 30,000-39,999	22	6.7
	Ksh. 40,000-49,999	9	2.8
	Ksh 50,000 and above	39	12.0
Employment status	Non response	71	21.8
	Employed	109	33.4
	Self employed	64	19.6
	Unemployed	141	43.3
	Non response	122	3.7

4.2

Majority of those who were aware of the COVID-19 prevention protocols reported that their first source of information was the Television (53.7%, n=175) while the others had heard from radios (22.1%, n=72), hospitals (2.5%, n=8), friends (7.1%, n=23) and churches (1.2%, n=4). Based on the respondents understanding of what COVID-19 disease is, 52.5% (n=171) knew COVID-19 as a killer disease while 48.2% (n=48.2) knew it as a highly infectious disease (table 4.2).

The researcher also evaluated the respondents' knowledge on what causes COVID-19. The respondents reported that, it is caused by; corona virus (61.0%, n=199), overcrowding (11.0%, n=36), and shaking of hands (8.3%, n=27). The responses indicated that, although majority of the respondents knew the causes of COVID-19, some seemed not to understand what really causes it. Assessment of the knowledge on symptoms of COVID-19, some respondents reported that they were; fever (66.8%, n=218), coughing and sneezing (66.6%, n=217) and breathing problems (34.0%, n=111). These responses show that majority of the respondents understood the correct signs of COVID-19. They also indicated that COVID-19 is transmitted through contact with infected person or surface (36.7%), hand shaking (15%), inhaling infected air (42.8%) and being in overcrowded areas (4.5%). These responses show that most respondents understood how COVID-19 was transmitted (table 4.2).

The respondents were also asked whether COVID-19 was preventable. According to 98.5% (n=321) of the respondents, it was preventable through; putting on face mask (80.7%, n=263), social distancing (54.9%, n=179), proper hand washing (54.0%, n=176%), vaccination (39.9%, n=130), sanitizing (23.9%, n=78) and avoiding body contact (23.3%, n=76).

Table 4.2: Knowledge on COVID-19 and prevention protocols among the respondents

Variable	Categories	n	%
Heard about COVID-19	Yes	315	96.6
	No	11	3.4
Source of information on COVID-19	Television	175	53.7
	Radio	72	22.1
	Friends	23	7.1
	Hospital	8	2.5
	Church	4	1.2
	Family	3	0.9
	All	41	12.6
Knowledge on what COVID-19 is	Killer disease	171	52.5
	Highly infectious disease	157	48.2
Knowledge on the causes of COVID-19	Corona virus	199	61.0
	Overcrowding	36	11.0
	Shaking of hands	27	8.3
Knowledge on Signs and symptoms of COVID-19	Fever	218	66.9
	Coughing/sneezing	217	66.6
	Breathing problems	111	34.0
	Sweating	40	12.3
	Loss of smell	39	12.0
	Loss of appetite	12	3.7
Knowledge on transmission of COVID-19	Contact with infected persons	145	44.5
	Infected air	141	43.3
	Infected surfaces	68	20.9
	Overcrowding	51	15.6
	Not washing hands	20	6.1
Know if COVID-19 is preventable	Yes	321	98.5
	No	5	1.5
Knowledge on prevention methods	Putting on masks	263	80.7
	Social distancing	179	54.9
	Handwashing	176	54.0
	Vaccination	130	39.9

Sanitizing	78	23.9
Avoid body contact	76	23.3

4.3

To achieve this objective, the respondents were presented with a 5-point Likert scale on attitudes with various levels; strongly agree, agree, undecided, disagree, strongly disagree. The responses were summarized in Table 4.3. Slightly more than half of the respondents (50.9%) strongly agreed and agreed (39.6%) that they adhered to COVID-19 prevention protocols because they thought COVID-19 is very infectious. Among the respondents, 35.0% and 42.9% strongly agreed and agreed respectively that they adhered because they were concerned that they can get infected with COVID-19 disease. Slightly less than half of the respondents (48.5%) strongly agreed that purchasing a thermometer for their premises was too costly and those who perceived that buying new facemask every day is too costly (44.2%). Additionally, 51.5% agreed and 36.38% strongly agreed that observing the recommended social distance can prevent them from contracting COVID-19.

Table 4.3: Attitude on adherence to COVID-19 prevention protocols among the respondents

Statement	Strongly agree	Agree	Undecided	Disagree	Strongly disagree
I think COVID-19 disease is very infectious	50.9%	39.6%	2.1%	5.5%	1.8%
I am so concerned that I can be infected with COVID-19 disease	35.0%	42.9%	5.5%	10.7%	3.0%
I think COVID-19 disease has no cure	16.9%	25.8%	17.2%	27.6%	4.3%
I think if I get infected with COVID-19 I may lose my life	14.4%	37.4%	10.1%	24.8%	2.8%
I think covid-19 infection makes person stigmatized	26.1%	39.6%	7.1%	19.3%	8.0%

Putting on face masks is very cumbersome	28.5%	36.8%	4.6%	21.2%	8.9%
The sub-county has no enough water for hand washing points	33.1%	30.1%	3.1%	23.0%	10.8%
Continued hand washing uses a lot of water	31.9%	33.1%	4.6%	19.3%	13.1%
It is very difficult for me stay at home for a day	32.8%	38.0%	2.5%	16.0%	4.0%
I think observing the recommended social distance can prevent me from contracting COVID-19 disease	36.8%	51.5%	2.8%	4.9%	4.0%
My premises cannot afford enough water for frequent hand washing	23.3%	29.1%	7.1%	26.1%	14.4%
I find it uncomfortable to put on a facemask especially when with friends	29.6%	34.4%	3.4%	19.9%	12.6%
Buying new facemask every day is too costly to me and my family	44.2%	27.3%	4.9%	14.7%	9.2%
I think purchasing a thermometer for my premises is too costly to me	48.5%	26.1%	4.3%	10.7%	10.4%

Other 50% were using alcohol based hand sanitizers sometimes. These results show that there was still a problem in as far the practices of the COVID-19 prevention protocols among adults residing in Kitui Central Sub-County since all the other practices were below 50% with some who never practiced any adherence. The results are summarized in Figure 4.1.

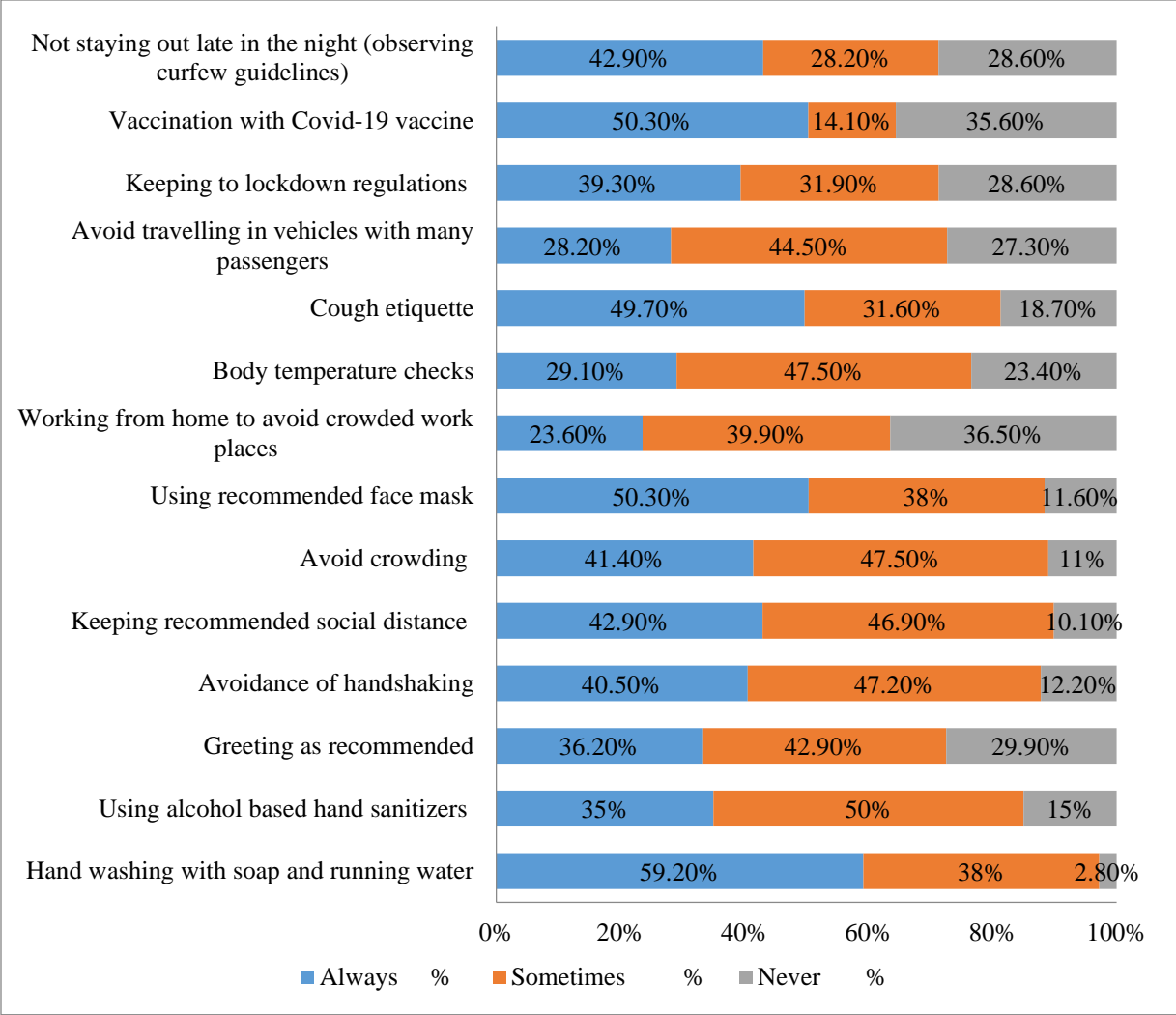


Table 4.4: Correlation Matrix for Attitude Variables

		Correlation Matrix ^a													
		Very infectious	I can be infected	I think no cure	May lose my life	Stigmatized	Masks cumbersome	No enough water	Hand washing use a lot of water	Difficult to stay at home	Social distancing	Can't afford enough water	Masks are uncomfortable	Masks are costly	Thermometer is costly
Correlation	Very infectious	1.000	.200	.011	.166	.042	-.075	-.088	-.069	.024	.225	-.176	-.090	-.100	-.113
	I can be infected	.200	1.000	.089	.107	.146	.063	-.019	.255	.022	.151	.041	-.032	.018	-.007
	I think no cure	.011	.089	1.000	.150	.158	.168	.112	.085	.127	.146	.138	.186	.207	.090
	May lose my life	.166	.107	.150	1.000	.245	.252	.199	.093	.067	.126	.091	.168	.179	.234
	Stigmatized	.042	.146	.158	.245	1.000	.317	.138	.110	.091	.071	.071	.123	.107	.003
	Masks cumbersome	-.075	.063	.168	.252	.317	1.000	.335	.251	.244	.055	.243	.331	.362	.188
	No enough water	-.088	-.019	.112	.199	.138	.335	1.000	.278	.196	.131	.437	.197	.304	.156
	Hand washing use a lot of water	-.069	.255	.085	.093	.110	.251	.278	1.000	.088	.106	.139	.073	.161	.035
	Difficult to stay at home	.024	.022	.127	.067	.091	.244	.196	.088	1.000	.053	.135	.162	.164	.055
	Social distancing	.225	.151	.146	.126	.071	.055	.131	.106	.053	1.000	-.009	.071	.096	.208
	Can't afford enough water	-.176	.041	.138	.091	.071	.243	.437	.139	.135	-.009	1.000	.251	.318	.152
	Masks are uncomfortable	-.090	-.032	.186	.168	.123	.331	.197	.073	.162	.071	.251	1.000	.346	.209
	Masks are costly	-.100	.018	.207	.179	.107	.362	.304	.161	.164	.096	.318	.346	1.000	.300
	Thermometer is costly	-.113	-.007	.090	.234	.003	.188	.156	.035	.055	.208	.152	.209	.300	1.000
Sig. (1-tailed)	Very infectious		.000	.423	.002	.235	.101	.067	.119	.342	.000	.001	.061	.043	.026
	I can be infected	.000		.065	.034	.006	.141	.375	.000	.357	.005	.241	.294	.382	.454
	I think no cure	.423	.065		.005	.003	.002	.028	.073	.015	.006	.009	.001	.000	.063
	May lose my life	.002	.034	.005		.000	.000	.000	.056	.125	.015	.059	.002	.001	.000

	Stigmatized	.235	.006	.003	.000		.000	.009	.030	.059	.112	.111	.017	.033	.483
	Masks cumbersome	.101	.141	.002	.000	.000		.000	.000	.000	.172	.000	.000	.000	.001
	No enough water	.067	.375	.028	.000	.009	.000		.000	.000	.012	.000	.000	.000	.004
	Hand washing use a lot of water	.119	.000	.073	.056	.030	.000	.000		.067	.035	.009	.105	.003	.276
	Difficult to stay at home	.342	.357	.015	.125	.059	.000	.000	.067		.181	.010	.003	.002	.172
	Social distancing	.000	.005	.006	.015	.112	.172	.012	.035	.181		.439	.114	.050	.000
	Can't afford enough water	.001	.241	.009	.059	.111	.000	.000	.009	.010	.439		.000	.000	.005
	Masks are uncomfortable	.061	.294	.001	.002	.017	.000	.000	.105	.003	.114	.000		.000	.000
	Masks are costly	.043	.382	.000	.001	.033	.000	.000	.003	.002	.050	.000	.000		.000
	Thermometer is costly	.026	.454	.063	.000	.483	.001	.004	.276	.172	.000	.005	.000	.000	

a. Determinant = .154

Table 4.5: Inverse Correlation Matrix for Attitude Variables

	Very infectious	I can be infected	I think no cure	May lose my life	Stigmatized	Masks cumbersome	No enough water	Hand washing use a lot of water	Difficult to stay at home	Social distancing	Can't afford enough water	Masks are uncomfortable	Masks are costly	Thermometer is costly
Very infectious	1.220	-.219	.012	-.248	.010	.048	.027	.140	-.070	-.276	.155	.050	.032	.193
I can be infected	-.219	1.180	-.052	-.046	-.126	-.002	.173	-.321	.004	-.103	-.121	.073	.011	.005
I think no cure	.012	-.052	1.113	-.076	-.099	-.023	.032	-.009	-.073	-.124	-.071	-.102	-.129	.019
May lose my life	-.248	-.046	-.076	1.240	-.206	-.135	-.145	-.008	.040	.017	.028	-.070	-.032	-.249
Stigmatized	.010	-.126	-.099	-.206	1.189	-.318	-.040	.015	-.005	-.031	.027	-.022	.025	.120
Masks cumbersome	.048	-.002	-.023	-.135	-.318	1.484	-.193	-.194	-.185	.062	-.030	-.235	-.240	-.080

No enough water	.027	.173	.032	-.145	-.040	-.193	1.473	-.274	-.121	-.157	-.500	.025	-.126	.000
Hand washing use a lot of water	.140	-.321	-.009	-.008	.015	-.194	-.274	1.224	-.003	-.076	.034	.034	-.059	.074
Difficult to stay at home	-.070	.004	-.073	.040	-.005	-.185	-.121	-.003	1.100	-.005	-.026	-.073	-.045	.016
Social distancing	-.276	-.103	-.124	.017	-.031	.062	-.157	-.076	-.005	1.180	.103	-.036	-.018	-.257
Can't afford enough water	.155	-.121	-.071	.028	.027	-.030	-.500	.034	-.026	.103	1.368	-.149	-.195	-.040
Masks are uncomfortable	.050	.073	-.102	-.070	-.022	-.235	.025	.034	-.073	-.036	-.149	1.263	-.236	-.087
Masks are costly	.032	.011	-.129	-.032	.025	-.240	-.126	-.059	-.045	-.018	-.195	-.236	1.393	-.243
Thermometer is costly	.193	.005	.019	-.249	.120	-.080	.000	.074	.016	-.257	-.040	-.087	-.243	1.240

It can also be observed that for these data, Bartlett's test is highly significant ($p < .001$), and therefore factor analysis is appropriate.

Table 4.6: KMO and Bartlett's Test for Attitude

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.731
Bartlett's Test of Sphericity	Approx. Chi-Square	538.599
	df	91
	Sig.	.000

Table 4.7: Total variance explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.004	21.458	21.458	3.004	21.458	21.458	2.087	14.905	14.905
2	1.586	11.325	32.783	1.586	11.325	32.783	1.939	13.852	28.757
3	1.206	8.616	41.399	1.206	8.616	41.399	1.463	10.452	39.209
4	1.083	7.738	49.137	1.083	7.738	49.137	1.390	9.928	49.137
5	.976	6.974	56.111						
6	.923	6.590	62.701						

7	.847	6.053	68.754						
8	.799	5.705	74.459						
9	.746	5.328	79.786						
10	.714	5.097	84.884						
11	.633	4.520	89.404						
12	.533	3.809	93.212						
13	.494	3.530	96.743						
14	.456	3.257	100.000						
Extraction Method: Principal Component Analysis.									

However, after extraction it accounted for only 14.905% of variance compared to 13.852%, 10.45% and 9.928 respectively. Findings for the study were presented in scree plot as in figure 4.2 below;

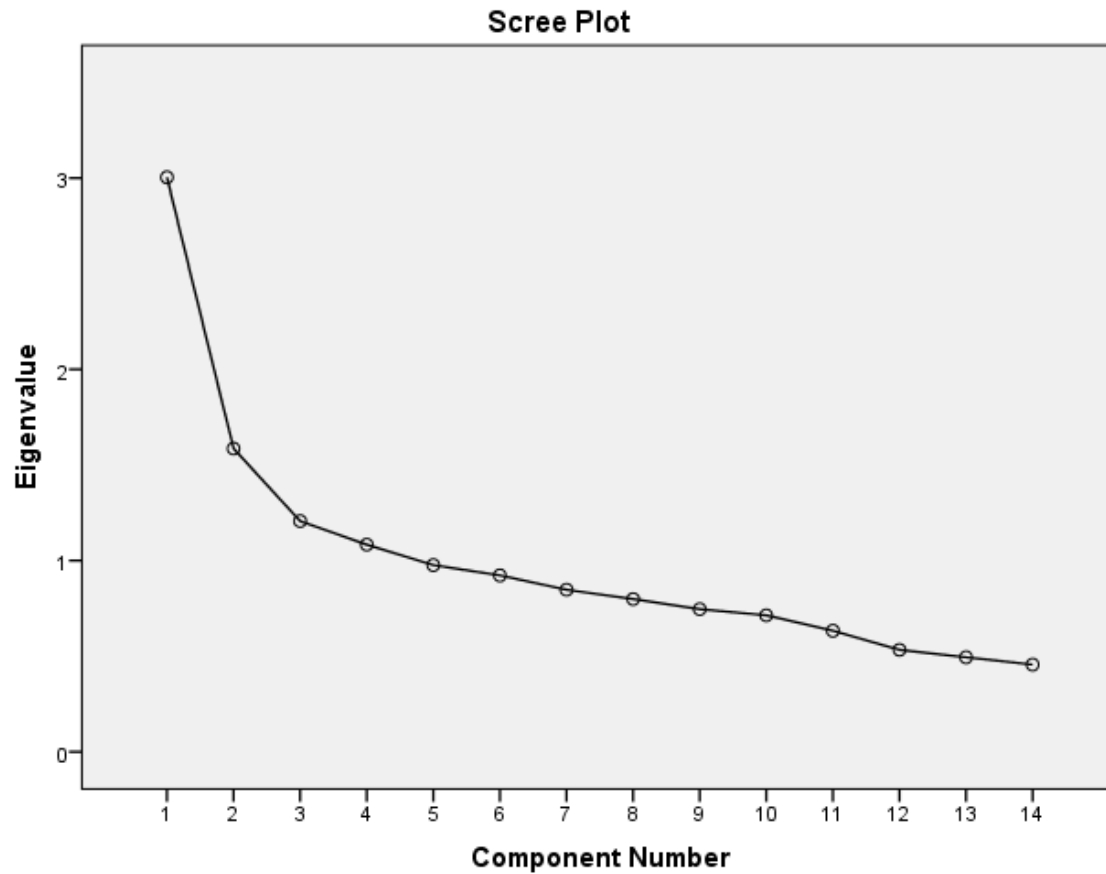


Figure 4.1: Scree Plot

Scree plot was used to show whether or not an eigenvalue is large enough to represent a meaningful factor. Cattell (1966b) argued that the cut-off point for selecting factors should be at the point of inflexion of scree plot curve.

Table 4.8 shows the factor loadings after rotation. The items that cluster on the same components suggest that component 1 represents

a fear of infection 2 a fear of death, component 3 a Negative attitude on protocols and component 4 Negative attitude on material cost.

Table 4.8: Summary of exploratory factor analysis results for Attitude questionnaire

Items	Rotated Factor Loadings			
	Fear of infection	Fear of death	Negative attitude on protocols	Negative attitude on material cost
1. Can't afford enough water	.679	.126	.063	.060
2. No enough water	.627	.218	.134	.211
3. Very Infectious	-.580	.191	.262	.311
4. Masks are costly	.517	.309	.353	-.081
5. Stigmatized	-.072	.721	-.169	.164
6. Masks cumbersome	.405	.622	.027	.067
7. May lose my life	-.071	.540	.368	.063
8. masks are uncomfortable	.351	.434	.244	-.257
9. I think no cure	.062	.421	.214	.033
10. Difficult to stay at home	.194	.408	-.044	.014
11. Thermometer is costly	.283	.027	.701	-.185
12. Social distancing	-.106	.020	.689	.337
13. I can be infected	-.094	.105	.080	.733
14. hand washing use a lot of water	.437	.049	-.046	.672
Eigenvalues	3.0	1.59	1.21	1.08
% of variance	21.33	11.33	8.62	7.74
A	0.78	0.65	0.66	0.54

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

4.6 Association between practices of the COVID-19 Prevention Protocols variables among Adults Residing in Kitui Central

Sub-County

Table 4.9: Correlation Matrix for Practices Variables

		Hand washing	Sanitizer	Greeting as recommended	Avoid hand shaking	Social distance	Avoid crowding	Face mask	Working from Home	body temp	cough etiquette	Avoid crowded vehicles	Lockdown regulation	Vaccination
Correlation	Hand washing	1.000	.496	.157	.360	.522	.197	.161	.134	.427	.391	.259	.114	.183
	Sanitizer	.496	1.000	.150	.303	.561	.212	.176	.152	.534	.461	.278	.238	.214
	Greeting as recommended	.157	.150	1.000	.193	.207	.150	.035	.021	.156	.194	.097	.032	.013
	Avoid hand shaking	.360	.303	.193	1.000	.374	.219	.088	.083	.311	.282	.165	.100	.072
	Social distance	.522	.561	.207	.374	1.000	.389	.233	.227	.630	.497	.346	.166	.144
	Avoid crowding	.197	.212	.150	.219	.389	1.000	.132	.110	.217	.359	.164	.049	.071
	Face mask	.161	.176	.035	.088	.233	.132	1.000	.018	.109	.187	.070	.149	.103
	Working from Home	.134	.152	.021	.083	.227	.110	.018	1.000	.240	.180	.208	.166	.054
	body temp	.427	.534	.156	.311	.630	.217	.109	.240	1.000	.536	.296	.347	.213
	Cough etiquette	.391	.461	.194	.282	.497	.359	.187	.180	.536	1.000	.298	.235	.233
	Avoid crowded vehicles	.259	.278	.097	.165	.346	.164	.070	.208	.296	.298	1.000	.176	.090
	Lockdown regulations	.114	.238	.032	.100	.166	.049	.149	.166	.347	.235	.176	1.000	.094
	Vaccination	.183	.214	.013	.072	.144	.071	.103	.054	.213	.233	.090	.094	1.000
	Sig. (1-tailed)	Hand washing		.000	.004	.000	.000	.000	.003	.011	.000	.000	.000	.026
Sanitizer		.000		.005	.000	.000	.000	.001	.005	.000	.000	.000	.000	.000

Greeting as recommended	.004	.005		.001	.000	.005	.277	.364	.004	.000	.050	.295	.415
Avoid hand shaking	.000	.000	.001		.000	.000	.068	.080	.000	.000	.002	.044	.111
Social distance	.000	.000	.000	.000		.000	.000	.000	.000	.000	.000	.002	.007
Avoid crowding	.000	.000	.005	.000	.000		.012	.030	.000	.000	.003	.204	.115
Face mask	.003	.001	.277	.068	.000	.012		.382	.032	.001	.119	.006	.041
Working from Home	.011	.005	.364	.080	.000	.030	.382		.000	.001	.000	.002	.181
body temp	.000	.000	.004	.000	.000	.000	.032	.000		.000	.000	.000	.000
cough etiquette	.000	.000	.000	.000	.000	.000	.001	.001	.000		.000	.000	.000
Avoid crowded vehicles	.000	.000	.050	.002	.000	.003	.119	.000	.000	.000		.001	.064
Lockdown regulations	.026	.000	.295	.044	.002	.204	.006	.002	.000	.000	.001		.055
Vaccination	.001	.000	.415	.111	.007	.115	.041	.181	.000	.000	.064	.055	
a. Determinant = .054													

Table 4.10: Inverse Correlation Matrix for Practices

	Hand washing	Sanitizer	Greeting as recommended	Avoid hand shaking	Social distance	Avoid crowding	Face mask	Working from Home	body temp	cough etiquette	Avoid crowded vehicles	Lockdown regulations	Vaccination
Hand washing	1.589	-.370	-.030	-.243	-.400	.062	-.048	-.003	-.074	-.124	-.081	.080	-.091
Sanitizer	-.370	1.775	-.012	-.062	-.436	.053	-.045	.031	-.309	-.215	-.060	-.124	-.113
Greeting as recommended	-.030	-.012	1.079	-.121	-.095	-.059	.024	.039	-.004	-.108	-.014	.018	.042
Avoid hand shaking	-.243	-.062	-.121	1.253	-.178	-.096	.015	.021	-.083	-.048	-.005	-.013	.029
Social distance	-.400	-.436	-.095	-.178	2.417	-.426	-.259	-.128	-.878	-.087	-.218	.204	.104
Avoid crowding	.062	.053	-.059	-.096	-.426	1.265	-.036	-.031	.157	-.329	-.015	.037	.003
Face mask	-.048	-.045	.024	.015	-.259	-.036	1.104	.050	.186	-.103	.037	-.154	-.064
Working from Home	-.003	.031	.039	.021	-.128	-.031	.050	1.104	-.117	-.032	-.136	-.106	.003
body temp	-.074	-.309	-.004	-.083	-.878	.157	.186	-.117	2.177	-.477	-.010	-.409	-.126
cough etiquette	-.124	-.215	-.108	-.048	-.087	-.329	-.103	-.032	-.477	1.720	-.136	-.075	-.157
Avoid crowded vehicles	-.081	-.060	-.014	-.005	-.218	-.015	.037	-.136	-.010	-.136	1.204	-.098	-.001
Lockdown regulations	.080	-.124	.018	-.013	.204	.037	-.154	-.106	-.409	-.075	-.098	1.203	.002
Vaccination	-.091	-.113	.042	.029	.104	.003	-.064	.003	-.126	-.157	-.001	.002	1.093

Table 4.11: KMO and Bartlett's Test for practices

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.861
Bartlett's Test of Sphericity	Approx. Chi-Square	827.913
	Df	78
	Sig.	.000

An initial analysis was run to obtain eigenvalues for each component in the data. Three components had eigenvalues over Kaiser's criterion of 1 and in combination explained 48.076% of the variance. Rotation maximizes the loading of each variable on one of the extracted factors while minimizing the loading on all other factors. Rotation works through changing the absolute values of the variables while keeping their differential values constant. Table 4.12 shows the factor loadings after rotation.

Table 4.12: Total Variance explained for Practices

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.029	30.989	30.989	4.029	30.989	30.989	2.751	21.162	21.162
2	1.167	8.981	39.970	1.167	8.981	39.970	1.964	15.106	36.268
3	1.054	8.106	48.076	1.054	8.106	48.076	1.535	11.808	48.076
4	.953	7.332	55.409						
5	.905	6.963	62.371						
6	.865	6.653	69.024						
7	.784	6.029	75.053						
8	.770	5.923	80.975						
9	.711	5.466	86.441						
10	.536	4.121	90.563						
11	.491	3.779	94.342						
12	.451	3.472	97.814						
13	.284	2.186	100.000						

Extraction Method: Principal Component Analysis.

Since the underlying factors are unrelated the orthogonal rotations varimax was chosen. This is because varimax attempts to maximize the dispersion of loadings within factors. This implies that it tries to load a smaller number of variables highly onto each factor resulting in more interpretable clusters of factors. Since all variables are not clustered between the axes, then the rotation has been relatively successful in maximizing the loading of a variable. Table 4.10 shows the lists the eigenvalues associated with each linear component (factor) before extraction, after extraction and after rotation. Before extraction, SPSS has identified 13 linear components within the data set. The eigenvalues associated with each factor represent the variance explained by that particular linear component. Before rotation, factor 1 accounted for considerably more variance than the remaining two (30.989%) compared to 8.981% and 8.106%, but after extraction it accounts for only 21.162% of variance (compared to 15.106 and 11.808% respectively).The scree plot for adherence is presented in figure 4.3 below;

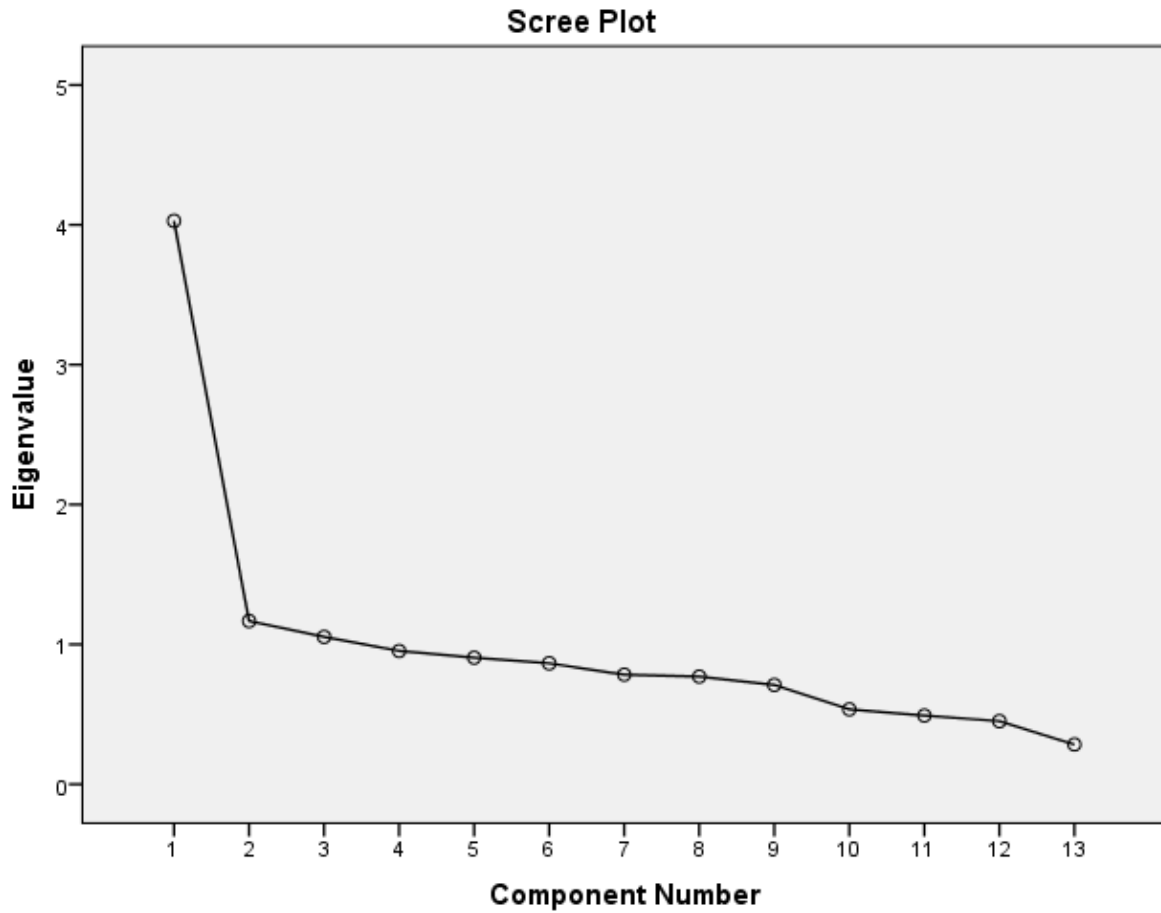


Figure 4.2: Scree Plot

Table 4.13: Summary of exploratory factor analysis results for practices questionnaire

Item	Rotated Component Matrix ^a		
	Component 1	Component 2	Component 3
1. Social distance	.662	.386	.312
2. Avoid hand shaking	.623	.076	.098
3. Avoid crowding	.587	.060	.030
4. Greeting as recommended	.582	-.089	-.108
5. Hand washing	.563	.229	.344
6. cough etiquette	.471	.366	.443
7. Sanitizer	.457	.371	.452
8. Working from Home	.037	.726	-.207
9. Lockdown regulations	-.116	.574	.272

10. body temp	.421	.555	.358
11. Avoid crowded vehicles	.246	.552	.049
12. Vaccination	-.066	.027	.695
13. Curfew guidelines	.125	.314	.576
14. Face mask	.130	-.096	.496
Eigenvalues			
	4.03	1.17	1.05
% of variance			
	31.0	8.99	8.11
α			
	0.77	0.71	0.52
Extraction Method: Principal Component Analysis.			
Rotation Method: Varimax with Kaiser Normalization.			
a. Rotation converged in 4 iterations.			

4.7 Observation Checklist results

The respondents were requested to tick on the choices given in table 4.112 as a checklist for the adherence to COVID-19 protocols.

Table 4.14: Check list Responses

No.	Statement	Yes %	Inappropriately %	No %
1.	Has face masks	68.7%	5.2%	26.1%
2.	Has put on a face mask	54.0%	9.8%	43.6%
3.	Does not reuse face masks	54.0%	2.5%	43.6%
4.	Puts on the face mask appropriately	52.1%	11.3%	36.2%
5.	Practices hand washing	54.3%	14.7%	40%
6.	Has a designated hand washing point with soap and running water	56.7%	9.8%	33.4%

7.	Sanitizes hands using alcohol, based sanitizers	49.4%	8.9%	41.7%
8.	Has recommended hand sanitizer	48.5%	5.8%	45.7%
9.	Disinfects frequently touched surfaces	37.1%	10.1%	52.8%
10.	Coughs/sneezes into the elbow	52.5%	11%	36.5%
11.	Practices social distancing	46.3%	7.7%	46%
12.	Has been fully vaccinated for COVID-19	48.5%	12.9%	38.7%
13.	Has COVID-19 IEC materials within the premises/household	29.4%	7.1%	63.5%

The checklist results in Table 4.11 shows that 7 items out of the 13 items rated slightly above 50%, thus subjects were adhering to COVID -19 prevention protocols with the highest at 68.7% for the use of face masks. It was also observed that 63.5% of the subjects did not have Covid-19 IEC materials within their premises/household while 52.8% did not disinfect frequently touched surfaces. Principal component analysis was performed to establish which linear components exist within the data set and how variables contribute to that component. The results were presented using tables which were then explained as below;

Table 4.14: Correlation Matrix for adherence

		Has facemask	Has put on mask	Does not reuse mask	Put on mask appropriately	Practices hand washing	hand washing points	Sanitizes	Has sanitizer	Disinfects frequently	sneezes into elbow	Social distancing	vaccinated	Has material
Correlation	Has facemask	1.000	.183	.059	.116	.034	.090	.138	.117	.065	.056	.029	.057	.116
	Has put on mask	.183	1.000	.339	.516	.275	.483	.510	.379	.240	.215	.271	.359	.350
	Does not reuse mask	.059	.339	1.000	.311	.175	.253	.290	.283	.199	.203	.171	.204	.219
	Put on mask appropriately	.116	.516	.311	1.000	.262	.328	.435	.364	.239	.206	.244	.302	.318
	Practices hand washing	.034	.275	.175	.262	1.000	.250	.229	.196	.114	.113	.140	.086	.167
	hand washing points	.090	.483	.253	.328	.250	1.000	.595	.557	.296	.289	.255	.300	.314
	Sanitizes	.138	.510	.290	.435	.229	.595	1.000	.753	.349	.268	.287	.350	.373
	sanitizer	.117	.379	.283	.364	.196	.557	.753	1.000	.360	.264	.163	.346	.368
	Disinfects frequently	.065	.240	.199	.239	.114	.296	.349	.360	1.000	.136	.095	.188	.234
	Coughs/sneezes into elbow	.056	.215	.203	.206	.113	.289	.268	.264	.136	1.000	.129	.171	.155
	Social distancing	.029	.271	.171	.244	.140	.255	.287	.163	.095	.129	1.000	.118	.161
	Fully vaccinated	.057	.359	.204	.302	.086	.300	.350	.346	.188	.171	.118	1.000	.265
Has material	.116	.350	.219	.318	.167	.314	.373	.368	.234	.155	.161	.265	1.000	
Sig. (1-tailed)	Has facemask		.001	.162	.027	.285	.066	.011	.025	.138	.176	.316	.171	.027
	Has put on mask			.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
	Does not reuse mask				.000	.002	.000	.000	.000	.000	.000	.002	.000	.000
	Put on mask appropriately					.000	.000	.000	.000	.000	.000	.000	.000	.000
	Practices hand washing						.000	.000	.000	.029	.030	.010	.077	.003
	Has designated hand washing points							.000	.000	.000	.000	.000	.000	.000

	Sanitizes using sanitizer	.011	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
	Has hand sanitizer	.025	.000	.000	.000	.000	.000	.000	.000	.000	.000	.003	.000	.000
	Disinfects frequently	.138	.000	.000	.000	.029	.000	.000	.000	.000	.012	.058	.001	.000
	Coughs/sneezes into elbow	.176	.000	.000	.000	.030	.000	.000	.000	.012	.000	.016	.002	.005
	Social distancing	.316	.000	.002	.000	.010	.000	.000	.003	.058	.016	.000	.025	.004
	Fully vaccinated	.171	.000	.000	.000	.077	.000	.000	.000	.001	.002	.025	.000	.000
	Has material	.027	.000	.000	.000	.003	.000	.000	.000	.000	.005	.004	.000	.000
a. Determinant = .037														

Table 4. 15: Inverse Correlation Matrix for adherence

	Has facemask	Has put on mask	Does not reuse mask	Put on mask	hand washing	hand washing points	Sanitizes	Has recommended hand sanitizer	Disinfects frequently	Coughs/sneezes into elbow	Social distancing	Fully vaccinated	Has material
Has facemask	1.044	-.170	.015	-.019	.026	.037	-.052	-.034	-.005	-.013	.032	.034	-.053
Has put on mask	-.170	1.852	-.200	-.480	-.141	-.388	-.425	.265	-.007	-.002	-.097	-.232	-.147
Does not reuse mask	.015	-.200	1.218	-.141	-.062	.005	.024	-.127	-.078	-.109	-.065	-.041	-.051
Put on mask appropriately	-.019	-.480	-.141	1.543	-.151	.097	-.191	-.072	-.074	-.062	-.111	-.119	-.120
Practices hand washing	.026	-.141	-.062	-.151	1.135	-.132	-.015	-.019	.002	-.012	-.034	.078	-.041
Has designated hand washing points	.037	-.388	.005	.097	-.132	1.819	-.437	-.412	-.099	-.177	-.127	-.055	-.049
Sanitizes using alcohol based sanitizer	-.052	-.425	.024	-.191	-.015	-.437	2.942	-.1597	-.117	-.037	-.277	-.056	-.068
Has recommended hand sanitizer	-.034	.265	-.127	-.072	-.019	-.412	-.1597	2.597	-.200	-.090	.194	-.182	-.187

Disinfects frequently	-.005	-.007	-.078	-.074	.002	-.099	-.117	-.200	1.200	-.004	.028	-.025	-.087
Coughs/sneezes into elbow	-.013	-.002	-.109	-.062	-.012	-.177	-.037	-.090	-.004	1.136	-.033	-.047	-.008
Social distancing	.032	-.097	-.065	-.111	-.034	-.127	-.277	.194	.028	-.033	1.153	.025	-.036
Fully vaccinated	.034	-.232	-.041	-.119	.078	-.055	-.056	-.182	-.025	-.047	.025	1.256	-.108
Has material	-.053	-.147	-.051	-.120	-.041	-.049	-.068	-.187	-.087	-.008	-.036	-.108	1.279

Table 4.16: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.875
Bartlett's Test of Sphericity	Approx. Chi-Square	898.781
	Df	78
	Sig.	.000

For these data the value is 0.875, which falls into the range of being super, and therefore the sample size is adequate for factor analysis. It can also be observed that for these data, Bartlett's test is highly significant ($p < .001$), and therefore factor analysis is appropriate.

Table 4.17: Total variance explained for adherence

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.305	33.113	33.113	4.305	33.113	33.113	3.209	24.686	24.686
2	1.048	8.064	41.177	1.048	8.064	41.177	2.144	16.491	41.177
3	.999	7.682	48.860						
4	.894	6.878	55.737						
5	.880	6.769	62.506						
6	.869	6.685	69.191						
7	.810	6.232	75.423						
8	.724	5.566	80.990						
9	.696	5.353	86.343						
10	.627	4.821	91.164						
11	.534	4.110	95.274						
12	.393	3.022	98.295						
13	.222	1.705	100.000						
Extraction Method: Principal Component Analysis.									

An initial analysis was run to obtain eigenvalues for each component in the data. Two components had eigenvalues over Kaiser's criterion of 1 and in combination explained 41.177% of the variance. Table 4.14 above shows lists of the Eigenvalues associated with each linear component (factor) before extraction, after extraction and after rotation. Rotation maximizes the loading of each

variable on one of the extracted factors while minimizing the loading on all other factors. Rotation works through changing the absolute values of the variables while keeping their differential values constant.

Before extraction, SPSS has identified 13 linear components within the data set. The eigenvalues associated with each factor represent the variance explained by that particular linear component. Before rotation, factor 1 accounted for considerably more variance than the remaining two (33.113%) compared to 8.064% %, but after extraction it accounts for only 24.686% of variance compared to 16.491.

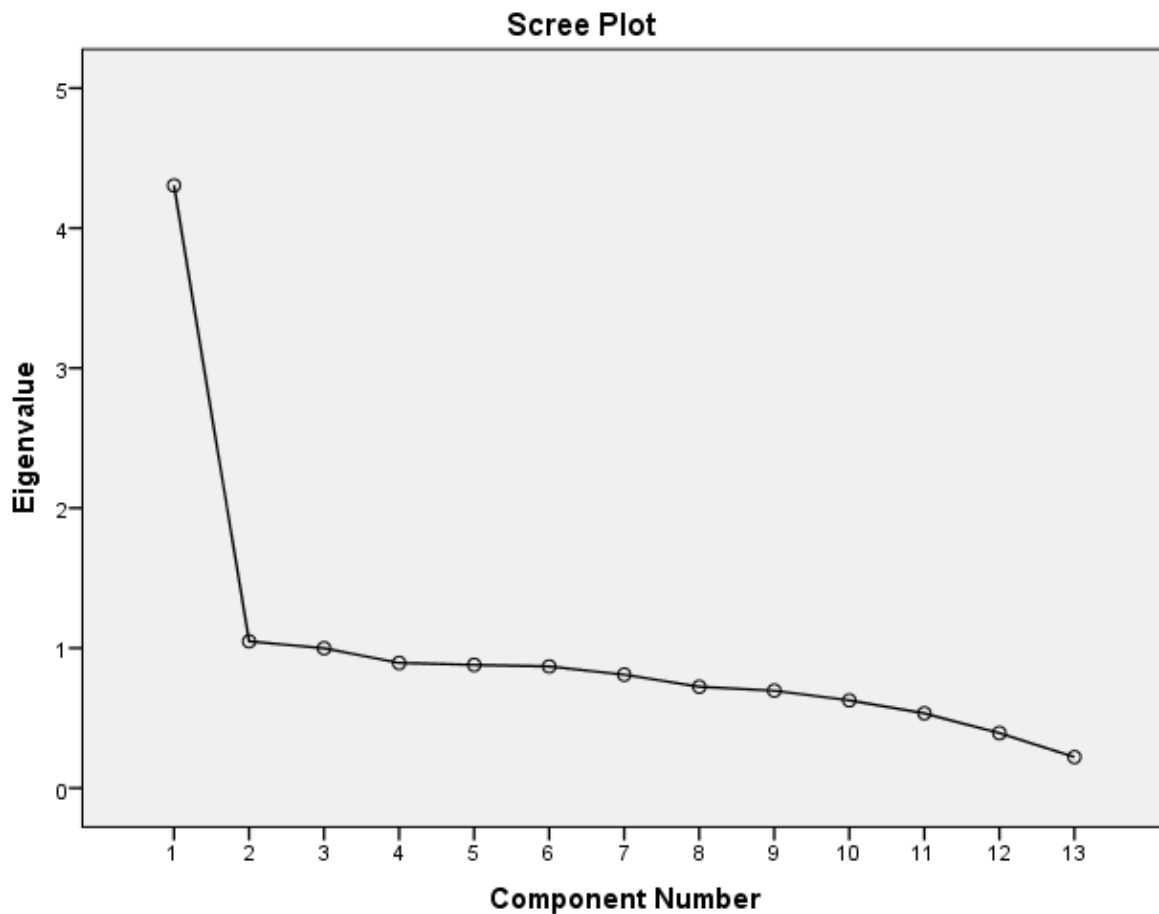


Figure 4.3: Scree Plot

Table 4. 18: Summary of exploratory factor analysis results for practices

Item	Rotated Factor Loadings	
	Component 1	Component 2
1. Has recommended hand sanitizer	.826	.166
2. Sanitizes using alcohol based sanitizer	.787	.323
3. Has designated hand washing points	.657	.329
4. Disinfects frequently	.608	-.011
5. Fully vaccinated	.535	.161
6. Coughs/sneezes into elbow	.361	.218
7. Has facemask	.233	.034
8. Practices hand washing	.016	.646
9. Social distancing	.034	.631
10. Put on mask appropriately	.371	.601
11. Has put on mask	.472	.595
12. Does not reuse mask	.253	.496
Eigenvalues	4.31	1.05
% of variance	33.11	8.06
A	0.85	0.83
Extraction Method: Principal Component Analysis.		
Rotation Method: Varimax with Kaiser Normalization.		
a. Rotation converged in 3 iterations.		

CHAPTER FIVE

DISCUSSION

5.1 Introduction

This study investigated the levels of adherence to COVID-19 prevention protocols among adults residing in Kitui Central Sub-County. In this chapter the discussions of the findings of the study are presented.

5.2 Knowledge on COVID-19 and the prevention protocols among the respondents

The study established that 97.5 % (318) of the respondents had heard about COVID-19 prevention protocols hence were aware. Majority of those who were aware of the COVID-19 prevention protocols (53.7%; n=175) reported that their first source of information was the Television while the others 46.1% (151) heard from other sources. The respondents stated that COVID-19 was a killer disease, it's contagious, it originated from China, it has no cure, it affects respiratory system, it's a worldwide disease and it can be prevented. These results agree with Ditekemena, Nkamba, & Mahindo (2021) who argued that to a larger extent, populations should be aware of the condition in terms of its causation factor, modalities of transmission between and among people, the varied clinical presentation of, the disease progression in infected persons, management interventions and prevention measures.

The study also established that the symptoms of COVID-19 are; fever, coughing, loss of appetite, loss of smell, chest pain and sour throat. These results agree with (WHO, Coronavirus disease (COVID-19) which reported that the manifestations of COVID-19 include: - fever, dry cough, sore throat, headache, fatigue, myalgia and breathlessness. It was also established that there was a significant difference between the respondents who had knowledge on the COVID-19 prevention protocols and those who did not have knowledge on the COVID-19 prevention protocols among

adults adhering to COVID-19 prevention protocols ($\chi^2 = 0.103$; $df = 1$; $p = 0.001$). According to WHO (2020), adherence to COVID-19 prevention measures is influenced by peoples' knowledge about the disease.

5.3 Attitude on adherence to COVID-19 prevention protocols among the respondents

The responses were presented indicated that slightly more than half of the respondents (50.9%) strongly agreed while 39.6% agreed to the statement “*I think COVID-19 is very infectious*”.

The researcher was also interested in understanding reasons for non-adherence to the COVID-19 prevention measures by some of the respondents. About 44% of the respondents reported that buying new facemask every day was too costly for them. During the peak of COVID-19, the price of a single facemask went up by about 5 times the initial cost (Can, 2020). With the hard economic situations and massive loss of jobs, majority of the people could not meet this cost on daily basis. Therefore, some could not adhere to the Ministry of Health requirement of wearing a facemask at all times when in public spaces.

Daily monitoring of temperature for people in major entry points of buildings, malls, shops and bus stops was floated as one of the ways of detecting fever which was a clinical symptom of COVID-19 (Mitra *et al.*, 2020; Vike *et al.*, 2020). Slightly less than half of the respondents in this study (48.5%) strongly agreed that purchasing a thermometer for their premises was too costly. This was as a result of the rapid rise in the price of thermoguns in Kenya coupled with influx of counterfeit thermoguns which could not last for long.

5.4 Practices of the COVID-19 prevention protocols among the respondents

On practice, the study established that majority 59.2% (193) of the respondents practiced hand washing with soap and running water always, followed by 50.3% (164) who were using the recommended face mask always. The compliance to hand washing was higher when compared to

a study by Seid et al., (2022) who reported a proportion of good compliance with hand hygiene amongst the respondents during COVID-19 which was at 43.93% in Southern Ethiopia. This was attributed to the many partners who joined hands in different capacities to support the community with handwashing facilities as a COVID-19 prevention measure. Additionally, despite the challenges in accessing facemasks associated with high costs and unavailability, half of the respondents practiced the use of facemask. This can be associated to the perception of the severity of the disease due to its high infectivity and transmission rate which caused fear of infection among people.

Other 50% (163) were using alcohol based hand sanitizers sometimes. These results show that there was still a problem in as far the practices of the COVID-19 prevention protocols among adults residing in Kitui Central Sub-County since all the other practices were below 50% with some who never practiced any adherence. It was also established that there was significant association between adherence to COVID-19 prevention protocols and level of education among the respondents ($\chi^2 = 65.363$; $df = 1$; $p\text{-value} = 0.00$). This agrees with Zhan, Yang, &Fu, 2020 who argued that persons with higher education exhibited better behaviors' with regards to uptake of prevention strategies

CHAPTER SIX

CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusions

The study concludes that the measures taken by the Kenyan Ministry of Health to health educate the public on COVID-19 disease were effective in improving the knowledge of the people about COVID-19. This can be justified by majority of the participants had general knowledge about COVID-19 signs and symptoms, methods of spread and prevention measures. The Ministry of

Health officials gave daily updates and statistics on Television channels of the disease progression and warned people to take precautions. There were also radio talk shows on the local media channels and physical campaigns using public address system in Kitui Central Sub-county to educate the general public on COVID-19 signs, transmission and prevention measures. Also, the Ministry of Health educated the public about COVID-19 vaccine and demystified the myths and misconceptions about COVID-19 disease.

On the attitude of adherence to COVID-19 prevention protocols, the study concludes that the individuals' attitude and perceptions about the severity of COVID-19 disease shaped their adherence to the prevention protocols. In the initial stages, the disease was very infectious characterized by a very rapid spread. Majority of the people in Kitui Central Sub-county feared that they will get infected with this novel disease and thus opted to adhere to the Ministry of Health guidelines for preventing COVID-19 disease. This involved practicing simple measures such as frequent washing of hands using soap and running water, use of alcohol based hand sanitizers, observing social distancing when in public spaces and using the recommended face mask to cover the mouth and nose.

The current study confirmed that adherence to COVID-19 prevention protocols had some association with awareness, perception and practices of the adults living in Kitui Central Sub-County. Level of awareness was associated with level of education and income level and not with gender, marital status, and religion. Knowledge was also associated with level of education and income level and not with the other factors. Attitude towards COVID-19 prevention protocols and practice were both associated with level of education. Since the data indicates that there is still a problem in perception, knowledge and practice towards adherence to COVID-19 prevention

protocols by adults.

6.2 Recommendations

6.2.1 Recommendations for action

This study recommends that the county government departments of education and health should promote continuous informal education coupled with campaigns to raise awareness levels of COVID-19. This will greatly help in combating COVID-19 disease and the understanding that the disease is controllable, manageable and preventable. More awareness on COVID-19 disease would positively change peoples' attitude and uptake of prevention protocols consequently reducing on the disease prevalence and eventually eliminate it. Additionally, the study also recommends the Ministry of Health to develop preparedness mechanisms for future pandemics. In the initial stages, it was very difficult to control COVID-19 disease and this created a lot of fear among the general public. Very little was known about the disease and therefore most of the people were in panic mode.

6.2.2 Recommendations for further research

The study recommends further research to be done in different settings, that is urban and rural settings, and comparisons made between different groups. The current study was carried out in a peri-urban setting and there could be differences in knowledge, attitudes and practices for the same in different settings. Again, further research is also needed to understand why despite the Ministry of Health efforts to educate the public about COVID-19 in Kitui Central Sub-county, some of the people did not change their attitude and thus did not practice the COVID-19 prevention protocols. Other factors such as cultural practices that may influence the practicing of the COVID-19 prevention protocols also need to be researched on and documented.

6.2.3 Recommendations for policy

The study recommends continuous review and evaluation of the implementation of the health promotion related policies. Basic practices such as washing hands with soap and running water are what people should be practicing on daily basis to prevent themselves from infections. However, this is a rare practice among many people and only became a common practice as a COVID-19 preventive measure. There is a need to develop a policy guideline to ensure continuity of the practices even when COVID-19 is fully eliminated as this will help in preventing the public from other infections/diseases.

REFERENCES

- Ahmed, M. A. M., Siewe Fodjo, J. N., Gele, A. A., Farah, A. A., Osman, S., Guled, I. A., Ali, A. M., & Colebunders, R. (2020). COVID-19 in Somalia: Adherence to Preventive Measures and Evolution of the Disease Burden. *Pathogens (Basel, Switzerland)*, 9(9), 735. <https://doi.org/10.3390/pathogens9090735>
- Rodríguez-Morales, A. J., MacGregor, K., Kanagarajah, S., Patel, D., & Schlagenhauf, P. (2020). Going global - Travel and the 2019 novel coronavirus. *Travel medicine and infectious disease*, 33, 101578. <https://doi.org/10.1016/j.tmaid.2020.101578>
- Can H. A. (2020) COVID-19 – economics behind the pricing of face masks. *Vietnam Investment Review*. Available from: <https://vir.com.vn/covid-19-economics-behind-the-pricing-of-face-masks-74206.html>
- Centre for Infection and Immunity. (2020, May 5). *Infectious disease research*. Retrieved from: <https://www.mailman.columbia.edu/research/centre-infection-and-immunity/combating-pandemic-threats>
- Ditekemena, J. D., Nkamba, D. M., Muhindo, H. M., Siewe, J. N. F., Luhata, C., Van den Bergh, R., Tshetu Kitoto, A., Van Damme, W., Muyembe, J. J., & Colebunders, R. (2021). Factors associated with adherence to COVID-19 prevention measures in the Democratic Republic of the Congo (DRC): results of an online survey. *BMJ open*, 11(1), e043356. <https://doi.org/10.1136/bmjopen-2020-043356>
- Faria de Moura Villela, E., López, R. V. M., Sato, A. P. S., de Oliveira, F. M., Waldman, E. A., Van den Bergh, R., Siewe Fodjo, J. N., & Colebunders, R. (2021). COVID-19 outbreak in Brazil: adherence to national preventive measures and impact on people's lives, an online survey. *BMC public health*, 21(1), 152. <https://doi.org/10.1186/s12889-021-10222-z>
- Gandhi, M., Yokoe, D. S., & Havlir, D. V. (2020). Asymptomatic Transmission, the Achilles' Heel of Current Strategies to Control Covid-19. *The New England journal of medicine*, 382(22), 2158–2160. <https://doi.org/10.1056/NEJMe2009758>
- Hamner, L., Dubbel, P., Capron, I., Ross, A., Jordan, A., Lee, J., Lynn, J., Ball, A., Narwal, S., Russell, S., Patrick, D., & Leibrand, H. (2020). High sars-COV-2 attack rate following

- exposure at a choir practice — Skagit County, Washington, March 2020. *MMWR. Morbidity and Mortality Weekly Report*, 69(19), 606–610. <https://doi.org/10.15585/mmwr.mm6919e6>
- Harper, C. A., & Rhodes, D. (2022). Ideological responses to the breaking of COVID-19 social distancing recommendations. *Group Processes & Intergroup Relations*, 0(0). <https://doi.org/10.1177/13684302221074546>
- Hu, K., Zhao, Y., Wang, M., Zeng, Q., Wang, X., Wang, M., Zheng, Z., Li, X., Zhang, Y., Wang, T., Zeng, S., Jiang, Y., Liu, D., Yu, W., Hu, F., Qin, H., Hao, J., Yuan, J., Shang, R., Jiang, M., Ding, X., Zhang, B., Shi, B., & Zhang, C. (2020). Identification of a super-spreading chain of transmission associated with covid-19. <https://doi.org/10.1101/2020.03.19.20026245>
- Khan, G., Sheek-Hussein, M., Al Suwaidi, A. R., Idris, K., & Abu-Zidan, F. M. (2020). Novel coronavirus pandemic: A global health threat. *Turkish journal of emergency medicine*, 20(2), 55–62. <https://doi.org/10.4103/2452-2473.285016>
- Kitui County MOH Report. (2022). *Situation Report Number 261*. Kitui County. Retrieved January 2022
- KNBS. (2020). *Survey on Socio Economic Impact of COVID-19 on Household Reports*. Nairobi: Kenya National Bureau of Statistics. Retrieved December 7th , 2021, from <https://t.co/zRheAaYKwi?amp>
- Kordzadeh-Kermani, E., Khalili, H., & Karimzadeh, I. (2020). Pathogenesis, clinical manifestations and complications of coronavirus disease 2019 (COVID-19). *Future microbiology*, 15, 1287–1305. <https://doi.org/10.2217/fmb-2020-0110>
- Kramer, A. D., Guillory, J. E., & Hancock, J. T. (2014). Experimental evidence of massive-scale emotional contagion through social networks. *Proceedings of the National Academy of Sciences of the United States of America*, 111(24), 8788–8790. <https://doi.org/10.1073/pnas.1320040111>

- Lotfi, M., Hamblin, M. R., & Rezaei, N. (2020). COVID-19: Transmission, prevention, and potential therapeutic opportunities. *Clinica chimica acta; international journal of clinical chemistry*, 508, 254–266. <https://doi.org/10.1016/j.cca.2020.05.044>
- Lu, H., Stratton, C. W., & Tang, Y. W. (2020). Outbreak of pneumonia of unknown etiology in Wuhan, China: The mystery and the miracle. *Journal of medical virology*, 92(4), 401–402. <https://doi.org/10.1002/jmv.25678>
- Maier, B. F., & Brockmann, D. (2020). Effective containment explains subexponential growth in recent confirmed COVID-19 cases in China. *Science (New York, N.Y.)*, 368(6492), 742–746. <https://doi.org/10.1126/science.abb4557>
- MOH Kenya. (2020). *First Case of Coronavirus Disease Confirmed in Kenya*. Retrieved from <https://www.afro.who.int/health-topics/coronavirus-COVID-19>
- MOH Kenya. (April, 2021). *Knowledge, Attitude and Practice Survey: Assessing Progress in Adherence to Preventive Measure and Vaccine Hesitancy In community*.
- Mitra, B., Luckhoff, C., Mitchell, R. D., O'Reilly, G. M., Smit, V., & Cameron, P. A. (2020). Temperature screening has negligible value for control of COVID-19. *Emergency medicine Australasia : EMA*, 32(5), 867–869. <https://doi.org/10.1111/1742-6723.13578>
- Nguyen, N. P. T., Hoang, T. D., Tran, V. T., Vu, C. T., Siewe Fodjo, J. N., Colebunders, R., Dunne, M. P., & Vo, T. V. (2020). Preventive behavior of Vietnamese people in response to the COVID-19 pandemic. *PloS one*, 15(9), e0238830. <https://doi.org/10.1371/journal.pone.0238830>
- Kohler, H., Bäuerle, A., Schweda, A., Weismüller, B., Fink, M., Musche, V., Robitzsch, A., Pfeiffer, C., Benecke, A. V., Dörrie, N., Führer, D., Taube, C., Rassaf, T., Teufel, M., & Skoda, E. M. (2021). Increased COVID-19-related fear and subjective risk perception regarding COVID-19 affects behavior in individuals with internal high-risk diseases. *Journal of primary care & community health*, 12, 2150132721996898. <https://doi.org/10.1177/2150132721996898>
- Li, Q., Guan, X., Wu, P., Wang, X., Zhou, L., Tong, Y., Ren, R., Leung, K. S. M., Lau, E. H. Y., Wong, J. Y., Xing, X., Xiang, N., Wu, Y., Li, C., Chen, Q., Li, D., Liu, T., Zhao, J., Liu,

- M., Tu, W., Feng, Z. (2020). Early Transmission Dynamics in Wuhan, China, of Novel Coronavirus-Infected Pneumonia. *The New England journal of medicine*, 382(13), 1199–1207. <https://doi.org/10.1056/NEJMoa2001316>
- Pullano, G., Pinotti, F., Valdano, E., Boëlle, P. Y., Poletto, C., & Colizza, V. (2020). Novel coronavirus (2019-nCoV) early-stage importation risk to Europe, January 2020. *Euro surveillance: bulletin European sur les maladies transmissibles = European communicable disease bulletin*, 25(4), 2000057. <https://doi.org/10.2807/1560-7917.ES.2020.25.4.2000057>
- Sanche, S., Lin, Y. T., Xu, C., Romero-Severson, E., Hengartner, N., & Ke, R. (2020). High Contagiousness and Rapid Spread of Severe Acute Respiratory Syndrome Coronavirus 2. *Emerging infectious diseases*, 26(7), 1470–1477. <https://doi.org/10.3201/eid2607.200282>
- Seid, M., Yohanes, T., Goshu, Y., Jemal, K., & Siraj, M. (2022). The effect of compliance to Hand hygiene during COVID-19 on intestinal parasitic infection and intensity of soil transmitted helminthes, among patients attending general hospital, southern Ethiopia: Observational study. *PloS one*, 17(6), e0270378. <https://doi.org/10.1371/journal.pone.0270378>
- Sessou, P., Fodjo, J. N. S., Jérôme, C. S., Farougou, S., & Colebunders, R. (2021). Assessment of adherence to public health measures and their impact on the COVID-19 outbreak in Benin Republic, West Africa. *The Pan African medical journal*, 38, 293. <https://doi.org/10.11604/pamj.2021.38.293.26843>
- Shabu, S. A., M-Amin, K., Mahmood, K. I., & Shabila, N. P. (2021). Risk Perception and Behavioral Response to COVID-19: A Survey of University Students and Staff in the Iraqi Kurdistan Region. *Social work in public health*, 36(4), 474–485. <https://doi.org/10.1080/19371918.2021.1915909>
- Tong, K. K., Chen, J. H., Yu, E. W., & Wu, A. M. S. (2020). Adherence to COVID-19 Precautionary Measures: Applying the Health Belief Model and Generalized Social Beliefs to a Probability Community Sample. *Applied psychology. Health and well-being*, 12(4), 1205–1223. <https://doi.org/10.1111/aphw.12230>

- Van Damme, W., Dahake, R., Delamou, A., Ingelbeen, B., Wouters, E., Vanham, G., van de Pas, R., Dossou, J. P., Ir, P., Abimbola, S., Van der Borgh, S., Narayanan, D., Bloom, G., Van Engelse, I., Ag Ahmed, M. A., Kiendrébéogo, J. A., Verdonck, K., De Brouwere, V., Bello, K., Kloos, H., ... Assefa, Y. (2020). The COVID-19 pandemic: diverse contexts; different epidemics-how and why?. *BMJ global health*, 5(7), e003098. <https://doi.org/10.1136/bmjgh-2020-003098>
- WHO. (2020). *Coronavirus disease (COVID-19) advice for the public*. 2020. Geneva: WHO. Retrieved April 6th, 2020, from <https://www.who.int/emergencies/diseases/novel-coronavirus-2019/advice-for-public>
- WHO. (2020). *Rational use of personal protective equipment (PPE) for coronavirus disease(COVID-19): Interim guidance (Internet)*. Retrieved April 10th, 2020from <https://apps.who.int/iris/handle/10665/331498>
- WHO. (2022). World Health Organization. Retrieved edition 80, February 2022
- Zhan, S., Yang, Y. Y., & Fu, C. (2020). Public's early response to the novel coronavirus-infected pneumonia. *Emerging microbes & infections*, 9(1), 534. <https://doi.org/10.1080/22221751.2020.1732232>

APPENDICES

Appendix I: Informed consent form

Dear respondent,

My name is **Faith Ngui**, a Masters student at South Eastern Kenya University School of Health Sciences. I am conducting a study on “**ADHERENCE TO COVID-19 PREVENTION PROTOCOLS AMONG ADULTS RESIDING IN KITUI CENTRAL SUB-COUNTY, KITUI COUNTY, KENYA**”. The information gathered from this study will be used by the university and the Sub-County health management team in improving adherence to COVID-19 prevention protocols among residents of the area thus deterring the contracting of the disease through creation of awareness of adherence strategies.

Participation. Your participation in this study is voluntary and you have the right to decline participation or opt out of the study at any time without any consequences

Benefits. There are no monetary or material benefits from your participation in this study. However, your information will help us learn more about adherence to COVID-19 prevention measures in the sub-County.

Risks. There are no anticipated physical or psychological risks from your participation in this study. However, filling out the questionnaire may take you 10 - 15 minutes

Privacy and confidentiality. Data collected will be kept in a secured folder for safe keeping and the information will be held confidentially during and after the study. You will **NOT** write your name on the questionnaire

If you have any questions you may contact me on **0720 883 146** or my supervisors;

Dr. Josphat Gichure -0723379055 or Dr. TaratasioNdwiga-0721486309

Participant's declaration. The above information regarding my participation in the study is clear to me and my participation in this study is absolutely voluntary. It is clear to me that the information I will give will remain confidential and that I can opt out of the study at any time without penalty. I understand that I will not be discriminated against even if I decline to participate in this study and that the study has no risks neither will it affect my wellbeing.

Signature

Date

Investigator's declaration

I, the undersigned have explained to the participant in a language he/she understands the

procedures to be followed in the study and the risks and benefits involved.

Name researcher.....signature.....Date.....

Appendix II. Semi-Structured Interviewer Administered Questionnaire

TOPIC: ADHERENCE TO COVID-19 PREVENTION PROTOCOLS AMONG ADULTS

RESIDING IN KITUI CENTRAL SUB-COUNTY, KITUI COUNTY, KENYA

Instructions to the respondents

The questionnaire shall be physically availed to you

The information gathered shall be held with ultimate confidentiality.

DO NOT write your name on the Questionnaire

Please tick on choice(s) given and answer the other questions as appropriate

PART I. SOCIO-DEMOGRAPHIC CHARACTERISTICS

1. What is your completed age in years? _____

2. What is your gender?

Male []

Female []

3. What is your highest level of education?

i. Non-formal []

ii. Primary []

iii. Secondary []

iv. Certificate []

v. Diploma []

vi. Degree []

3 What is your marital status?

i. Married []

- ii. Single []
- iii. Widow []
- iv. Widower []
- v. Separated []
- vi. Divorced []

4 What is your religion?

- i. Protestants []
- ii. Catholic []
- iii. Muslim []
- iv. Others []

5 What is your occupation?

6 What is your employment status?

- i. Unemployed []
- ii. Employed []
- iii. Self-employed []

7 What is your average monthly income?

- i. Below Ksh.10,000 []
- ii. Ksh.10,000-19,999 []
- iii. Ksh.20,000-29,999 []
- iv. Ksh.30,000-39,999 []
- v. Ksh.40,000-49,999 []
- vi. Ksh.50,000 and Above []

PART II. AWARENESS ON COVID-19 PREVENTION MEASURES

1. Have you ever heard about COVID-19 Yes No

2. If yes, what was your first source of information on COVID-19?

- i. Television
- ii. Radio

- iii. Hospital
- iv. Friends
- v. Church
- vi. Family
- vii. Any other (specify).....

3. What do you know about COVID-19?

- i.
- ii.
- iii.
- iv.

4. What causes COVID-19?

- i.
- ii.
- iii.
- iv.

5. What are the signs and symptoms of COVID-19?

- i.
- ii.
- iii.
- iv.

6. How is COVID-19 transmitted?

- i.
- ii.
- iii.
- iv.

7. Is COVID-19 preventable Yes No

If yes, how can one prevent him/herself from being infected with COVID-19 disease?

- i.
- ii.
- iii.
- iv.

8 How have you prevented yourself from contracting COVID-19?

- i.
- ii.
- iii.
- iv.

PART III. PRACTICES FOR ADHERENCE TO COVID-19 PREVENTION MEASURES

Tick your exercising of the below COVID-19 prevention measures

Measurement statement	Always	Sometimes	Never
Hand washing with soap and running water			
Using alcohol based hand sanitizers			
Greeting as recommended			
Avoidance of handshaking			
Keeping recommended social distance			
Avoid crowding			
Using recommended face mask			
Working from home to avoid crowded work places			
Body temperature checks			
Cough etiquette			

Avoid travelling in vehicles with many passengers			
Keeping to lockdown regulations			
Vaccination with COVID-19 vaccine			
Not staying out late in the night (observing curfew guidelines)			

PART IV. PERCEPTION OF ADHERENCE TO COVID-19 PREVENTION MEASURES

Participants attitude towards adherence to COVID-19 prevention interventions was measured using a Likert scale with various levels i.e. strongly agree, agree, undecided, disagree, strongly disagree

	Statement	Strongly agree	Agree	Undecided	Disagree	Strongly disagree
1.	I think COVID-19 disease is very infectious					
2.	I am so concerned that i can be infected with COVID-19 disease					
3.	I think COVID-19 disease has no cure					
4.	I think if i get infected with COVID-19 i may lose my life					
5.	I think covid-19 infection makes person stigmatized					
6.	Putting on face masks is very cumbersome					
7.	The sub-county has no enough water for hand washing points					
8.	Continued hand washing uses a lot of water					
9.	It is very difficult for me stay at home for a day					
10	I think observing the recommended social distance can prevent me from contracting COVID-19 disease					
11.	My premises cannot afford enough water for frequent handwashing					
12.	I find it uncomfortable to put on					

	a facemask especially when with friends					
13.	Buying new facemask every day is too costly to me and my family					
14.	I think purchasing a thermometer for my premises is too costly to me					

Appendix III: Observation Checklist

TOPIC: ADHERENCE TO COVID-19 PREVENTION PROTOCOLS AMONG ADULTS RESIDING IN KITUI CENTRAL SUB-COUNTY, KITUI COUNTY, KENYA

Instructions to the observers

The information gathered shall be held with ultimate confidentiality.

Please tick on the choices given as they apply to independent subjects

No.	Statement	Yes	Inappropriately	No
1.	Has face masks			
2.	Has put on a face mask			
3.	Does not reuse face masks			
4.	Puts on the face mask appropriately			
5.	Practices hand washing			
6.	Has a designated hand washing point with soap and running water			
7.	Sanitizes hands using alcohol, based sanitizers			
8.	Has recommended hand sanitizer			
9.	Disinfects frequently touched surfaces			
10.	Coughs/sneezes into the elbow			
11.	Practices social distancing			
12.	Has been fully vaccinated for COVID-19			
13.	Has COVID-19 IEC materials within the			

premises/household



OFFICE OF THE DIRECTOR OF GRADUATE STUDIES AND RESEARCH
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B2510052022

May 10, 2022

TO: Faith Ngui
Department of Public Health
South Eastern University of Kenya

Dear Faith,

**RE: ADHERENCE TO COVID-19 PREVENTION PROTOCOLS AMONG ADULTS
RESIDING IN KITUI CENTRAL SUB-COUNTY, KITUI COUNTY, KENYA**

This is to inform you that the Institutional Scientific Ethics Review Committee (ISERC) of the University of Eastern Africa Baraton has reviewed and approved your above research proposal. Your application approval number is UEAB/ISERC/25/05/2022. The approval period is 10th May, 2022 – 10th May, 2023.

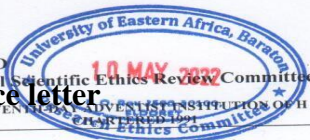
This approval is subject to compliance with the following requirements;

- i. Only approved documents including (informed consents, study instruments, MTA) will be used.
- ii. All changes including (amendments, deviations, and violations) are submitted for review and approval by the Institutional Scientific Ethics Review Committee (ISERC) of the University of Eastern Africa Baraton.
- iii. Death and life threatening problems and serious adverse events or unexpected adverse events whether related or unrelated to the study must be reported to the Institutional Scientific Ethics Review Committee (ISERC) of the University of Eastern Africa Baraton within 72 hours of notification.
- iv. Any changes, anticipated or otherwise that may increase the risks or affected safety or welfare of study participants and others or affect the integrity of the research must be reported to the Institutional Scientific Ethics Review Committee (ISERC) of the University of Eastern Africa Baraton within 72 hours.
- v. Clearance for export of biological specimens must be obtained from relevant institutions.
- vi. Submission of a request for renewal of approval at least 60 days prior to expiry of the approval period. Attach a comprehensive progress report to support the renewal.
- vii. Submission of an executive summary report within 90 days upon completion of the study to the Institutional Scientific Ethics Review Committee (ISERC) of the University of Eastern Africa Baraton.

Prior to commencing your study, you will be expected to obtain a research license from National Commission for Science, Technology and Innovation (NACOSTI) <https://oris.nacosti.go.ke> and also obtain other clearances needed.

Sincerely yours,

Prof. Jackie K. Obey, PhD
Chairperson, Institutional Scientific Ethics Review Committee



Appendix IV: IERC Clearance letter



Walter



Appendix V: NACOSTI Research Permit

Appendix VI: Study area map

