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EVALUATION OF OSAYIDELERA, A CAMPAIGN ADDRESSING RISK PERCEPTIONS OF COVID-19 IN BLANTYRE, MALAWI

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IN PARTIAL FULFILMENT FOR THE AWARD OF

MASTER OF PUBLIC HEALTH

DATE:

14 June, 2023

DECLARATION

I, Chiyembekezo Focus Maganga, declare that this research report is my own work. It is being submitted for the degree of Master of Public Health (in the field of SBCC) at the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination at this or any other University.

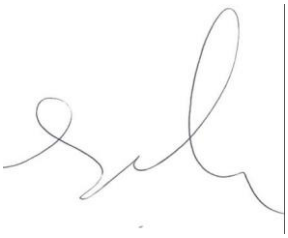


_____ Date: 14 June, 2023

PLAGIARISM DECLARATION

I, **Chiyembekezo Focus Maganga,** as a postgraduate student registered for an MPH at the University of the Witwatersrand declare the following:

- I am aware that plagiarism is the use of someone else's work without their permission and or without acknowledging the original source.
- I am aware plagiarism is wrong.
- I confirm that this written work is my own work except where I have stated otherwise.
- I have followed the required conventions in referencing the thoughts and ideas of others.
- I understand that the University of the Witwatersrand may take disciplinary action against me if there is a belief that this is not my own unaided work or if I have failed to acknowledge the ideas or writing of others.



Signature ……...

14/06/2023

Date ……

DEDICATION

I dedicate this work to Ekari and Nohakelha Maganga. I hope this work will inspire you to work even harder.

ACKNOWLEDGEMENTS

It has always been God. I acknowledge the Love of the Father, Grace of the Son and Fellowship of the Holy Spirit in my life and, more so, in this work.

To my main supervisor, Sara: Your bold, comprehensive and consistent guidance substantiated and engineered this work. You are a star. I am firmly and sincerely indebted to your counsel. To my co-supervisor, Flemmings, I say, thank you. I had very hardworking, dedicated and passionate supervisors, ever. I acknowledge and am sincerely grateful to the moral support and intellectual guidance I received from my supervisors, Dr. Sara Jewett Nieuwoudt and Dr. Flemmings Ngwira.

My family: Lydia and our two beloved kids, Ekari and Nohakelha, you guys are awesome. Your love, patience and prayers energized this journey. My dad and Mom, I thank you also for the unwaveringly spiritual and moral support.

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There are also many people too numerous to mention whose valuable contributions are not taken for granted.

ABSTRACT

Background

Osayidelera COVID-19 was a national campaign that was implemented as part of Malawi's Risk Communication and Community Engagement response for the pandemic. The campaign was designed to address low COVID-19 risk perceptions and enhance compliance to preventive behaviours. Despite massive resources that were channeled towards the campaign, there were no studies that had evaluated the effectiveness of Osayidelera in addressing low risk perception in Malawi, and that had measured the association between the risk perceptions and preventive behaviours in Malawi. This study set out to change that, by testing associations between exposure to the campaign and both risk perceptions and protective behaviours in the context of Blantyre, one of areas hardest hit by COVID-19 in Malawi.

Methods

A cross-sectional survey was conducted in Blantyre from 6 to 20 May, 2022. A sample of 224 adults (18 and older) were drawn from rural, peri-urban and urban locations in Blantyre using a multi-stage sampling technique. Data were cleaned in Microsoft Excel and analysed in STATA. Descriptive statistics were used to characterise the study sample, campaign exposure, risk perceptions and behaviours. Logistic regression models were used to test associations between campaign exposure and risk perceptions, and risk perceptions and protective behaviours.

Results

Overall, 63% of the sample reported low COVID-19 risk perceptions. The only sociodemographic variables associated with low risk perception in the multivariate logistic

model were those who were divorced (aOR=0.20, p=0.046 CI=0.04-0.97) and widowed (aOR=0.10, p=0.009 CI=0.02-0.57); they had significantly lower odds of low risk perceptions than those who were single. Exposure to COVID-19 campaign was generally low, with only 27% of the respondents reporting high levels of exposure. The proportion of respondents who could recall exposure to the name "Osayidelera" was even lower, at 16%. In the multivariate logistic model, males had higher odds of high exposure to the campaign as compared to females (aOR=3.75, p=0.001 CI=1.66-7.69) with those odds even higher among respondents in peri-urban areas versus rural areas (aOR=6.15, p=0.043 CI=1.06-35.71). High COVID-19 knowledge was also significantly associated with exposure to the COVID-19 campaign (aOR=2.48, p=0.013 CI=1.21 - 5.06).

The results showed no significant association between campaign exposure and risk perceptions (p>0.05). In the adjusted multivariate logistic regression model, only those living in Blantyre urban had significantly higher odds of low risk perceptions as compared to those living in Blantyre rural (aOR=4.83, p=<0.001, CI= 2.15- 10.85). All other factors were non-significant. Finally, we found that adherence to preventive behaviours was generally poor, with only 29% reporting high levels of adherence, regardless of their COVID-19 risk perceptions. Risk perceptions were not associated with preventive behaviours.

Conclusion

This study established that there was low reach of the campaign in Blantyre, and that the relationship between risk perceptions and adoption of preventive behaviours was not as strong and positive as hypothesized by the campaign. Campaign designers may need to revisit assumptions about their theory of change. The study contributes to growth of scholarship on

health promotion campaigns and risk communication by showing factors associated with the reach of the campaign and with risk perceptions in Malawi, where such literature is scant.

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List of Abbreviations

COVID-19:	Coronavirus Virus Disease 2019
HBM:	Health Belief Model
HC4L:	Health Communication for Life
HREC-Medical:	Human Research Committee-Medical
ICT:	Information and Communications Technologies
IQR	Interquartile Range
MOH:	Ministry of Health
NSO:	National Statistical Office
NHSRC:	National Health Science Research Committee
RCCE:	Risk Communication and Community Engagement
REDCap:	Research Electronic Data Capture
SARS-CoV-2:	Severe Acute Respiratory Syndrome Coronavirus 2
UK:	United Kingdom
WHO:	World Health Organization

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1.0 CHAPTER 1: INTRODUCTION

1.1. Introduction to chapter

This chapter presents a background to the study and Osayidelera COVID-19 Campaign. The chapter also presents the problem statement and justification for the study, followed by the research question, the aim and specific objectives that guided the study. This is followed by the literature review, including relevant literature on risk perceptions and their associated factors; campaign exposure in health promotion; and the association between risk perceptions and preventive measures.

1.2. Background to the study

COVID-19, a disease caused by Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2), started in late December 2019 when a cluster of pneumonia cases that were associated with intensive care unit admission and high fatality rates were reported in Wuhan, Hubei Province, in China (1,2). The disease spread quickly across the globe, and became the first coronavirus disease to be charecterised as a pandemic by the World Health Organization (WHO) (3).

At the time it was declared as a pandemic on 11 March, 2020, there were already more than 118 000 confirmed cases and 4291 COVID-19 related deaths spread across 114 countries (3). By 18 December, 2022, there were over 649 million confirmed cases and over 6.6 million COVID-19 related deaths reported globally to the WHO (4).

Malawi, an impoverished Southern African, with one of the weakest health systems in the world, and a population of over 18 million people (5) was also greatly affected by the disease. The country reported its first confirmed case of the disease on 2 April, 2020 (6). By 23 October, 2022

Malawi had over 88 000 COVID-19 confirmed cases and over 2 600 deaths reported to the WHO (7). However, by that time, the country had only tested about 619 000 samples (8), and given this limited number of tests, the true burden of disease in Malawi is said to be underestimated (9).

In Malawi, low COVID-19 risk perceptions, which manifest through non-compliance, mistrust and denial, were said to be major barrier to people's adoption of public health measures recommended for the disease (10). A risk perception is defined as a person's subjective evaluation about the possibility of adverse occurrences such as an injury, illness, disease and death (11). Several studies conducted outside of Malawi showed a significant association between risk perceptions and adherence to different COVID-19 preventive behaviors. For example, in Italy, risk perceptions were associated with practicing hygiene and cleaning (12); In the United Kingdom (UK), risk perceptions were associated with wearing face masks or social distancing (13); And in Nigeria, risk perceptions were associated with observing more than one protective behaviour (14). However, a meta-analysis study that was done in the sub-Saharan Africa concluded high risk perceptions of COVID-19 in the region do not necessarily translate into adherence to preventive measures of the disease as socio-economic environment of the region constrain people from following public health measures (15).

1.2.1 Osayidelera COVID-19 Campaign

To address people's risk perceptions of COVID-19 in Malawi, the country's Ministry of Health (MoH) and the USAID Health Communication for Life (HC4L) project developed a national COVID-19 awareness campaign dubbed Osayidelera COVID-19 campaign. Osayidelera COVID-19 can be translated as "don't underestimate or dismiss COVID-19". The key objectives of the campaign was to help address COVID-19 low risk perceptions in the country and to

enhance compliance to preventive behaviours (16). By addressing low risk perception, the campaign, which had ran from March 2020- to January 2022 also aimed at enhancing high adherence to the disease's preventive behaviours. However, the campaign was also designed to provide correct information on COVID-19 and dispel myths and misconceptions about the disease and to promote prompt healthcare seeking behaviours and home-based management of COVID-19 symptoms.

The campaign used Osayidelera COVID-19 posters, radio jingles, DJ mentions, stickers, broadcast of theme songs, Moyo ndi Mpamba Facebook page, hotlines, video messages, and community mobilization, among others, to reach out to Malawians in all the country's 28 districts and set the tone of the public health threat brought by the disease (16). Osayidelera also used neutral influencers and public figures to enhance trust in COVID-19 awareness messages and encourage adherence to preventive measures (16). Among the influencers that the campaign used were traditional leaders, healthcare workers, renowned music artists and religious leaders.

The campaign was designed and implemented as part of the country's COVID-19 Risk Communication and Community Engagement (RCCE) response. The WHO sets RCCE as one of the essential pillars during public health emergency readiness and response. RCCE is defined as "the real-time exchange of information, advice, and opinions between experts or officials and people who face a threat to their survival, health, economic, or social well-being and improved livelihoods"(17). The RCCE response is intended to ensure there is real time right information about the disease, alleviate confusion and misunderstandings, address risk perceptions, prevent infodemics and involve communities in the response (18–20). Further, risk communication is said to have direct potential of enhancing adherence to preventive behaviours or indirect influence on adherence to preventive behaviours via addressing risk perceptions which, in turn,

may influence the adherence (21). Community engagement strategies in RCCE ensures communities are involved in the response so as to devise acceptable and beneficial interventions to thwart further amplification of the epidemic and to ensure individuals and groups use set public health measures (19).

However, at the time this study was conceived, the campaign had not been evaluated to determine whether or not it succeeded in addressing COVID-19 risk perceptions and increasing compliance to preventive behaviours. The current study attempted to change that by evaluating whether exposure to the campaign was associated with COVID-19 risk perceptions and/or preventive behaviours.

1.3. Statement of the problem

By 23 October, 2022 Malawi had reported over 88 000 confirmed cases and over 2 600 COVID-19 related deaths (7). Most of these cases occurred in Blantyre which accounted for about one-third of both COVID-19 confirmed cases and fatalities in Malawi (8). At the peak of the pandemic, Malawi's health system was overstretched, with many hospitals reporting acute shortage of intensive care unit beds, ventilators, oxygen and personal protective equipment, among others (22,23). Further, the number of frontline healthcare workers and responders infected with the disease rose alarmingly. Subsequently, the Malawi government declared the country as a state of national disaster in all the districts. The Osayidelera COVID-19 Campaign was developed towards the beginning of the pandemic. At that time, there was limited correct information about the pandemic, high prevalence of low risk perception, and low compliance to preventive measures (10). However, it is not known whether exposure to the campaign was associated with increases in COVID-19 risk perceptions. Additionally, while the WHO underscores that the uptake of the pandemic's preventive behaviours and social measures remain

critical, even in the presence of safe and effective vaccines (17), there was limited scholarship on adherence to COVID-19 protective behaviours, and its association with risk perceptions in Malawi.

1.4. Justification of the study

The COVID-19 pandemic unveiled the importance of understanding people's risk perceptions and associated factors during epidemics (24). In major public health emergencies like COVID-19, assessing public risk perceptions may help understand why and how people adopt protective measures related to the public health problem (15,25). Despite massive resources that were channeled towards the Osayidelera COVID-19 Campaign, as has been mentioned, there was no study that had evaluated the effectiveness of the campaign in addressing low risk perception in Malawi or directly measured the association between risk perceptions and preventive behaviours. Further, the reach of the campaign had not been evaluated, and factors associated with exposure to the campaign were unknown. An evaluation of the campaign, therefore, could help to inform strategies for planning and implementing SBCC campaigns aimed at addressing risk perceptions and enhancing protective behaviours. The study was conducted in Blantyre because it was the COVID-19 epicenter in Malawi (8).

1.5. Research question

The key research question was: "Is exposure to the Osayidelera COVID-19 campaign associated with higher COVID-19 risk perceptions among adults aged 18 and above in Blantyre, Malawi?" A secondary question was about whether risk perceptions were associated with preventive behaviours.

1.6. Aim of the study

The overall study aim was to evaluate if exposure to the Osayidelera COVID-19 Campaign was associated with higher risk perceptions compared to those unexposed to the campaign among adults aged 18 and above in Blantyre, Malawi.

1.7. Objectives of the study

The study was guided by the following specific objectives:

1. To describe the COVID-19 risk perceptions of Blantyre residents aged 18 and above, by socio-demographic characteristics of the study sample.
2. To describe Blantyre residents' exposure to the Osayidelera COVID-19 Campaign, by socio-demographic characteristics of the study sample.
3. To examine if there was an association between exposure to Osayidelera COVID-19 Campaign and COVID-19 risk perceptions among Blantyre residents aged 18 and above.
4. To examine if there was an association between COVID-19 risk perceptions and preventive behaviours among Blantyre residents aged 18 and above.

1.8. LITERATURE REVIEW

This section discusses relevant literature to the study and gaps that exist in the literature. Thus, the section discusses literature on COVID-19 risk perceptions and associated factors; exposure to campaign and associated factors; and COVID-19 protective behaviours and their association with risk perceptions.

1.8.1 COVID-19 risk perceptions and associated factors

Several studies have described COVID-19 risk perceptions and associated factors, although their findings have often been contradictory. For example, a study on COVID-19 risk perceptions and

associated factors among college students in China during quarantine established gender, location, medical vs non-medical students and knowledge level were significantly associated with the disease (26). Specifically, being female, being non-medical or having a higher knowledge level were significantly associated with high COVID-19 risk perception. In another study in Bangladesh, gender, and education level were also significant factors associated with COVID-19 risk perceptions along with age, religion and time (early lockdown vs late lockdown) (27). However, in this study, males were the ones associated with having a high risk perception, along with young adults, people with higher qualifications and quarantined people. In South Africa, a study that used data from the first and second wave of COVID-19 established high risk perceptions were associated with higher income groups, educated people and older respondents (28). Another cross-sectional study that investigated COVID-19 risk perceptions among Sub-Saharan Africans staying in their respective countries and those living in the diaspora established that residents aged 39-48, and healthcare workers had significantly high risk perceptions (29). These contradictory results point to the importance of conducting country or community-specific assessments of what influences risk perceptions.

In many studies that investigated COVID-19 risk perceptions, the timing of data collection is said to have influenced people's level of perceived risks (12,27,28,30). A general observation has been that risk perceptions decline over time due to a process called risk analysis (12). Risk analysis is a systematic, complex and conscious process that ascertains risk judgment using logic and reasoning (12). The process of risk analysis is deemed slower, effortful and less efficient as it strikes to draw conclusions that are deeper and rational (31). In risk analysis people can either create a negative mental picture associated with the disease, which is created when individuals see risky situations as source of threats, or a positive mental picture when they see opportunities

risky conditions pose (32). For example, as COVID-19 cases continue, people may still weigh whether or not the risk from the disease outweighs opportunities the disease creates like working at home or receiving monetary incentives for working in a COVID-19 risky environment.

However, risk perceptions are not only formed through careful analysis. Several studies have contrasted risk as analysis from risk as a feeling (12,31–33). The latter is deemed to be intuitive, fast and mostly automatic. Risk as a feeling is emotional and diverts from cognitive assessments, though it is also said to drive behaviour. However, the two aspects of risk are said to still be dependent on each other (31).

Studies previously conducted on COVID-19 risk perceptions in Malawi found low risk perceptions of the disease (10,34). However, none of the studies we found evaluated the effectiveness of the Osayidelera COVID-19 campaign in addressing low risk perceptions. These studies also used study samples that were not representative of the COVID-19 situation in the country, as they did not specifically look at Blantyre, and were conducted at a time Malawi had registered only a few confirmed cases of COVID-19 pandemic (10,34).

1.8.2 Association between exposure to campaign and risk perceptions

In Sub-Saharan Africa, studies that have evaluated awareness campaigns of other epidemics showed a significant association between campaign exposure and risk perceptions. For example, a study in Kenya revealed that people's exposure to HIV/AIDS branded advertising messages prompted them to consider themselves to be at higher risk of acquiring HIV and to consider AIDS as a severe threat (35). In the case of Ebola, a cross-sectional national survey study in Sierra Leone showed that exposure to the internet and community-level information sources were significantly associated with high Ebola risk perceptions (11). Though studies that have

measured the association between exposure to COVID-19 awareness campaigns and risk perceptions are generally scanty, the pattern is similar.

A growing body of evidence suggests that people who have high exposure to COVID-19 information have higher COVID-19 perceived risks. For example, a cross-sectional study conducted in Bolivia (n=886) which assessed association between social media exposure to COVID-19 information and risk perception established the two possessed a significant association (36). In the study, social media exposure to COVID-19 information measured how much the study's respondents consumed COVID-19 information through Facebook, Twitter, WhatsApp and YouTube. The study also established the level of exposure to COVID-19 information on social media was associated with people's adoption of preventive attitudes through influencing their perceived risk. Another study conducted in Malaysia that measured exposure to COVID-19 media campaign also found that those with high exposure modified people's perceived risk of the pandemic (37). However, two separate cross-sectional studies that were conducted in China suggested high exposure to COVID-19 information was associated with anxiety and strong negative emotions (25,38). Another study in China that explored the role of fear and powerlessness in the relationship between COVID-19 risk perceptions and information-avoidance highlighted protection motivation theory and information-avoidance behaviour as they relate to information-seeking behaviours during the pandemic(39). The protection motivation theory explains that high perceived risk of the disease induce information behaviours among people as they seek information about the risk to assess the severity of the risk and their capabilities to protect themselves while the information-avoidance behaviour explains any behaviour designed to prevent or delay exposure to available but potentially unwanted information about the risk as a way of sustaining optimism and reducing negative emotions (39).

1.8.3 COVID-19 preventive behaviours and their relation to risk perceptions

Different COVID-19 preventive behaviours, recommended by the WHO, have been assessed in different studies. These studies have measured a variety of behaviours, sometimes in different ways. Several studies like the ones independently conducted in Ethiopia (40), the UK (41), Iran (42), Italy (12) and Nigeria and Egypt (43) assessed the use of face mask, hand hygiene, social distancing and avoiding public places in relation to COVID-19. The use of hand hygiene and avoiding public places were also measured in other studies which did not measure the use of face masks (1,44,45) and social distancing (46). In China, a study measured several preventive behaviours including avoiding close contact with people who are symptomatic, covering the mouth or nose when one is coughing or sneezing, and avoiding contact with or eating wild animals (47).

There are also different levels of adherence to preventive measures found in different studies. For example, a cross-sectional study among Iranian medical students found that adherence to preventive behaviours were very high at 94% (48). A cross-sectional study among Saudi Arabians aged 16 and above drawn from WhatsApp groups found moderate adherence of about 50% to most COVID-19 preventive behaviours (49). In Ethiopia (50) and Uganda (51) two separate studies conducted in 2022 and 2021 respectively found very low adherence to preventive behaviours. These studies investigated different population groups and at different times, which may explain inconsistent findings. This reinforces the importance of measuring behaviours in specific context.

Similar to the literature around risk perceptions, the timing of when preventive behaviours were assessed in relation to the COVID-19 pandemic has been crucial in explaining adoption of preventive behaviours. Three different longitudinal studies that evaluated COVID-19 risk

perceptions and preventive behaviours at two time points in the UK (13), South Africa (28) and Italy (52) were consistent in revealing both risk perceptions and adherence to preventive behaviours change over time due to COVID-19 situation at the time. While both risk analysis and affective risks are attributed to these changes, it is interesting to note two studies (13,52) concluded psychological and affective reactions were more attributable to the changes in adherence to risk perceptions and protective behaviours than did analytic and objective measures. This is also consistent with assertion by many risk perceptions theorists who have argued affect and emotion play a primary role that people use to maneuver through complex, uncertain or dangerous situation in a quick, easy and efficient way (31).

The association between COVID-19 risk perceptions and preventive behaviours have been assessed in several studies, albeit many of these were cross-sectional and could not determine causality. Though the general trend shows an association between high risk perceptions and adoption of preventive behaviours, these results have not been consistent. For example, a cross-sectional study that compared risk perceptions (perceived risk of severity of symptoms and perceived transmission) and preventive behaviours during the early phase of the pandemic in Hong Kong and the UK found different levels of associations between the two (53). The measure of risk perceptions in the study are similar to two of the constructs of Health Belief Model (HBM) though there are differences in the naming (perceived severity and perceived susceptibility in HBM (54), and perceived risk of severity and perceived transmission in the study). in terms of results, those with high COVID-19 perceived risk of severity of symptoms in the UK had higher odds of adopting social distancing and those with high perceived risk of transmission had higher odds of practicing social distancing and contact avoidance with infected individuals, while in Hong Kong, these risks were not associated with social distancing (53). In

Ethiopia, high risk perceptions were associated with preventive measures like social distancing and face masking (55), in Nigeria risk perceptions were associated with adopting at least one protective behaviours (14) and in the UK, risk perceptions were positively associated with adhering to preventive behaviours like face masking and social distancing (13).

Despite trends pointing to associations between risk perceptions and behaviour, some scholars have questioned the relative importance of risk perceptions in influencing adoption of preventive behaviours (12). Instead, in addition to risk perceptions there are other factors that have been cited in different studies to have an influence on adoption of preventive behaviours, although these results vary, mostly depending on factors measured in the study. For example, a study in Saudi Arabia cited fear of nasal swabs, forgetfulness and negligence as a reason for not adopting preventive behaviours (49). Altruism vs individualism is something else that has been explored in some studies; in Canada, a study cited a desire to protect others (44) while a comparative Middle East survey conducted in Saudi Arabia, Egypt and Jordan framed this as people's feeling of responsibility toward one's own health (30) as the reason for engaging in preventive measures. A scoping review sub-Saharan Africa that drew from lessons learnt in previous epidemics like HIV and Ebola cited the socio-economic environment of the region as being a factor that constrain people from following COVID-19 preventive measures (15). This points to the importance of including socio-economic condition variables for studies exploring COVID-19 preventive measures, even if not the main variables of interest.

No studies were found about the association between COVID-19 risk perceptions and preventive behaviours in Malawi, and, more particularly in Blantyre, where most confirmed COVID-19 cases and deaths were reported.

1.10 Chapter conclusion

The chapter provided a background to the study, statement of the problem, research question, aim and specific objectives, and discussed literature relevant to the study. The chapter demonstrated how exposure to campaigns relates with risk perceptions as established in previous studies. Further, as has been discussed in the chapter, people's perceived risk of COVID-19 is thought to have an important bearing on their level of adherence to public health measures set to contain the pandemic. However, the chapter also highlighted, drawing on literature, that risk perceptions is not the only important factor associated with adherence to preventive measures. Specifically, in the context of the sub-Saharan Africa, the socio-economic context makes it difficult for most people in the region to adhere to protective behaviours, even when their risk perceptions are high. As such, this study accounted for possible co-variates.

2.0 CHAPTER 2: METHODOLOGY

2.1. Chapter introduction

This chapter presents the methods that were used to answer specific objectives for the study. The chapter presents the study design that was employed, study population, the desired sample size and sampling methods, data collection, including variables scales and subscales and the type of analyses that were done.

2.2. Study design

This study employed a cross-sectional design. A cross-sectional study design creates a one-time snapshot of the situation in a given population at a specified time (56). This methodological design is relatively cheaper, but has the capacity to measure multiple outcomes and exposures from a single study, and is also viewed effective in making preliminary evaluations before embarking on lengthy and expensive longitudinal-type studies (56–58).

2.3. Study Setting

The study was conducted in Blantyre from 6 to 20 May, 2022. Blantyre has a population of around 1.2 million people, and accounts for about 7% of Malawi's total population (5). The district has Blantyre city, which covers a land area of 240km^2 and with a population of 800 thousand people, and Blantyre rural, which covers a land area of 1,785km^2 but with a population of slightly above 450 thousand people (5). Blantyre, however, accounted for over 31% of all COVID-19 confirmed cases and 33% of all COVID-19 related deaths in Malawi, making it the country's COVID-19 epicenter (59).

2.4. Study population

To be eligible for inclusion in the study, one had to be at least aged 18. Those who had not been in Blantyre for at least six months from January 2020 to January 2022 were excluded from the study as they were deemed to be not well exposed to the campaign in the study setting.

2.5. Sample size and sampling technique

A target sample size for this study was calculated using STATA under the assumptions that 60% of those exposed have high risk perception compared to the 40% in the unexposed group. The study employed the power of 0.8 and alpha of 0.05, which are dominantly used and widely accepted. STATA tabulated a sample size of 214, but to account for an estimated refusal rate of 10%, we adjusted the desired sample size to 235 participants.

Multi-stage sampling was applied. Firstly, simple random sampling was used to select 15 locations (10 townships and five villages) in Blantyre falling into the following strata: rural, peri-urban or urban. Once the locations were identified, systematic random selection of every 10^{th} house was used to identify households. The first house in selected locations was picked randomly from the first 25 houses closet to a targeted spot (usually the main trading center or shopping mall in urban and peri-urban locations or closet to the village head in rural locations). Research assistants had numbers (1-25) representing the first 25 houses at targeted spots, and they could fold the papers to randomly select one paper that represented a house at the spot. Once the first house was selected, all adults aged at least 18 in systematically identified households were enumerated into the study, and a simple random sampling was used to select a single adult for participation within the household. When the randomly sampled participant was not home at the time of the study, they were being replaced by another member of the same

household who was also selected randomly from the list of members who qualified for selection and who were available at the time of data collection in the household.

2.6. Data collection tool

An administered structured questionnaire was used to collect data (see Appendix 1). The questionnaire as a whole was designed specifically for this study, and had five sections. The first section asked about the respondents' social and demographic characteristics; the second section sought to understand the respondents' exposure to COVID-19 campaigns, including Osayidilera; the third section sought to capture the respondents' knowledge of COVID-19; the fourth section asked the respondents about their risk perceptions; the last section asked respondents about their adherence to COVID-19 preventive measures.

All socio-demographic variables were categorical, except for age. The categorical variables were sex, residential location, marital status, religion, wealth status and highest education. Other variables that were measured were exposure to COVID-19 (categorical) and COVID-19 knowledge (continuous). Wealth status was measured by asking the respondents whether they have a radio set, TV set, mobile phone, non-mobile phone and a personal computer. Three categories of wealth were created as: High wealth where the respondent had at least four of the household effects; as moderate wealth where the respondent had three of the household effects; and as low wealth where the respondent had less than three of the household effects.

Exposure to COVID-19 was categorised as: High where both the respondent and their close relation or close friend tested positive for COVID-19; Moderate where either the respondent or their close relation, but not both, tested positive for COVID-19; And Low where neither the respondent nor their close relation tested positive for COVID-19.

The study used a number of scales and sub-scales to measure key concepts, including COVID-19 risk perceptions; exposure to the COVID-19 campaign, including Osayiledera; COVID-19 knowledge; and COVID-19 preventive behaviours. These were measured as follows:

COVID-19 risk perception was measured using a four-item scale, with responses recorded using a five point Likert scale (1= very low, 5= very high). The scale for measuring risk perception was adopted and modified from a validated scale used in China (25). The COVID-19 risk perception total scores ranged from 5 to 20. Total score for each respondent was categorised as high where the total score was 15 -20 and as low where the total score was below 15.

COVID-19 campaign exposure-overall was tabulated using a 10-item scale, with responses captured using a 5-point scale of exposure (1=never, 2= Not very often 3= once a week, 4=twice a week and 5=more than twice a week). Total scores for COVID-19 campaign exposure ranged from 10 to 50. Total scores of 10 to 25 were categorised as Low Exposure while scores of 26 to 50 were categorised as High Exposure. There were three sub-scales for COVID-19 campaign exposure. The first sub-scale, Osayidelera exposure, included five items that measured exposure to messages that carried the name 'Osayidelera.' This sub-scale was designed to assess the reach and quality of branding for the campaign. The second sub-scale, General Campaign, contained five items that asked exposure to COVID-19 information where respondents did not recall the Osayidelera branding. In both these sub-scales, total scores ranged between 5 and 25. Total scores of between 5 and 12 were categorised as Low Exposure while total scores of between 13 and 25 were categorised as high exposure. The third sub-scale was designed to compare those with no exposure at all to COVID-19 campaign with those with some exposure to the campaign. Total scores of not more than 10 were categorised as No exposure while total scores of more than 10 were categorised as Some Exposure.

COVID-19 Knowledge was measured using a five-item scale: Three items contained questions on clinical characteristics of COVID-19 (common symptoms, presence and effectiveness of treatment, and severity of the disease); one item covered transmission; and one item was a survey question on prevention and control. The questionnaire items on COVID-19 knowledge were developed and validated by Zhong et al. (60) and were used in several other studies (61,62). All respondents could answer "yes", "no" or "I don't know". Knowledge scores were tabulated by assigning one point to only the correct questions, and the total was reported as a continuous variable, with a maximum possible score of 5.

COVID-19 preventive behaviours were measured using a scale containing four items (wearing of facial masks in public places, observing social distancing, practicing hand hygiene and staying home as much as one can). These preventive measures were chosen because they were the public health non-pharmaceutical measures that the campaign emphasised. Each item was measured on a four-point scale with responses capturing the frequency of adherence to preventive practices (1 = never to 4=always). Total scores from preventive behaviours were calculated for each respondent, and the scores ranged from 4 to 16. The tabulated scores were expressed as percentages and categorised as into three: High, moderate and low adherence. High adherence to preventive measures was coded where total scores were between 12 and 16; Moderate adherence to preventive behaviours was coded where total scores were between 10 and 11; Low moderate adherence was coded where total scores were less than 10. Each of the four items in the scale was also explored by creating four subscales. The frequency of adherence to each subscale (wearing masks in public places, practicing hand hygiene, observing social distancing and staying home whenever possible) was measured to see the extent each of the preventive behaviours was observed.

2.7. Ethical Considerations

2.7.1. Autonomy

All participants were given either English or Chichewa information sheet (Appendices 2 and 3), depending on their preference, and invited to participate in the study. The information sheets provided the participants with information regarding the nature and processes involved in the study, purpose of the study and the approximate duration it would take for research assistants to complete administering the questionnaire. The information sheet also informed the respondents that participation in the study was voluntary, and that there would be no any penalty or loss of benefits if a participant chose not to participate in the study.

The participants were also given English or Chichewa written consent forms to sign (Appendices 4 and 5). The consent forms also provided the respondents with information regarding the title and purpose of the study, nature of the study and processes involved in it and the fact that participation was voluntary.

2.7.2. Veracity

The respondents were also provided with contact details for the principal investigator, his supervisors and chairpersons for University of Witwatersrand's Human Research Committee-Medical and Malawi's National Health Science Research Committee. They were told that the two human research ethics committee had approved the research, and that any participant was free to contact the ethics committees if they needed further information regarding the study or were concerned about any aspect of the research.

2.7.3 Confidentiality

The respondents were informed that personal information would be treated in the strictest confidence, and that the information would only be available to this researcher and supervisors, with only rare exceptions where it is required by law or by research ethics committee to respond to formal complaints to do with the study. The confidentiality agreement was also included in the informed consent forms, and participates were made aware before research assistants started administering questionnaire.

2.7.4 Beneficence

The respondents were told there were no direct benefits for participating in the study. They were, however, told the longer-term objective would be a possibility of more effective health promotion campaigns that may assist in effectively communicating risks and enhancing adherence to preventive measures in a quest to contain their spread and burden

2.7.5 Ethical approval

Ethical clearance to carry out the study was granted by the University of the Witwatersrand's Human Research Committee-Medical (Certificate No.M211026, Appendix 6) and Malawi's National Health Sciences Research Committee (Certificate No. 21/12/2835, Appendix 7).

2.8. Pilot testing

The questionnaire was pilot tested with 44 participants and the above-mentioned scales' reliability was measured using a Cronbach's alpha test. The pilot test was also done to ascertain the practicality of using the sampling technique in the study. The pilot test was, therefore, conducted within the sampling frame, randomly selected from each residential location strata (one location each in rural, semi-rural and urban). The sampling frame and sampling techniques

were found to be feasible, with a total of 44 people sampled for the pilot. Using their responses, the alpha coefficient for the scale measuring COVID-19 Knowledge was 0.75, for measuring exposure to campaign was 0.74, and for measuring risk perception was 0.69. Since the scale for measuring risk perception had internal consistency of less than 0.70, we asked an experienced language expert to help in translating more accurately and precisely the questions in the scale. The pilot study did not consider the internal consistencies of sub-scales. The data from the pilot study were not included in the main study.

2.9. Data collection

Data were collected by three trained research assistants using administered structured questionnaires. The study primary investigator trained them on the protocol and tool. The research assistants had either a diploma in Information and Technology or Communication and were trained for one week. They (research assistants) collected data directly into Research Electronic Data Capture (REDCap) using smart phones. REDCap is a web-based software that is highly secure, effective and intuitive to use in capturing data for clinical studies and creating databases and projects. This strategy enhanced the privacy and security of the data and increased efficiency when transferring data into STATA.

2.11. Data Management

To ensure safety, security and privacy of the data, trained research assistants entered data directly into REDCap. I met the research assistants every second evening, during the period of data collection, to check the quality of the data and seek explanation for any missing data. Where missing information was not as a result of respondents' voluntary withdraw or voluntary withholding of information, research assistants were asked to set another time to go and meet the respondent and re-administer the sections with missing information. However, there were only

two of those incidences. After data collection was completed, data in REDCap was exported into Microsoft Excel where the basic post-coding took place. Most work on post coding and recoding of scales, however, were done in STATA.

After data was recoded, a test for normality was done to determine specific type of statistical tests to run where normality of data dictates the type of test to run. Cleaned and recoded data from STATA was exported back to Microsoft Excel and then kept in Google Drive after data analysis was completed for safekeeping.

2.12. Statistical analysis

The study used different key dependent and independent variables to answer its objectives. Table 1 summarises variables that were used for each study objective and the statistical analyses that were done. For objective 1 and 2, descriptive statistics were summarised either as proportions for categorical variables or by using median, range and interquartile range for continuous variables. For tests of association, bi-variate tests were conducted using either Pearson Chi-square test (X^2) or Fischer's Exact test for categorical variables, depending upon cell sizes. For continuous variables, bivariate tests of association were conducted using ranksum test since data was not normally distributed. A multivariate logistic model was used to find factors associated with risk perceptions or exposure to the campaign. Factors that were enrolled in multivariate logistic regression models were those which yielded a p-value of not more than 0.20 in both bi-variate and univariate analyses. This same process was used to select variables for the other logistic regression models that are presented for objectives 3 and 4.

For objective 3, Pearson Chi-square test and Fischer's Exact test was used to measure association between COVID-19 risk perceptions and exposure to COVID-19 campaign and the subscales of the campaign. Multivariate logistic regression model was then used to establish the strength of

the association between risk perception and some exposure vs no exposure because this was the only sub-scale which was significantly associated with risk perceptions in bivariate analysis.

For objective 4, Pearson Chi-square test (X^2) or Fischer's Exact test was used to measure association between risk perceptions and preventive behaviours. The association between the four sub-scales of preventive behaviours and risk perceptions was also done using Pearson Chi-square test (X^2) or Fischer's Exact test. Logistic regression analysis model was used to find factors associated with social distancing as it was the only preventive behaviour that was associated with risk perceptions.

All data analyses were conducted using STATA 17.0 (StataCorp, College Station, TX, USA). Statistical significance was set at $p<0.05$. Table 1 summarises the type of analyses done for each objective.

Table 1: Statistical analysis conducted for each study objective

Objective	Dependent variable	Independent variables	Descriptive and Analytic tests
1. To describe exposure (reach) to the Osayidelera COVID-19 Campaign, by social-demographic characteristics of the study sample.	COVID-19 risk perception	Age, Sex, Religion, COVID-19 knowledge, COVID-19 exposure, Education, Wealth and Residential location.	o Descriptive analysis o Bi-variate analysis o Multivariate logistic regression
2. To describe exposure (reach) to the Osayidelera COVID-19 Campaign, by social-demographic characteristics of the study sample.	Exposure to COVID-19 campaign overall Sub-scales: Exposure to Osayidelera, Exposure to general campaign and Some vs no exposure to the campaign	Age, Sex, Religion, COVID-19 knowledge, COVID-19 history, Education, Wealth and Residential location.	o Descriptive analysis o Bi-variate analysis o Multivariate logistic regression
3. To examine if there is an association	COVID-19 risk perception	Exposure to COVID-19 campaign	o Pearson Chi-square test or

between exposure to Osayidelera COVID-19 Campaign and COVID-19 risk perceptions of Blantyre residents aged 18 and above.		Sub-scales: Exposure to Osayidelera, Exposure to general campaign and some vs no exposure to campaign	Fischer's Exact test o Multivariate logistic regression model
4. To examine if there is an association between COVID-19 risk perceptions and preventive behaviours among Blantyre residents aged 18 and above.	Preventive behaviours Sub-scales: Wearing face masks, social distancing, hand hygiene and staying home whenever possible	COVID-19 risk perception	o Pearson Chi-square test (X^2) or Fischer's Exact test o Multivariate logistic regression model

2.13. Chapter conclusion

The chapter discussed methods that were used to answer the four specific objectives for the study. The chapter also presented the study design that was employed, study population, the desired sample size and sampling methods, data collection, including variables scales and sub-scales and the type of analyses that were done. As presented in the chapter, the study relied on logistic regression analyses models to test independent factors associated with dependent variables of interest in the study.

3.0 CHAPTER 3: RESULTS

3.1. Chapter introduction

This chapter presents the results for the study. The chapter begins by providing demographic characteristics of the study sample and then findings for the study's four objectives: Describing COVID-19 risk perceptions by social and demographic factors; describing the reach of the campaign by social and demographic factors; establishing whether there is statistical significant association between COVID-19 risk perceptions and exposure to the campaign; and establishing whether there is significant association between risk perceptions and preventive behaviours.

3.2. Study sample and COVID-19 risk perceptions

Table 2 presents the overall socio-demographic characteristics of the Blantyre residents in the sample population (n=224), compared by overall COVID-19 risk perceptions. It also presents the sample's reported level of exposure to COVID-19 as well as their COVID-19 knowledge. Overall, the study sample had a median age of 33, age range of 18 to 78, and an interquartile range (IQR) of 13. Slightly above half of the respondents were men (51%), 42% were from urban areas, and 53% had a university or college education. About 60% were married, 44% were trained professionals and 47% were from a Protestant church. About 37% reported to be of high wealth.

Table 2: COVID-19 risk perception by respondents' demographic characteristics

Demographic Factor (n=224)	Total	Risk perceptions		p-value
		Low	High	
Sex				0.866
Female	49% (109)	62%	38%	
Male	51% (115)	63%	37%	
Residential location				0.001*
Blantyre Rural	28% (51)	47%	53%	
Blantyre Peri-urban	35% (78)	58%	42%	
Blantyre Urban	42% (95)	76%	24%	
Highest education				0.012*
College/ University	53% (199)	72%	28%	
Secondary School	23% (51)	49%	51%	
Primary School	20% (44)	52%	48%	
None	4% (10)	70%	30%	
Marital Status				0.004*
Single	30% (67)	76%	24%	
Married	60% (134)	61%	39%	
Divorced	6% (13)	30%	70%	
Widowed	4% (10)	63%	37%	
Wealth Status				0.019*
Low	33% (75)	53%	47%	
Moderate	30% (67)	60%	40%	
High	37% (82)	74%	26%	
Religion				0.981
Catholic	24% (53)	62%	38%	
Muslim	4% (8)	75%	25%	
Pentecostal	24% (53)	62%	38%	
Protestant	47% (105)	63%	37%	
Other	2% (5)	60%	40%	
Occupation				0.014*
Business	12% (28)	57%	43%	
Farmer	20% (44)	48%	52%	
Student	17% (38)	68%	32%	
Trained professional	44% (98)	72%	28%	
Other	7% (15)	40%	60%	
Exposure to COVID				0.135
Low	65% (146)	60%	40%	

Moderate	32% (72)	71%	29%	
High	2% (5)	40%	60%	
COVID Knowledge	Mean=4.61	Mean=4.59	Mean=4.65	0.946
Age	Mean= 32.5	Mean=33	Mean=35.85	0.1148

Tests of associations in categorical variables used Chi-square tests or Fishar's Exact test while continuous variables was done by ranksum test

Overall, 63% of the sample reported low COVID-19 risk perceptions. As shown in Table 3, risk perceptions did not differ significantly by gender nor were religion and age significantly associated with differences in risk perception. In contrast, significantly more respondents from rural locations had high risk perceptions (53%) compared with people living in urban or peri-urban parts of Blantyre. Other demographic groups that were more likely to report high risk perceptions as compared with their counterparts included farmers (52%), people of low wealth (47%), and those who did not complete college or university (secondary education, 51%; or primary education, 48%). Divorced respondents, albeit a relatively small group, had the highest COVID-19 risk perceptions (70%), significantly higher than their married, single and widowed counterparts.

The self-reported COVID-19 exposure was low among our respondents. Only 2% of the respondents had high COVID-19 exposure, 32% had moderate exposure while 65% respondents had low exposure to the disease. We found no significant association between risk perceptions and COVID-19 exposure (p=0.135) though people with moderate COVID-19 exposure had higher risk perceptions (71%) than those with high COVID-19 exposure (40%) or those with low COVID-19 exposure (60%). COVID-19 knowledge in the sample was, however, very high with

a mean score of 4.61 out of a total score of 6 and standard deviation of 0.88. However, there was also no significant association between COVID-19 knowledge and risk perception (p= 0.946).

The results of univariate logistic regression analyses and the multivariate logistic regression model of demographic factors associated with low risk perceptions in the sample population are shown in Table 3. Whereas in bi-variate analysis the focus was on high risk perception, in the case of regression analysis low risk perception became the focus as a potential point of concern from the campaign perspective. As shown in Table 3, a number of variables were significantly associated with low risk perceptions in the univariate logistic regression analysis, with only relationship status factors remaining significant in the multivariable analysis. The univariate analysis revealed that urban-based respondents had statistically higher odds of low risk perceptions (OR=3.52, p=0.001 CI=1.71 – 7.26) than those is rural Blantyre. Respondents who had university or college education had also statistically higher odds of having low risk perceptions (OR=2.71, p=0.004 CI=1.37-5.35) than those with secondary education. Further, odds of having low risk perceptions were significantly lower among respondents who were married (OR=0.49, p=0.037 CI=0.26-0.96), divorced (OR=0.20, p=0.011 CI=0.06-0.68) and widowed (OR=0.13 p=0.007 CI=0.03-0.58) as compared to those who were single. The odds of having low risk perceptions were also significantly lower among those with low wealth (OR=0.39, p=0.007 CI=0.20-0.77) than those with high wealth. Farmers (OR=0.35, p=0.005 CI=0.17-0.73) and people who reported to be in other occupations (OR=0.25, p=0.017 CI=0.08-0.78) also had significantly lower odds of risk perception as compared to trained professionals. However, the results of the multivariate logistic model revealed only those who are divorced (aOR=0.20, p=0.046 CI=0.04-0.97) and widowed (aOR=0.10, p=0.009 CI=0.02-0.57) had significantly lower odds of having low risk perceptions than those who were single. In the

adjusted model, none of the other socio-demographic variables were associated with COVID-19 risk perceptions.

Table 3: Factors associated with low COVID-19 risk perceptions, univariate and multivariate logistic regression model results

Demographic Factor (n=224)	Crude OR	P>|z|	95%CI interval	AOR[a]	P>|z|	95%CI interval
Residential location						
Blantyre Rural	1.0 (reference)					
Blantyre Peri-urban	1.53	0.237	0.75 - 3.12	1.51	0.437	0.53 - 4.27
Blantyre Urban	3.52	0.001*	1.71 - 7.26	3.32	0.076	0.88 - 12.47
Highest education						
Secondary School	1.0 (reference)					
College or University	2.71	0.004*	1.37 - 5.35	1.21	0.777	0.32 - 4.55
Primary School	1.14	0.752	0.51 - 2.55	1.96	0.217	0.67 - 5.70
None	2.43	0.234	0.56 - 10.44	3.56	0.165	0.59 - 21.40
Marital Status						
Single	1.0 (reference)					
Married	0.49	0.037*	0.26 - 0.96	0.45	0.111	0.17 - 1.20
Divorced	0.20	0.011*	0.06 - 0.68	0.20	0.046*	0.04 - 0.97
Widowed	0.13	0.007*	0.03 - 0.58	0.10	0.009*	0.02 - 0.57
Wealth Status						
High	1.0 (reference)					
Moderate	0.51	0.058	0.25 - 1.02	0.10	0.999	0.41 - 2.46
Low	0.39	0.007*	0.20 - 0.77	0.79	0.694	0.25 - 2.50
Occupation						
Trained professional	1.0 (reference)					
Farmer	0.35	0.005*	0.17 - 0.73	0.69	0.630	0.16 - 3.07
Student	0.82	0.641	0.36 - 1.86	0.67	0.534	0.19 - 2.35
Business	0.51	0.126	0.21 - 1.21	1.19	0.814	0.27 - 5.24
Other	0.25	0.017*	0.08 - 0.78	0.47	0.357	0.10 - 2.32
Exposure to COVID						
High	1.0 (reference)					
Moderate	3.64	0.173	0.57 - 23.40	4.01	0.162	0.57 - 28.13
Low	2.21	0.392	036 - 13.64	4.78	0.119	0.67 - 34.20
Age	0.98	0.068	0.95 - 1.00	1.00	0.998	0.97 - 1.03

*denotes p<0.05. OR=odds ratio, AOR=Adjusted odds ratio

[a] Adjusted model included Residential location, Occupation, Highest education, Marital status, Wealth, Exposure to COVID-19 and Age. Age was treated as a continuous variable.

3.3. Demographic factors and exposure to COVID-19 campaign

Exposure to COVID-19 campaign among our respondents was generally low, with only about 27% of the respondents reporting high levels of exposure (n=221). The proportion of respondents who could recall exposure to the name "Osayidelera" was even lower, at 16%. The exposure to general messages where the respondents could not recall the name "Osayidelera" was relatively higher at 54%. Only 3% of the respondents reported no exposure at all to any COVID-19 messages from channels that were assessed in this study.

Table 4 summarises overall exposure to the COVID-19 campaign by demographic factors, and whether there was any association between each demographic factor and exposure to the general campaign. As shown, the overall exposure to the campaign differed significantly by sex, with more women (86%) than men reporting low campaign exposure (n=106). The overall exposure to the campaign also differed significantly, with the following demographic groups reporting low exposure at significantly higher rates than their counterparts: Rural residents (96%), respondents with primary school (93%), respondents with low wealth (85%) and farmers (88%).

Exposure to the campaign also differed significantly by exposure to COVID-19 ($p=0.014$). Most respondents with low exposure to COVID-19 reported low exposure to the campaign (80%), compared with those with moderate exposure to COVID-19 (62%) and those with higher exposure to COVID-19 (60%). COVID-19 knowledge was also significantly associated with exposure to the campaign ($p<0.001$). Exposure to the campaign, however, did not vary significantly by age, marital status and religion ($p>0.05$).

Table 4: Exposure to the campaign and its association with sociodemographic factors

		Campaign exposure		
Demographic Factor (n=224)	**Total**	**Low**	**High**	**p-value**
Sex				<0.001*
Females	48% (106)	86%	14%	
Males	52% (117)	62%	38%	
Residential location				<0.001*
Blantyre Rural	22% (49)	96%	4%	
Blantyre Peri-urban	35% (78)	71%	29%	
Blantyre Urban	43% (96)	64%	36%	
Highest level of education				<0.001*
College/ University	54% (121)	63%	37%	
Secondary School	22% (50)	80%	20%	
Primary School	29% (44)	93%	7%	
None	4% (10)	80%	20%	
Marital Status				0.751
Single	30% (67)	75%	25%	
Married	60% (133)	73%	27%	
Divorced	6% (13)	61%	38%	
Widowed	4% (10)	80%	20%	
Wealth Status				0.012*
Low	33% (73)	85%	15%	
Moderate	30% (67)	72%	28%	
High	37% (83)	64%	36%	
Religion				0.887
Catholic	23% (52)	69%	31%	
Muslim	4% (8)	62%	38%	
Pentecostal	24% (53)	74%	26%	
Protestant	47% (105)	74%	26%	
Other	2% (5)	100%	0%	
Occupation				0.012*
Business	12% (27)	85%	15%	

Farmer	7% (16)	88%	12%	
Student	17% (38)	71%	29%	
Trained professional	45% (100)	62%	32%	
Other	11% (25)	84%	16%	
COVID Exposure				0.014*
Low	65% (143)	80%	20%	
Moderate	33% (73)	62%	38%	
High	2% (5)	60%	40%	
COVID-19 knowledge	Mean=4.61	Mean=4.49	Mean= 4.93	<0.001*
Age	Mean=32.5	Mean=33.79	Mean=35.36	0.234

Tests of associations in categorical variables used Chi-square tests or Fishar's Exact test while continuous variables was done by ranksum test

Table 5 shows the results of univariate logistic analyses and multivariate logistic model of factors associated with high exposure to the COVID-19 campaign. The multivariate logistic model revealed that males had increased odds of high exposure to the campaign compared to females (aOR=3.75, p=0.001 CI=1.66-7.69). Similarly, respondents in peri-urban areas had significantly higher odds of high exposure to the campaign compared to those in rural areas (aOR=6.15, p=0.043 CI=1.06-35.7). The results also showed that as COVID-19 knowledge increased by one unit among respondents, the odds of high exposure increased by over two units (aOR=2.48, p=0.013 CI=1.21 - 5.06). In univariate analyses, there were, however, many factors that were associated with exposure to the campaign: Odds of high exposure to the campaign among residents in urban areas was higher than those in rural areas (OR= 33.48, p=0.001 CI=3.09 – 58.92); respondents with college/university education had significantly higher odds of high exposure to the campaign than those with secondary education (OR=2.37, p=0.031 CI=1.08 – 5.19); respondents with low wealth had lower odds of high exposure to the campaign as compared to those with high wealth (OR= 0.31, p=0.004 CI=0.14 – 0.69); and respondents who

reported to be farmers (OR=0.17, p=0.002 CI=0.06 - 0.52) and doing business (OR=0.28, p=0.030 CI=0.09 – 0.88) had lower odds of high exposure to the campaign than trained professionals.

Table 5: Factors associated with high exposure to COVID-19 campaign, univariate and multivariate logistic regression model results

Demographic Factor (n=224)	Crude OR	p>|z|	95%CI interval	[a]AOR	p>|z|	95% CI interval
Sex						
Female	1.0 (reference)					
Male	3.79	<0.001*	1.96 - 7.34	3.57	0.001*	1.66 - 7.69
Residential location						
Blantyre Rural	1.0 (reference)					
Blantyre Peri-urban	9.83	0.003*	2.20 - 43.89	6.15	0.043*	1.06 - 35.71
Blantyre Urban	33.48	0.001*	3.09 - 58.92	6.03	0.066	0.89 - 40.98
Highest education						
Secondary School	1.0 (reference)					
College/University	2.37	0.031*	1.08 - 5.19	2.29	0.286	0.50 - 10.53
Primary School	0.31	0.090	0.08 - 1.20	0.50	0.405	1.00 - 2.54
None	1.00	1.000	0.18 - 5.46	1.13	0.904	0.15 - 8.60
Wealth Status						
High	1.0 (reference)					
Moderate	0.70	0.313	0.35 - 1.40	1.56	0.337	0.63 - 3.86
Low	0.31	0.004*	0.14 - 0.69	1.71	0.334	0.52 - 5.60
Occupation						
Trained professional	1.0 (reference)					
Business	0.28	0.030*	0.09 - 0.88	1.35	0.747	0.22 - 8.19
Farmer	0.17	0.002*	0.06 - 0.52	1.99	0.503	0.27 - 14.75
Student	0.66	0.322	0.30 - 1.49	1.36	0.583	0.46 - 4.03
Other	0.41	0.186	0.11 - 1.54	1.04	0.965	0.16 - 6.90
COVID-19 Exposure						
High	1.0 (reference)					
Low	0.38	0.303	0.06 - 2.39			
Moderate	0.93	0.942	0.17 - 5.94			

COVID-19 knowledge	2.57	0.002*	1.42 - 4.67	2.48	0.013*	1.21 - 5.06

*denotes P<0.05, OR=odds ratio, AOR=adjusted odds ratio

[a]The model included sex, residential location, highest education, wealth, occupation and COVID-19 knowledge

3.4. Association between COVID-19 campaign exposure and risk perceptions

The third study objective was to see if exposure to COVID-19 campaigns was associated with risk perceptions. As shown in Table 6, four different measures of campaign exposure were tested for associations with risk perceptions. The results show no significant association between any form of campaign exposure and risk perceptions (p>0.05).

Table 6: Associations between campaign exposure and risk perceptions

		Risk perceptions		
Exposure	**Total (n=221)**	**Low**	**High**	**P-value**
Overall				0.507
Low	73% (162)	64%	36%	
High	27% (59)	59%	41%	
Exposure to Osayidelera				0.996
Low	84% (186)	63%	37%	
High	16% (35)	63%	37%	
Exposure to general messages				0.459
Low	46% (103)	60%	40%	
High	54% (120)	65%	35%	
No vs Some				0.263
No exposure	3% (7)	86%	14%	
Some exposure	97% (214)	62%	38%	

3.5. COVID-19 preventive behaviours and their association with risk perception

This study also explored associations between risk perceptions and actual behaviours. Table 7 presents a summary of adherence to COVID-19 preventive behaviours among our sample population. The table also presents the association between preventive behaviours and risk perceptions. The results shows that adherence to preventive behaviours was generally very low, with only 29% reporting high levels of adherence, regardless of their COVID-19 risk perception. Of the individual behaviours assessed, only social distancing was significantly associated with risk perceptions (p=0.032), with those reporting that they socially distanced often or always having lower risk perceptions, in contrast with the way preventive behaviours are often framed in relation to risk perceptions. Wearing face masks and practicing hand hygiene were the most common preventive behaviours reported to have been practicing often or always (about 60%) though neither behaviour was significantly associated with risk perceptions.

Table 7: Self-reported COVID-19 preventive behaviours, overall and in relation to risk perceptions

		Risk perceptions		
Type of preventive behaviours	Total (n=224)	Low	High	P-value
Overall preventive behaviors				0.771
Low adherence	48% (107)	61%	39%	
Moderate adherence	23% (51)	67%	33%	
High adherence	29% (65)	63%	37%	
Wearing of masks				0.433
Never	1% (3)	100%	0%	
Sometimes	26% (58)	59%	41%	
Often	46% (104)	66%	34%	
Always	26% (59)	59%	41%	
Practicing hand hygiene				0.747
Never	3% (6)	83%	17%	
Sometimes	39% (86)	63%	37%	

Often	35% (78)	64%	36%	
Always	24% (54)	59%	41%	
Social distancing				0.032*
Never	29% (64)	58%	42%	
Sometimes	40% (89)	56%	44%	
Often	20% (45)	80%	20%	
Always	12% (26)	69%	31%	
Staying home				0.262
Never	35% (78)	58%	42%	
Sometimes	29% (65)	63%	37%	
Often	18% (41)	76%	24%	
Always	17% (39)	59%	41%	

Since social distancing was the only factor associated with risk perceptions in bivariate analyses, we used a logistic regression model focused on this behaviour as the outcome, which included other factors found earlier to be associated with exposure to the campaign, as summarised in Table 8. The results show that, in the adjusted model, odds of low social distancing were lower among respondents from urban areas as compared to those from rural areas (aOR=0.18, p=0.001 CI=0.06 – 0.48). None of the other factors were significant.

Table 8: Factors associated with low social distancing: Regression analysis

Social distancing	**AOR**	**P>|z|**	**95% CI**
Sex			
Female	1.0 (reference)		
Male	1.14	0.691	2.61 – 2.13
Residential location			
Rural	1.0 (reference)		
Peri-urban	0.49	0.184	0.17 – 1.40

Urban	0.18	0.001*	0.06 – 0.48
Some vs no exposure			
No exposure	1.0 (reference)		
Some exposure	0.40	0.425	0.40 – 3.87
Marital Status			
Single	1.0 (reference)		
Divorced	2.23	0.348	0.42 – 11.85
Married	1.25	0.508	0.64 – 2.45
Widowed	5.64	0.119	0.64 – 49.50
COVID-19 knowledge	0.93	0.708	0.63 – 1.38

*denotes P<0.05

The model included sex, residential location, some vs no exposure, marital status and COVID-19 knowledge

3.6. Chapter conclusion

The chapter provided results of the four objectives for the study. The findings presented in the chapter point to low exposure to the campaign among respondents, and the absence of statistically significant association between both the exposure to the campaign and risk perceptions and the risk perceptions and adherence to preventive measures. The next chapter discusses these results.

4.0 CHAPTER 4: DISCUSSION

4.1. Chapter introduction

This chapter discusses the results and the limitations of this study. The chapter begins by discussing the study sample, which is followed by a discussion on how the results for each study objective relate to existing literature and, more importantly, the implications of this study.

4.2. Study sample

Our study sample had an overall median age of 33, ranging from 18 to 78. While Malawi has a youthful population with a median age of 17 (5), this study focused on adults. Among adults who participated in the study, ages clustered towards younger respondents, as shown by the IQR of 13. Otherwise, the study sample and demographics of the study population (Blantyre population) were similar in several ways. For instance, the National Statistical Office (NSO) reports Blantyre has 50% males, which is similar to this study. Further, the NSO reports that urban and peri-urban locations in Blantyre account for about 70% , and that those who are widowed and divorced each account for about 5% of total population in the district (5). However, there were differences in demographic factors like education levels, occupation and wealth between our sample and study population. In our study, we had a larger proportion of people with tertiary or college education (about 50%), in professional employment (45%) and of self-reported moderate or high wealth (about 35%) as compared to the study population where these factors are in the range of 20-30%. Given that the most recent population and housing census report was in 2018, it could be that these demographic factors have improved or that there were some limitations in the sampling technique for the study that may account for the differences.

4.3. COVID-19 risk perceptions

The first study objective was to describe COVID-19 risk perceptions among Blantyre residents. The results show that risk perceptions were generally low, with 63% of our respondents reporting low risk perceptions. In a multivariate logistic regression model, the study found that the odds of low risk perceptions were significantly lower among respondents who were divorced and widowed than those who were single. None of other factors were significant in the adjusted model.

The finding about low risk perceptions in the present study is consistent with separate studies conducted in Greece (63), Italy (12) and Ethiopia (50) which also found low risk perceptions among respondents. Many studies conducted in other countries towards the beginning of the pandemic found high COVID-19 risk perceptions (1,26,30,33,64). However, the same was not true for Malawi. A study on knowledge, risk perceptions and COVID-19 preventive behaviours that was conducted towards the beginning of the pandemic in Malawi did not find high COVID-19 risk perceptions (65). While there was significant space between the timeframes of that study (the cited study conducted its data collection 23 April to 22 May, 2020) and ours, our key similarities are that our study samples share similar socio-economic contexts and that data were collected at the time COVID-19 cases were not high.

Risk analysis may explain the low risk perceptions in our study. The data collection for this study was conducted at a time when there were low number of cases and fatalities. Savadori and Lauriola argue risk perceptions may decline over time due to risk analysis (12). This hypothesis is also supported by several previous studies that measured people's COVID-19 risk perceptions at different times, and attributed differences in levels of risk perceptions to number of cases and fatalities at the time of data collection for the studies (12,27,28,30).

The other factor that may explain differences in risk perceptions across studies are differences in people's level of direct exposure to a risk (64). This suggests that people who contracted COVID-19 or acquired direct experience with it may have high risk perceptions. However, in our study, we did not find any association between risk perceptions and self-reported exposure to COVID-19. In fact, people with moderate COVID-19 exposure had higher risk perceptions than those with high COVID-19 exposure. This result, nevertheless, does not entirely come as a surprise given the relatively lower COVID-19 fatalities in Africa as compared with other continents (66). A study that explained possible reasons behind the low burden of COVID-19 in Africa mentioned several factors, including the demographic pyramid in Africa, in which authors argued Africa's youthful population may have helped avert severity of the disease in the region (66). The paper also argued pre-existing conditions that fuel COVID-19 fatalities like diabetes, obesity and hypertension are considerably less prevalent in Africa. In the end, this may have contributed to low risk perceptions in Africa, including Malawi.

In our logistic regression model, we found that those who were divorced and those who were widowed were more likely to have higher risk perceptions than those who were single. This was the only factor associated with risk perceptions in the study in the logistic regression model. Relationship status (being married, widowed or divorced) was also associated with higher risk perceptions in a study conducted in China (25), though its possible explanation was not explored. In our study, we cannot rule out a possibility that this finding may simply be spurious given that the proportions in the study sample that were widowed or divorced were very small, which might have brought a false positive in the statistical analysis.

The findings on factors associated with risk perceptions in the present study are, however, different from many studies. In several studies done in other countries, older age, being female

and COVID-19 knowledge were found to be significantly associated with higher risk perceptions (26,27,55,67). High levels of trust in government as source of information was also associated with high risk perceptions in one study (68). These were not significant in this study.

Our findings also differ from another cross-sectional survey that was conducted in Malawi's capital, Lilongwe, which found that respondents with no education held lower risk perceptions than other groups (34). In contrast, in our univariate regression analysis, those with college or university education among our respondents had higher odds of low risk perception than those with secondary education. However, in the logistic regression model, level of education was not associated with low risk perceptions. Though this finding fell away in the regression model, the study findings in Lilongwe (34) where higher education was associated with higher risk perceptions were not replicated in this study. One reasons for this difference is that despite similarities between Lilongwe and Blantyre in terms of socio demographic characteristics, the timing of our studies were different and the number of confirmed cases and deaths were different, with Blantyre cumulatively reporting significantly higher confirmed cases and deaths than Lilongwe. However, this cannot be said for certain.

4.4. Osayidelera COVID-19 exposure

Another study objective was to describe exposure to COVID-19 campaign by demographic characteristics of the study sample. Our findings showed that exposure to overall COVID-19 campaign was generally low, with only 27% of respondents reporting high exposure. Brand awareness of the Osayidelera Campaign was even lower, with only 16% of respondents being able to recall the campaign name. Around half of the respondents reported to have high exposure to general COVID-19 campaign messages, when questions about Osayidelera were removed. In the multivariate logistic model, we found that odds of high exposure to the campaign were

significantly higher among males as compared to females and among respondents in peri-urban areas than those in rural areas. COVID-19 knowledge was also significantly associated with exposure to COVID-19 campaign.

I believe the significant proportion of respondents who could not recall the name Osayidelera in the campaign could be attributed to poor branding of Osayidelera COVID-19 Campaign materials. All COVID-19 messages coordinated by the country's MoH were supposed to be part of Osayidelera, and the significant difference in the reach of the campaign between those who could recall the name Osayidelera in the campaign (16%) and those who could not recall the name (54%) could largely be attributed to the branding of the campaign, with the name of Osayidelera not being conspicuous in the messaging particularly in Radio where no visuals are used. The radio also happens to be the most widely accessed and used mass media in Malawi (69).

Several studies have underscored importance of branding in determining behaviour choice by establishing consumer relationships and enhancing association between health behaviours and their benefits (70,71). It could, therefore, have been even more useful if the campaign was well branded so that the respondents could associate COVID-19 messages with 'Osayidelera' which means 'don't underrate' or 'don't underestimate'. Risk perceptions form an important ingredient in risk communication (19), and the word 'Osayidelera', sparks the idea of addressing risk perceptions.

Men in our study sample had significantly higher chances of high exposure to the overall campaign than women which is consistent with systematic disparities in access to resources among men and women in Malawi. The 2018 Malawi Population and Housing Census Report indicates about 52% of all households in Malawi had a mobile phone, about 34% had a radio,

about 12 % had a television and about 16% had access to internet (5). The 2015-16 Malawi Demographic and Health Survey revealed that men in Malawi are more likely than women to be exposed to any and all forms of media (72). Further, only 6% of women between the ages of 15-49 in Malawi were found to have used the internet in the previous year as compared to 18% of men in the same age bracket (72). Additionally, the 2019 Access and Use of ICTs by Households and Individuals Report in Malawi, showed that in male headed households, proportions of owning a functioning radio was greater (53%) than female headed households (69).

The significant differences in the reach between respondents in peri-urban and rural areas could also be attributed to structural factors that are linked to access. It could be that the channels used in the campaign were significantly more accessible to peri-urban dwellers than rural dwellers. Significant disparities in access to telecommunications gadgets and mass media between rural and urban dwellers was highlighted in the 2019 Access and Use of ICTs by Households and Individuals in Malawi report; while access to internet services among individuals in Malawi was 14.6%, in urban areas, the access was 40.7% compared to 9.3% in rural areas (69).

In our study, we found that COVID-19 knowledge, which was high among respondents, was significantly associated with high exposure to the campaign. Several studies have emphasized the importance of health education and promotion campaigns in helping in the fight against COVID-19 pandemic (29,45,73) by increasing knowledge and risk perceptions of the pandemic. Of course, given that our study was cross-sectional, we cannot draw a causal relationship between high COVID-19 knowledge and higher campaign exposure. Nevertheless, the finding of high COVID-19 in our study is different from an earlier study that was conducted in the country in Karonga district that found low knowledge on COVID-19 among respondents (65). The differences could be because, over time, people have gotten exposed to correct information about

the pandemic. It could as well be that since Malawi did not have an RCCE plan, at least at the time of the study, the success of the campaign and the RCCE response were dependent on effectiveness of unique strategies put in place by implementers at district level.

4.5. Campaign exposure and risk perceptions

Our third objective was to establish whether or not there was any statistically significant association between campaign exposure and risk perceptions. The bivariate analyses showed no association between risk perceptions and all our scales of campaign exposure, namely: exposure to campaign overall, exposure to Osayidelera, exposure to general messages and some exposure versus no exposure. Of the four scales, the association between some exposure vs no exposure and risk perceptions was the strongest, although its p-value was more than 0.20, the cut-off point for inclusion in regression models. Given the theoretical importance of including campaign exposure in an analysis of risk perceptions, this scale was added in a multivariate logistic model that included factors that were earlier found to be associated with campaign exposure. However, the scale was still not significantly associated with risk perceptions. The finding implies the campaign was not successful in addressing risk perceptions among our respondents.

There are several reasons that may explain why the campaign failed to address risk perceptions. The first reason could be that the campaign was not effectively designed, in the context of it being informed by appropriate behaviour change theory and empirical evidence. Studies have demonstrated that health promotions campaign that are evidence-informed by incorporating theoretical and empirical evidence in the planning process are more effective (74–76). In the context of COVID-19, Van den Broucke, in the article, “Why health promotion matters to the COVID-19 pandemic, and vice versa” contends that changing people’s behaviour is far more complicated that merely informing them of the risks (77). The position is also echoed by another

study which argued that a behaviour change theory is needed in an intervention that is aimed at changing behaviour (78). While literature is compelling in highlighting the importance of the use of appropriate theory to inform a health promotion campaign, we did not examine the design of the campaign though, theoretically, campaigns that are theory based have higher odds of achieving intended outcomes (74–76). For example, the Health Belief Model (HBM) was applied in the design of previous health programmes and was found to be effective (54,79,80). The model has the following constructs: perceived susceptibility and severity of diseases, perceived benefits of preventive behavior, perceived barriers to preventive behavior, cause to action and self-efficacy for doing preventive behavior (81). Several previous studies have supported the use of HBM as a model for predicting/explaining public health behaviours for infectious diseases such as COVID-19 (81–83).

The other reason that may have lessened the effectiveness of the campaign in addressing risk perceptions could be the quality of messaging though this was not specifically evaluated in this paper. There is, however, a consensus among researchers that messaging is an important ingredient with stakes in effectiveness of disease prevention and health promotion campaigns (46,84,85). Message frame, defined as a message tailoring technique that reflects how the message is structured and organized without altering the meaning of the content, is said to be helpful in inducing desirable behaviour (85). The common message frames are centered on gain (positives, which reinforces the behaviours by highlighting its advantages or benefits) or loss (negatives, which highlights the disadvantages or danger of not adopting the behaviours), both of which are said to have unique implications on enhancing persuasion (85). In message frames for disease, fear appeals that send shock and stimulation through threat or warning expression are said to be dominant (46). However, several studies have argued persuasion appeals of gain-

framing or loss-framing are complicated, and that the efficacy of each appeal depends upon the characteristics of the targeted audience (85,86). Scholars have, therefore, encouraged that a campaign should incorporate different frames and tailor messages to particular groups. While we did not assess messaging in this study, evidence suggesting the power of using different messaging in a health campaign is compelling (85,86).

Further, given that the campaign exposure was generally low among our respondents, it is possible that the low risk perceptions had more to do with the reach of the campaign than it had with the design of the campaign, in terms of its fidelity and messaging. Studies that found strong associations between campaign/media exposure and COVID-19 risk perceptions also emphasized the importance of high exposure to messages (36,37). We take note that the exposure to the campaign was low, and that the respondents may not have been adequately exposed to the messages.

4.6. Risk perceptions and preventive behaviours

Our fourth objective was to assess COVID-19 preventive behaviours and their association with risk perceptions. The findings revealed adherence to preventive behaviours was generally very low, with only 29% reporting high levels of adherence, regardless of their COVID-19 risk perceptions. Among the preventive behaviours assessed in the study, wearing face masks and practicing hand hygiene were the most practiced preventive behaviours. Our study found no significant association between low perceptions and overall preventive behaviours. Only social distancing was associated with risk perceptions in bivariate analysis, with those reporting that they socially distanced often or always having lower risk perceptions.

Previous studies done in other countries that looked at adherence to preventive behaviours had different findings on level of adherence to preventive behaviours. For example two separate

studies in Uganda (51) and Ethiopia (55) found less than 50% adherence to most preventive measures such as use of face masks, social distancing and avoiding of social gatherings. In Iran, a study found moderate compliance to hand hygiene (64%), to the use of face masks and avoidance of social gatherings (collectively in the range of 52% to 70%) and lower adherence to cough etiquette (51%) (49). A large-scale Pan-European survey found higher compliance to social distancing as compared to hygiene measures, though there was generally high adherence of above 90% to all preventive measures except avoiding touching nose, eyes and mouth, which was at about 62% (87).

Closer to home, in Malawi, low adoption of protective measures was also found in the study conducted in the capital city of Lilongwe (34). The study found several reasons that people did not practice preventive measures, which included lack of money and resources (39%) and lack of access to necessary items like masks (33%). In the present study, lack of money or financial constraints may have also contributed to low adherence to preventive measures among our respondents. Though we did not independently assess this factor among our respondents, several other studies in sub-Saharan Africa have cited it as one of the reasons for low adoption of protective behaviours (15,88). As many people in the region are in informal employment, it makes it difficult for people to stay home or buy materials like face masks and sanitizers.

Low compliance to preventive measures among our respondents also may be linked to the low number of COVID-19 confirmed cases and fatalities at a time of our data collection, as mentioned earlier. The number of cases and fatalities at the time a study is conducted has been linked to risk perceptions and preventive behaviours in several studies (12,27,28,30). We collected our data at a time COVID-19 confirmed cases and fatalities were very low which explain why many respondents reported low adherence to preventive measures.

Politicization of COVID-19 may also have contributed to people not trusting campaign messages, including on adherence to preventive measures. Malawi had fresh presidential elections in June 2020 that were sanctioned by the country's constitutional court after the court annulled the 2019 presidential elections. This was also a period COVID-19 cases were starting to rise in the country, and the then opposition political parties claimed the soaring of confirmed COVID-19 cases was a scheme by the then ruling party to use the disease as a scapegoat to circumvent the sanctioned 2020 fresh presidential elections. A study previously conducted in Malawi found that this politicization of the pandemic influenced both the adherence to preventive measures and the low risk perceptions in the country (10). The politicization may have eroded trust in the country's RCCE response. In RCCE, trust is deemed the most important component (64,89), and when influencers like politicians provide contradicting information about an outbreak, it may make people lose trust in public information they receive in the RCCE response.

Here it is important to note, again, that risk perception was not significantly associated with overall preventive behaviours in the present study. This contradicts several studies that found that high risk perceptions are associated with preventive behaviours (24,43,55). That said, our study is not the first to question the strength of risk perceptions in predicting preventive behaviours, joining scholars such as Savadori and Lauriola (52).

In Africa, studies have cited other factors that are associated with preventive behaviours. Religious and cultural factors have often been cited in studies conducted in sub-Saharan Africa to influence low compliance to preventive behaviours (15,90). Thus, the faith in divine protection is perceived as more important than public health measures which is, in Sub-Saharan Africa, viewed to have no positive impact (15). Further, social norms and cultural practices may

also account for low adherence to preventive measures in rural areas where social gatherings, family meetings and cultural festivals are highly regarded. Studies in Malawi and the African continent have highlighted how structural factors like culture and social norms, that manifest in a form of value for social gatherings and cultural festivals, contradict with protective measures for COVID-19 such as social distancing and avoiding social gatherings (10,15,90).

Social distancing was the only preventive behaviour in the present study that was associated with risk perceptions in bivariate analysis, with those reporting that they socially distanced often or always having lower risk perceptions. Given that this study was cross-sectional, we cannot discount the effect that engaging in evidence-based behaviour may have in a person reassessing their risk as low when they practiced a preventive behaviour. Thus, it is possible that people who followed evidence-based preventive behaviours, like social distancing, may have perceived their risk as minimal because of their adherence to preventive behaviour. It is also interesting to note respondents in our study who were from Blantyre urban had significantly higher odds of low risk perceptions than those from rural areas, even though they had higher odds of practicing social distancing than those from rural area. This finding strengthens our hypothesis that adhering to a protective behaviour could reduce their perceived risk to a disease. Thus, following social distancing may make people reassess their risk and peg it as being minimal believing that by practicing social distancing, they cannot be infected with the disease.

That hand hygiene and wearing of face masks were the most frequently practiced protective measures did not come as a surprise in the present study. The Lilongwe study had a similar finding (34). Another nested study in Malawi also found washing hands (hand hygiene) to be the most dominant preventive measure while wearing of face masks was found to be more prevalent in towns than in rural areas (91). Hand hygiene and wearing of masks were also being tightly

enforced by banks and financial institutions in Malawi, which might have enhanced the compliance to these preventive measures. Figure 1 shows an example of an Osayidelera poster that was used in the campaign. The translated text says: I wear masks and observe one metre social distancing to protect myself and protect you, what about you?



Figure 1: Osayidelera COVID-19 campaign poster illustrating how the campaign promoted adherence to preventive measures.

Our findings further show that respondents in urban and peri-urban areas were significantly more likely to practice social distancing and other preventive behaviours than respondents in rural areas. Another study in Malawi also established that adherence to COVID-19 preventive measures were significantly higher in urban areas than rural areas (91). The significantly lower reach of the campaign in rural areas, as has been suggested in this study, may also account for

the lower adherence to preventive behaviours among rural respondents. Several studies have also shown significant associations between high wealth or high levels of education and high adherence to preventive measures (62,92,93). In Malawi, higher education and wealth are associated with residents of urban areas (5).

4.7. Limitations

The results for this study must be understood within the context of some limitations. The key limitation was that this study was cross-sectional which limited establishment of causal relationships between independent and dependent factors in the study.

The results may have also suffered from information and social desirability biases, given the self-reporting nature of the data collection. Information bias may have occurred due to inaccurate reporting or misclassification of exposure to the campaign, level of risk perceptions or adherence to preventive behaviours. Social desirability may have occurred if some respondents manipulated their responses deliberately in order to be viewed favourably by research assistants when they administered questionnaires.

Additionally, since this study was conducted at a time COVID-19 cases and fatalities were very low in Malawi, the results may only reflect a situation the burden of the disease was low in Blantyre. This study did also not independently investigate reasons for adopting or not adopting preventive behaviours. I, therefore, relied on existing literature to give possible reasons for compliance and non-compliance to preventive behaviours among respondents. Furthermore, while Osayidelera COVID-19 Campaign was run in all districts, the study only evaluated the campaign in Blantyre. It is possible that the results could have been different if the study were

extended to other districts. Nevertheless, Blantyre was chosen on basis of it being the epicenter of COVID-19 in Malawi, but study findings may still not be generalised beyond the locality. The study results could have also been strengthened if the sample size was larger, with greater power to pick up differences.

Despite these limitations, the study provides initial evidence of how the Osayidelera COVID-19 campaign may have influenced COVID-19 related risk perceptions (or not), and unveiled systematic disparities associated with the reach of the campaign in different populations, particularly related to gender and geographic location.

4.8. Chapter conclusion

The chapter discussed the results for the study. The chapter used existing literature to discuss results for each objective, and highlighted new scholarship that this study brings. It also noted limitations. The next chapter presents conclusions and recommendations for the study.

5.0 CHAPTER 5: CONCLUSION AND RECOMMENDATIONS

5.1. Chapter introduction

This chapter summarises major findings for the study and highlights how the knowledge generated in this study can help inform the design and implementation of health promotion campaigns. The chapter also provides recommendations for policymakers, programmers and implementers of health promotion campaigns and future studies.

5.2. Conclusion

The current study has established that Osayidelera COVID-19 Campaign, which was implemented as part of Malawi's COVID-19 RCCE response, had low reach among Blantyre

residents, and that the overall COVID-19 campaign failed to address the pandemic's low risk perceptions. The study also shows that exposure to Osayidelera where respondents could recall the name 'Osayidelera COVID-19 Campaign' was significantly lower than exposure to general messages where respondents could not recall the name 'Osayidelera', implying ineffectiveness in branding of the campaign. While the study shows low exposure to the overall COVID-19 campaign, the multivariate logistic regression model unveiled systematic disparities in the reach of the campaign. The results showed that odds of high exposure to the campaign were significantly higher among males as compared to females, and among respondents in peri-urban areas than those in rural areas. High COVID-19 knowledge was also significantly associated with high exposure to the campaign.

The study has contributed to growth of scholarship on health promotion campaigns and risk communication by measuring factors associated with the reach of the campaign and with risk perceptions in a developing country, where such literature is scantly. This study shows the relationship between risk perceptions and adoption of preventive behaviours is not always strong and positive as was hypothesized by the campaign. In fact, our study suggests observing evidence-based protective behaviours may make people reassess and lower their perceived risk. Programmers of RCCE response and health campaigns in Malawi and other third world countries should use empirical evidence to prioritize the factors they will use to enhance the uptake of preventive behaviours. This study has also argued socio-economic and religious factors may have contributed to both people's perceived risk of COVID-19 and protective behaviours.

5.3 Recommendations

This section outlines recommendations the study makes based on the findings. The recommendations have been categorised into three: Policy, programming and research recommendations.

5.3.1. Policy recommendations

1. Policy makers should work on decreasing systematic disparities in issues of access to Information and Communication Technology (ICT), and information in general. The COVID-19 pandemic has exposed the extent of digital divide (disparities in issues of access to internet and ICTs) both globally and nationally. This study reveals significant differences in the reach of the campaign between rural vs urban populations and women vs men in the study. The findings suggest majority of rural masses and women in Malawi failed to access authentic and verifiable health information which could enable them to adopt healthy behaviours. Part of the reasons explaining low reach of the campaign is low internet penetration in rural areas and among women in Malawi. However, the UN general assembly had, in 2016, declared the internet to be a basic human right (94). As was established by a systematic review study that explored digital transformation challenges in South Africa (95), rural masses struggle with keeping the pace of advancements in technology as internet and broadband infrastructures struggles to penetrate into rural and remote areas. Government should enhance ownership and access to mobile phones by removing certain levies to make mobile handsets and the internet more accessible to marginalized populations. Presently, Malawi is said to be one of the countries with the most expensive internet in the world (96) which make it difficult for people from rural areas and women to afford them.

2. Authorities should work on developing a national RCCE strategy that will strengthen the country's capacity in handling both the existing and future epidemics. Disparities in the reach of the campaign might be attributed to the absence of a national RCCE strategy. The national RCCE strategy could have provided stakeholders with protocols for coordination and flow of communication in the campaign thereby ensuring vulnerable and at risk populations are strategically targeted.
3. Policymakers should utilize RCCE structures and expertise gained in handling previous epidemics to enhance capacity for handling the COVID-19 RCCE response. Malawi is one of the countries in the SADC region and sub-Saharan Africa that are perpetually affected by epidemics or afflicted with endemics, which, in the end, brings with it experiences for handling epidemics, including what works and what fails. However, the experience has been that there is low collaborations and sharing of best practices among experts and government officials in the country.
4. Politicians should stop politicization of epidemics, as this erodes trust in RCCE responses. Policymakers should also add a clause in the Public Health Act of Malawi that shall penalize reckless political statements by politicians and public officials during epidemics like COVID-19.

5.3.2. Programming recommendations

1. To enhance the effectiveness of the campaign, campaign programmers ought to use relevant behaviour change theory(ies) and empirical literature to inform the design or fidelity of the programme. As has been discussed in the study, behaviour change is a complex process, and there is evidence that a social and behavior change intervention that is informed by theory with constructs that touch on all important aspects of the behaviour

change process is effectives (74–76). Programmers should, therefore, pay attention to constructs that have empirical evidence of being effective. The use of theory in the initial planning of the programme can also help to inform programmers of any barriers that should be anticipated during implementation. To address risk perceptions, programmers could, for example, use the Health Belief Model which has constructs that are relevant to understanding the type of risks, benefits for taking the healthy behaviour and barriers to desirable action. The Theory of Planned Behaviour could help to inform constructs that are linked to behavior intention, in this case, the adoption of protective behaviours. If the programme wanted to address various factors operating at different levels, the socioecological model could help capture the factors at intra, interpersonal, community and national level.

2. Campaign messaging also poses an important ingredient that can make or break the success of a health campaign. Message frames, as have been discussed in the study, enhances persuasiveness of messages. Considering the complexity in the behaviour change process, programmers should utilize different types of message frames in order to appeal to ever-changing needs and altitudes of targeted audiences. The empirical literature is compelling in citing persuasion appeals of gain-framing or loss-framing as being more complicated (85,86), and that programmers should use formative research and stakeholders' collaboration during planning stage to determine which frames to use for particular messages to enhance persuasion of the campaign messages.
3. The campaign programmers must put deliberate campaign approaches (communication channels) that target marginalized audiences like rural residents and women to enhance reach of the campaign among marginalized populations. For example, interpersonal

approaches like door to door visits could help reach out to those who many not have access to mass media and other digital technologies. However, given restrictions on social gatherings that were imposed during COVID-19 pandemic, the programmers can emphasise community-level approaches that do not attract large gatherings. An example of such an approach is van-mobilisation which is fast, quick but not necessarily interpersonal, as people can receive messages while in their homes.

4. Campaign programmers must also strive to build brand equity, a strategic process in health promotion campaign, which is said to enhance message recall and salience of the messages (97). In this study over 80% of the respondents could not recall the word "Osayidelera" in the campaign, which the study interpreted to be connected to poor branding. Effective branding, through brand equity, can solve this problem by making protective behaviours more personally compelling and socially relevant for the intended audience. This could be done by making sure campaign branding is consistent in all messages.
5. At the initial stages of developing the campaign, the programmers should plan for systematic research to inform and evaluate campaign activities. The programmers can even triangulate their results by making use of both qualitative and quantitative approaches (98). Putting in place methods of monitoring and evaluation at the design stage of a programme can help enhance both the efficiency and effectiveness of the programme by ensuring any other challenge or difficulties in fidelity are captured and addressed within reasonable time. It can also help to identify and address any systematic disparities in the reach of the campaign.

5.3.2. Research recommendations

1. This study did not focus on the process of campaign implementation. Another study can, therefore, be a process evaluation of the campaign. This kind of a study can help unpack the challenges and quality of implementation of the campaign which were not the focus in this study.
2. Another study should explore factors that influence adoption of preventive measures in Malawi. This is something the study discussed using existing literature in the sub-Saharan region, but I did not independently investigate reasons for adopting or not adopting various protective behaviours.
3. This study did not investigate message frames that were used in the campaign, and the effectiveness of such frames. Another study could look at this aspect in the campaign, and help inform which message frames were associated with higher risk perceptions.
4. Another study can investigate effectiveness of the channels or approaches that were used in the Campaign. The channels used in a campaign have an influence on the campaign's reach, and it is important that another study do investigate approaches that were used in the campaign and their effectiveness in the context of accessibility and trustworthiness among targeted populations.

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APPENDIX 1: EXPOSURE TO OSAYIDELERA COVID-19 AND RISK PERCEPTIONS QUESTIONNAIRE

This questionnaire seeks data on your exposure to Osayidelera COVID-19 campaign and COVID-19 risk perceptions. The questionnaire is not, in any way, a test; we are simply interested in your level of exposure to the said campaign and the perceived risk of COVID-19. All your responses to the survey will be treated with utmost level of confidentiality. It should take you a maximum of 20 minutes to complete the survey.

Part A: Social demographic information

1. Age, Specify: _____

2. Gender
   - Male
   - Female

3. Residential location, Specify:_____

4. Highest level of education attained
   - College and university
   - Secondary school
   - Primary school
   - None

5. Marital status
   - Married
   - Single
   - Widowed
   - Divorced

6. History of COVID-19 exposure
   - I tested positive
   - A family member or close friend tested positive
   - None

7. Religion
   - Catholic
   - Protestant
   - Pentecostal

- Muslim
- African Traditional Religion
- Other, specify: _____
- None

8. Occupation
- Trained professional
- Farmer
- Student
- Laborer
- Other, specify:_____

9. Wealth

Household effects, we have:

A radio
- Yes
- No

A television
- Yes
- No

A mobile phone
- Yes
- No

Non-mobile telephone
- Yes
- No

A computer
- Yes
- No

PART B: EXPOSURE TO OSAYIDELERA COVID-19 CAMPAIGN

1. Have you ever heard of Osayidelera campaign?
   - Yes
   - No

2. Read each item carefully, and respond using the scale provided. Circle your appropriate level of exposure to the campaign
   Rate each exposure on the following scale

Never	Not very often	Once a week	Twice a week	More than twice a week
1	2	3	4	5

In the last six months, how much do you agree with the following statements?

No	**Statement**	**Scale**				
1	I heard/read of "Osayidelera COVID-19 Campaign" from the mass media like TV, radio and newspapers	1	2	3	4	5
2	I heard/read about COVID-19 from mass media from a source that was not Osayidelera	1	2	3	4	5
3	I read of "Osayidelera COVID-19 Campaign" from the social media	1	2	3	4	5
4	I read about COVID-19 on the social media from a source that was not Osayidelera	1	2	3	4	5
5	I heard of "Osayidelera COVID-19 Campaign" through trained people who were conducting door-to-door campaign	1	2	3	4	5
6	I heard of COVID-19 through a door-to-door campaign that was not Osayidelera	1	2	3	4	5
7	I saw posters or stickers of "Osayidelera COVID-19 Campaign"	1	2	3	4	5
8	I saw posters or stickers about COVID-19 that were not from the Osayidelera campaign	1	2	3	4	5

9	I heard about “Osayidelera COVID-19 Campaign” through COVID-l9 hotline/Call Center	1	2	3	4	5
10	I heard about COVID-19 through COVID-l9 hotline/Call Center that was not Osayidelera	1	2	3	4	5

3. What were your main sources of COVID-19 information in the past year (tick all options that apply)
- o Radio
- o Television
- o Newspapers
- o Social media and the internet
- o Healthcare workers
- o Friends and Family
- o Politicians
- o Religious leaders
- o Local NGOs
- o Chiefs and traditional leaders
- o Others, specify:_____

4. Which source do you trust the most, pertaining to COVID-19 information?
- o Radio
- o Television
- o Newspapers
- o Social media and the internet
- o Healthcare workers
- o Friends and Family
- o Politicians
- o Religious leaders
- o Local NGOs
- o Chiefs and traditional leaders
- o Others, specify:_____

5. Why do you trust the source in 3 above the most:_____

6. Which source do you NOT trust the most, regarding COVID-19 information?
- Healthcare workers
- Journalists
- Politicians
- Family and friends
- Religious leaders
- NGO officials
- Academicians
- Chiefs and traditional leaders
- Others, specify

7. Why do you NOT trust this source: _____

SECTION C: KNOWLEDGE OF COVID-19

Read each item carefully, and respond using the scale provided. Circle your appropriate response to each structured question about COVID-19.

Put your responses using the following scale

I don't know whether the statement is true or false	No, it is incorrect (False)	Yes, it is correct (True)
1	2	3

Do you agree each of the following statements?

Item	Question	Scale		
1	The main clinical symptoms of COVID-19 are fever, fatigue, dry cough, and shortage of breath.	1	2	3
2	Early symptomatic and supportive treatment can help most patients recover from infection.	1	2	3
3	Not all persons with COVID-19 will develop severe cases.	1	2	3
4	The COVID-19 virus spreads via respiratory droplets of infected individuals.	1	2	3

5	Ordinary residents can wear general medical masks to prevent infection by the COVID-19 virus.	1	2	3

SECTION D: RISK PERCEPTIONS OF COVID-19

1. What is your risk of being infected with COVID-19?
- Very low
- Low
- Moderate
- High
- Very high

2. If you were infected with COVID-19, what would be your risk of passing it to someone else?
- Very low
- Low
- Moderate
- High
- Very high

3. If you were infected with COVID-19, what would be your risk of becoming severely ill?
- Very low
- Low
- Moderate
- High
- Very high

4. What is your level of worry or concern that comes because of COVID-19?

- Very low
- Low
- Moderate
- High
- Very high

SECTION E: PREVENTIVE BEHAVIORS

1. Read each item carefully, and respond using the scale provided. Circle your appropriate level of exposure to the campaign

Rate each exposure on the following scale

Never	Sometimes	Often	Always
1	2	3	4

In the past month, how much have you adhere to the following preventive measures.

Item	Question	Scale			
1	Wearing facial masks correctly and consistently in public places	1	2	3	4
2	Practicing hand hygiene like washing hands with soap or using a hand sanitizer	1	2	3	4
3	Keeping a 1 metre social distancing	1	2	3	4
4	Staying home whenever you can	1	2	3	4

2. Have you gotten your COVID-19 vaccine?
    - Yes
    - No

APPENDIX 2: INFORMATION SHEET (ENGLISH)

STUDY INFORMATION DOCUMENT

STUDY TITLE: EVALUATION OF OSAYIDELERA, A CAMPAIGN ADDRESSING RISK PERCEPTIONS OF COVID-19 IN BLANTYRE, MALAWI

Greetings:

Introduction:

I, Focus Chiyembekezo Maganga, am doing research on how Osayidelera COVID-19 Campaign addressed COVID-19 risk perceptions in Blantyre, Malawi. Research is a process used in seeking new knowledge. In this study, we want to assess whether Osayidelera COVID-19 campaign increased people's knowledge on the pandemic, addressed risk perceptions and contributed to adherence to preventive measures. The study may help inform how future campaigns should be designed and implemented to help contain public health emergencies.

Invitation to Participate: We are asking or inviting you to take part in this research study.

Features involved in the study:

1. This study will use questionnaires to solicit data that is required to answer the research question of this study;
2. The data will strictly be used for academic purpose, and you will not be identified anywhere in the study;
3. It will take approximately 20 minutes to complete all the questions in the questionnaire;

Risks of being involved in the study: This study does not have any risks associated with participation in it. The study only asks questions aimed at understanding the effectiveness of Osayidelera COVID-19 Campaign in addressing COVID-19 risk perceptions.

Benefits of being in the study: There are no direct benefits to the Participant for this study. However, the longer-term objective is the possibility of more effective health promotions campaign that may assist in effectively communicating risks and preventive measures of epidemics in a quest to contain their spread and burden.

Participation is voluntary, that refusal to participate will involve no penalty or loss of benefits to which the Participant is otherwise entitled. There is no requirement to provide a reason for withdrawing and any data collected on such a person will in default be destroyed, unless the Participant specifically consents to its retention.

Confidentiality: Normally personal information will be treated in the strictest confidence and will only be available to the Principal Investigator (PI) and his/her Supervisor, in the case wherein the PI is a postgraduate student. The only exceptions - and both of them are rare - would normally be:

1. personal information may be disclosed if required by law
2. the Human Research Ethics Committees of the University may exceptionally require personal data to respond to a formal complaint, or for a compliance audit

Contact details:

Focus Maganga, Principal Investigator, telephone no. 0999031754, or by e-mail at focusmaganga@gmail.com,

Dr. Sara Nieuwoudt, Supervisor, by e-mail at Sara.Nieuwoudt@wits.ac.za
Dr. Flemmings Ngwira, Supervisor, telephone no. 0997456007, or by e-mail at fngwira@poly.ac.mw

Outputs

The results of the study can be shared with you after the study is completed

Contact details of HREC administrator and chair.

This study has been approved by the Human Research Ethics Committee (Medical) of the University of the Witwatersrand, Johannesburg ("Committee") and Malawi's National Health Sciences Research Committee. The principal function of both these Committees is to safeguard the rights and dignity of all human subjects who agree to participate in a research project and the integrity of the research.

If you have any concern over the way the study is being conducted, please contact the Chairperson of the HREC Committee who is Professor Clement Penny, who may be contacted on telephone number 011 717 2301, or by e-mail on Clement.Penny@wits.ac.za. The telephone numbers for the Committee secretariat are 011 717 2700/1234 and the e-mail addresses are Zanele.Ndlovu@wits.ac.za and Rhulani.Mukansi@wits.ac.za

You can also contact the National Health Sciences Research Committee, Ministry of Health, P.O. B 30377, Lilongwe 3, Malawi, Cell: 0999397913 Email: mohdoccentre@gmail.com

Thank you for reading this Study Information Sheet.

Date: January, 2022

APPENDIX 3: CHICHEWA INFORMATION SHEET

CHIKALATA CHA UTHENGA WA KAFUKUFUKU

STUDY TITLE: EVALUATION OF OSAYIDELERA, A CAMPAIGN ADDRESSING RISK PERCEPTIONS OF COVID-19 IN BLANTYRE, MALAWI

Landirani moni:

Mau oyamba:

Ine Focus Chiyembekezo Maganga ndikupanga kafukufuku wa m'mene mauthenga okuziwisani za matenda a COVID-19 (Osayidelera COVID-19 campaign) anakupangisirani kuyamba kuyiwopa ndikuziteteza ku nthendayi. Tikukupemphani kuti mutenga nawo gawo mu kafukufukuyi yemwe azathandize kuziwa njira zabwino zophunzitsira anthu njira zoyenera kusata kuti aziteteze ku matende opasirana. Kafukufukuyi tikumupanga mu boma la Blantyre.

Pempho lotenga nawo mbali: tikukupemphani ndi kukumemani kuti mutenge nawo mbali mu kafukufuku ameneyu.

Zoyenera kudziwa zokhuza kutengapo gawo mu kafukufukuyi:

4. Kafukufukuyi azagwiritsa ntchito mafunso omwe akonzedwa kale okhunza kafukufukuyi;
5. Zomwe muzayankhe zizagwirisidwa ntchito yokhayo yokhunza kafukufuku ndipo zizasungidwa mwa chinsinsi. dzina lanu silizantchulidwapo palipotse pa zosatira za kafukufukuyi;
6. Zizakutengerani nthawi yokwanira pafupifupi mphindi makumi;
7. Mafunso omwe akonzedwa kale akufutsa zokhudza inu mwini, mauthenga a Osayidelera COVID-19, mmene mumayiwopera nthenda ya COVID-19 komatso kusata kwanu njira zopewera nthendayi.

Ziwopsezo potenga nawo mbali mu kafufukuyi: Palibe chowopseza chilichonse potenga nawo mbali mukafukufuku ameneyu. Kafukufuku ameneyu angothandiza kumvetsetsa mphamvu ya mauthenga okhunza COVID-19 kukuthandizani kuti musatenge nthenda imeneyi.

Phindu potenga nawo mbali pa kafukufukuyi: Palibe phindu lililonse lomwe muzalandire potenga nawo gawo mu kafukufuku ameneyu. Komabe zosatira za kafukufukuyi zizathandiza kuti mtsogolomo pazakhale njira zabwino za ma uthenga okuthandizirani kupera miliri ya matenda.

Kutengapo gawo mu kafufuku ndi kosakakamiza: Sipazakhala chilango chilichochonse mukakana kutenga nawo nawo gawo mu kafukufuku ameneyu. Muzakhala oloredwa kunena kuti zomwe munapereka mu kafukufukuyi zichotsedwe ndipo simuzafunsidwa kunena zifukwa za kusintha maganizo kwanu.

Chinsinsi cha mayankho operekedwa: mayankho anu okhunza inu ndi moyo wanu azasunkhidwa mwa chinsinsi kwambiri ndipo palibe palibe azapasidwe mayankho amenewa kupatulapo kwa yemwe akupanga kafukufukuyi komatso omwe akumuyang'anira. Zimene zingapangitse kuti zisatero ndi ziwiri:

3. Ngati osatira za ma lamulo anena kuti izi ziperekedwe
4. Ngati omwe apereka chilolezo cha kafukufukuyi alandira dandaulo lomwe likufunika kuwona mayankhowa kuti dandaulo lisatiridwe

Contact details:

Focus Maganga, Principal Investigator, telephone no. 0999031754, or by e-mail at focusmaganga@gmail.com,

Dr. Sara Nieuwoudt, Supervisor, by e-mail at Sara.Nieuwoudt@wits.ac.za
Dr. Flemmings Ngwira, Supervisor, telephone no. 0997456007, or by e-mail at fngwira@poly.ac.mw

Zosatira za kafukufuku

Zosatira zakafukufuku zizaperekedwa kwa inu kafukufukuyi akazamalizidwa

Contact details of HREC administrator and chair.

This study has been approved by the Human Research Ethics Committee (Medical) of the University of the Witwatersrand, Johannesburg ("Committee") and the National Health Sciences Research Committee in Malawi. A principal function of this Committee is to safeguard the rights and dignity of all human subjects who agree to participate in a research project and the integrity of the research.

If you have any concern over the way the study is being conducted, please contact the Chairperson of this Committee who is Professor Clement Penny, who may be contacted on telephone number 011 717 2301, or by e-mail on Clement.Penny@wits.ac.za. The telephone numbers for the Committee secretariat are 011 717 2700/1234 and the e-mail addresses are Zanele.Ndlovu@wits.ac.za and Rhulani.Mukansi@wits.ac.za

Mungatheso kuyankhulana ndi a National Health Sciences Research Committee, Ministry of Health, P.O. B 30377, Lilongwe 3, Malawi, Cell: 0999397913 Email: mohdoccentre@gmail.com

Takuthokozani powerenga zokhunza kafukufukuyi

Date: January, 2022

APPENDIX 4: INFORMED CONSENT SHEET



PARTICIPANT CONSENT SHEET

EVALUATION OF OSAYIDELERA, A CAMPAIGN ADDRESSING RISK PERCEPTIONS OF COVID-19 IN BLANTYRE, MALAWI

1. I have been given a Participant Information Sheet which explains the nature and processes involved in this study, which is attached hereto;
2. I was given time to read it, or had it read to me, in the language I best understand;
3. I was given time to ask any questions I wanted to and found any answers given to me to be reasonable and satisfactory;
4. I believe I fully understand why the study is being conducted and what the intended outcomes will be;
5. I understand that there will be no immediate benefit to me, should I agree to participate, nor will I receive any payment; conversely, participation will not cost me anything but my time;
6. I understand that, even if I initially consent to take part in the study, I may subsequently withdraw at any time and would not be required to give any reasons; if that happened, any data collected about me for the purposes of the study would immediately be destroyed, unless I give consent for it to be retained
7. I have been given a range of contact details, listed below. If I require further information or become concerned about any aspect of this study I am free to speak to any of these contacts.

Contact details:

Focus Maganga, Principal Investigator, telephone no. 0999031754, or by e-mail at focusmaganga@gmail.com,

Dr. Sara Nieuwoudt, Supervisor, by e-mail at Sara.Nieuwoudt@wits.ac.za
Dr. Flemmings Ngwira, Supervisor, telephone no. 0997456007, or by e-mail at fngwira@poly.ac.mw

Professor CB Penny, Chairperson of the Human Research Ethics Committee (Medical) at the University of Witwatersrand, on telephone no. 011 717 2301, or by e-mail at Clement.Penny@wits.ac.za.
Ms. Z Ndlovu or Mr Rhulani Mkansi, Committee Secretariat, telephone nos.: 011 717 2700 or 1234, or by e-mail at: Zanele.Ndlovu@wits.ac.za or Rhulani.Mkansi@wits.ac.za

The chairperson, National Health Sciences Research Committee, Ministry of Health, P.O. B 30377, Lilongwe 3, Malawi, Cell: 0999397913 Email: mohdoccentre@gmail.com

Name of Participant: _____
Date: _____
Place: _____
Signature or mark _____

Witnessed by:

Name of Witness: _____
Signature: _____
Date: _____

APPENDIX 5: CHICHEWA INFORMED CONSENT SHEET

WITS UNIVERSITY

CHIKALATA CHA CHILOLEZO

EVALUATION OF OSAYIDELERA, A CAMPAIGN ADDRESSING RISK PERCEPTIONS OF COVID-19 IN BLANTYRE, MALAWI

1. Andifotokozera za kutenga nawo gawo mbali mu kafukufuku ameneyu ndipo ndalandira chikalata chofotokozera m'mene kafukufukuyi achitikire;
2. Ndawerenga (kapena andiwerengera) chikalata cha uthenga wa kafukufukuyi;
3. Ndamvetsa uthenga umenewu ndipo ndinali ndi mwayi ofunsa mafunso kuti ndiunikiridwe;
4. Ndamvetsa cholinga chakafukufukuyi ndi cholinga cha zosatira zake;
5. Ndamvetsa kuti kutenga mbali kwake ndi kodzipereka ndipo palibe phindu lomwe ndingapeze pa nthawi yakafukufukuyi. Ndamvetsaso kuti kusatenga gawo mu kafukufukuyi sikundiyika mu vuto lili lonse
6. Ndamvetsa kuti ndili ndi ufulu wotuluka mukafukufukuyi nthawi ili yotse ngakhale nditavomereza kutengapo gawo mukafukufukuyi popanda kupereka chifukwa pa kusintha maganizo kwanga.
7. Ndapatsidwa ma nambala omwe ndingathe kuyimbira ngati nditafuna kumvetsa bwino gawo lina lililonse lakafukufukuyi.

Contact details:

Focus Maganga, Principal Investigator, telephone no. 0999031754, or by e-mail at focusmaganga@gmail.com,

Dr. Sara Nieuwoudt, Supervisor, by e-mail at Sara.Nieuwoudt@wits.ac.za
Dr. Flemmings Ngwira, Supervisor, telephone no. 0997456007, or by e-mail at fngwira@poly.ac.mw

Professor CB Penny, Chairperson of the Human Research Ethics Committee (Medical) at the University of Witwatersrand, on telephone no. 011 717 2301, or by e-mail at Clement.Penny@wits.ac.za.
Ms. Z Ndlovu or Mr Rhulani Mkansi, Committee Secretariat, telephone nos.: 011 717 2700 or 1234, or by e-mail at: Zanele.Ndlovu@wits.ac.za or Rhulani.Mkansi@wits.ac.za

The chairperson, National Health Sciences Research Committee, Ministry of Health, P.O. B 30377, Lilongwe 3, Malawi, Cell: 0999397913 Email: mohdoccentre@gmail.com

Participant ID: _____
Date: _____
Place: _____
Signature or mark _____

Witnessed by:

Name of Witness: _____
Signature: _____
Date: _____

APPENDIX 6: NHRC ETHICS CERTIFICATE



CERTIFICATE OF ETHICS APPROVAL

This is to certify that the National Health Sciences Research Committee has reviewed and approved the study titled:

Study Title: Protocol # 21/12/2835: Evaluation of Osaidelera COVID-19, a Campaign Addressing Risk Perceptions of COVID-10 in Blantyre.

Investigator: Focus Chiyembekezo Maganga

StartDate: 16/02/2022 EndDate: 15/02/2023

Date of Issue: 16/02/2022

Dr Collins Mitambo
For Chairperson, NHSRC

National Health Sciences Research Committee
2022 -02- 16
APPROVED

Mr Billy Nyambalo
NHSRC Administrator

APPENDIX 7: HREC- MEDICAL ETHICS CERTIFICATE

UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG	HUMAN RESEARCH ETHICS COMMITTEE (MEDICAL)

Office of the Deputy Vice-Chancellor (Research and Innovation)

TO: Mr FC Maganga
School of Public Heath
Medical School
University

E-mail: 1925205@students.wits.ac.za

CC: Supervisor, Drs S Nieuwoudt and F Ngwira
<Sara.Nieuwoudt@wits.ac.za>
and <HREC-Medical Research Office@wits.ac.za>

FROM: Mr Iain Burns
Human Research Ethics Committee (Medical)
Tel: 011 717 1252

E-mail: Iain.Burns@wits.ac.za

DATE: 2022/05/05

REF: R14/48

PROTOCOL NO: **M211026** (This is your ethics application reference number. Please quote it in all enquiries, oral or written, relating to this study.)

PROJECT TITLE: *Evaluation of Osayidelera, a campaign addressing risk perceptions of COVID-19 in Blantyre, Malawi*

Please find attached the Clearance Certificate for the above project. I hope it goes well and that an article in a recognized publication comes out of it. This will reflect well on your professional standing and contribute to Government funding of the University.

/MSWorks2000/Iain0007/Clearscan.wps

UNIVERSITY OF THE WITWATERSRAND JOHANNESBURG

R49 Mr FC Maganga

HUMAN RESEARCH ETHICS COMMITTEE (MEDICAL)
CLEARANCE CERTIFICATE NO. M211026

NAME: (Principal Investigator) Mr FC Maganga

DEPARTMENT: School of Public Health
Medical School
University

PROJECT TITLE: *Evaluation of Osayidelera, a campaign addressing risk perceptions of COVID-19 in Blantyre, Malawi*

DATE CONSIDERED: 2021/10/29

DECISION: Approved unconditionally

CONDITIONS:

NOTE: If contact information regarding student study participants is required, please contact the Registrar's office - <Nicoleen.Potgieter@wits.ac.za>

SUPERVISOR: Drs S Nieuwoudt and F Ngwira

APPROVED BY: Dr CB Penny, Chairperson, HREC (Medical)

DATE OF APPROVAL: 2022/05/05

This Clearance Certificate is valid for 5 years from the date of approval. An extension may be applied for.

DECLARATION OF INVESTIGATORS

To be completed in duplicate and **ONE COPY** returned to the Research Office secretariat on the 3rd floor, Phillip Tobias Building, Parktown, University of the Witwatersrand, Johannesburg.

I/we fully understand the conditions under which I am/we are authorized to carry out the above-mentioned research and I/we undertake to ensure compliance with these conditions. Should any departure be contemplated from the research protocol as approved, I/we undertake to submit details to the Committee. **I agree to submit a yearly progress report**. When a funder requires annual re-certification, the application date will be one year after the date when the study was initially reviewed. In this case, the study was initially reviewed in **October** and therefore reports and re-certification will be due in the month of **October** each year. Unreported changes to the study may invalidate the clearance given by the HREC (Medical).

Signature of Principal Investigator _____ Date _____