SCHOOL OF MEDICINE AND HEALTH SCIENCES

PHYSICAL INTERVENTIONS TO INTERRUPT OR REDUCE THE SPREAD OF RESPIRATORY VIRUSES AT RAILWAY CLINIC

BY

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DECLARATION

DISSERTATION CLEARANCE AND DECLARATION

DECLARATION

Steven Lwiindi BSPH18212410

I declare that this proposal is my creative work and to the best of my acquaintance has not beenpresented for a degree in any other institution.

Signature: S.Lwiindi **Date:** 26th May 2023

Supervisor Name: Dr Fredrick Chitangala

This dissertation has been submitted with my approval as a University of Lusaka (UNILUS)supervisor.

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Signature: _____ **Date:** 26th May 2023

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DEDICATION

I dedicate this material to my parents Mr and Mrs Lwiindi who always remaindered me to do my very best so that I make him and the entire family proud as he always told me that the family is looking up for my success.

ABSTRACT

Introduction: Respiratory diseases account for 6% of all deaths worldwide, according to the World Health Organisation of the entire worldwide malady burden. Viral epidemics or pandemics of acute respiratory infections (ARIs) pose a global threat. Examples are influenza (H1N1) caused by the H1N1pdm09 virus in 2009, severe acute respiratory syndrome (SARS) in 2003, and coronavirus disease 2019 (COVID-19) caused by SARS-CoV-2 in 2019. Antiviral drugs and vaccines may be insufficient to prevent their spread. This is an update of a Cochrane Review last published in 2020. We include results from studies from the current COVID-19 pandemic. Implementing transmission barriers such as physical interventions (Immigration controls, quarantine, social distancing, lockdowns, personal protection e.g., face masks, gloves and hand hygiene) have been shown to be effective in monetarising respiratory virus outbreaks or in healthcare facilities such as home regions sick.

Method: A qualitative in-depth interview was conducted at railway clinic in Lusaka, Zambia. The researcher purposefully sampled health workers between the ages of 25-35 who have experience in physical interventions. The researcher interviewed 16 health workers who were subjected to in-depth interviews. Respiratory infections and physical interventions were among the themes and factors covered in the interview process that were drawn from empirical research and theories about the physical interventions.

Results: According to this research, the health workers suggest that face masks and hand hygiene may reduce respiratory illness, comparing hand hygiene interventions with controls there was a 50% relative reduction in the number of people with influenza in the hand hygiene group, 11 participants; moderate certainty evidence, suggesting a probable benefit, the use of masks might reduce the risk of viral respiratory infections. In the healthcare setup, a possible reduced risk of influenza like illness was found among mask users, results show no difference between masks and surgical masks on the risk of confirmed influenza or other confirmed viral respiratory infections, although possible benefits face masks were found for preventing influenza like illness or other clinical respiratory infections.

Conclusion: In order to reduce the spread of respiratory infections, it is necessary to have Physical intervention strategies such as face mask wearing, social distancing, hand hygiene, and ventilation are effective measures which helps in the reduction of respiratory viruses.

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LIST OF ACRONYMS

ARI……. Acute Respiratory Infection

HRV…….…… Human Rhinoviruses

MDR……. Multidrug Resistance

MERS……..... Middle East Respiratory Syndrome

PPE…… Personal Protective Equipment

RSV…… Respiratory Syncytial viruses

SARs…….. Severe Acute Respiratory Infection

TB……. Tuberculosis

WHO…… World Health Organization

CHAPTER ONE

INTRODUCTION

1.1. BACKGROUND

Respiratory diseases account for 6% of all deaths worldwide, according to the World Health Organisation of the entire worldwide malady burden. Epidemic and pandemic respiratory infections are an extreme worldwide threat with acute respiratory infections (ARIs) accounting for one third of total global deaths. Severe Acute Respiratory Syndrome (SARS) in 2003, H1N1 influenza caused by the H1N1pdm09 virus in 2009, Middle East Respiratory Syndrome (MERS) which began in 2012, and coronavirus disease caused by SARS CoV – COVID-19 - 2 are some of them. famous pandemic. On the other hand, non-epidemic acute respiratory infections also contribute significantly to global morbidity.

The most recent interim guidelines from the WHO in 2007, the journal Infection Prevention and Control in Epidemic and Pandemic-Prone Acute Respiratory Infections in Healthcare Settings was published. Transmission of acute respiratory disease. The guidelines place a strong prominence on acute respiratory diseases with epidemic or pandemic potential. Since 2007, WHO has not published any updated guidelines on the prevention of various respiratory diseases. It is understandable that this organization is focusing more on developing prevention guidelines for the rapidly spreading COVID-19 these days. A common example is the Interim Guidance on Healthcare Infection Prevention and Control in Suspected COVID-19 released in March 2020.

The lack of recent global guidelines and proposals to prevent respiratory disease transmission requires a review of the effectiveness of current measures. Implementing transmission barriers such as physical interventions (Immigration controls, quarantine, social distancing, lockdowns, personal protection e.g., face masks, gloves and hand hygiene) have been shown to be effective in monetarising respiratory virus outbreaks or in healthcare facilities such as home regions sick (Lee et al 2017). Because physical interventions are quick, promptly accessible, and autonomous of particular types of infectious agents, including novel viruses, they have the potential to be widely applicable.

1.2. COMMON RESPIRATORY VIRUSES

1.2.1. Influenza

Influenza is a common contagion that can be fatal, particularly at-risk populations. The cold infection affects the lungs, throat, and nose, causing high fever, muscle aches, chills, stuffy nose, cough, a runny nose, headache, and fatigue. Young children, the old, women who are pregnant, and people with chronic illnesses or weakened immune systems are all highly susceptible to the virus. The cold contagion is usually treated with rest and hydration to allow the body to fight the infection on its own. Over-the-counter anti-inflammatory pain relievers can help with symptoms. Yearly inoculations can offer assistance anticipate and treat the flu complications. Influenza infection has been described in Zambia (Mizuta et al. 1997) since the 1990s, but due to limited laboratory diagnostic capacity prior to 2008 (Theo et al. 2012), little is meaning known around the commitment of flu infections to the respiratory malady burden that public health planning to prevent and control influenza-related illnesses is difficult. There are currently no influenza action guidelines or vaccination guidelines in Zambia, and no action is being taken to reduce transmission and disease severity associated with influenza infection.

1.2.2. Respiratory syncytial viruses (RSV)

Respiratory syncytial infection (RSV) causes disease of the lungs and aviation routes. Since its disclosure in 1956, RSV has been recognized as a major cause of horribleness and mortality around the world, particularly in new born children within the to begin with six months of life. It is additionally common for most children to ended up tainted with the infection by the age of 2. Respiratory syncytial infection can moreover contaminate grown-ups. The virus can cause serious infections in the old people, people with heart and lung disease are more at risk, or people with a low immune system. Resource-strapped nations have more than twice the rate of genuine malady seen in created nations, and outstandingly, 99% of worldwide passing's are due to RSV disease. (Nair et al 2010).

1.2.3. Tuberculosis

In the year 2015, 10.4 million people contracted tuberculosis (TB) and a number of 1.4 million died worldwide, with TB remaining one of the top ten causes of death. Of the approximately 580,000 people who are fit for treatment for multi drug resistant tuberculosis (MDR-TB), only

125,000 (20%) are on treatment. Tuberculosis (TB) is a bacterial infection that is transmitted by inhaling small droplets from the hacks or wheezes of an infected individual. The microbes that cause TB are spread when a contaminated individual hacks or wheezes. Most individuals contaminated with the microscopic organisms have no side effects. When indications do happen, they as a rule incorporate a hack (some of the time wicked), weight misfortune, night sweats and fever.

1.2.4. Human rhinoviruses

Human rhinovirus (HRV) is responsible for many common cold symptoms such as runny nose, stuffy nose, sore throat, coughing and coughing. Nevertheless, notwithstanding the high detection rate in children, utmost HRV infections are asymptomatic. As a result, this virus is usually ignored, although a strong association between HRV infection early in life and ensuing asthma induction has been reported (Kim el in 2017).

1.2.5. Corona viruses (including SARS and MERS CoV)

The occurrence of the COVID-19 has attracted worldwide attention since December 2019. The primary outbreak of COVID-19, caused by coronavirus 2 is a new serious intense respiratory disorder, happened in Wuhan, Hubei Area, China. Corona affects distinctive individuals in numerous ways. Most individuals who are tainted involvement gentle to direct sickness and recoup without hospitalization. Most countries closed their borders to limit the spread of the virus when it was at its peak. The World Health Organisation however, confirmed that confirmed COVID-19 cases and deaths still increased due to increased internal-community transmission (WHO,2020). Vaccination against the virus eventually proved and continues to prove more effective than physical prevention measures in curbing the spread of Corona.

1.3. STATEMENT OF THE PROBLEM

Southern Africa records one of the most noteworthy mortality rates from flu infection and respiratory syncytial infection (RSV) contamination in the world (Iuliano et al 2018). Respiratory diseases in Africa are largely affect children below the age of five. In Zambia, acute respiratory infections account for 30-40% of children's outpatient turnout and 20-30% of hospital admissions. The most common respiratory infections in Zambia are tuberculosis and the influenza virus and their spread has proven very challenging to curb.

In Zambia, tuberculosis (TB) remains to be a leading cause of disease and death, particularly for those with HIV (PLWHA). The projected number of tuberculosis cases in Zambia in 2018 was 72,495 (with a range of 40,495 to 111,495). Of these, 40,176 (55.4%) had their TB diagnosed, and 43,387 (59.8%) had their TB tested. In Zambia, there were over 59,000 new cases of active TB disease in 2019 (incidence: 333 per 100,000), resulting in 15,400 TB-related deaths, 62% of which were HIV-positive individuals. Zambia continues to be one of the 30 WHO countries with a high burden of TB, despite the fact that the incidence of TB has dramatically declined over the past ten years. Zambia still has the sixth highest incidence of TB in sub-Saharan Africa. WHO produced guidance on the use of two new agents to improve DR-TB treatment outcomes bed aquiline and delamanid in 2013 and 2014 respectively. Despite fairly good treatment success rates for drug-susceptible TB (DS-TB), MDR-TB is still a growing problem in Zambia and warrants for more effective spread-prevention methods.

The influenza virus is another menacing respiratory virus in Zambia. On April 27, 2022, the Lusaka District Health Department was informed of an increase in people with flu-like symptoms around the University of Zambia's Great East Road campus. A total of fourty samples were collected and tested at the National Virology Laboratory at UMBAL. The investigation revealed that all but one were infected with the H3N2 flu. This corresponds to a 97.5% positivity rate among the samples drawn. None of the patients tested positive for COVID-19. The age range of those infected ranged from 14 to 47 years, with 23 males and 16 females which clearly shows that respiratory viruses mostly affect old people and children. Seasonal influenza virus infections are the major cause for an estimated 291,243 to 645,832 respiratory deaths.

1.4. JUSTIFICATION OF THE STUDY

A respiratory epidemic destroys human life and escalates a national health crisis. It was estimated that globally in 2019 respiratory infections were reported to affect 33·0 million RSV-associated acute lower respiratory infection episodes. Although physical interventions have been continuous mentioned in several global studies and health guidelines, their effectiveness has not been widely analysed. This study will contribute to the existing works on respiratory viruses and infections that pose an epidemic or pandemic threat. It outlines a variety of physical interventions that can be implemented to stop or reduce the spread of respiratory viruses and examine their effectiveness. In light of the recent COVI-19 outbreak, the research of virus transmission prevention measures

has become even more indispensable. Therefore, this study will be a small but very significant contribution to the over global medical research.

1.5. GENERAL RESEARCH OBJECTIVES

1. To explore the physical interventions for reducing or interrupting the spread of respiratory viruses.

1.6. SPECIFIC RESEARCH OBJECTIVES

1. To highlight the broad prevention measures that can be used to reduce the spread of respiratory virus infection.
2. To explore the physical interventions that can be implemented to curb the spread of respiratory viruses.
3. To examine the effectiveness of physical interventions such as eye protection, face masks and person distancing in interrupting the spread of respiratory viruses.

1.7. RESEARCH QUESTIONS

1. What broad prevention measures can be used to reduce the spread of respiratory virus infections?
2. What are the physical interventions that can be implemented to curb the spread of respiratory viruses?
3. How effective are physical interventions such eye protection, face masks and person distancing in interrupting the spread of respiratory viruses?

CHAPTER TWO
LITERATURE REVIEW

2.0 THEORETICAL REVIEW

Studies such as that of (Lee et al 2012) have been undertaken to identify physical interventions used for interrupting or reducing the spread of respiratory viruses. According to these studies, screening at ports of entry, isolation, social distance, barriers, quarantine, personal protection such as gloves, gowns and masks, gloves, and hand hygiene are all effective. are some of the main physical interventions, However, very little research has been done globally, let alone in Zambia, directly targeted at analysing the effectiveness of these physical interventions. The few global studies that primarily focused on evaluating the effectiveness of these physical measures concluded that the interventions were effective in interrupting the spread of respiratory viruses. This chapter will examine a broad range of previous studies relating to respiratory viruses in an attempt to identify effective physical interventions that can be implemented to curb their transmission.

2.1 Behavioural Model

In this study the theory which was used was the behavioural model, Behavioural model is a learning theory based on the idea that all behaviour is acquired through conditioning and conditioning. Behaviourism is concerned only with observable behaviour in response to stimuli because such behaviours can be studied in a systematic and observable way. A person's sense of risk affects their protective behaviour (Betsch et al., 2019b). Marshall (2020), who claims that "perceived risk effects behaviour linked to safety," corroborates this. Scientific research into how people behave in response to COVID-19 is becoming more and more popular. Regarding regions of the world except Asia, there is still a lot of work to be done. Many recent investigations, such as those by Shabu et al. (2020) and Lee and You (2020), were carried out in an Asian or Middle Eastern setting.

2.2 Zambian Studies

Between 2019-2021 Health workers (health workers) in Zambia are increasingly being infected with the coronavirus that causes coronavirus disease, severe acute respiratory syndrome coronavirus 2. In July 2020, 20 health facilities in 6 districts participated in a cross-sectional study by Fwoloshi et al. (2021) to determine the incidence of SARS-CoV-2 among health workers in Zambia. Using the polymerase chain reaction (PCR) and an enzyme linked immunosorbent assay, participants were examined for SARS-CoV-2 infection and antibodies (ELISA). Infection prevention and control training, supply of personal protective equipment based on risk of exposure, the establishment of COVID-19 treatment centres, screening for COVID-19 symptoms in patients with access to healthcare facilities, and the establishment of COVID-19 treatment centres all appear to have reduced the spread of SARS-CoV-2. Zambian health workers.

Naluonde el at (2019) found that one of the most common physical actions to stop the spread of respiratory viruses is hand hygiene. The study highlighted that hand washing reduces exposure to many infectious agents that cause various diseases that affect children's health. The study climaxes that hand washing and sanitation is especially important in Zambian schools, as a lack of hand washing increases absenteeism and feeds a vicious cycle of ill health. The outcome of this study indicate that the creative and innovative application of drive theory can improve hand washing and other hygiene behaviours. It is recommended that the increase in handwashing with soap be scaled up and the model further adapted to translate practices that work in schools into better practices at home.

2.3 Studies in China

In accordance with government guidelines, China has implemented a number of non-pharmaceutical measures (NPI) against Corona, including the prohibition of social gatherings, the wearing of masks, and the encouragement of employees to work from home. The Chinese government has also proposed delaying the 2020 spring semester in primary and secondary schools. As a result, all face-to-face learning in schools was canceled, and students had to receive online courses at home during the Corona pandemic till schools reopened in early June 2020. No previous NPI could compare to the extent of the lockdown imposed during the COVID-19 outbreak This multifaceted NPI not only reduces COVID-19 spread, but it is also associated with a significant reduction in airborne and faecal-oral infectious diseases such as: B. Flu, bronchiolitis,

influenza, gastroenteritis, and acute otitis media. In 2020, the number of children admitted to Fudan University Children's Hospital with LRTI decreased by 45.5% compared to 2019. Many other countries, including USA, Finland, France, Morocco and Brazil have seen a significant decrease in the number of child hospitalizations in 2020, which is consistent with our findings. In 2020, the overall respiratory virus detection rate was lower (18.35% vs. 23.30%) than in 2019. Another study, this time in New Zealand, looked at the detection rate of influenza and other major respiratory viruses in hospitalized patients with supposed influenza was also reduced to unprecedented levels due to strict NRI implementations such as lockdowns and border closures in 2020.

2.4 International Studies

Al-Ansary el at (2020) assesse hand washing, surface disinfection, and other hygiene measures' effectiveness in preventing the spread of respiratory diseases A systematic review and meta-analysis were used in this study, which focused solely on evidence from randomized controlled trials (RCTs) and cluster RCTs (c-RCTs). RCTs and c-RCTs test the use of hand hygiene methods, surface disinfection or cleaning, and various other barrier measures on people of all ages. Acute respiratory illness (ARI), influenza-like illness (ILI), or laboratory-confirmed influenza (INF) and/or associated outcomes are examples of outcomes (e.g., death, absence from school or work). In the intervention group, hand hygiene reduced the number of participants with ARI by 16%. The hand hygiene group experienced a 36% decrease in absenteeism. When different hand hygiene interventions were compared, one type of intervention was preferred over the other. Combining hand hygiene with wearing a face mask or disinfecting surfaces or objects has no additional effect. Despite the lack of evidence on the impact of hand hygiene on reducing ARI and influenza, the limited evidence on reduced ARD exposure and associated absence justifies strengthening recommendations for standard hand hygiene practices to reduce respiratory virus spread.

Kozlowski D (2012) conducted a similar study. This study was built on a Cochrane review that included 20 outcomes reported from randomized trials, 9 outcomes reported from case-control studies, 16 outcomes reported from prospective cohort studies, 6 outcomes reported from retrospective cohort studies, and 13 outcomes reported from post-control study. trials, with a total of 64 reported studies. Randomized trials have examined the effect of hand washing on viral inactivation and prevention of the common cold, use of veridical disposable wipes on the incidence

and prevalence of acute respiratory infections, hand washing education programs on the prevalence of ARI in schools and homes. Face masks and hand washing to reduce respiratory illness in shared accommodations, surgical masks among healthcare workers, use of masks and hand sanitizers versus hand sanitizers alone, and use of basic surgical masks versus N95 respirators for influenza. The results show that all precautions are effective in stopping the spread of the respiratory virus. However, their effectiveness is different.

Cowling and Leung's (2010) study continues to support the importance of physical intervention in preventing the spread of respiratory viruses. Hand washing is also effective in reducing the spread of respiratory infections in hospitals, schools, and communities, according to the authors. Face masks and other physical barriers have been shown to reduce the spread of respiratory infections in hospitals, and face masks combined with hand hygiene are even more effective in stopping the spread of influenza in the home. The authors emphasize that there remains a large research gap regarding the effectiveness of social distancing and other population-level interventions. They also note that many studies have looked at respiratory infections, such as flu-like illness or the common cold, but have not identified a specific pathogen. Although many pathogens share the same transmission route, the role of long-distance aerosol transmission for many pathogens, including the influenza virus, is still controversial. Each virus has unique epidemiological characteristics that affect the effectiveness of physical interventions. Hand washing, for example, should be effective against viruses that transmit via indirect contact, such as adenovirus, and a face mask or N95 respirator may be effective against viruses that transmit via airborne transmission, such as coxsackievirus, chicken pox, or smallpox.

CONCEPTUAL FRAMEWORK

Figure 1

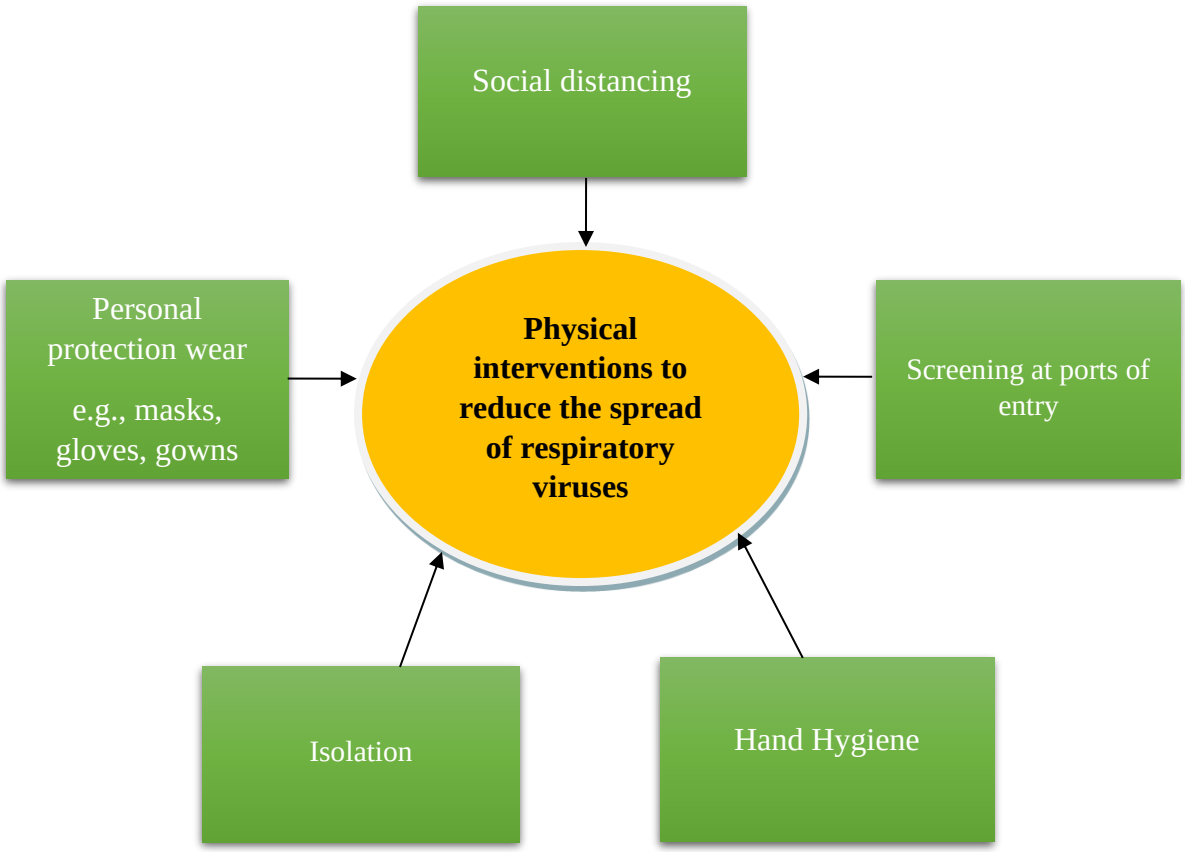

Figure 1: Physical interventions to reduce the spread of respiratory viruses (Researcher, 2022)

The most common physical interventions to reduce the respiratory viruses are depicted in Figure 1. The measures identified are similar to those identified by other researchers who conducted studies on the prevention of the spread of respiratory diseases. These include (but are not limited to) screening at ports of entry, barriers, isolation, social distance, quarantine, personal protection such as gloves, masks, and hand hygiene.

CHAPTER THREE

3.0 METHODOLOGY

3.1 Introduction

The methodology used to evaluate the effectiveness of physical interventions to stop or reduce the spread of respiratory viruses is described in this chapter. The methods used to conduct the study and analyze the data are discussed in this chapter. The method includes the following elements; Research design, research location, research population, sampling method, sample size, variable data collection techniques, and data management analysis. This chapter also shows ethical consideration during this phase.

3.2 Study approach

This study used a qualitative approach in addressing the study's main goal was to evaluate physical interventions to stop or reduce the spread of respiratory viruses. in railway clinics. Qualitative research is a type of research approach that is used because it focuses on analysing words, phrases and statements in a broader sense in order to easily understand the feelings, opinions and life experiences of respondents, so as to describe new concepts and theories can be developed regarding a problem affecting the people. This approach is significant because it creates a platform for respondents participating in research to freely express themselves, and gives all the vital information necessary for the study. Furthermore, this approach will gather in-depth insights into all the relevant information that is ideal for the research.

3.3 Study design

This study made use of a case study design type. The case study design was chosen because the type of study involves an assessment of A physical interventions to interrupt or reduce the spread of respiratory viruses at railway clinic. Case study design was essential to this study as it helps to understand what regulations are put in place in older to combat respiratory viruses, a case study is a body of research that is based on an inquiry and related data from an analysis of a group, individual, or controlled research environment.

3.4 Study area

A study area is a physical environment and the conditions under which research data were collected (Polit and Hungler, 2001)

The study was done at railway clinic, Lusaka province of Zambia. Railway clinic being a health centre.

Target population

A study population is a total group of individuals or things meeting the criteria of interest to the researcher (Uys, 2010)

The study was conducted in Lusaka at railway clinic among health workers who deal with intervention of respiratory viruses.

Inclusion criteria:

- Health workers dealing with physical interventions for respiratory viruses
- People accessing health services.
- People willing to participate in the study will be included.

Exclusion criteria:

- People with the inability to talk
- People outside the railway clinic catchment area

3.5 Sample size determination

The sample size was determined using data saturation, that is, researchers stop collecting data only when there is no new information to add to their existing findings of the study (Saunders, 2018). In as much as sample size determination was based on data saturation theory, a sample size of 16 participants was used in the study through two focus group discussion, focus group discussion one and focus group discussion two had a sample size of 8 to 7 participants respectively.

Sampling procedures

The purposive sampling method was used. This method is used because it targets a certain group of people. Targeted sampling requires researchers to reject any individual who does not meet the study's inclusion criteria (Tongco, 2007).

The following are the variables that are going to be considered in this study:

Social-economic variables

- Income

Demographic variables

- Knowledge
- Gender
- Age

Personal variables

- Behavior

3.6 Data collection methods

Data Collection Tool

Data was collected from the study participants using an interview schedule. The interview schedule will enable the participants to express themselves in detail.

Interview guide

To get a comprehensive picture of the topic, interviews were conducted so that the participants could freely express their opinions about the interventions being practiced. In-depth information about the research topic was obtained through in-depth interviews. The advantage of using this data collection tool is that researchers can obtain very sophisticated information (Nedovic, 2007). In addition, in-depth interviews also increase confidentiality and privacy.

Pre-test

The pre-test of the questionnaire was done among 8 people who deal with physical intervention at railway clinic. The purpose of pre-testing is to ensure that the interview guide is credible, dependable, and trustworthy. It helped in determining the time to be taken to complete the interview schedule. This also helped the researcher plan the process properly and ensure that time was not wasted unnecessarily.

3.7 Data analysis

The data collected was checked for internal consistency to verify the reliability of the thematic analysis is one of the qualitative analysis methods available and used, a thematic analysis helps researchers make sense of the answers that the participants give as they are variations in education

level among participants (Howitt & Cramer, 2008). Furthermore, the data were grouped into key thematic areas such as demographics, social, economic, and personal variables, this method was therefore used to analyse the data as it makes sure that the data collected is summarized and interpreted in a way that gave meaning to the interpretation process (Alhojailan, 2012). After data was collected it was therefore grouped into key thematic areas such as: demographic characteristics of participants, basic knowledge health workers have regarding respiratory viruses

Scientific rigor

The scientific rigor was used in this study to ensure that the research is credible, dependable, and transferrable for further research. The scientific rigor is essential to this study as, through it, they were a strict application of the scientific method to ensure there is a robust, and unbiased study design, methodology, analysis, interpretation, and full reporting of results (Marshall & Rossman,1989)

Guba and Lincoln (1989) proposed some criterial to ensure that bias is minimized and encourage trustworthy in qualitative research;

Credibility: To reduce chances to being biased in this research prolonged engagement of participants will be used to ensure that data that will be collected is significant by interacting with participants on a detailed level and going back to confirm findings to your them after analysis and interpretation is done.

Transferability: To avoid bias in this research context of this research will be easily transferred from one context to another setting through used of thick description as it entails voices, feelings actions and means will be effectively used and are very important in this research to make sure that data that is collected is relevant.

Dependability: To increase on the research trustworthiness, this research is purely open for correction from different stakeholder and secondary data will also be used in order to come with valid explanations of research phenomenon so that bias is reduced.

Confirmability: Lastly, to ensure that bias is reduced in this research all the study findings will be based on the participant's narratives and words rather than assumption that can influence biasness.

3.8 Ethical considerations

This scientific research is carried out in strict adherence to ethical principles; Participants have the right to choose whether to participate in this research. The participants were interviewed privately. An informed consent form was provided to all participants and must be signed to explain the purpose of the research and to ensure that any responses are for the purpose of this research only. This study received ethical approval from the University of Lusaka Research Ethics Committee (see Appendix). Permission has been obtained from local authorities to carry out studies among medical staff performing physical interventions regarding respiratory viruses in railway clinics. This study will consider the following ethical principles:

- ✓ Autonomy: Prioritizing participant freedom, this research will ensure that people's choices regarding research requirements are respected without compromising their coercion.
- ✓ Benevolence: Research ensures that those who participate in research are treated in an acceptable manner, as kindness and caring are priorities.
- ✓ Confidentiality: The study ensures that the personal data collected from the participants used in the study will not be disclosed or shared with others, therefore the data will be stored.
- ✓ No Harm: In order to maintain and protect the health of the participants, this study did not involve any dangerous actions during data collection, thereby avoiding any kind of harm to the respondents.
- ✓ Fairness: This study will ensure that fairness is a priority in all research processes to avoid discrimination.

CHAPTER 4

4.0 RESULTS

This chapter looked at present findings gotten from the participants regarding the physical interventions to interrupt or reduce the spread of respiratory viruses at railway clinic in Lusaka business district health center, of which it was followed up by a series of questions which aimed at finding out about demographic characteristics of the targeted health workers and satisfying the Research objectives.

Results for this study were obtained through Interview guides and focus group discussion as earlier indicated in the data collection section of which suitable to this type of research. The research carried out was intentionally directed to find out what physical intervention are put in place to reduce respiratory viruses at railway clinic. with reference to inclusion and exclusion of the study health workers were interviewed within the focus groups that were formed to discuss the topic in depth, these participants that were involved in this study work at the healthcare center.

4.1 Demographic Profile of the Participants

The study was composed of 15 participants who were "eligible to participate. Two of the participants were on internship. The participants were talked to by the in charge into joining this study. After receiving the information sheet and being oriented into the study, the health workers were then given the consent form to sign. The demographic data of the participants is as follows: 8 representing (53%) of the respondents were Male and 7 representing (47%) were Female; 11 represents (73%) of the respondents were aged between 24-35 years, and the remaining 4 represents (27%) were between 36-51.

4.2 Hand hygiene and face masks

From the findings, the health workers suggest that face masks and hand hygiene may reduce respiratory illness, comparing hand hygiene interventions with controls there was a 50% relative reduction in the number of people with influenza in the hand hygiene group, 11 participants; moderate certainty evidence, suggesting a probable benefit, the use of masks might reduce the risk of viral respiratory infections. In the healthcare setup, a possible reduced risk of influenza like illness was found among mask users, results show no difference between masks and surgical masks on the risk of confirmed influenza or other confirmed viral respiratory infections, although possible benefits face masks were found for preventing influenza like illness or other clinical respiratory infections. Surgical masks might be superior to cloth masks but data are limited to 1 trial.

In the management of infectious disease, prevention is clearly preferred to treatment. For viral respiratory infections, the list of preventive options includes vaccines, physical distancing, isolation (of those who are sick), quarantine (of those who are exposed), hand hygiene, masks, and a host of other interventions. For health care workers, masks are one part of personal protective equipment (PPE), but the amount of PPE varies based on the clinical environment, current risk level, and local directives. In observational studies, wearing masks is associated with a lower risk of contracting viral respiratory infections. However, the observational design is at high risk of confounding and mask use might simply be a surrogate measure for comparing more careful versus less careful people.

4.2.1 Personal measures for protecting yourself

What physical intervention are put in place to lessen the spread of respiratory infection?

"I often wear a mask, cough in folded elbow, working from well-ventilated room" (said the Clerk)

From other findings of the study, here are some of the responses of the physical interventions bellow:

Avoid close contact with sick people

- ✓ People with one or more of the following symptoms: fever, cough, sore throat, body aches, headache, chills and fatigue may be infected with influenza or another virus.
- ✓ Maintain a distance of at least one meter from someone with symptoms of influenza and avoid crowded situations. When distance cannot be maintained, reduce the time of close contact with people who might be ill as much as possible. When sick people or crowded situations cannot be avoided, reduce the time in these situations to the extent possible.
- ✓ Do not unnecessarily visit people who are sick.
- ✓ When caring for people who may have influenza, avoid being face-to-face with the sick person and minimize close contact.

Wash or clean your hands frequently

- ✓ Hand hygiene is commonly performed by washing hands with soap and water, alcohol-based hand rub, or other waterless hand disinfectants, all of which are easily accessible, available. Washing or disinfecting your hands often will help protect you from the virus.

Wash your hands thoroughly with soap and water, especially after you cough or sneeze. Alcohol-based hand sanitizers reduce the amount of influenza virus on contaminated hands, although washing with soap and water is more effective.

- ✓ When caring for someone who may have influenza or any respiratory infection, make sure to wash your hands after touching the sick person and after handling their tissues or laundry.
- ✓ Washing hands should not be just a quick rinse; it should go on for at least 20 seconds every time.
- ✓ After washing with soap and water, dry hands thoroughly with, if available, single-use paper towels or a warm air dryer.

4.3 Factors influencing the spread of respiratory viruses

The results of the study suggest that the majority of the respondents (Health workers) keep their inpatient at an observation bed since they have no wards so they mostly refer them to Kamwala clinic. Additionally, temperature and the room size influence the spread of respiratory infections, transmission of viruses via airborne routes may be affected by ambient humidity, which affects not only the virus' stability but also respiratory droplet size, as water content evaporates. The room size tends to influence the spread of respiratory viruses. The results from the study suggest that majority of the respondents had positive response towards the effectiveness of the physical interventions at railway clinic. How effective are physical intervention?

"Physical interventions we have here are very effective, they have helped us lessen the spread of respiratory diseases, we always sensitize our patients on importance of wearing masks, social distance". (Said the RHNP)

"The physical intervention is not very effective when it comes too observation bed which is only one and if there are more than three people to attend to" (said the Registered Nurse)

Among the 16 respondents, evryone knew the correct steps in wearing a face mask, and their attitudes toward face masks were generally positive. Further analyses showed that respondents (health workers) were more likely to wear a face mask at a clinic than in a public place or at home. Moreover, respondents were more likely to wear a face mask to protect others against influenza-like illness and other respiratory infections for self-protection and to avoid the spread of respiratory

viruses. There was low to moderate correlation between attitudes and practices. Our findings show that hand hygiene has a modest effect as a physical intervention to interrupt the spread of respiratory viruses. According to the participants they stated: *"most respiratory viruses, including the pandemic SARS-CoV-2, are considered to be predominantly spread via respiratory particles of varying size or contact routes, or both. Hand hygiene would be expected to be beneficial in reducing the spread of SARS-CoV-2 similar to other beta coronaviruses which are very susceptible to the concentrations of alcohol commonly found in most hand-sanitiser preparations"*. Support for this effect is the finding that poor hand hygiene, despite the use of full personal protective equipment (PPE), was independently associated with an increased risk of SARS-CoV-2 transmission and other respiratory viruses like influenza to healthcare workers at railway clinic, the practice of hand hygiene appears to have a consistent effect in all settings, and should be an essential component of other interventions.

From our findings of this research, it supports physical distancing of 1 m or more and provide protection from the spread of respiratory viruses. Optimum use of face masks, respirators, and eye protection in public and health-care settings should be informed by these findings and contextual factors. According to the participants responses, it was concluded that health workers are well informed on the aspect of how to specifically prevent and lessen the spread of respiratory infections among health workers, the responded stated:

"Transmission of viruses are lower with physical distancing of 1 m or more, compared with a distance of less than 1 m, protection is increased as distance is lengthened, Face mask use can result in a large reduction in risk of infection"

The findings of this research shows that at least 1 m physical distancing are associated with a large reduction in infection, and distances of 2 m might be more effective. These data also suggest that wearing face masks protects people (both health-care workers and the general public) against infection by these coronaviruses and other respiratory infections, and that eye protection could confer additional benefit. However, none of these interventions afforded complete protection from infection.

Another participant, still with regard to physical prevention on respiratory infection, stated:

"...if we do not learn from SARS and we do not make the people change their behaviour on proper hand hygiene and masking up the problems that remain, we will pay a terrible price in the next pandemic".

4.4 Limitations

The study applied a qualitative approach, therefore it consumed time when collecting data and the interpretations were limited. The high risk of bias in the trials, variation in outcome measurement, and relatively low adherence with the interventions during the studies hinders drawing firm conclusions. It had a small sample size which attracted potential bias in answers, self-selection bias, and potentially poor phrasing of questions from researchers during discussions with the health workers, we conducted interviews with the health workers, majority weren't interested to having conversations**,** other health workers were too busy to participate in the discussion.

5.0 DISCUSSION

The first objective of this research was to highlight the broad prevention measures that can be used to reduce the spread of respiratory virus infection, the study conducted a comprehensive review of respondents, focusing primarily on health workers, and revealed that a significant majority of participants were actively involved in the healthcare profession. Notably, these individuals demonstrated a remarkable ease in answering the research questions, largely attributed to their extensive educational background and professional expertise, key findings from the study revealed that most of the respondents were aware of the physical intervention that can be used to reduce the spread of respiratory viruses as they were able to describe what is and the effects that may arise from not wearing personal protective equipment's while dealing with patients. The study was composed of 15 participants who were "eligible to participate. From the findings, the health workers suggest that face masks and hand hygiene may reduce respiratory illness, comparing hand hygiene interventions with controls there was a 50% relative. In this study, I looked at a few environmental, and social cognitive variables that would increase the spread of respiratory infections among health workers at railway clinic. The spread of respiratory viruses is a major public health concern globally, with the potential to cause significant morbidity and mortality. The COVID-19 pandemic has highlighted the importance of physical interventions in reducing the spread of respiratory viruses. This paper aims to provide a comprehensive discussion of physical intervention strategies that can be employed to reduce the transmission of respiratory viruses.

Another objective of this research was to explore the physical interventions that can be implemented to curb the spread of respiratory viruses. It has been noted that there are many factors that contributes to spread of respiratory viruses, rail way clinic has implemented measures to help curb the spread of respiratory infection such as wearing face mask, social distancing, hand hygiene etc. Most of the participants stated that even though physical interventions are being followed, railway clinic mostly refer their patients to kamala clinic since they have no wards.

Wearing face masks is an effective physical intervention strategy to prevent the spread of respiratory viruses. Studies have shown that masks reduce the transmission of respiratory viruses by blocking large droplets that contain the virus from spreading. T Jefferson in 2020 found that masks are very effective when it comes to prevention of respiratory infections, the same interventions are used at rail way clinic which are playing a positive impact to prevent respiratory infections. A similar study done by Borghi J in 2022 found that wearing a face mask plays a major

role in preventing respiratory infections. The effectiveness of masks depends on the type of mask, the fit, and the duration of use. In particular, Face masks have been found to reduce the risk of infection by up to 95% among healthcare workers who work directly with infected patients.

Social distancing is also an effective strategy to reduce the spread of respiratory viruses. The aim is to minimize contact with infected individuals and reduce the risk of transmission. The recommended distance between individuals is 6 feet or two meters. Social distancing measures include limiting public gatherings, and encouraging remote work. JJ Bartoszko 2020 found evidence that a policy of at least one-meter physical distancing are associated with a large reduction in infection, and distances of two metres might be more effective.

Hand hygiene is another crucial physical intervention strategy to reduce the spread of respiratory viruses. Health workers at rail way clinic are using hand hygiene as one of the physical interventions to reduce the spread of respiratory virus, they have place hand wash water bucket with soap around their premises. Handwashing with soap and water for at least 20 seconds is effective in reducing the transmission of respiratory viruses. Alcohol-based hand sanitizers can also be used if soap and water are not readily available. Handwashing reduces the rate of respiratory infections by removing respiratory pathogens from hands, and preventing them from entering the body or passing on to other people. In July 1993 Arnaud S discovered that hand hygiene plays an important role in the reduction of respiratory viruses, evidence suggests that washing hands with soap after defecation and before eating can cut the respiratory infection rate by up to 25%.

Ventilation is an essential physical intervention strategy to reduce the transmission of respiratory viruses in indoor settings. Proper ventilation enables the exchange of fresh air and reduces the concentration of respiratory droplets containing the virus. The use of air filters and UV-C disinfection systems can also help reduce the viral load in the air.

T Jefferson et al in 2020 found that face masks and eye protection are more effective in preventing influenza-like illness and other respiratory infections like COVID-19. Face mask intervention reduces respiratory infections in particular when intervention is conducted in a community setting and face masks are combined with appropriate hand hygiene. My results are in line with the current recommendations by the public health experts that face mask recommendations are most efficient when used together with appropriate hand hygiene and other physical interventions. Physical

interventions are highly effective against the spread of respiratory viruses, the following are measures that are used to reduce the spread of respiratory virus infection at railway clinic.

Implementation of physical interventions

One major problem with physical interventions is poor compliance, especially during periods of low threat as reported in many of the studies. Physical interventions require change in behaviour, which is the most important barrier to implementation.

Wash hands regularly. This is especially important after touching surfaces or objects that might be contaminated with respiratory droplets, or after touching persons who are ill with respiratory symptoms. Alcohol hand gels are an adequate substitute when soap and clean water are not readily available.

Measures for persons with symptoms of respiratory illness

Provide persons with symptoms of respiratory illness with information on preventing spread of illness by practicing respiratory hygiene and cough etiquette, which includes the following:

- ✓ Whenever you sneeze or cough, cover your mouth and nose.
- ✓ Use tissues to catch respiratory secretions or droplets. After use, place used tissues in the closest trash can.
- ✓ Wash your hands with soap and water or alcohol-based hand gel after coming in contact with infected objects or materials or respiratory secretions.
- ✓ Provide tissues and a container for used tissue disposal (e.g., paper or plastic bag)
- ✓ Whenever feasible, give residents the tools they need to follow proper coughing and respiratory hygiene:
- ✓ Provide a personal alcohol hand gel dispenser; if sinks are provided, make sure that hand-washing products (such as soap and paper towels) are always accessible.
- ✓ Separate sick persons and close contacts from other residents until 24 hours after the respiratory illness symptoms are gone. If possible, put sick persons in a separate room or in a separate section of the evacuation centre away from other residents who are not sick. If this is not possible, encourage persons with respiratory illness to stay at least 3-6 feet away from those not providing direct care and support.

- ✓ People who are not ill should refrain from making close physical contact with sick people, unless it's absolutely required to offer them care and assistance (e.g., kissing, embracing, hand shaking, other direct touching, conversing within 3-6 feet).
- ✓ Employees at evacuation centres who exhibit symptoms ought to be given the day off.

Physical distancing is associated with a large reduction in infection, a distance of two meters is more effective, as implemented in some countries and all health facilities in Zambia. The main benefit of physical distancing measures is to prevent onward transmission and, thereby, reduce the adverse outcomes of SARS-CoV-2 infection and other respiratory infections such as influenza. The use of face masks is protective for both health-care workers and people in the community exposed to infection. Policy makers at all levels should strive to address equity implications for groups with currently limited access to face masks and eye protection. Despite the difficulties in implementing the interventions, several personal protective strategies are required. Eye protection and face masks provides extra benefits to avoid the spread of respiratory illnesses.

6.0 CONCLUSION AND RECOMMENDATIONS

Physical intervention strategies such as face mask wearing, social distancing, hand hygiene, and ventilation are effective measures to reduce the spread of respiratory viruses. These strategies should be employed in combination and followed consistently to achieve maximum effectiveness. Public health education and awareness campaigns on these physical interventions should be intensified to increase compliance and reduce the spread of respiratory viruses. Respiratory viruses such as influenza, SARS-CoV-2, and common cold viruses are spread through respiratory droplets generated during coughing, sneezing, talking, or breathing. Transmission can also occur through direct or indirect contact with contaminated surfaces. Physical intervention strategies target the mode of transmission of respiratory viruses and include non-pharmaceutical measures such as wearing masks, social distancing, and hand hygiene.

6.1 RECOMMENDATIONS

Physical means might prevent the spread of virus by aerosols or large droplets from infected to susceptible people (such as by using masks and distancing measures) and by contact (such as by using handwashing, gloves and protective gowns). Such public health measures were widely adopted during the 'Spanish Flu' pandemic of 1918 to 1919 (Bootsma 2007).

Based on the discussion above, the following recommendations are made:

- ✓ Wearing a face mask in public spaces, especially indoors, should be mandatory to reduce the spread of respiratory viruses.
- ✓ Social distancing measures should be implemented, including limiting public gatherings and encouraging remote work.
- ✓ Hand hygiene practices should be promoted, particularly handwashing with soap and water for at least 20 seconds. This is especially important after touching surfaces or objects that might be contaminated with respiratory droplets, or after touching persons who are ill with respiratory symptoms.
- ✓ Indoor spaces should be well-ventilated, and air filters and UV-C disinfection systems should be used where appropriate.
- ✓ Maintain a clean environment. If frequently touched surfaces are contaminated with respiratory droplets or secretions, wipe up visible material with paper towels and dispose of used towels in a plastic garbage bag, disinfect using any standard household disinfectant

- ✓ Minimize close contact with persons who have symptoms of respiratory illness, such as coughing or sneezing.

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APPENDIX

QUESTIONNAIRE/ INTERVIEW GUIDE

OPEN ENDED QUESTIONS

Title: Physical Interventions to Interrupt or Reduce the Spread of Respiratory Viruses

SECTION A

SOCIAL DEMOGRAPHIC DATA

1. Age
2. Sex
3. Marital status
4. Education level
5. Religion

SECTION B

1. What respiratory viruses do you know?
2. What physical intervention are put in place to lessen the spread of respiratory infections?
3. Do you think people with an immune deficiency are more affected with respiratory viruses?
4. Share with us why you hold that view in the above question?
5. Do you think it is relevant to integrate physical intervention on respiratory viruses?

SECTION C: FACTORS INFLUENCING THE SPREAD OF RESPIRATORY INFECTIONS

1. Where do you keep your in patients?

2. Are you happy with the way patients are being treated?

3. Do you think all health workers are playing their role in preventing the spread of respiratory viruses?

4. How effective are physical interventions?

5. In your own view what are the things you can do to prevent the spread of respiratory viruses?

CONSENT FORM

UNIVERSITY OF LUSAKA

SCHOOL OF MEDICINE AND HEALTH SCIENCES

DEPARTMENT OF PUBLIC HEALTH

Informed Consent Sheet

CONSENT FORM

TITLE OF RESEARCH:

ASSESSMENT OF PERCEPTIONS ABOUT FACTORS CONTRIBUTING TO HIGH INCIDENCE OF SEXUALLY TRANSMITTED DISEASES IN KITWE

REFERENCE TO PARTICIPANT INFORMATION SHEET:

1. Double-check that you have properly read the Information Sheet or that you have been adequately informed.
2. Your permission is required if a tape or audio recording is used.
3. Your participation in this study is entirely voluntary; you are under no obligation to do so if you choose not to.
4. You will not be penalized or denied services to which you are otherwise entitled if you refuse to participate.
5. If you want to join, you have the right to withdraw at any time, with no penalty or loss of services, and without giving a reason.
6. You can choose not to respond to any of the study's questions. If there is anything you would rather not discuss, please let us know.
7. All information obtained during the interview will be kept strictly confidential.
8. If you choose to participate in this research study, I'll need your signed consent form to start the interview. ----------

-VOLUNTARY CONSENT

The material on the Participant Information Sheet about this study has been read (or explained to me). I've had the chance to raise questions about it, and all of my concerns have been addressed adequately.

I am now willingly volunteering to take part in this study and am aware that I have the right to end the interview at any time and decline to answer any of the study's questions.

My signature below says that I am willing to participate in this research:

Participant's name (Printed): …….

…….....……

Participant's signature: …… Consent Date:.....

Researcher Conducting Informed Consent (Printed)

……

Signature of Researcher: …… Date: .....

Signature of parent/guardian: …… Date: ……...

CONSENT FORM

SCHOOL OF MEDICINE AND HEALTH SCIENCES

DEPARTMENT OF PUBLIC HEALTH

I have read and comprehended all of the material offered to me. All of my questions have been satisfactorily answered. By signing this form, I have given my free agreement to participate in the aforesaid study.

I understand that my participation in the survey is entirely voluntary, and I reserve the right to withdraw at any moment. I also accept that the information I give will remain confidential and that I will remain anonymous.

(a) Signature of participant: _____

(b) Signature of Researcher: _____

(c) Signature of Witness: _____

(d) Place: _____

(e) Date: _____

WORK PLAN

6.1 Gantt chart for the work plan

ACTIVITY	May	June	July	Aug	Sept	Oct	Nov	Dec
Proposal writing & editing								
Proposal presentation								
Data collection								
Analysis comparison & compilation								
Final presentation								
Printing of project								
Final project submission								

BUDGET

S/N	**ITEM/DESCRIPTION**	**QUALITY**	**UNIT COST(K)**	**TOTAL COST(K)**
1.	Printing of proposal		K130	K130
2.	Stationery (pen, pencil, note book)		K40	K40
3.	Printing of data collection tools (questionnaires**)**		K350	K350

4.	Transport		K550	K550
5.	Helper(s)		K600	K600
6.	Miscellaneous costs		K100	K100
	TOTAL COST			**K1,770**

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SCHOOL OF MEDICINE AND HEALTH SCIENCES RESEARCH ETHICS COMMITTEE

Ref no: IORG0010092-2023/069

Date: 15th DECEMBER, 2022

STEVEN LWIINDI - BSPH18212410

Re: RESEARCH TITLE: PHYSICAL INTERVENTIONS TO INTERRUPT OR REDUCE THE SPREAD OF RESPIRATORY VIRUSES AT RAILWAY CLINIC

The above research was submitted to the research ethics committee for review. The study has no major ethical problems and is approved subject to the following:

1. The study cannot be changed without express permission of the UNILUS Research ethics committee
2. Approval from the Lusaka District health Management or equivalent health authorities should be sought.
3. The study tools should be added.
4. An informed consent form should be attached and filled by all study participants (If dealing with primary data)
5. The risks and benefits should be included in the consent form.
6. Ensure before commencement that approval is sought from ZNHRA Congratulations and the committee wishes you success in your work.

Prof Kasonde Bowa
MSc(Glasgow),M.Med(UNZA),FRCS(Glasgow),FACS,FCS,DPH(LSTMH),MPH(UCL)
Chairman- UNILUS REC
Professor of Urology and Consultant Urologist
Executive Dean
University of Lusaka and University Teaching Hospital School of Medicine and Health Sciences.

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15th DECEMBER, 2022

……
……..
……..

PERMISSION FOR **STEVEN LWIINDI - BSPH18212410 TO** CONDUCT A RESEARCH STUDY AT YOUR FACILITY/ INSTITUTION/ORGANIZATION

Reference is made to the above subject matter
The University of Lusaka, School of Medicine and Health Sciences here by requests for permission for **STEVEN LWIINDI** Public Health Student to conduct research at your facility/ institution/ organization, entitled**; PHYSICAL INTERVENTIONS TO INTERRUPT OR REDUCE THE SPREAD OF RESPIRATORY VIRUSES AT RAILWAY CLINIC.** The research is in partial fulfillment of the requirements for the degree of Bachelor of Science Public Health. This is purely for academic purposes and information gained in such a way will not be used in the public domain without prior authorization from the institutions/ organizations involved.
The research topic has been cleared by the University of Lusaka, School of Medicine and Health Sciences Research Ethics Committee as per the attached copy. Data collection is expected to be done from **1st January, 2023 to 31st March, 2023**.

The University of Lusaka avails itself of this opportunity to review to your office the assurances of its highest considerations and looks forward to your timely and favorable response.

Prof Kasonde Bowa
MSc(Glasgow),M.Med(UNZA),FRCS(Glasgow),FACS,FCS,DPH(LSTMH),MPH(UCL)
Chairman- UNILUS REC
Professor of Urology and Consultant Urologist
Executive Dean University of Lusaka and University Teaching Hospital School of Medicine and Health Sciences.

Ref No: NHRA000047/24/01/2023 **Date:24th January 2023**

The Principal Investigator,
Steven Lwiindi,
UNILUS,
Lusaka, Zambia.

Dear Mr Lwiindi,

Re: Request for Authority to Conduct Research

NATIONAL HEALTH RES EARCH AUTHORITY

Lot No. 18961/M , off Kasama Road, Chalala, P.O. Box 30075, LUSAKA

Tell: +260211 250309 | Email : znhrasec@nhra.org.zm | www.nhra.org.z m

The National Health Research Authority is in receipt of your request for ethical clearance and authority to conduct research titled **"Physical Interventions To Interrupt Or Reduce The Spread Of Respiratory Viruses At Railway Clinic."**

I wish to inform you that following submission of your request to the Authority, our review of the same and in view of the ethical clearance, this study has been **approved** on condition that:

1. The relevant Provincial and District Medical Officers where the study is being conducted are fully appraised;
2. Progress updates are provided to NHRA bi-annually from the date of commencement of the study;
3. The final study report is cleared by the NHRA before any publication or dissemination within or outside the country;
4. After clearance for publication or dissemination by the NHRA, the final study report is shared with all relevant Provincial and District Directors of Health where the study was being conducted, University leadership, and all key respondents.

Yours sincerely,
Acting Director/Chief Executive Officer

Ms Sandra Chilengi-Sakala,
National Health Research Authority

All correspondences should be addressed to the
Medical Superintendent

In replyplease quote:

No.....

REPUBLIC OF ZAMBIA

MINISTRY OF HEALTH

Chawama General Hospital
P.O. Box 50827
Lusaka

Mr. Steven Lwiindi
University of Lusaka
LUSAKA

3rd April, 2023.

Dear Mr. Lwiindi

RE: AUTHORITY TO CONDUCT RESEARCH IN LUSAKA DISTRICT

Reference is made to the above mentioned subject.

Chawama General Hospital is in receipt of your letter requesting for permission to conduct a research entitled: 'PHYSICAL INTERVENTIONS TO INTERRUPT OR REDUCE THE SPREAD OF RESPIRATORY VIRUSES AT RAILWAY CLINIC, LUSAKA DISTRICT ZAMBIA".

My office is glad to inform you that it has no objection to your request provided that you share the findings of the study before any publications are made.

Please kindly ensure minimum interruption in service delivery. Yours Sincerely,

Dr. Shula Chanda
Medical Suugrintendent

REPUBLIC OF ZAMBIA
MINISTRY OF HEALTH
03 APR 2023
MEDICAL
P.O. BOX 50

All correspondence should be
Director In reply please quote No:.....

Tel: +260-211-235554
Fax: +260-211236429

REPUBLIC OF ZAMBIA
MINISTRY OF HEALTH

LUSAKA DISTRICT HEALTH OFFICE
P.o. BOX 50827, LUSAKA

23March, 2

REPUBLIC OF ZAMBIA
23. MIMSTRY OF HEALTH
CHAWAMA GENERAL HOSPITAL
30 MAR 2023
MEDICAL SUPERINTENDENT
P.O. BOX 50827, LUSAKA- ZAMBIA

No objection
Aj ms

Steven Lwiin
University of LUSAKA

Dear Mr. Lwii

RE: AUTHORITY TO CONDUCT RESEARCH IN LUSAKA DISTRICT

We are in receipt of your letter over the above subject.

Please be informed that Lusaka District Health Office has no objection for you to conduct research entitled, "Physical interventions to interrupt or reduce the spread of respiratory viruses at Railway Clinic, Lusaka District Zambia".

Kindly ensure that your findings are shared with the health facility and District Health Office and that the normal operations of the facility are not disrupted.

By Copy of this letter, the Public Health Specialist and Medical Superintendent for Chawama General Hospital and the Incharge fo -Railway Clinic - Lusaka District are kindly requested to facilitate accordingly.

Dr. Charles Msiska

District Health Director — Technical Services LUSAKA DISTRICT HEALTH OFFICE

C.C: The Incharge - Railway Clinic

CC: The Public Health Specialist — Chawama General Hospital CC: The Medical Superintendent — Chawama General Hospital