

**HEALTH-SEEKING BEHAVIOR DURING COVID-19 AMONG SLUM DWELLERS IN
RAILWAYS INFORMAL SETTLEMENT, MOMBASA COUNTY, KENYA: A CROSS-
SECTIONAL STUDY**

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DECLARATION AND APPROVAL

Student Declaration

This work is my original research thesis and has no previous use or presentation in other universities or higher institutions for degree or academic award.

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DEDICATION

This research work is dedicated to my family, Barawas, for their constant encouragement to pursue my academics and to my daughter, Chevonne, you are loved.



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ABSTRACT

Severe Acute Respiratory Syndrome of Covid Virus (SARS-CoV-2) commonly known as corona virus (COVID-19), was discovered as a new viral class of Coronaviridae family when a cohort of people in Wuhan Province in China were suspected to present with pneumonia-like symptoms which confirmed to be novel coronavirus. Preventive measures and vaccination are the main approaches to controlling spread of COVID-19 while early disease stage health-seeking behavior (HSB) of patients is an important link to achieving infection prevention and control. Slums present with increased population rate, inadequate access to clean water, small informal dwellings and sharing of unhygienic sanitation facilities such as toilets by multiple households. Slum dwellers are considered among high-risk individuals during pandemics and other disease outbreaks recording higher overall mortality and morbidity rates hence HSB of slum dwellers in Railways slums in Mombasa County was investigated. A descriptive cross-sectional study design was used to administer 133 structured questionnaires and 3 key informants' interviews, to participants who were selected using simple random and purposive sampling, respectively. Data was analyzed and results presented using tables, charts, graphs and thematic narration. Ethical approval was obtained from Mount Kenya University, NACOSTI and local authorities in Mombasa County. The study found mean age was 37.5 years, 69.2% were married 46.6% had attained secondary level of education and 79.7% were Christians. Most slum dwellers are self-employed (51.9%) with an average monthly income of <Ksh 15,000. Housing included semi-permanent houses (56.4%) and most dwellers lived with their family members. Majority of slum dwellers preferred wearing face masks (93.2%), 59% of the respondents preferred seeking physician consultation, there was 76.7% COVID-19 testing rate and 76.7% COVID-19 vaccination rate. There was significant association between predisposing factors of marriage ($\chi^2=15.471$, $df=3$, $p=0.001$) and housing status ($\chi^2=12.235$, $df=5$, $p=0.032$) with health seeking behavior. There was significant association between enabling factors of perceived health status ($\chi^2=32.105$, $df=4$, $p <0.001$), access to insurance ($\chi^2=12.791$, $df=4$, $p=0.012$) and self-efficacy ($\chi^2=11.252$, $df=4$, $p=0.024$) with HSB choices. 63.2% of the participants were healthy with no pre-existing conditions, while among those with positive history of illnesses, hypertension was the leading condition (33.3%). Enabling factors of pre-existing conditions ($\chi^2=11.559$, $df=3$, $p=0.009$), self-reported health status ($\chi^2=13.105$, $df=4$, $p=0.011$) and disease severity ($\chi^2=7.851$, $df=4$, $p=0.097$) were significant in influencing HSB choices. The study also found that divorced slum dwellers were three times more likely to seek physician's services than single slum dwellers ($\beta=1.228$, $B/OR=3.415$, $p=0.447$, $95\%CI=0.144-80.177$). Inadequate funds was the leading challenge in sustaining preventive and control measures of COVID-19. The study findings conclude that understanding slum dwellers health-seeking behaviors and their influencing factors during pandemic informs on development of effective preventive strategies for future SARS illnesses and recommends mass education and awareness to promote attitude change, mass testing and vaccination and promotion of adherence to control and preventive measures of SARs illnesses.

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LIST OF ABBREVIATIONS

APHRC- African Population and Health Research Centre

AIDS- Acquired Immunodeficiency Syndrome

CDC- Centre for Disease Control

CIDP - County Integrated Development Plan

COVID-19 – Corona Virus

DAC - Development Assistance Committee

FDSE – Free Day Secondary Education

FPE – Free Primary Education

GAVI- Global Alliance for Vaccines and Immunisation

HBM- Health Belief Model

HIV- Human Immunodeficiency Virus

HSB - Health Seeking Behavior

HUM – Healthcare Utilization Model

IPC- Infection prevention and control

KDHS – Kenya Demographics and Health Survey

KII – Key Informant Interview

KNBS – Kenya National Bureau of Statistics

MoE – Ministry of Education

MoH- Ministry of Health

MPH- Master of Public Health

OECD - Organization for Economic Co-operation and Development

RNA- Ribonucleic Acid

SARS- Severe Acute Respiratory Syndrome

SDGs- Sustainable Development Goals

UN- United Nations

USA- United State of America

WASH- Water, Sanitation and Hygiene

WHO – World Health Organization



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CHAPTER ONE: INTRODUCTION

1.1 Background of the study

Corona Virus Disease 2019 (COVID-19) emerged in Wuhan, China in December 2019 (Nanshan et al, 2020). In early 2020, 80,955 confirmed COVID-19 cases in China mainland with approximated discharge rate more than 50% were declared by World Health Organization, (WHO, 2020). The index COVID-19 case in Kenya was reported on 12th march 2020, (MoH Kenya, 2020). COVID-19 is an infectious disease and therefore early diagnosis and management are necessary and important. In highly infectious diseases, the patient acts as a reservoir hence increasing source of disease spread and transmission from one individual to another, (Ehsanul et al, 2018).

Similar to other respiratory infectious diseases, COVID-19 spreads through droplets, direct contact or by human-to-human transmission (Lai et al, 2020). Currently, adoption of preventive measures is the main approach in preventing COVID-19 spread since there is no specific drugs or existing management guidelines on treatment regimen for COVID-19 (WHO, 2020). Additional important links to infection prevention and control includes health-seeking behavior of patients during early stage of COVID-19.

At the helm of COVID-19 pandemic, Kenya ministry of health-imposed regulations to control spread of COVID-19 which included curfews and banning of international flights. In March of 2020 schools were closed, large social gatherings including large prayer meetings, ceremonies like weddings and political rallies were banned. Additionally, a 30-day lockdown order was issued, a measure that became recurrent over the next few months. Public movement was only allowed strictly from 4.00am to 7.00pm. This restriction was however offloaded later, and public movement extended from 5.00 a.m. to 9.00 p.m., (Aridi et al, 2020).

Symptom identification, diagnosis, evaluation and action are the steps individuals engage in to ascertain a state of good health. These steps involve HSB which refers to strategies or patterns people adopt to select options they can use during any stage of an illness to mitigate sickness or disease.

Health-seeking behavior can be influenced by elements such as myths and misconceptions surrounding disease origin, individual economic status, belief constructs of disease and gender relations, incubation duration of disease, household sizes and access to health care facilities. These factors continually interact and influence individual health care choices thus an in-depth understanding of aforementioned factors help unveil people's HSB, (Latunji & Akinyemi, 2018). For instance people who live in urban and rural areas are exposed to different health challenges that affect how they seek health-care i.e. people who live in urban slums or shanty places experience distinctive health problems including small informal dwellings, high population density, inadequate availability of clean water supply, multi-generational households, sharing of unhygienic sanitary facilities such as toilets and bathrooms among several large families and a high level of both inter-cultural and intra-community mixing (Ezeh et al, 2017) confirming that the external surroundings in which people live presets their health-seeking behavior. COVID-19 disproportionately affect the vulnerable populations including slum dwellers due to limited mitigation capacity such as high prevalence of chronic conditions and poor access to high quality public health and medical care. In wuhan , all population regardless of urban or rural were covered by medical insurance fund while in Brazil majority of the poor people could not afford medical care hence reported the high fatality rate. This vulnerable population included the blacks, (Shadmi et al, 2020). According to health services consultation meeting in 2018, it was reported that there is high transient residence within urban slums of Mombasa leading to negative health status due

to unclean environment including pollution, congestion and widespread lack of ability to afford medical care, (Muungano, 2018)

Majority of slums residents lack employment while some depend on informal sector which records poor pay. The few who are employed in the formal sector such as government and municipalities hold lower cadre jobs with little pay, (Otieno et al, 2020; Shadmi et al 2020). Muungano (2018) reported that the little wages earned can support basic needs such as food, rent, clothing and transport, while none is channeled towards their health care insurance. Apart from low social-economic status, the poor sanitation and unhygienic conditions of slum dwellers also expose them to various health problems (Corburn & Hildebrand, 2015) including respiratory illnesses such as COVID-19.

Globally, COVID-19 exposed the systemic weaknesses in the nations including poor infrastructures, inadequate government disaster preparedness, supply chain management among others. It exposed that there are shortcomings in healthcare systems that require need to develop best practice guidelines and legislation to coordinate cooperative global action against COVID-19 and other emerging infectious diseases especially among the vulnerable population in informal settlements, (Filip et al, 2022).

In Kenya, despite of Ministry of Health (2020) reporting progress of the pandemic through various main stream media to raise citizens level of awareness on prevention and management, majority of people living in the slum areas managed COVID-19 using upper respiratory tract infection regimen upon experiencing flu-like symptoms i.e. fever and cough and they did not adhere to any preventive measures as reported by Star news (May 24, 2020) which contributed greatly to delay in diagnosing and treating. As a result, it affected the disease development and prolonged its treatment and management time. Pachauri and Pachauri (2023) express that media and

communication played a critical role during COVID-19 pandemic and will continue to be very important in future pandemics.

As at December 2020, more than 200 publications and existing research about COVID-19 focused mainly on clinical presentation of patients and epidemiological characteristics of the disease (Long et al, 2020). This study therefore seeks to determine covid-19 health seeking behavior among slum dwellers of railways, Mombasa Kenya. These are people living in an area that is highly populated with poor infrastructure, insecure neighborhoods and poor hygiene practices and whose health seeking behaviors are likely to be highly compromised.

1.2 Problem statement

Although considerable number of researches on health seeking behaviors among slum dwellers exist in Kenya, more focus has been placed in the rural setting. Similar studies in urban areas are missing. It would be interesting to see how the poorest among urban dwellers, often the slum dwellers, fare.

In addition, existing research focused mainly on epidemiological findings and clinical manifestations of confirmed patients suffering from COVID-19 as evidenced by more than 200 publications on the subject matter since 2020. There are no adequate studies on health seeking behaviours of urban slum dwellers towards COVID-19 hence increasing their vulnerability more than that of their rural counterparts. Despite of Mombasa County including health sector as its priority area with the highest budget allocation of 4.8 billion in the fiscal year of 2021/22 it is not clearly stated how they will improve health care access among slum dwellers across the county in regards to COVID-19, (Mombasa County Program Based Budget, 2021). Carter et al (2025) reported that 84.2% of the Kibera informal settlement dwellers in Nairobi tested positive of COVID-19 during determination of seroprevalence tests during the COVID-19 pandemic.

Railways slum is an informal settlement located along the railway line in Mombasa County and has been characterised by high population density and lack of adequate access to healthcare services. Solymari et al (2022) reported that the populations at higher risk of spreading and contacting COVID-19 includes slum dwellers as they have high limitation to health care interventions access since the population are poorly equipped to deal efficiently with COVID-19 pandemic challenges thus the study question on what is the COVID-19 health seeking behavior among slum dwellers of railways, Mombasa Kenya ensues.

1.3 Study Purpose

The study purposed to determine COVID-19 health seeking behavior among slum dwellers of Railways in Mombasa County, Kenya.

1.4 Study Objectives

1.4.1 Broad objectives

To determine COVID-19 health seeking behavior among slum dwellers of railways, Mombasa County, Kenya

1.4.2 Specific objectives

1. To identify various COVID-19 HSB among slum dwellers of Railways, Mombasa County, Kenya
2. To determine factors influencing the COVID-19 HSB choices of slum dwellers of Railways, Mombasa County, Kenya
3. To identify preventive strategies for future SARS illnesses among slum dwellers of Railways, Mombasa County.

1.5 Research questions

1. What are the various COVID-19 health-seeking behaviors among slum dwellers of Railways, Mombasa County, Kenya?
2. Which factors influence the COVID-19 HSB choices by slum dwellers of Railways, Mombasa County, Kenya?
3. What are the preventive strategies for future SARS illnesses among slum dwellers of Railways, Mombasa County, Kenya?

1.6 Study Justification

During outbreaks, information on HSB is useful in developing measures for control of outbreaks. For instance, in 2014 when Ebola epidemic occurred in West Africa, HSB studies provided key data pertaining false beliefs and myths on Ebola mode of spread and preventive approach which guided on control measures to tame the vigorous spread of the disease (Jalloh et al, 2017) and the need to prevent stigmatization of Ebola survivors and foster safer case management and burial practices, (Muzembo et al, 2022). During Zika and SARS outbreaks, HSB surveys assessed on better approaches to triage patient calls that reported symptoms such as fever. The survey also measured public response to mitigation process, (Hirner et al, 2021). Currently, there are scholarly publication on COVID-19 HSB surveys. However, they comprise of brief phone-based surveys which were conducted in China and high-risk adults in the US. Unfortunately, the above-mentioned phone surveys are not applicable to the African informal settlement settings. This study will therefore give a clear picture of the needs and needed assistance concerning COVID-19 HSB of people in Railways slums, Mombasa County, Kenya. Data from the study will inform the Kenyan government on slum dwellers behavior towards COVID-19 and related outbreaks and best strategy in preventing spread of future SARS infectious illnesses in informal settlements.

1.7 Study limitation

The study limitations included limited studies on COVID-19 related health-seeking behavior hence risk literature gap to adequately advise the current study. Additionally, the target population included slum dwellers of Railways who presented with language barrier due to high illiteracy rate and low education level hence Swahili translated version of the data collection tools were generated which may have slightly compromised the quality of data expected. Further, our sample size was selected randomly hence might have included dwellers who were not originally based in Railways slums during the COVID-19 pandemic period. Lastly, our data collection tools contained questions that required our respondents to recall events which occurred during the hype of COVID-19 pandemic hence risking recall bias from participants due to 3-year time lapse. Recall bias was thus eliminated by engaging clients in short recap session of the events that occurred during the helm of COVID-19 pandemic in 2020.

1.8 Study delimitation

This study determined only COVID-19 HSB among slum dwellers of Railways in Mombasa County, Kenya thus future studies should explore COVID-19 HSB among upper class strata. The study determined several factors that influenced their choices and the possible preventive measures for management of outbreaks. The study did not determine HSB on other diseases and illnesses though it is assumed that majority of viral infectious illness apply the same theory. The study did not evaluate other factors that influenced the COVID-19 outcomes e.g. Donor organizations and government inputs as at that time. The study was conducted in Railways informal settlement in Mombasa County where 133 households and 3 key informants were clustered and randomly selected. Data was collected using a structured questionnaire and key informant interviews respectively. Data was analyzed and descriptive statistics generated.

1.9 Study significance

The study will contribute to the pool of scientific knowledge on health seeking behavior of slum dwellers not only in Mombasa County but also in other informal settlements in Kenya and larger Sub-Saharan Africa. The study findings will be of great impact in developing strategies to managing outbreaks in the slums and informal settlements. It will be a source of strategic advice to scholars when developing preventive measures for infectious illnesses. Understanding factors that influence the HSB choices will positively contribute to the body of literature on future researchers who will be exploring similar thematic area. The published findings will guide relevant ministry e.g. ministry of health, in developing preventive policies and improvement of health access in urban slum dwellers.

1.10 Study assumptions

This study generally assumed that communities in slum dwellings are more prone to COVID-19 spread and they are least prepared to manage outbreaks. It assumed that respondents responded to data collections tool with utmost honesty and clarity and that key informants gave accurate information to the interview guide questions in the Key Informant Interview.

Additionally, the study assumed that informal settlements characteristics of congestion, poor housing, weak economic muscle, lack access to proper sanitations increases residents' vulnerability to infectious illnesses leading to spread, increased mortality and morbidity. It is thus assumed that a majority of the population who were mostly affected by COVID-19 pandemic were from the informal areas.

1.11 Operational definition of key terms

Choices: These refer to options available to particular people and are easily accessible to them during time of needs. During COVID-19 pandemic, various measures were in place and in such, dwellers employed various options based on the influencing factors.

COVID-19 – This refers to upper respiratory tract infection caused by SARS-CoV-2 virus and which can spread from one person to another in droplets through nose and mouth when they cough, sneeze, speak or breathe. As a result, one should protect themselves by maintaining social distance of at least 2 meters, wearing properly fitted facemask, washing hands or using sanitizers and getting vaccinated.

Enabling factors: These are factors that facilitate health seeking behavior based on degree of availability i.e. level of income, health insurance, access to health facility and self-efficacy.

Health: This refers to state of complete physical, mental, spiritual and emotional wellbeing and not merely the absence of a disease or infirmity.

Health-Seeking behavior – This refers to measures taken by individual to manage or alleviate an illness. In this study, this refers to measures adopted by slum dwellers to manage COVID-19 infections and its spread.

Need factors: These are factors that put person in a service-requiring state and include person state of pre-existing health, self-reported health and disease severity.

Predisposing factors: These refer to factors that promote motivation to seek health care services such as level of knowledge, marital status, attitude and perceived state of health that provide reason to seek help when ill.

Slums: This refers to informal settlements that lack or have scarcity of basic amenities such as housing, water and food. They are characterized by poorly ventilated housing, improper disposal of waste, and low economic access among others.

Outcomes: In this study this refers to the experienced results among slum dwellers who contracted COVID 19 after implementing the HSB choices and interventions for treatment and management of COVID 19. This will be evaluated based on various HSB choices made by the participants.

SARS- This is Severe Acute Respiratory Syndrome, a group of respiratory illnesses caused by SARS-associated coronavirus in the environment. Similar to COVID-19, it is airborne and spreads through small droplets of saliva. Infected patient present with flu like respiratory symptoms of fever, body malaise, cough and shortness of breath.

Slum Dwellers: This refers to group or community of people who live in a particular geography and known for their similarities in economic class according to the economic stratum. The study will involve participants who hail from slums, areas associated with low economic class.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

The chapter reviews related literature in reference to the study topic. The first section of this chapter deals with an empirical theory where it clearly identifies the research gap which relates to the study. The second section of the chapter deals with the theoretical framework that's relevant to the topic. The third section explains conceptual framework in which we have adopted Andersen's Healthcare Utilization Model (HUM) to determine COVID-19 health-seeking behavior.

2.2 Empirical literature

SARS-CoV-2, commonly known as COVID-19, was discovered as a new viral class of Coronaviridae family when a cohort of people Wuhan Province in China were suspected to present with pneumonia-like symptoms which were later confirmed to be novel coronavirus, (Amu, 2020 ;Aytekin et al, 2020). The World Health Organization (WHO) declared COVID-19 a global pandemic in March 11, 2020, (WHO , 2021). Cumulatively as at October 2022, since the beginning of the pandemic, there were 620 million identified cases and over 6.5 million confirmed deaths recorded worldwide (WHO, 2022). In 2025, there is reported increase of SARS-CoV2 activity globally with test positivity of 11% as May 2025 compared to 2% test positivity reported in February 2025, (WHO, 2025). CDC (2025) and public health authorities are updating isolation and quarantine recommendations to match population immunity, vaccine availability and COVID-19 variant, (ASSURE, 2025). It had been projected by global health experts and African governments that Sub-Saharan Africa might potentially record more than two million COVID-19 deaths if no measures were implemented (Walker et al, 2020) while according to WHO 2022 analysis, deaths in Africa were projected to decline by 94% if population adheres to vaccination

protocols (WHO analysis, 2022). Current data reports that most infections of COVID-19 in 2025 are milder especially among vaccinated individual however, early testing, vaccination and isolation are important, (WHO,2025).

Sustainable Development Goal (SDG) 3 tackles good health and wellbeing and aims to ensure health lives and promote well-being for all ages through ending preventable death, addressing communicable diseases, strengthening health systems and achieving universal health coverage by 2030, (UN,2023). The Universal Health Coverage targets to achieve financial risk protection, access to essential healthcare services and effective and affordable essential vaccines and medicines, (The Global Goals, 2023). Unprepared health systems present with fragility hence exacerbate the consequences of COVID-19 outbreak. The level of unpreparedness thus incapacitates the ability to establish adequate surveillance systems and control measures for COVID 19, (Makoni, 2020). As an early intervention, the World Bank Group through building sustainable cities and communities developed short term and long term priority areas (overcrowded living conditions, limited access to basic services and aspects of working in informal sectors which were often crowded) of interventions which included identification of hot spots, water provision, handwashing, community engagements, waste collection, access to healthcare, targeted social protection schemes such as cash transfers, vaccinations for slum populations and policy actions through budget support to local governments, (World Bank Group, 2020). Most African countries have challenges in establishing systems around case notification, virology, hospital based and mortality surveillance of COVID-19 (Yusuff et al, 2021). There was mushrooming concerns about misinformation on management of COVID-19 that is promoting unsupported treatment and unhealthy preventive behaviors leading to widespread confusion in the community (Ionnidis, 2020), especially among the estimated 1 billion urban slum dwellers (UN-

Habitat, 2016). Communities in urban slums are potentially at higher risk of contracting COVID-19 and are least prepared to curb the pandemics while possibility of implementing preventive measures of personal hygiene such as hand washing and social distancing is a challenge in these set ups (Dahab et al, 2020). WHO (2025) advises member states to continue applying risk based and integrated approach to managing COVID-19 while vaccination remains a key intervention for preventing disease and death from COVID-19 including among at risk groups.

United Nations Human Settlements Program (2003) reported that, “coming 30 years one out of three people in the world might end up settling in urban slums if the current trends hold.” These settlements manifest with high population rate due to rural urban migration, poor housing that are congested, unavailability of constant clean water supply, sharing unhygienic sanitary facilities such as toilets and bathrooms and multi-generational households. The geography of slum dwelling is comprised of high level of both inter-cultural and intra-community living leading to poor health outcomes related to high poverty index compared to other urban health hence inability to afford medical services (Ezeh et al, 2017).

Health-seeking behavior refers to actions taken to alleviate symptoms and control disease process and illness which is influenced by existing medical system in any given society. Healthcare-seeking behavior is considered one of the determinants of health status of a country and its socio-economic development (Latunji & Akinyemi, 2018). Health seeking behavior is defined as any peoples' inaction, or action taken based on individual perception and recognition of changes from state of good health or having a specific health challenge and finding a proper remedy with purpose of restoring good health. This behavior is guided by individual or household rules, society expectation and provider characteristics (Olenja, 2003). There is generally poor healthcare-seeking behavior among people in Sub Saharan Africa similar to many other low-and middle-

income countries (Akinyemi et al, 2019) leading to increased morbidity, mortality and worse health outcomes among patients (Latunji & Akinyemi , 2018).

The initial response towards ending COVID-19 from high income countries lead to numerous international and national level decisions and protocols (WHO, 2020). The decisions led to evolution of protocols and COVID-19 preventive measures of wearing face masks while in public, maintain physical and social distance, observation of frequent hand washing with soap. Workers and employees were advised to work from home except for essential workers and businesses while there was a global closure of schools and ban of all international travel. There was also isolation of confirmed infected persons and quarantining of 14 days for of exposed to contact individuals (WHO, 2021; Qian et al, 2020). With the COVID-19 vaccine breakthrough, (Miller & Burger, 2020) vaccination was declared the best tool to prevent from COVID-19 as is projected to decline COVID-19 deaths by 94%, (WHO, 2022). Persons who have completed 2 to 3 doses of mRNA based COVID-19 vaccine are said to have achieved 90% protection from COVID-19 associated death, (Tenforde et al, 2022; WHO, 2022).

There is high mortality rate (Mukeku, 2018; Zulu et al, 2011) and higher mobility rates, (Salon & Gulyani , 2010) among slum dwellers. In previous pandemics, outbreak of diseases had high acceleration in slum areas: Ebola Pandemic in 2014-2016 reported high spread within high population density slums of Guinea, Sierra Leone and Liberia (Synder et al, 2017) while Zika virus spread widely in slum parts of favelas in Rio de Janeiro, Brazil (Basile,2022). GAVI (2023) reported that during the pandemic Brazil implemented lockdowns, redistribution of hospital resources and payment of financial aid assisted members of slums to stay home.

A study in Thailand highlighted dwellers of urban slums in Bangkok adopted WASH practices to implement COVID-19 preventive practices. This included handwashing, hygiene and seeking

treatment from public health care. There were significant barriers to accessing clean water, sanitation and health care services. The study reported that slum dwellers who had access to WASH resources exhibited stronger protective behavior against COVID-19 (Nguyen and Pattanarsi,2022). A study in Mumbai reported that community healthcare workers conducted health education in the communities as preventive measure in managing spread of the virus (Corburn et al, 2020). In Dhaka, members of the community worked in solidarity to offer community aids in form of food and other essential goods and services to support those who could not work or had lost their jobs, (Hossain et al, 2023). In South Africa, slum dwellers opted to adoption of digital health to seek healthcare solution making telemedicine and digital health a vital tool to minimizing physical contact and practicing social distancing. The mobile apps were critical in consulting for healthcare services, receive information, schedule for vaccination hence efficiently manage their health during the pandemic, (Mwitari et al, 2021). A study done in several slums in Nairobi including Kibera and Mukuru wa Njenga indicated that residents made makeshift handwashing stations to promote use of soap and sanitizers. These were also assisted through distribution done in key spaces like healthcare facilities, schools and homes, (Muchangi et al, 2024).

Slum-dwellers unique characteristics such as large family sizes promote higher viral transmission index than other communities. A model study conducted in New Delhi slum in India proved that slum specific demographics and activities sustained great infection rates despite widespread vaccination and social distancing measures recording 44% higher rates of influenza than non-slum dwellers (Adiga et al, 2018). This report agrees with a study on socioeconomic and health vulnerability among urban slum dwellers in Bangladesh, (Hasan et al, 2024). Most slum dwellers rely on income from informal sources thus the population is prone to economic shocks. This is in

agreement with research data that proved that health status in slums is directly proportional to poverty index, (Mukeku, 2018),(Zulu et al, 2011) a similar dual economic and health relation crisis that was posed by COVID-19 pandemic in 2020, (Seddiky et al, 2023). Socio-economic status of residents in slum have influence on the course and outcome of COVID-19. In the United States, socioeconomically disadvantaged groups were at more risk to be affected by comorbidities that lead to severe state of COVID-19 compared to rest of the population. A comparative research showed that culture, economic status, geographical location, infrastructure, religion and other factors influence health choices and outcome among the risk groups, (Friensen and Pelz, 2020). In India, Pradesh slum reported improved hygiene practices with time while vaccine compliance reduced after sending messages from doctors debunking fake news about COVID-19. Most slum dwellers were not able to comply with lockdown measures as majority had lost their jobs and needed to fend for themselves, (Armand et al, 2020).

Kawuki et al, (2023) established that more slum communities complied with personal protective measures of face mask use, handwashing/hygiene and social distancing compared to estate communities. Level of knowledge, perception, access to information, infection risk and severity perception were associated with higher odds of compliance to preventive measures. To improve compliance rate in future pandemic Kawuki et al suggested that interventions should include community education which will foster positive perception to disease, address water and sanitation needs, provide subsidized facemasks and soap to slum communities and engaging religious leaders. In Bangladesh, Hasan et al, (2022) established that attitude, level of knowledge and perception has significant influence on the maintenance of COVID-19 preventive measures.

The emergence of COVID-19 disrupted health services in most (90%) resource limited countries in the five WHO regions deepening the pressure on health delivery systems globally with majority

of complains emanating from low- and middle-income countries (WHO, 2021). Factors contributing to poor health system capacity in terms of inadequate infrastructures, leadership and poor outbreak preparedness exposes these health systems and renders them vulnerable to COVID-19 (Jensen & Molina, 2020). Most population in sub-Saharan Africa, experience scarcity of fresh water hindering frequent hand hygiene, most communities have unhygienic sanitary facilities, poor or total lack of internet/technological connectivity for homework and education, and limited or no extra sources to sustain income loss (Gibson & Rush 2020). Corburn et al (2020) describes health challenges of the global south to include lack of basic needs such as water, toilets, waste collection and drainage and inadequate housing. The study thus suggested policy changes to reduce spread of COVID-19 to include improve likelihood of medical care among urban slum communities, provide economic, social and physical improvements, train and deploy community health workers, provide food assistance, develop and implement solid waste collection strategy. It advices to innovate beyond disaster response to long term planning. The abysmal health of urban slum dwellers in India was attributed to poor structures such as inadequate housing, water and sanitation. The house also lacking lighting, ventilation and overcrowding led to poor outcomes among the residents. It was thus crucial that housing policy is reimagined for the urban poor with an emphasis done based on pandemic guidelines, (Dubey et al, 2022).

Additionally, most of healthcare and public health systems in Sub Saharan Africa are compromised when it comes to access to critical care services in occurrence of complications of COVID-19 patients. Majority of the health facilities lack essential infrastructures like critical care unit (CCU) beds, adequate supply of oxygen and personal protective equipment for the existing workforce. (WHO, 2021). For containment to be archived there was dire need to establish a COVID-19 task force which was steered by the Kenyan MoH to promote and implement the country's prevention

measures in a bid to contain and mitigate any extreme health, social and economic effects of COVID-19 pandemic, (MoH Kenya, 2020). On March 13, 2020, upon detection and confirmation of first case, School closure, ban on international travel and prohibition of large social meetings were implemented by the Government of Kenya (Kabale, 2020). These particular activities (weddings, funerals, cultural meetings and prayers gathering) were considered high risk and would promote spread of COVID-19 hence critical in controlling them to prevent accelerated transmission of the virus, (WHO, 2021) a similar approach that was applied for Ebola in 2014 (Jalloh et al, 2017). Seildlein et al (2021) proposed decongestion policy where urban slum dwellers can be resettled to their rural ancestral villages avoiding risk of overcrowding and reduce population density in urban slums leading to reduced transmission rate among urban informal settlements.

Health system management teams require updated and actionable records and data to help develop guidelines, regulation and implementation approaches, to enable them come up with evidence-based changes on evolution of COVID-19 outbreak. There are no current systemic surveys conducted in urban slums of Sub-Saharan Africa. The existing blogs, write ups, commentaries and newspaper report all ward of devastating situation if COVID-19 takes hold, (Austrian et al, 2020). Despite many health systems in the world experiencing stringent challenges due to COVID-19 pandemic, there are existing opportunities to channel and focus resources to boast more health promotion measures and activities towards preventive approaches (DAC & OECD, 2020). Friesen and Pelz (2020) suggested that there is need to aggregate data on the number of people living in informal settlements, their living conditions and their health status. It is reported that inadequate data availability is among reasons why measures to contain the pandemic only work to limited extent in the slums. It highlighted that key data on noncommunicable diseases that lead to severe

course of COVID-19, regional similarities and differences e.g. between Nairobi and Mombasa Kenya and establishing the number of inhabitants will help initiate appropriate measures to contain the COVID-19 pandemic. Housing policies should also ensure that the housing infrastructure complies with basic housing and pandemic guidelines and criteria, (Dubey et al, 2022)

Mehroolhassani et al (2022) established determinants of health during COVID-19 pandemic among slum residences of Kerman city in Iran including: Economical: unemployment, decreasing in income, and increasing limitations of many institutions in providing resources; Sociocultural: lack of awareness, begging culture, low trust in disease control programs, low bottom-up planning, and increasing violence; Situational: decreasing donors' activities and canceling important meetings; and Physical environment: inadequate space and inappropriate conditions in some houses and alleys for people protection against Corona viruses. The study recommended for multidisciplinary actions, increase in health education and awareness and engagement of slum residents in control disease program. In Kenya, the Ministry of Health in Kenya (MoH, 2020) ensured public health education has been intensified across the country through media outlets include mainstream media, face to face forums and social media while health systems redirected funding to boost on preventive measures for COVID-19, (OECD, 2020). Diverse measures of managing COVID-19 have been implemented since onset in 2020, investigation to find the relationship between knowledge and national prevention measures to behaviors and care seeking behavior of urban slum dwellers have not been adequately investigated (Awel et al, 2022). The few studies done reveal negative health care seeking behavior among positive COVID-19 patients (Tay et al, 2022). We thus, will be exploring the factors influencing COVID-19 health seeking behavior of residents in Railways slums, Mombasa County, Kenya. This study informs and contributes towards strategies by the Kenyan government towards effectiveness of public health education and behavior change

and assess health needs of residents in urban slum areas to enable improvement in accessibility to primary health care services associated with infectious diseases like COVID-19.

2.3 Theoretical framework

2.3.1 Andersen’s Healthcare Utilization Model

Andersen’s Healthcare Utilization Model (HUM) was founded in 1968 (Anderson & Newman, 1973). The utilization model assumes that individual’s consumption of health care choices or personal health practices are contributed by three major elements: predisposing, enabling and need for care factors consisting of contextual and individual level predictors (Anderson, 1995; Anderson, 2008).

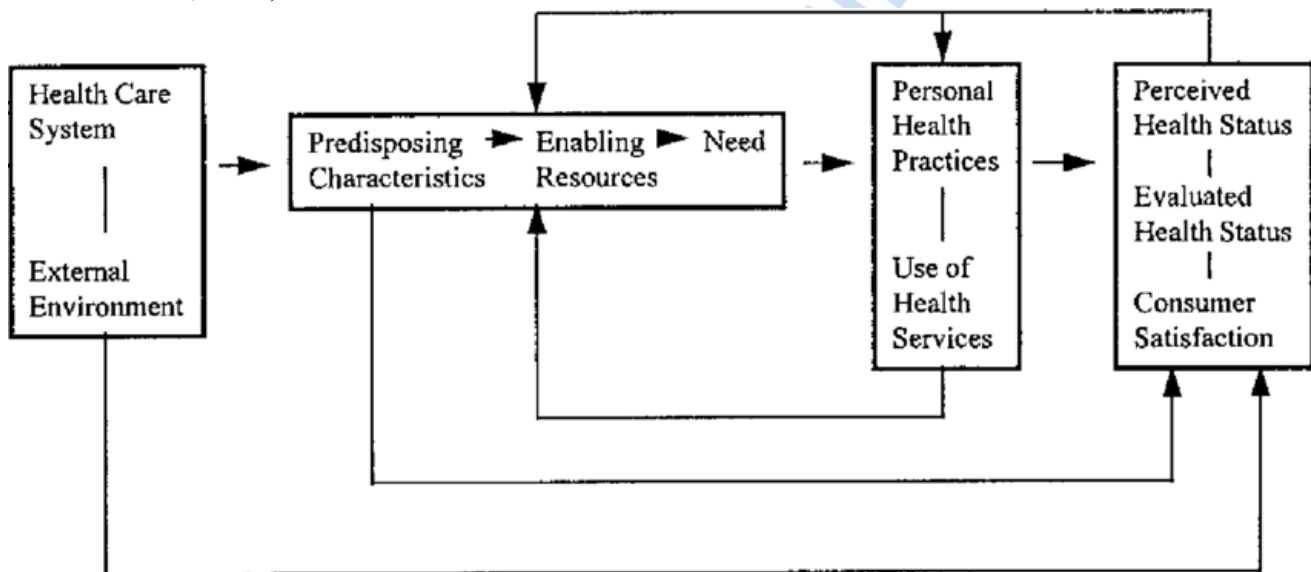


Figure 1: Theoretical framework of Andersen’s Model of Healthcare Utilization (Anderson, 2008)

The HUM theory has three major elements, which include predisposing, enabling, and need factors (Fig 1) together explaining how they influence COVID-19 HSB in an individual or a community.

In this regard, predisposing factors is described as individual related factors such as socio demographic characteristics like gender, age, perception/attitude, level of education, race/ethnicity, belief/religion and sex (Anderson, 1995, Kadushin, 2004, Anderson, 2008) while contextual factors are considered a composition of social-demographic characteristics of

communities such as politics, community values, organizational and cultural norms. In addition, level of health knowledge is also considered a contextual factor as it contributes greatly to healthcare behaviors shaping person's attitude, perception, beliefs and general understanding about implications of a specific health behavior.

Enabling factors are community or individual factors that influence the degree of initiating and continuing a certain health choice. It contains resources, incomes and financial sources considered to promote or deny access to healthcare and subsequent use of health service (Kadushin, 2004, Jahangir al, 2012). In this study, enabling factors explored on individual level factors such as wealth, income, medical insurance and even existence of family support at the household level. Other factors explored included availability of income to meet the expense of adopting a healthy lifestyle e.g. consistent physical exercise, balance diet and good nutrition, face masking and good hand and personal hygiene (Anderson, 2008). Travel time and transportation means to health facility and waiting time for healthcare are considered enabling factors (Jahangir et al, 2012). Health education, health policies and community health outreach programs and promotive initiatives are relevant in influencing individual health behavior during a pandemic such as COVID-19 and afterwards their attitude towards positive health healthcare seeking behaviors (Kadushin, 2004).

Need factors in this study represented potential needs of health care service use such as pre-existing illness, obesity, contextual and individual level of perception on severity of disease (Anderson & Davidson, 2014). At the individual level, the study compared the contrast between how people viewed and practiced health (Self-rating/ self-diagnosis based on symptoms) and the actual evaluated needs which are based on objective findings from a qualified health care professional after thorough examination and assessment analysis (Kadushin, 2004). Epidemiological factors of

COVID-19: morbidity and mortality also influence the health care need factors for individuals i.e. COVID-19 prevalence, overall national and local incidence, infections and death rates (Jahangir et al, 2012).

Andersen Healthcare Utilization Model has been criticized for minimally being attentive to contribution of culture and social factors to the predisposing factors while over stamping need factors with little consideration for beliefs and social constructs of the community (Babitsch et al 2012). It is agreeable that predisposing factors and enabling resources are necessary as they play great role expounding the perceived and evaluated need (Andersen & Newman, 1973). Anderson healthcare utilization model itself considers perceived needs to be majorly influenced by social factors including beliefs and cultural patterns.

2.3.2 The Health Belief Model (HBM)

HBM is a foundational framework established in 1950s to understand the preventive health behavior of individuals especially in the contexts of uptake of disease preventive approaches and screening tests for early detection of asymptomatic disease such as COVID-19, (Alyafei and Carr, 2024). The model has six primary cognitive constructs that influence behavior: Perceived severity, perceived susceptibility, perceived benefits, perceived barriers, self-efficacy and cues to action. The study explains the following constructs as follows: Perceived severity is the probability that a person will change their health behaviors to avoid a consequence depends on how serious they believe the consequences will be. The health belief model proposes that individuals who perceive a given health problem as serious are more likely to engage in behaviors to prevent the health problem from occurring (or reduce its severity). For instance, people will less consider undertaking COVID-19 preventive measures if there are no severe COVID-19 symptoms reported. However, studies have explained that this is a less powerful predictor of behavior, (Boskey, 2008).

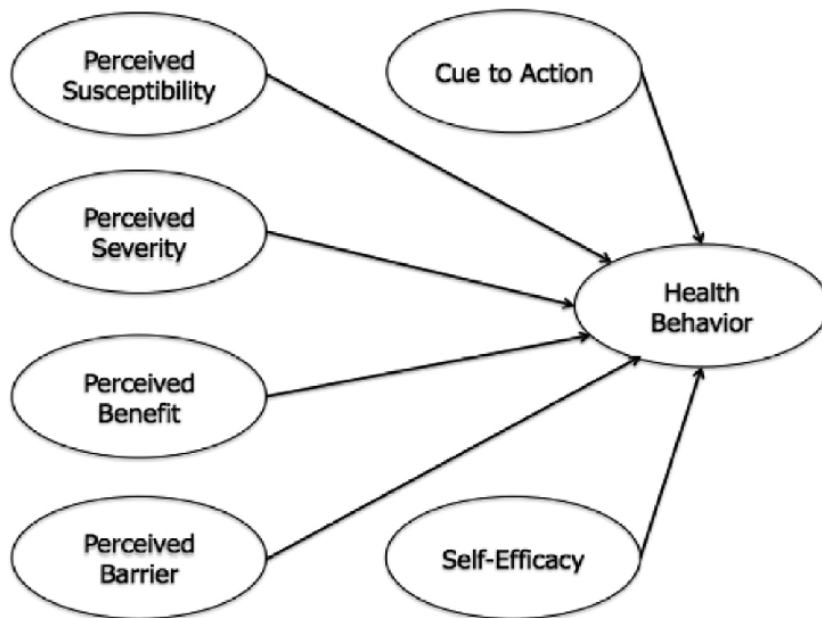


Figure 2: Theoretical framework of Health Belief Model (Rosenstock 1966)

Perceived susceptibility refers to risk of developing a health problem. HBM suggests that individuals who perceive that are more at risk to a particular health problem will engage in behaviours to reduce chances of developing the disease. For instance, elderly population who are at risk of developing hypertension may opt for lifestyle modification such as exercise, nutrition balance, stress management and substance used to reduce risk factors, (Boskey, 2024). Perceived benefits refer to believed effectiveness to strategies designed to reduce risk of the disease e.g. if wearing of facemasks will help reduce likelihood of transmission of COVID-19 then it will increase chance of the individual adopting the behavior. Perceived barriers include the obstacles to behavior change. This construct explains that for behavior change to occur the benefits should out way the barriers. Barriers could include costs and expenses, side effects of medication, pain etc. Self-efficacy refers to an individual’s perception of his or her competence to successfully perform a behavior. This was added to help explain individual differences in health behaviours such a engagement in one time health related behaviours such as screening, testing and vaccination. However, it was adopted to encompass long term behaviours such as diet modification, exercise

and alcohol or smoking building confidence that individual belief in one's ability to effect change can lead to positive outcome (Boushey et al, 2001), (Boskey, 2024). Cues to action explains that triggers are necessary to prompt action and engaging in particular behaviours. Cues could be internal (Pain, body symptoms) or external (events, reminders and social media). Individuals who receive reminders on severity of illness have higher chances of seeking health care services, (Urich, 2017).

Though HBM has had great impact in preventive programs, majority of these programs have been in reduction of non-communicable diseases such as reducing risk of diabetes, tobacco or alcohol use. The model also does not address social and cultural factors on health beliefs and behaviors. It assumes that individuals can make rational decision after weighing pros and cons which in some instances is not true. Therefore, incorporating social determinants of health into the model gives it a deeper understanding such as recognizing social, economic, environmental and other factors in health beliefs, (Alyafei and Carr, 2024; Rosenstock et al, 1988).

The study adopted both Andersen's Healthcare Utilization Model and Health Belief Model to establish variables influencing health seeking behavior among slum dwellers of Railways informal settlement. The HUM assumes that individual's consumption of health care choices or personal health practices are contributed by three major elements: predisposing, enabling and need for care factors which compliments the social determinants of health missing in the HBM. Advantageously, HUM also encompasses enabling factors (self-efficacy, perceived barriers) and need for care factors (perceived risk and severity) which are also reflected in the Health belief model. The study thus adopted these models as they are in tangent with the study objectives and have alignment in determining how various factors influence COVID-19 healthcare seeking behavior among slum dwellers of Railways, Mombasa, Kenya.

2.4 Conceptual framework

Through the Andersen Model and Health belief Model the study established the relationship between predisposing factors (religion, marital status, attitude, health belief, personal values, education, source of income, housing status, pre-existing conditions) enabling factors (income level, access to health care/information, perceived self-efficacy,) and need for care factors (pre-existing illness, perceived risk, COVID-19 severity) contributed in influencing healthcare seeking behavior of individual during the COVID 19 pandemic. The individual health choices were mirrored on nutrition, physical exercise, adherence to COVID-19 protocol and medical check-up.

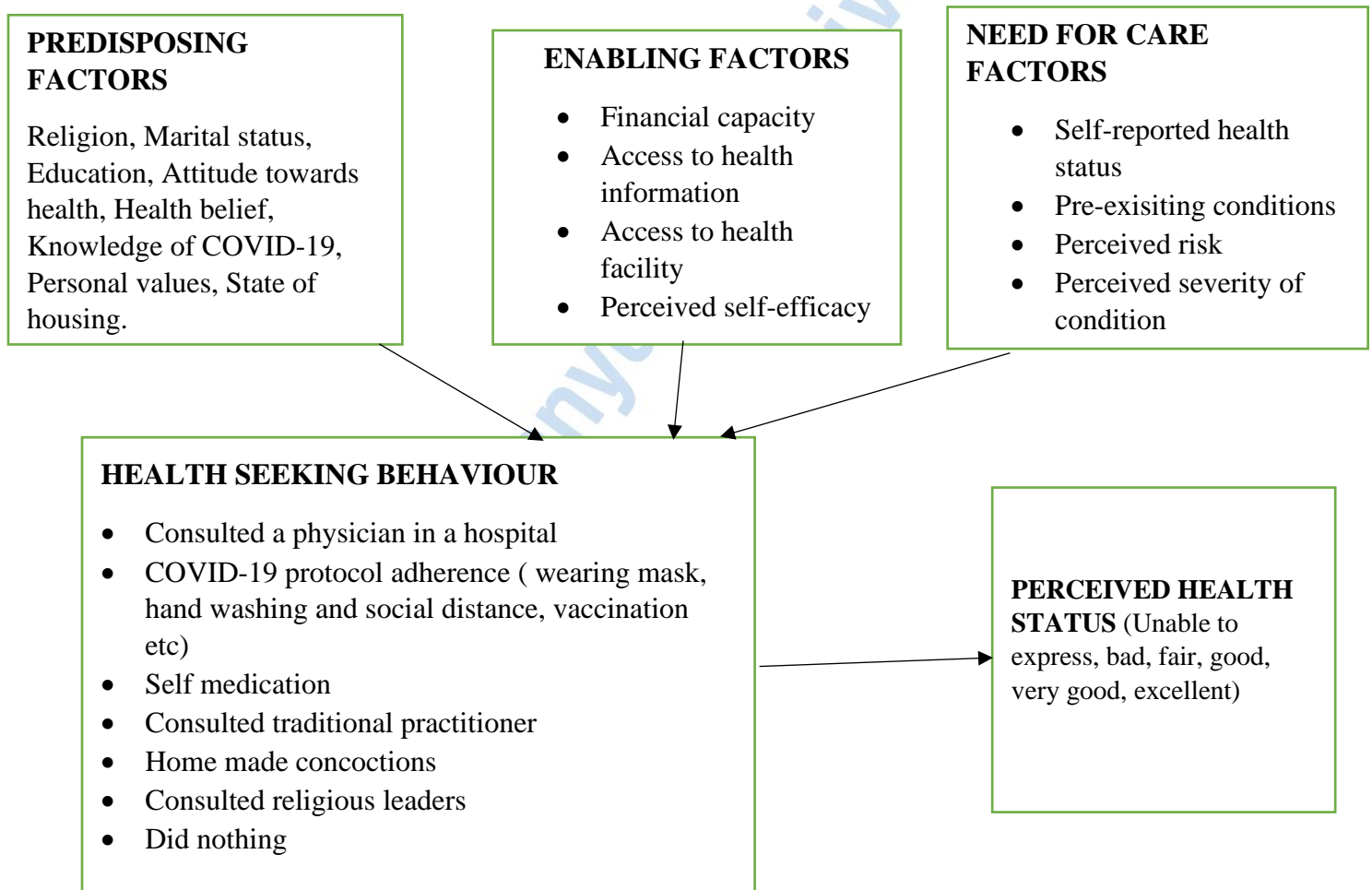


Figure 3: Conceptual Application of Andersen Health Care Utilization model

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This section explains the study methodology in detail. It encompasses study design, target population, study location, sampling procedures, sample population, sample size determination, pre-testing and study proof of validity, methods of data collection, data analysis methods, eligibility criteria and ethical considerations.

3.2 Study Area

The study was conducted in Mombasa County which is among 47 counties of Kenya. It is located at the coastal region ($4^{\circ} 2' 37.4640''$ S and $39^{\circ} 39' 31.9356''$ E) with a population estimate of 1.2 million according to population statistics of 2019 (KNBS, 2019). Mombasa county health service delivery system is distributed into 5 tiers of care as per MoH standards: level 1 to level 5. The population of Mombasa is spread out in 6 major sub counties: Changamwe, Kisauni, Jomvu, Nyali, Mvita and Likoni. Population distribution in the county is influenced by the proximity to vital social and infrastructure networks such as roads, water, housing, electricity, employment opportunities and security (CIDP, 2017-2022). Majority of the slum areas in Mombasa County are found in Mshomoroni, Junda, Kisumu ndogo, Shika Adabu, Ngomeni, Bangladesh, Moroto, Soweto, Maweni, Ziwa la Ngombe, Bahati and Railways. Bahati and Railways are found in Changamwe Sub County. Railways slum is the study focus area. Railways forms part of the 65% of the Mombasa County informal settlements. It lies adjacent to the Railway line and major highway famously being a gateway to Mombasa city. It is assumed most newcomers arrive in this area before settling in other parts of the city such as Likoni which is the largest slum in Mombasa County, (SDI, 2014). Although it is not the biggest slum in Mombasa, Railways presents with overcrowding, poor solid waste management and inadequate housing and sanitation facilities.

3.3 Study design

The study used descriptive cross sectional study design to determine COVID 19 HSB among slum dwellers of Railways in Mombasa County, Kenya. This approach helped characterize the various COVID-19 HSB choices among slum dwellers and their reasons why they selected the given interventions giving a clear understanding of situation in a snap shot i.e. what was going on and why it was going on according to Ramos (2009). Descriptive cross sectional study design allowed the study to explore the influence of predisposing factors, enabling factors and need for care factors on the HSB choices among the residents of Railways. Additionally, the researcher was also be able to collect data from a large pool of participants and establish potential preventive measures for future SARS infections. This design also helped to easily approve or disapprove the study assumptions through application of mixed methods to collect qualitative and quantitative data.

The study data was collected based on three independent variables (predisposing, enabling and need for care factors) and one dependent variable (COVID-19 HSB). The independent variables included; predisposing factors, enabling factors and the need for care factors. The dependent variables included health-seeking behavior towards prevention of COVID-19. The information on these variables unraveled various COVID-19 health seeking behaviors and factors that influenced the COVID-19 HSB choices.

3.4 Study Population

The study was conducted in Railway slum which is found in Changamwe Sub County of Mombasa County. Changamwe has a population of 131,882 (KDHS, 2019) distributed across Changamwe, Kipevu, PortReiz, Mikindani and Miritini constituencies. Changamwe constituency has 46,614 households with an average household size of 2.8. The population density of changamwe is 7,457

people per square kilometer. Railway slum covers an area size of 1.8km² consisting of population estimate of 13,422 with 203 households.

3. 5 Target population

The study target population were residents of railways slums, Mombasa County. It included both men and women in the area who were over 18 years old. The study respondents targeted household heads, however incase the head was absent a representative was selected to fill the questionnaire.

3.5.1 Inclusion Criteria

Residents who had resided in Railways slums during the COVID 19 Pandemic for at least 6 months prior to declaration of COVID-19 pandemic

3.5.2 Exclusion Criteria

New residents who moved into Railways slums after 2021.

3. 6 Sampling procedure

Simple random technique was applied to pick the study participants. Simple random sampling was used because it allowed every resident an equal chance to be selected for the study eliminating selection bias. The households were clustered into 4 clusters based on location boundary. From each cluster, list of total households and their contacts were generated from the area chief who is a custodian of household data and all households numbered. Participants were then selected randomly to participate in the study. Purposive sampling was used in selecting key informants who included the chief, religious leaders and health care managers. Purposive sampling is based on personal judgment and attainment of eligibility criteria for the study therefore the key informants were selected purposefully due to their key role of management and service delivery in Railways slum.

3.7 Sample Size Determination

The sample population was determined under Cochran formula. This formula allowed the study to calculate the ideal sample size given the desired level of precision, desired confidence level and proportion of the HSB existing in the population could be established.

Cochran Formula (1977)

$$n_0 = \frac{Z^2 pq}{e^2}$$

$$n_0 = ((1.96)^2(0.44)(0.56)/(0.05)^2)$$

$$n_0 = 378.62$$

$$n_0 = 378 \text{ (For a larger population)}$$

Where

n_0 = sample size

e = desired level of precision/ margin of error (5%)

p = expected rate of health care use (44%) (Owiti et al, 2018).

q = (1-p)

Z = value of standard normal variable (1.96 at 5% level of significance)

The household population under study was low (203) so the size was modified using this equation where n was the new adjusted sample size and N represented target population)

$$n = \frac{n_0}{1 + \frac{(n_0 - 1)}{N}}$$

$$n = 378 / (1 + (377/203)) = 132.3$$

$$n = 133 \text{ Households}$$

3.8 Construction of research instruments

Data collection tools included structured questionnaires (Appendix 2.1 and Appendix 2.2) and key informant interview guide (Appendix 3). The questionnaire included questions regarding the basic demographics, knowledge and awareness on COVID 19 symptoms, chosen HSB methods to prevent spread of COVID-19 infection, predisposing, enabling and need for care factors that influenced the selection of COVID-19 HSB preventive measures and perceived state of health after implementation of health choices. Key informant guide contained open ended questions that highlighted the sub themes of the study such as common choices adopted by the community,

challenges experienced while implementing the preventive measures like hand washing, social distancing and vaccination.

3.9 Data Collection

The study used mixed methods in data collection. Data was collected from 133 households of the Railways slums through guidance of *mama wa mtaa* as the community entry and focal person. The data collection process took place on 12th December by 3 trained data collectors. Structured questionnaire was administered to the household participants by study interviewer in Railways slums who were randomly selected. Filling of the questionnaire lasted 5 minutes. The process begun at 8.00am and ended at 3.30pm. The questionnaire covered sub-themes of the study objectives i.e. various HSB choices, factors influencing HSB choices and strategies to prevent future SARS infection spread. It encompassed both closed and open-ended questions. The data in the questionnaires were filled into a google form which was later consolidated into a data set. Key Informant Interviews were conducted to key-purposefully selected people who included local area chief of Railways, facility in-charge of Changamwe health centre and a church leader from Railways slum. This group of individuals were selected because they play key roles in Railways community which influenced the community choices in regards to COVID-19. The KII sessions lasted averagely 15 minutes where the interviewer took guided field notes and recorded the responses through a phone recorder which was later transcribed by the researcher for analysis.

3.10 Testing of validity and reliability

Validity and reliability of data collection tools was established through pre-test that was conducted in Moroto slum which is located adjacent to Railways slums. Moroto slum bore similar characteristics to Railways slum in terms of size and composition thus a great selection for pre-test. The pretest evaluation indicated strong content validity where the questionnaire captured wide

range of factors affecting the health seeking behavior including demographics and aligned factors to Andersen Health Utilization Model. We converted some closed ended questions into open ended to allow the study capture more clear responses from the participants such as measures put in place to prevent oneself from contacting COVID-19. The construct was also good as the Likert scale appropriately captured the perceived influence on the various COVID-19 HSB choices. Some terms were complex and needed to be simplified such as self -efficacy needed more explanation to be understood by the participants. The questionnaire was thus translated to Swahili to help easily administer to the participants. The study however could not establish external validity as it could not generalize to other slum areas such as rural settings or the general Kenyan population. In establishing outcomes after implementing HSB choices the results were self-reported hence the study could not compare these responses to external records such as clinical hospital records or data limiting our criterion validity. Recall bias was prone as majority could not adequately remember all the events of COVID-19 pandemic in 2020, hence we conducted a short recap session to help harness clear responses from the participants. Inter-rater reliability was established by training the interviewers before going for the main study in Railways slums.

3.11 Data analysis

The responses were coded, cleaned and analyzed using SPSS version 26.0 and thematic narration. Quantitative data was analyzed using SPSS version 26.0 at univariate level where the study established measures of central tendencies, standard deviation of the dependent variable contributing to HSB choices of slum dwellers in preventing themselves from contacting COVID-19. Quantitative data was grouped and summarized to generate estimates. Estimates were used to calculate descriptive statistics e.g. Mean age of household. The study applied regression and correlation tests to establish relationship between any two or more variables. Data presentation

included charts, tables and graphs. Qualitative data that's is field notes and recordings were transcribed by the researcher and organized to establish themes, then was analyzed establishing patterns and examples that describes Railways slum dwellers HSB choices. Discussion of the findings was done according to study objectives developed under the study questions.

3.12 Ethical considerations

Clearance from Mount Kenya University Ethical Review Committee (MPH/2019/57768, Appendix 7 and Appendix 8), National Commission for Science, Technology and Innovation (NACOSTI/P/23/30308, Appendix 6) and Mombasa County Department of Health (MSA/CH/ADM.37/VOL.1/85, Appendix 5) was sought before commencing the data collection. Consent was also sought from all participants (Appendix 1) and consent forms filled and signed. Confidentiality and anonymity of the respondents was achieved by coding the questionnaires. The study was well explained as voluntary and participants maintained the right to withdrawal at any given moment during the study.

CHAPTER FOUR: RESEARCH FINDINGS AND DISCUSSIONS

4.0 Introduction

This chapter provides the findings of the research study on predisposing, enabling and need factors that influence COVID-19 health seeking behavior among slum dwellers and their relationship. Data analysis presentation and discussion of findings are based on objectives of the study. The section has four main subsections. The first subsection provides socioeconomic characteristics of slum dwellers, second subsection deals with the various HSB choices that they made during COVID-19 pandemic, third segment provides the factors that influenced the HSB choices and last section explains the preventive strategies for future SARS illness among slum dwellers.

4.1 Social Economic Status of Slum Dwellers of Railways Slum, Mombasa County

Social economic status of households has great significance and influence on HSB among slum dwellers, (Li et al, 2020), thus, in this segment, the study identifies the social economic determinants of utilization of health care measures during the COVID-19 pandemic.

Table 1 shows that majority of the respondents were female accounting for 60.2% (n=80) while male accounted for 39.8% (n=53) of the respondents. The age distribution showed that majority of the dwellers ranged at 31-40 years at 32.3% (n=43) while the least range of population are the above 60 years at 2.3% (n=3). The mean age was 37.5 years, modal age of the respondents was 35 years while the median age was 35 years and standard deviation of 11.12 years. Majority of the respondents were married (69.2%) while divorced and separated were the least respondents (3.8%). Regarding religion, majority were Christians (79.7%, n=106) while Muslim were second at 19.5% (n=26). Forty seven percent (46.6% n=62) of the dwellers attained secondary level of education while 0.8% attained university level of education (n=1). The occupation distribution showed that 51.9% were self-employed, 30.1% were unemployed, 16.5% were formally employed

and 1.5% were informally employed. The unemployed group composed more women than men and that included house wives and students. In the informal employment, the dwellers were working in settings such as caregiving, cleaning and garment making. Majority of the self-employed group were running small businesses including retail shops, farming and carpentry. For the population that worked in formal employment, dominant areas were hospitality, security, cargo logistics, mechanics and teaching. The findings showed that majority of respondents earn monthly income of <ksh 15,000 (76.7%, n=102) while none of the respondents earned above Ksh 45,000. The state of the houses spanned across permanent (n=58) and semi-permanent (n=65). Majority of the houses were semi-permanent (56.4%) while 43.6% of the houses were permanent. Majority of the permanent houses were clean (35.3%) compared to semi-permanent houses (29.3%). Majority (78.2%, n=104) of the households were living with family members while 21.8% were living alone.

Table 1: Socioeconomic distribution of the Railway slum dwellers households

| Characteristics | | Frequency (n=133) | Percent (%) |
|-----------------|----------------|-------------------|--------------|
| Sex | Male | 53 | 39.8 |
| | Female | 80 | 60.2 |
| | Total | 133 | 100.0 |
| Age (Year) | 18-24 years | 19 | 14.3 |
| | 25-30 years | 22 | 16.5 |
| | 31-40 years | 43 | 32.3 |
| | 41-50 years | 32 | 24.1 |
| | 51- 60 years | 14 | 10.5 |
| | Above 60 years | 3 | 2.3 |
| | Total | 133 | 100.0 |
| Marital Status | Married | 92 | 69.2 |
| | Single | 31 | 23.3 |
| | Divorced | 5 | 3.8 |
| | Separated | 5 | 3.8 |
| | Total | 133 | 100.0 |
| Religion | Christian | 106 | 79.7 |
| | Muslim | 26 | 19.5 |
| | Others | 1 | .8 |

| | | | |
|----------------------|--------------------------------|------------|--------------|
| | Total | 133 | 100.0 |
| Education Level | Informal | 10 | 7.5 |
| | Primary | 41 | 30.8 |
| | Secondary | 62 | 46.6 |
| | College | 19 | 14.3 |
| | University | 1 | 0.8 |
| | Total | 133 | 100.0 |
| Occupation | Unemployed | 40 | 30.1 |
| | Informal Employed | 2 | 1.5 |
| | Self employed | 69 | 51.9 |
| | Formal Employed | 22 | 16.5 |
| | Total | 133 | 100.0 |
| Monthly Income (Ksh) | < Ksh 15,000 | 102 | 76.7 |
| | Ksh. 15,001 - 30,000 | 27 | 20.3 |
| | Ksh. 30,001 - 45,000 | 4 | 3.0 |
| | > Ksh. 45,000 | 0 | 0 |
| | Total | 133 | 100.0 |
| State of the House | Semi-permanent, Clean | 39 | 29.3 |
| | Semi-Permanent, Congested | 30 | 22.6 |
| | Semi-Permanent, slightly clean | 6 | 4.5 |
| | Permanent, Clean | 47 | 35.3 |
| | Permanent, Congested | 10 | 7.5 |
| | Permanent, Slightly Clean | 1 | .8 |
| | Total | 133 | 100.0 |
| Living Status | Alone | 29 | 21.8 |
| | With Family | 104 | 78.2 |
| | Total | 133 | 100.0 |

4.2 COVID-19 Health Seeking Behavior of Households of Railways Slum, Mombasa

County

This section describes the self-reported actions taken by the respondents towards ensuring safety from COVID-19. It explored the preventive measures undertaken, reasons for the various HSB choices, perceived health status and challenges experienced in the course of action taken.

4.2.1: COVID-19 Preventive Practices among slum dwellers

The study asked which measures the dwellers took to prevent themselves from contacting COVID-19 when it was declared a pandemic. It was found that slum dwellers adhered to the stipulated protocols of COVID-19 prevention and control measures. **Table 2** indicates that majority of

respondents (18.0%) adhering by wearing masks, social distancing and hand washing while only a single respondent (0.8%) did not implement any measure towards prevention of COVID-19.

Table 2: COVID-19 preventing practices among Railways Slum Dwellers

| COVID-19 measures taken during pandemic | Frequency (n=133) | Percent (%) |
|--|--------------------------|--------------------|
| Hand Washing only | 6 | 4.5 |
| Hand washing, social distancing, wearing mask, home remedies | 7 | 5.3 |
| Prayers only | 1 | .8 |
| Traditional medicine only | 1 | .8 |
| Wearing mask, Hand washing, Social Distancing, Isolation | 11 | 8.3 |
| Wearing mask, Hand washing, Sanitizing, Social distancing | 17 | 12.8 |
| No measures taken | 1 | .8 |
| Wearing mask only | 16 | 12.0 |
| Wearing mask, hand washing | 15 | 11.3 |
| Wearing mask, Isolation | 6 | 4.5 |
| Wearing mask, Hand washing & Sanitizing | 5 | 3.8 |
| Wearing mask & Vaccination | 10 | 7.5 |
| Wearing mask, social distancing & Home remedies | 4 | 3.0 |
| Wearing mask, social distancing & Hand washing | 24 | 18.0 |
| Wearing Mask, Hand washing & Quarantine | 9 | 6.8 |
| Total | 133 | 100.0 |

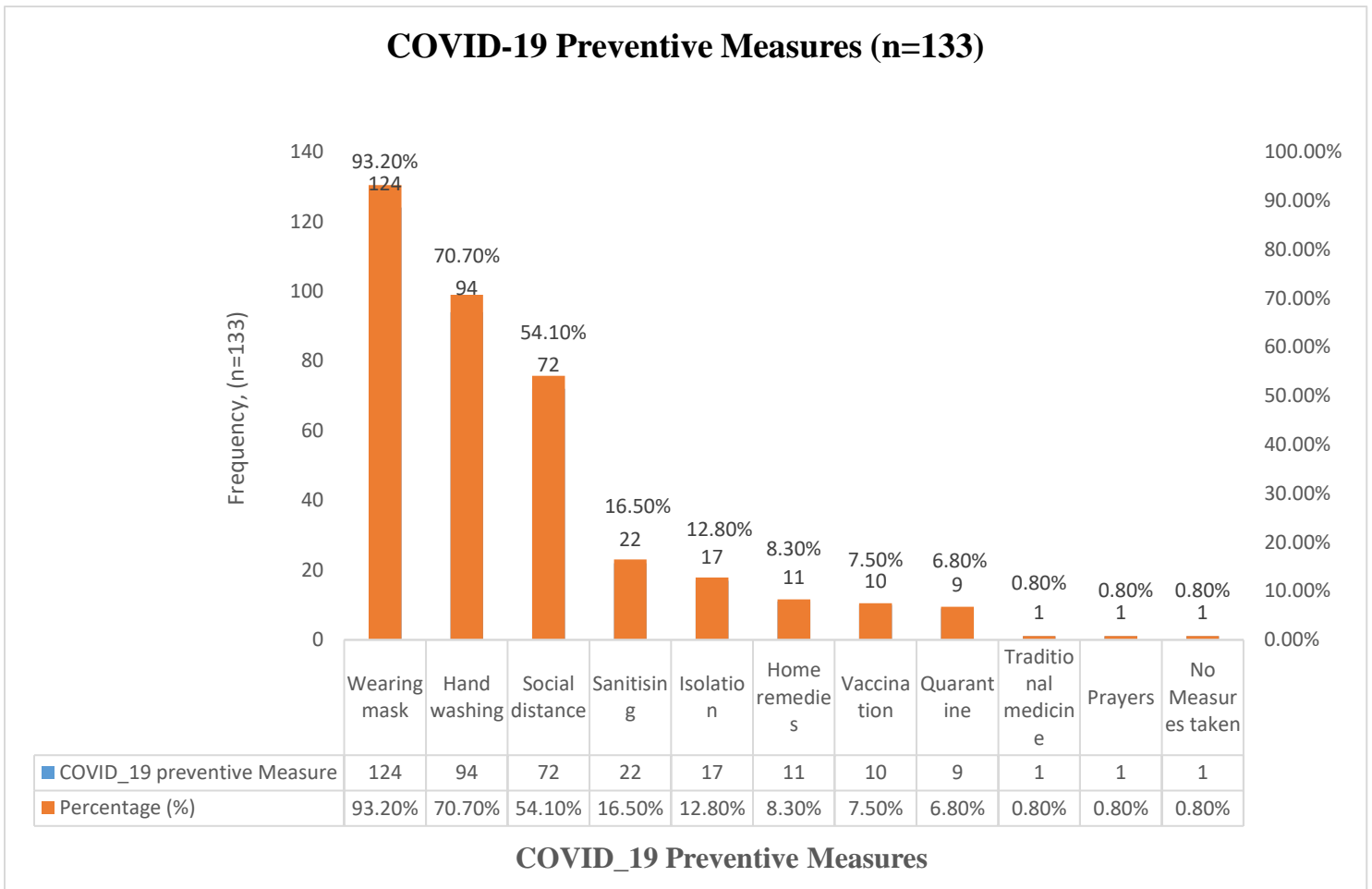


Figure 4: COVID-19 preventive measures taken by Railways slum dwellers during the COVID-19 pandemic.

Figure 3 shows that majority of the slum dwellers practiced wearing of masks (93.2%), hand washing (70.7%), social distancing (54.1%), sanitizing (16.5%), Isolation (12.8%), Vaccination (7.5%) and quarantine (6.8%). Others opted for home remedies and concoctions (8.3%), traditional medicine (0.8%), religious practices such as prayers (0.8%) while some did not take any preventive measures at all (0.8%). Wearing of mask (93.2%) was the most practiced preventive measure while prayers and traditional medicine were the least practiced (0.8%).

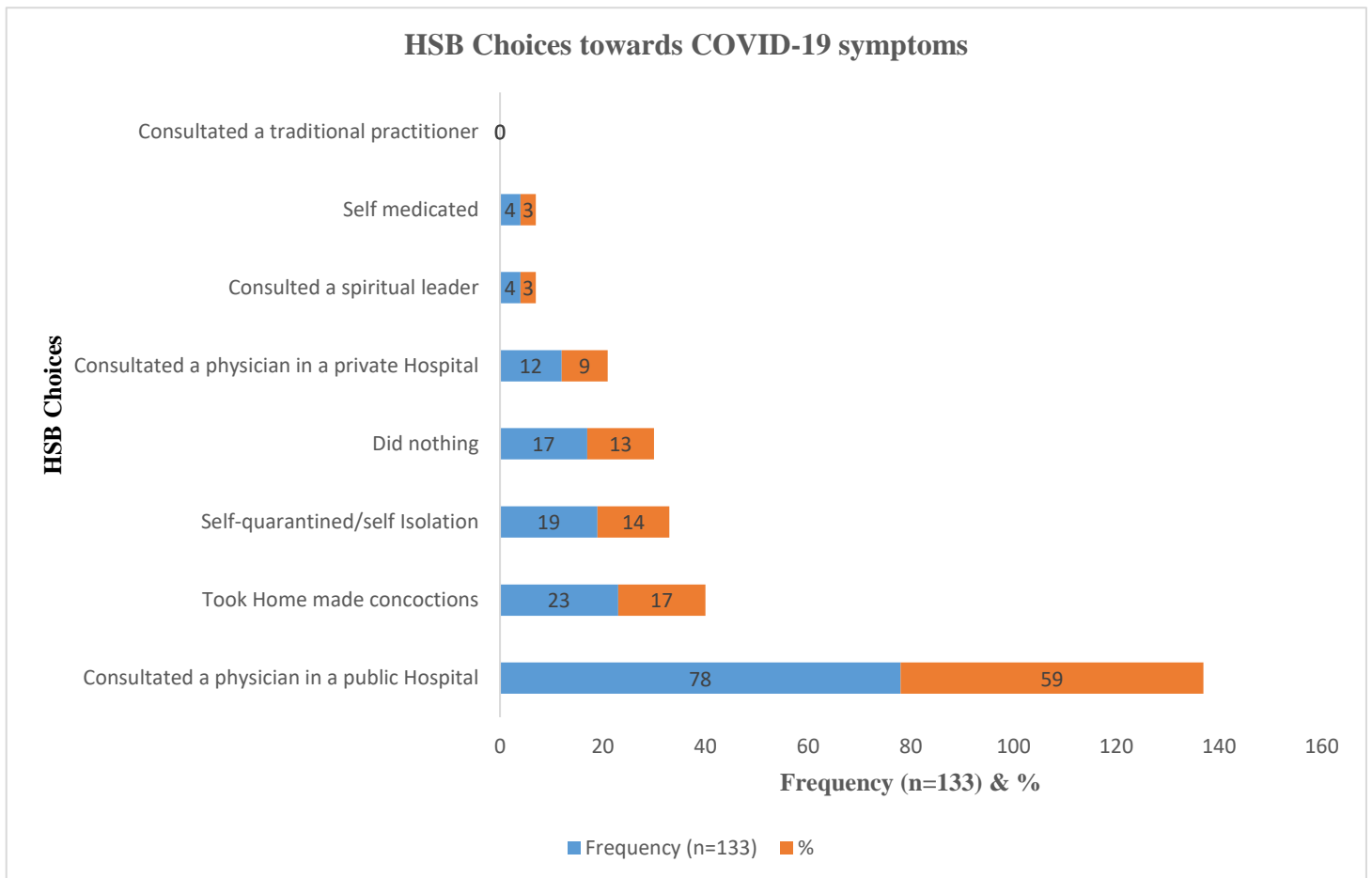


Figure 5: Health Seeking Behavior of slum dwellers towards COVID-19 symptoms.

The study asked the respondents to select the various HSB choices they made in responding to COVID-19 symptoms when first manifested and their reasons for such HSB choices. **Figure 4** shows that majority of the respondents foremost consulted physician in a public hospital (59%), 17% consumed home-made concoctions to clear the symptoms, 14% quarantined and self-isolated, 13% did nothing towards the symptoms, instead, allowing them to resolve on their own, 9% sought consultation from physician in private hospital, 3% sought guidance of spiritual leader, 3% self-medicated while none of the respondents consulted a traditional practitioner.

Table 3 illustrates that the leading reason for the selected HSB choice was fueled by anxiety and fear of contacting the disease (61.7%) while 2.3% made the HSB choices as treatment option to clear the symptoms.

Table 3: Reasons for the HSB choices towards COVID-19 symptoms

| Reason for HSB Choice | Frequency (n=133) | Percent (%) |
|------------------------------|--------------------------|--------------------|
| Anxiety/Fear | 82 | 61.7 |
| Access to Insurance | 12 | 9.0 |
| No symptoms | 15 | 11.3 |
| Prevention measure | 21 | 15.8 |
| Treatment measure | 3 | 2.2 |
| Total | 133 | 100.0 |

After undertaking the various HSB choices majority of the respondents reported very good health status (36.1%), 30.1% had excellent outcome, 22.3% stated good status, 2.3% reported fair status while 9.0% were unable to express their status as shown in table 4.

Table 4: Perceived health status after HSB choices

| Perceived Health Status | Frequency (n=133) | Percent (%) |
|--------------------------------|--------------------------|--------------------|
| Unable to express the status | 12 | 9.0 |
| Fair | 3 | 2.3 |
| Good | 30 | 22.6 |
| Very good | 48 | 36.1 |
| Excellent | 40 | 30.0 |
| Total | 133 | 100.0 |

Table 5 shows that 76.7% tested and vaccinated for COVID-19 Respondents who did not test for COVID-19 (23.1%) stated their reasons to include lack of perceived need (41.9%), no perceived symptoms (38.7%), fear of testing positive that could lead to stigma from the community (9.7%) and the belief that corona virus is a hoax (9.7%).

Table 5: Status of COVID-19 Testing and Vaccination practices in Railways Slums

| Status | | Frequency (n=133) | Percent (%) |
|---|----------------------------------|--------------------------|--------------------|
| COVID-19 Testing | No | 31 | 23.3 |
| | Yes | 102 | 76.7 |
| | Total | 133 | 100.0 |
| COVID-19 Vaccination | No | 31 | 23.3 |
| | Yes | 102 | 76.7 |
| | Total | 133 | 100.0 |
| Reasons for not Testing for COVID-19 (n=13) | No perceived need | 13 | 41.9 |
| | No symptoms | 12 | 38.7 |
| | Anxiety/Fear of testing positive | 3 | 9.7 |
| | Corona is not real | 3 | 9.7 |
| | Total | 31 | 100 |

The study revealed that the community attitude towards COVID-19 testing and vaccination was at the beginning negative hence slum dwellers likely had poor response to testing and vaccination. The attitude was described to have been influenced largely by individual level of understanding on the COVID-19 disease. After vibrant public awareness the slum dwellers underwent attitude change and came out for mass COVID-19 testing and vaccination e.g. when asked the health facility in-charge stated, *“They refused vaccination at first but later agreed to it,”* the chief said, *“people came out for vaccination,”* while the religious leader replied, *“The attitude towards COVID-19 vaccination depended on personal understanding, people in slums had poor response towards the vaccination!”*

4.2.2: Challenges experienced in implementing HSB choices

The study asked what challenges the slum dwellers experienced while implementing the various actions towards detection, prevention and treatment of COVID-19. The respondents stated that the challenges spanned from lack of adequate funds to buy and maintain COVID-19 preventive measures such as masks, *“My shop was closed during the period and I could not afford both basic needs and the facemasks”*. They experienced the challenge of limited movements through

implementation of curfew hours between 4.00am to 5.00pm, fatigue from constant masking and hand washing. There was inadequate water supply for hand washing and hygiene. Other dwellers complained of vaccine side effects such as nausea and vomiting, general body weakness and high temperature and community high level of ignorance on the severity of the COVID-19. Other respondents acknowledged stigma in the community towards positive cases, " *my neighbors stopped coming to my shop when they heard I had been tested positive for COVID-19*". The primary health facilities presented with long waiting hours at the queue for COVID-19 testing and vaccination, there was lack of access to isolation government isolation centers due to high costs and requirements. The police exercised brutality especially on failure to abide by the COVID-19 prevention and control protocols while others did not experience any challenges in the seeking care towards COVID-19.

4.3: Factors Influencing COVID-19 Health Seeking Behavior Choices by Slum Dwellers

The study explored on a scale of 1 to 5, 1 meaning no influence, 2-little influence, 3-moderate influence, 4-major influence and 5-extreme influence how predisposing factors, enabling factors and need for care factors influenced the HSB choices made by the slum dwellers of Railways.

4.3.1 Predisposing factors influencing Health seeking behavior

Table 6 shows that the predisposing factors had extreme influence on the COVID-19 HSB among the slum dwellers: Attitude (49.6%), religion (39.8%), health belief (40.6%), knowledge on COVID-19 (38.3%) and personal values (39.1%). Attitude had the leading influence at 49.6%, n=51) on the extreme influence.

Table 6: Predisposing factors level influence on the COVID-19 Health Seeking Behavior

| Predisposing factors | | Frequency (n=133) | Percent (%) |
|-----------------------------|--------------------|--------------------------|--------------------|
| Attitude toward COVID-19 | No Influence | 14 | 10.5 |
| | Little Influence | 8 | 6.0 |
| | Moderate Influence | 36 | 27.1 |
| | Major Influence | 9 | 6.8 |
| | Extreme Influence | 66 | 49.6 |
| | Total | 133 | 100.0 |
| Religion | No Influence | 34 | 25.6 |
| | Little Influence | 19 | 14.3 |
| | Moderate Influence | 15 | 11.3 |
| | Major Influence | 12 | 9.0 |
| | Extreme Influence | 53 | 39.8 |
| | Total | 133 | 100.0 |
| Health Belief | No Influence | 12 | 9.0 |
| | Little Influence | 9 | 6.8 |
| | Moderate Influence | 34 | 25.6 |
| | Major Influence | 24 | 18.0 |
| | Extreme Influence | 54 | 40.6 |
| | Total | 133 | 100.0 |
| Knowledge on COVID-19 | No Influence | 1 | .8 |
| | Little Influence | 11 | 8.3 |
| | Moderate Influence | 41 | 30.8 |
| | Major Influence | 29 | 21.8 |
| | Extreme Influence | 51 | 38.3 |
| | Total | 133 | 100.0 |
| Personal Values | No Influence | 10 | 7.52 |
| | Little Influence | 18 | 13.53 |
| | Moderate Influence | 22 | 16.54 |
| | Major Influence | 31 | 23.31 |
| | Extreme Influence | 52 | 39.10 |
| | Total | 133 | 100.0 |

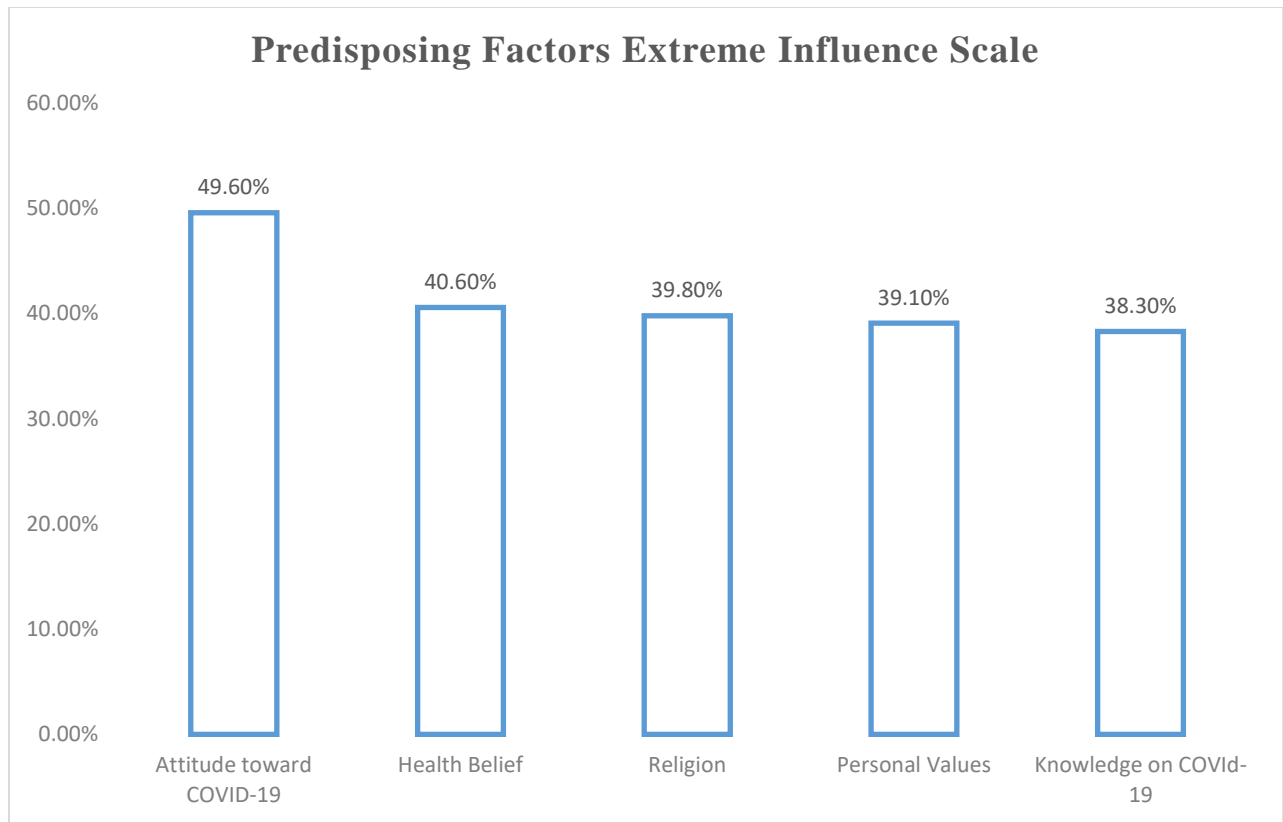


Figure 6: Score of extreme influence scale on the predisposing factors to COVID-19 HSB among slum dwellers.

All the predisposing factors were on the extreme influence scale; however, attitude was the leading factor at 49.60% (n=66) the lowest factor was level of knowledge on COVID-19 at 38.30% (n=51).

4.3.2 Enabling factors influencing Health seeking behavior

Financial capacity had moderate influence (51.1%), access to insurance had no influence (55.6%), access to health facility had extreme influence (39.1%) and self-efficacy had extreme influence (30.8%) on HSB as described in table 7.

Table 7: Enabling factors level of influence on the COVID-19 Health Seeking Behavior

| Enabling factors | | Frequency (n=133) | Percent (%) |
|---------------------------|--------------------|--------------------------|--------------------|
| Financial Capacity | No Influence | 13 | 9.8 |
| | Little Influence | 20 | 15.0 |
| | Moderate Influence | 68 | 51.1 |
| | Major Influence | 17 | 12.8 |
| | Extreme Influence | 15 | 11.3 |
| | Total | 133 | 100.0 |
| Access to Insurance | No Influence | 74 | 55.6 |
| | Little Influence | 18 | 13.5 |
| | Moderate Influence | 12 | 9.0 |
| | Major Influence | 11 | 8.3 |
| | Extreme Influence | 18 | 13.5 |
| | Total | 133 | 100.0 |
| Access to health facility | No Influence | 21 | 15.8 |
| | Little Influence | 8 | 6.0 |
| | Moderate Influence | 35 | 26.3 |
| | Major Influence | 17 | 12.8 |
| | Extreme Influence | 52 | 39.1 |
| | Total | 133 | 100.0 |
| Self-Efficacy | No Influence | 9 | 6.8 |
| | Little Influence | 17 | 12.8 |
| | Moderate Influence | 38 | 28.6 |
| | Major Influence | 28 | 21.1 |
| | Extreme Influence | 41 | 30.8 |
| | Total | 133 | 100.0 |

4.3.3 Need for care factors influencing Health seeking behavior

Table 8 shows that's 63.2% of the respondents did not have pre-existing conditions, 16.5% were not aware of their co-morbidities while 20.3% confirmed existence of illnesses. Among the 20.3% (n=27) who confirmed co-morbidities, majority reported to have diagnosis of hypertension

(33.3%), followed by HIV/AIDS diagnosis, 18.5%. The least reported illness was tuberculosis, asthma, arthritis, pneumonia and blood infections.

Table 8: Pre-existing health conditions among slum dwellers

| Pre-existing health conditions | | Frequency (n=133) | Percent (%) |
|--|-------------------|-------------------|--------------|
| Any pre-existing conditions? | No | 84 | 63.2 |
| | Not Aware | 22 | 16.5 |
| | Yes | 27 | 20.3 |
| | Total | 133 | 100.0 |
| | | Frequency (n=27) | Percent (%) |
| Specific pre-existing Health condition | Hypertension | 9 | 33.3 |
| | Diabetes Mellitus | 3 | 11.1 |
| | Eye problems | 2 | 7.4 |
| | HIV/AIDS | 5 | 18.5 |
| | Asthma | 1 | 3.7 |
| | Pneumonia | 1 | 3.7 |
| | Peptic Ulcers | 3 | 11.1 |
| | Tuberculosis | 1 | 3.7 |
| | Blood Infections | 1 | 3.7 |
| | Arthritis | 1 | 3.7 |
| | Total | 27 | 100.0 |

Note: The responses reflects both acute and chronic conditions as reported by the respondents.

Table 9 shows that pre-existing health conditions had no influence (57.9%), Self-reported health status had moderate influence (28.6%) and COVID-19 severity had moderate influence (42.1%) on the COVID-19 HSB among the slum dwellers of Railways, Mombasa.

Table 9: Need for care factors level influence on the COVID-19 HSB

| Need for Care factors | | Frequency (n=133) | Percent |
|-----------------------------|--------------------|-------------------|--------------|
| Pre-Existing Conditions | No Influence | 77 | 57.9 |
| | Little Influence | 4 | 3.0 |
| | Moderate Influence | 18 | 13.5 |
| | Major Influence | 5 | 3.8 |
| | Extreme Influence | 29 | 21.8 |
| | Total | 133 | 100.0 |
| Self-reported health status | No Influence | 28 | 21.1 |
| | Little Influence | 15 | 11.3 |
| | Moderate Influence | 38 | 28.6 |
| | Major Influence | 28 | 21.1 |
| | Extreme Influence | 24 | 18.0 |
| | Total | 133 | 100.0 |
| COVID-19 Severity | No Influence | 13 | 9.8 |
| | Little Influence | 2 | 1.5 |
| | Moderate Influence | 56 | 42.1 |
| | Major Influence | 9 | 6.8 |
| | Extreme Influence | 53 | 39.8 |
| | Total | 133 | 100.0 |

4.4: Preventive strategies for future SARS illness among slum dwellers

The study through KIIs asked for recommendations on preventive strategies for future SARS illnesses among slum dwellers. The key informants reported that MoH should conduct mass health education and awareness on illness prevention and control, emphasis should be made on coughing etiquette, social distancing, hand washing with soap and clean running water. *“If Corona virus is to reoccur community members should adhere to protocol especially on social distance, face masking and coughing etiquette,”* Additionally, residents should be on the look-out and avoid congested areas, wear their masks and government should ensure accessibility, affordability and reliability of isolation centers in the community. *“The government should avoid charging the suspected cases in the isolation centers. The costs were very high and they could not afford it.”* reported the chief. Attitude change to be encouraged to prevent discrimination and stigma for the

infected cases. The church leader emphasized that, “*masses should be sensitized and educated on the disease to avoid misleading each other in the community.*”

4.5: Bivariate Analysis of predisposing, enabling and need factors

Chi-square test was used to test the association between social-economic characteristics, predisposing, enabling and need factors and COVID-19 HSB among slum dwellers of Railways slums, Mombasa.

4.5.1: Bivariate analysis for health seeking behavior and predisposing factors

The bivariate analysis considered HSB predisposing factors influencing HSB of seeking of formal treatment through consultation of a physician among slum dwellers of Railways, Mombasa County. The findings show that there were more female slum dwellers (63.8%) seeking formal COVID-19 interventions compared to 36.2% male slum dwellers although the observed difference was not statistically significant at ($\chi^2=1.546$, $df=1$, $p=0.214$). Similarly, 32.9% of respondents aged 31-40 years reported using formal health care interventions for COVID-19 as opposed to respondents aged above 60 years (3.3%). This difference was not statistically significant at ($\chi^2=6.176$, $df=5$, $p=0.289$). In reference to marital status, more married respondents (79.1%) sought formal interventions for COVID-19 compared to divorced respondents (1.1%). The difference was statistically significant at ($\chi^2=15.471$, $df=3$, $p=0.001$). Regarding religion, Christians (79.1%) demonstrated more response to seeking care from formal health interventions compared to Muslims (20.9%). However, this difference did not display any statistical significance to health seeking behavior at ($\chi^2=2.440$, $df=2$, $p=0.295$) similar to education level and occupation at ($\chi^2=4.012$, $df=4$, $p=0.404$) and ($\chi^2=0.858$, $df=3$, $p=0.836$) respectively. Slums dwellers who attained secondary education (47.1%) sought formal interventions compared to university graduates (1.1%) while majority of the self-employed respondents reported formal care use than

their counter members in informal employment (1.1%). Regarding state of the house, respondents who lived in clean permanent houses (44.4%) sought formal treatment compared to those in congested and unhygienic semi- permanent houses. This difference was statistically significant at ($\chi^2=12.235$, $df=5$, $p=0.032$). Respondents who lived with family members reported high formal care use (81.3%) compared to those living alone (18.7%). The difference however was not artistically significant, ($\chi^2=0.199$, $df=1$, $p=0.290$).

Table 10: Bivariate Analysis of Health seeking behavior and predisposing factors

| Predisposing Factors | | Health Seeking Behavior | | | | N | p≤ 0.05 |
|----------------------|-------------|-------------------------|------------|-----------|------------|------------|-------------------------------------|
| | | Yes | | No | | | |
| | | n | % | n | % | | |
| Sex | Male | 33 | 36.2 | 20 | 47.6 | 53 | $\chi^2=1.546$, df=1 |
| | Female | 58 | 63.8 | 22 | 52.4 | 80 | |
| | n | 91 | 100 | 42 | 100 | 133 | p=0.214 |
| Age | 18-24 years | 9 | 9.9 | 10 | 23.8 | 19 | $\chi^2=6.176$, df=5 p=0.289 |
| | 25-30 Years | 16 | 17.5 | 6 | 14.2 | 22 | |
| | 31-40 years | 30 | 32.9 | 13 | 30.9 | 43 | |
| | 41-50 years | 22 | 24.2 | 10 | 23.8 | 32 | |
| | 51-60 years | 11 | 12.1 | 3 | 7.1 | 14 | |
| | >60 years | 3 | 3.3 | 0 | 0 | 3 | |
| | n | 91 | 100 | 42 | 100 | 133 | |
| Marital Status | Married | 72 | 79.1 | 20 | 47.6 | 92 | $\chi^2=15.471$ df=3 p=0.001 |
| | Single | 15 | 16.5 | 16 | 38.1 | 31 | |
| | Divorced | 1 | 1.1 | 4 | 9.5 | 5 | |
| | Separated | 3 | 3.2 | 2 | 4.8 | 5 | |
| | n | 91 | 100 | 42 | 100 | 133 | |
| Religion | Christian | 72 | 79.1 | 34 | 81.0 | 106 | $\chi^2=2.440$ df=2 p=0.295 |
| | Muslim | 19 | 20.9 | 7 | 16.7 | 26 | |
| | Others | 0 | 0 | 1 | 2.3 | 1 | |
| | n | 91 | 100 | 42 | 100 | 133 | |
| Education Level | Informal | 5 | 5.5 | 5 | 11.9 | 10 | $\chi^2=4.012$ df=4 p=0.404 |
| | Primary | 31 | 34.1 | 10 | 23.8 | 41 | |
| | Secondary | 43 | 47.3 | 19 | 45.2 | 62 | |
| | College | 11 | 12.0 | 8 | 19.1 | 19 | |
| | University | 1 | 1.1 | 0 | 0 | 1 | |
| | n | 91 | 100 | 42 | 100 | 133 | |
| Occupation | Unemployed | 29 | 31.9 | 11 | 26.2 | 40 | |

| | | | | | | | | |
|--------------------|--------------------------------|-------------|------------|-----------|------------|------------|-----------------|------------------|
| | Informal employed | 1 | 1.1 | 1 | 2.4 | 2 | $\chi^2=0.858$ | |
| | Self Employed | 47 | 51.6 | 22 | 52.4 | 69 | df=3 | |
| | Formal Employed | 14 | 15.4 | 8 | 19.0 | 22 | p=0.836 | |
| | n | 91 | 100 | 42 | 100 | 133 | | |
| State of the House | Semi-permanent, clean | 23 | 25.3 | 16 | 38.1 | 39 | $\chi^2=12.235$ | |
| | Semi-permanent, congested | 16 | 17.6 | 14 | 33.3 | 30 | df=5 | |
| | Semi-permanent, slightly clean | 5 | 5.5 | 1 | 2.4 | 6 | p=0.032 | |
| | Permanent, clean | 40 | 44.0 | 7 | 16.7 | 47 | | |
| | Permanent, congested | 6 | 4.4 | 4 | 9.5 | 10 | | |
| | Permanent, slightly clean | 1 | 1.1 | 0 | 0 | 1 | | |
| | n | 91 | 100 | 42 | 100 | 133 | | |
| | Living status | Alone | 17 | 18.7 | 12 | 28.6 | 29 | $\chi^2=0.199$, |
| | | With Family | 74 | 81.3 | 30 | 71.4 | 104 | df=1 |
| n | | 91 | 100 | 42 | 100 | 133 | p=0.290 | |

4.5.2: Bivariate Analysis of Health seeking behavior and enabling factors

Bivariate analysis of the variation in health seeking behavior by enabling factors is presented in table 11. The study found that 76.9% of the slum dwellers who earn monthly income below Ksh. 15,000 compared to 3.3% respondents with income range between Ksh. 30,001- 45,000 demonstrated utilization of formal care for COVID-19. However, this difference was not statistically significant at ($\chi^2=0.121$, $df=2$, $p=0.941$). Additionally, 44.0% of the respondents who had very good perceived health status sought formal treatment for COVID-19 unlike 28.6% of respondents could not express their perceived state of health and never sought any formal care. The difference was statistically significant at ($\chi^2=32.105$, $df=4$, $p<0.001$). Respondents who viewed financial capacity to be of no influence in HSB (76.9%) reported increased likelihood to seeking formal care compared to respondents who reported extreme influence of financial capacity on HSB. The difference did not have any statistical significance at ($\chi^2=4.806$, $df=4$, $p=0.308$). Additionally, 47.2% of respondents who reported no influence from access to insurance compared

to respondents who reported major influence (8.8%) sought formal medical check-up for COVID-19. This difference was statistically significant at ($\chi^2=12.791$, $df=4$, $p=0.012$). Accessibility to health facility had extreme influence on health seeking behavior of 48.4% of the respondents compared to 2.2% of respondents who had little influence. The difference was significant at ($\chi^2=25.666$, $df=4$, $p=0.000$). Similar case was reported in self-efficacy where 33% of slum dwellers who experienced extreme influence utilized formal services compared to 3% on who experienced major influence. This had statistical significance at ($\chi^2=11.252$, $df=4$, $p=0.024$)

Table 11: Bivariate Analysis of Health seeking behavior and enabling factor

| Enabling Factors | | Health Seeking Behavior | | | | N | $p \leq 0.05$ |
|---------------------------|--------------------|-------------------------|------------|------------|------------|------------|--|
| | | Yes | | No | | | |
| | | n | % | n | % | | |
| Monthly income | <ksh 15,000 | 70 | 76.9 | 32 | 76.2 | 102 | $\chi^2=0.121$ $df=2$ $p=0.941$ |
| | Ksh 15,001- 30,000 | 18 | 19.8 | 9 | 21.4 | 27 | |
| | Ksh 30,001- 45,000 | 3 | 3.3 | 1 | 2.4 | 4 | |
| | >ksh 45,000 | 0 | 0 | 0 | 0 | 0 | |
| | n | 91 | 100 | 42 | 100 | 133 | |
| Perceived Health status | Unable to express | 0 | 0 | 12 | 28.6 | 12 | $\chi^2=32.105$ $df=4$ $p<0.001$ |
| | Fair | 2 | 2.1 | 1 | 2.4 | 3 | |
| | Good | 19 | 20.9 | 11 | 26.2 | 30 | |
| | Very Good | 40 | 44.0 | 8 | 19.1 | 48 | |
| | Excellent | 30 | 33.0 | 10 | 23.8 | 40 | |
| n | 91 | 100 | 42 | 100 | 133 | | |
| Financial capacity | No Influence | 7 | 76.9 | 6 | 14.2 | 13 | $\chi^2=4.806$ $df=4$ $p=0.308$ |
| | Little Influence | 11 | 12.1 | 9 | 21.4 | 20 | |
| | Moderate Influence | 50 | 55.0 | 18 | 42.9 | 68 | |
| | Major Influence | 11 | 12.1 | 6 | 14.2 | 17 | |
| | Extreme Influence | 12 | 12.2 | 3 | 7.1 | 15 | |
| n | 91 | 100 | 42 | 100 | 133 | | |
| Access to Insurance | No Influence | 43 | 47.2 | 31 | 73.8 | 74 | $\chi^2=12.791$ $df=4$ $p=0.012$ |
| | Little Influence | 12 | 13.2 | 6 | 14.2 | 18 | |
| | Moderate Influence | 12 | 13.2 | 0 | 0 | 12 | |
| | Major Influence | 8 | 8.8 | 3 | 7.1 | 11 | |
| | Extreme Influence | 16 | 17.6 | 2 | 4.7 | 18 | |
| n | 91 | 100 | 42 | 100 | 133 | | |
| Access to health facility | No Influence | 11 | 12.1 | 10 | 23.8 | 21 | $\chi^2=25.666$ |
| | Little Influence | 2 | 2.2 | 6 | 14.3 | 8 | |

| | | | | | | | |
|---------------|--------------------|-----------|------------|-----------|------------|------------|-----------------|
| | Moderate Influence | 18 | 19.8 | 17 | 40.5 | 35 | df=4 |
| | Major Influence | 16 | 17.6 | 1 | 2.4 | 17 | p=0.000 |
| | Extreme Influence | 44 | 48.4 | 8 | 19.0 | 52 | |
| | n | 91 | 100 | 42 | 100 | 133 | |
| Self-Efficacy | No Influence | 5 | 5.5 | 4 | 9.5 | 9 | $\chi^2=11.252$ |
| | Little Influence | 11 | 12.1 | 6 | 14.3 | 17 | df=4 |
| | Moderate Influence | 20 | 22.0 | 18 | 42.9 | 38 | p=0.024 |
| | Major Influence | 25 | 27.5 | 3 | 7.1 | 28 | |
| | Extreme Influence | 30 | 33.0 | 11 | 26.2 | 41 | |
| | n | 91 | | 42 | 100 | 133 | |

4.5.3: Bivariate Analysis of Health seeking behavior and need factors

Bivariate analysis of the variation in health seeking behavior by need for care factors is presented in table 12. The study established that 53.8% of the respondents who reported no pre-existing conditions reported utilization of formal check-up as opposed to 25.3% who reported positive pre-existing conditions. The difference was significant at ($\chi^2=11.559$, $df=3$, $p=0.009$). Moreover, 27.5% of slum dwellers who were majorly influenced by self-reported health status sought formal medical check-up as opposed to 8.8% who had little influence from self-reported health status. The difference was statistically significant at ($\chi^2=13.105$, $df=4$, $p=0.011$). 45.1% of respondents who reported extreme influence by COVID-19 severity utilized formal care services as opposed to 8.8% of respondents who reported no influence from COVID-19 severity. The difference was not statistically significant at ($\chi^2=7.851$, $df=4$, $p=0.097$).

Table 12: Bivariate Analysis of Health seeking behavior and need factor

| Need Factors | | Health Seeking Behavior | | | | N | p≤ 0.05 |
|-----------------------------|--------------------|-------------------------|------------|-----------|------------|------------|------------------------------------|
| | | Yes | | No | | | |
| | | n | % | n | % | | |
| Pre-existing conditions | No | 49 | 53.8 | 35 | 83.3 | 84 | $\chi^2=11.559$ df=3 p=0.009 |
| | Not aware | 19 | 20.9 | 3 | 7.1 | 22 | |
| | Yes | 23 | 25.3 | 4 | 9.5 | 27 | |
| n | | 91 | 100 | 42 | 100 | 133 | |
| Self-reported health status | No Influence | 14 | 15.4 | 14 | 33.3 | 28 | $\chi^2=13.105$ df=4 p=0.011 |
| | Little Influence | 8 | 8.8 | 7 | 16.7 | 15 | |
| | Moderate Influence | 29 | 31.9 | 9 | 21.4 | 38 | |
| | Major Influence | 25 | 27.5 | 3 | 7.1 | 28 | |
| | Extreme Influence | 15 | 16.5 | 9 | 21.4 | 24 | |
| n | | 91 | 100 | 42 | 100 | 133 | |
| COVID-19 severity | No Influence | 8 | 8.8 | 5 | 11.9 | 13 | $\chi^2=7.851$ df=4 p=0.097 |
| | Little Influence | 0 | 0 | 2 | 4.8 | 2 | |
| | Moderate Influence | 35 | 38.5 | 21 | 50.9 | 56 | |
| | Major Influence | 7 | 7.7 | 2 | 4.8 | 9 | |
| | Extreme Influence | 41 | 45.1 | 12 | 28.6 | 53 | |
| n | | 91 | 100 | 42 | 100 | 133 | |

4.5.4 Binary Logistic regression analysis

To investigate the odds of the predisposing, enabling and need factors contributing to explaining the forecasting of various health seeking behaviors among slum dwellers of Railways slums, a binary logistic regression model was constructed. Chi-square tests were conducted using the format “*if slum dwellers consulted a physician*” as the dependent variable and the predisposing, enabling and need factors as independent variables. The Independent variables that were statistically significant at $p \leq 0.05$ were chosen and included in the logistic regression model and there after ran the “enter” method for the selected variables to ensure finding the best model fit for the data.

To test the model fit, omnibus tests that included -2log likelihood, cox & Snell and Hosmer Lemeshow chi-square test were determined as displayed in table 13 at significance of ($X^2= 46.272$, $df=17$, $p=0.00$). The -2Log Likelihood was 119.619, while the Nagelkerke R square was 0.412

indicating that 41.2% of the change in the dependent variable can be accounted for by the independent variables. The Hosmer Lemeshow test was good fit at $p > 0.005$ ($X^2 = 6.376$, $df = 8$, $p = 0.605$) hence no difference between the observed and predicted model. The values are approximately equal. Additionally, the model had a sensitivity of 89.0%, specificity of 59.5%, and percentage of accuracy of 79.7%. The sensitivity was low (<95%).

Table 13: Binary Regression Model

| Omnibus Tests of Model Fit | Intercept | Model | df | Sig. |
|----------------------------------|-----------|---------|----|-------|
| -2 log likelihood | | 119.619 | | |
| Model Chi-square test | | 46.272 | 17 | 0.00 |
| Cox and Snell | | 0.294 | | |
| Nagelkerke R square | | 0.412 | | |
| Hosmer Lemeshow Chi-square test. | | 6.376 | 8 | 0.605 |

The model for the regression coefficients was specified as follows:

$Consulted_physician = \beta + state_of_the_house + Pre_existing_conditions + access_to_insurance + Access_to_Health_facility + Self_efficacy + self_reported_health_status + Covid_19_severity + Marital_status$ and a binary logistic regression was run in SPSS version 26.0.

$Consulted_physician$ was the multivariate dependent variable, where consulted physician=1 if the slum dweller sought healthcare from a qualified physician and consulted physician=0 if the slum dweller sought healthcare services through other means that were not formal. Table 14 shows the binomial logic analysis at 5% level of significance. In bivariate analysis, marital status, state of the house, pre-existing conditions, access to insurance, access to health facility, self-efficacy, self-reported health status, and COVID-19 severity were significant at $p \leq 0.05$. However, in the logistic regression model, none of the independent variables were significant at $p > 0.05$. In regards to odd ratio, slum dwellers who demonstrated self-efficacy were 1.2 times likely to seek physician consultation compared to slum dwellers who had low self-efficacy ($\beta = 0.182$, $B/OR = 1.200$, $P = 0.448$, $95\%CI = 0.749-1.921$). Similarly, divorced slum dwellers were 3.4 times likely to seek

physician's services than single slum dwellers ($\beta=1.228$, B/OR=3.415, $p=0.447$, 95%CI=0.144-80.177). Access to insurance services ($\beta=-0.273$, B/OR=0.761, $p=0.184$, 95%CI=0.509-1.139) access to health facility ($\beta=-0.466$, B/OR=0.628, $p=0.067$, 95%CI=0.381-1.034) pre-existing health conditions ($\beta=-0.009$, B/OR=0.991, $p=0.963$, 95%CI=0.679-1.445) and COVID-19 severity ($\beta=-0.017$, B/OR=0.984, $p=0.940$, 95%CI=0.637-1.519) factors reported less like hood of occurrence with $OR < 1$.

Table 14: Binary logistic regression coefficients and odds ratio.

| Explanatory/ Independent Variable | Binary Logistic regression coefficients | | | | | 95% C.I for EXP (B) | | |
|-----------------------------------|---|-----------|-------|----|------|---------------------|-------|--------|
| | B | S.E | Wald | df | Sig. | Exp (B)/OR | Lower | Upper |
| State of the House | | | 5.612 | 5 | .346 | | | |
| Access to insurance | -.273 | .206 | 1.764 | 1 | .184 | .761 | .509 | 1.139 |
| Access to health facility | -.466 | .255 | 3.349 | 1 | .067 | .628 | .381 | 1.034 |
| Self-efficacy | .182 | .240 | .576 | 1 | .448 | 1.200 | .749 | 1.921 |
| Pre- existing chronic conditions | -.009 | .193 | .002 | 1 | .963 | .991 | .679 | 1.445 |
| Self- reported health status | .105 | .231 | .207 | 1 | .649 | 1.111 | .706 | 1.746 |
| COVID 19 Severity | -.017 | .222 | .006 | 1 | .940 | .984 | .637 | 1.519 |
| Marital Status | | | 5.887 | 3 | .117 | | | |
| (1) Married | -.762 | 1.162 | .430 | 1 | .512 | .467 | .048 | 4.548 |
| (2) Single | .306 | 1.242 | .061 | 1 | .806 | 1.358 | .119 | 15.497 |
| (3) Divorced | 1.228 | 1.615 | .578 | 1 | .447 | 3.415 | .144 | 80.877 |
| Constant | -37.231 | 56840.921 | .000 | 1 | .999 | .000 | | |

4.5.5 Summary of the findings

The modal age of slum dwellers was 35 years, married (69.2%), attained a secondary level of education (46.6%) which is low, and are Christians (79.7%). Additionally, the study revealed that most slum dwellers are self-employed (51.9%) operating a small business while the unemployed group were mainly women with an average monthly income of <ksh 15,000. Housing included semi-permanent houses (56.4%) and most dwellers lived with their family members as opposed to non-members or alone. The majority of the slum dwellers were aware of the COVID-19 control measures and the majority preferred wearing masks (93.2%) complimented by hand washing

(70.7%) and social distancing (54.1%). 59% of the respondents preferred seeking physician consultation in the event of COVID-19 symptoms due to fear and anxiety and the health outcome was good. There was 76.7% COVID-19 testing rate and 76.7% COVID-19 vaccination rate. Those who neither tested nor vaccinated reported lack of perceived need and that COVID-19 was not real. Lack of funds was the leading challenges in sustaining the preventive and control measures of COVID-19. Negative attitude towards COVID-19 was the leading predisposing factor that influences HSB choices. The enabling factors of access to health facility and self-efficacy had extreme influence on HSB choices. 63.2% of the sample were healthy with no pre-existing conditions, while among those with positive history of illnesses, hypertension was the leading condition (33.3%). All the enabling factors had moderate influence on the choices of HSB. The study established single and divorced marital status, state of the house, pre-existing conditions, access to insurance, access to health facility, self-efficacy, self-reported health status, and increasing severity COVID-19 were major factors that influenced COVID-19 health seeking behaviors among slum dwellers of Railways in Mombasa County. There is need for mass education for attitude change, mass testing and vaccination against COVID-19 and future SARS illness with constant adherence to control and preventive measures.

4.6 Discussion of the findings

4.6.1. Social economic status of slum dwellers

Individual characteristics have been shown to influence how individuals perceive and respond to illness (Li et al, 2020). The majority of the slum dwellers were female accounting for 60.2%. In a study analyzing caregiver health seeking behavior in Kaptembwa, one of the slum areas in Nakuru County established that majority of residents were women (91%) compared to male counterparts. A state that is due to high urban migration among women in sought of jobs and source of income,

(Kibet, 2022). An analysis conducted on the socio-economic condition of slum dwellers of Dhaka, reported that of the population of city of Dhaka (17.6 million), 60% lived in slums while women formed the majority of the rural urban migrants with main aim of seeking employment. The living condition were also worse compared to men, (Shadia and Farhanaza, 2015). However, according to report from UN Habitat on harsh realities of marginalized women in cities of developing world, where Kenya belongs focusing specifically on Kibera Slums, it is reported that despite women forming majority of the city slum population, this gives a sense of empowerment and equal rights to benefits and opportunities. Unluckily, deep poverty and inequalities are suggested to challenge access to health care services (UN-Habitat, 2019) and COVID-19 exposed more on this gender inequality in slums during the pandemics, (UN Habitat and UN Women, 2020), this could explain why gender was not significant in the health seeking behavior of the slum dwellers.

With regards to age, the modal age range of slum dwellers in Railways slums was 31 to 40 years while mode average age was 35 years. The least population in the slum were those above 60 years of age. which was in agreement with a cross-sectional study in Korogocho which reported that the modal age range of slum dwellers was 19 to 59 years, (Samira et al, 2023). Hossain et al (2022), supported that age was a significant predictor of HSB among slum dwellers especially among older people of above 60 years. In a study on “age friendly slums” health challenges of older slum dwellers in Nairobi, it affirmed that elderly are the least while also most at risk of pre-existing conditions such as hypertension and respiratory conditions compared to the majority young population. It thus proposed that an age friendly framework is key to help in eliminating adversities among the elderly especially where health issues of the elderly receive little considerations, (Aboderin et al, 2017). Moreover, the health of older slum residents may have direct influences on the prospects of younger generations in such settings as they often cohabit with care for children

and youth. Older population tend to seek health services compared to younger population, (Gabarani et al, 2021) especially among elderly people who live alone, have multiple conditions and higher average incomes, (Teo et al,2021; Duy et al, 2023). This observation was also at play in this study thus has an important implication in the ministry of Health such that services should be tailored to empower the young population to be in control of their health and be proactive towards positive health choices, (Mahajan et al 2020). Hossain et all (2022) also emphasizes on effective strategies to reduce any existing access barriers to healthcare services for older people in urban slum areas.

There is a significant relationship between health behaviors and marriage, (Ngaruiya, 2017) which marries with the study findings where 69.2% of slum dwellers were married and living with family members (78.2%). Ngaruiya, (2017) established that uptake of reproductive services from health facilities among slum dwellers of Nyeri, Kenya, was influenced by cultural behaviors including marriage. (Jahan et al, 2022) established that marital status was a significant predictor for health seeking behavior of slum dwellers which is in agreement with this study where marital status was statistically significant to health seeking behavior. A study on characteristics of lay consultation networks on treatments-seeking decisions in slums of Nigeria established that family and marriage networks provided point of reference to access to healthcare providers with an odd ratio of 1.92, (Onuegbu et al, 2023). A study in Kolkata showed that women seeking care for alcohol and drug addiction faced more opposition and social penalty from family and friends than men counterparts seeking same care, (Das et al, 2018). However, divorced and separated cohort have low odd ratio of healthcare services than those who are married (Jahan et al, 2022 suggesting that strengthening family bonds can increase pursuit to positive healthy outcomes.

In the current study, religion was not a significant contributor to the health seeking behavior of Railways residents. Several studies however have argued that religion has much to contribute to health promotion including on changing perspectives on meaning of life and science education for instance vaccine hesitancy have been effectively been communicated to those with religious faith regardless of the nature of religion that they practice, (Barmania et al, 2020). Another study conducted in Zimbabwe that viewed religious practices as predictors to mental and physical health outcomes established those religious affiliations and conceptions on HIV/AIDS affected the outcomes. Such that, there was low risk of treatment failure and undetectable viral load for clients who viewed HIV/AIDS without any spiritual/religious connotation while for those who viewed HIV/AIDS as results of sin was linked to higher risk of opportunistic infections (Grossenbacher, 2023). A liner regression analysis on variation in HSB based on religion domain among adolescents in Enugu state, Nigeria, revealed a significant interaction (Ugwu, 2022). The difference we find in our study could be alluded to small study sample size and age difference. Generally, these findings show that religious leaders have a key role to play in policy implementation and so by working with faith leaders in the prevention of COVID-19 health promotion can be enhanced.

Highest level of education of the dwellers attained was secondary level irrespective of gender, a finding consistent with Ngware (2018) who highlighted that majority of urban slum dwellers attended primary and secondary level majorly due to cost effectiveness as the Government of Kenya provides Free Primary Education (FPE) and Free Day Secondary Education (FDSE) but had poor transition to colleges and universities whose cost are quite high for slum dwellers. The Kenyan education system is segmented into primary, secondary and tertiary level (MoE, 2023). The study showed 15.1% enrollment into university and college levels indicating glimpse of hope

evidencing that more slum dwellers could upgrade their level of training if opportunity allows. Studies show that slum dwellers with higher education exhibit higher HSBs due to access to information and higher level of awareness on the disease, (Mou, 2022). On the contrary, a meta-analysis on factors influencing HSBs among slum dwellers revealed that though lack of knowledge is a barrier to accessing healthcare services, caregivers with good knowledge of child danger signs were less likely to seek timely health care services, (Park et al, 2022). This observation implies that higher education provides for better understanding of disease and increased autonomy in decision making among the slum dwellers thus it can be argued that enhanced health education and community awareness can help increase appropriate COVID-19 HSB choices.

The occupation distribution indicated that majority of the slum dwellers were self –employed. On informal employment participants were working in settings of caregiving, security and logistics which agrees with a study that revealed most slum dwellers work as pullers, drivers, hawkers, caregivers and vendors operating small businesses and were the most affected during the pandemic experienced job loss, salary cut and income reduction (Seddiky et al, 2023).

In this study there was no statistical significance on the types of occupation to health seeking behaviors, similar to study findings by (Li, Deng, Yang & Wang, (2020) that established occupation did not have significance on the HSBs. The study noted that occupation category, manual workers had the best treatment attitude but low probability of selecting comprehensive treatment. Professionals displaced higher probability of selecting hospitals than laborers. Other studies differ in showing that occupation is significantly associated with HSB choices such that there is higher odds of being affected by COVID 19 among non-healthcare professionals (which include the biggest portion in slums) than among healthcare professionals, (Khan et al, 2024).

In a study by Mou et al (2022) slum dwellers who were self-employed exhibited low HSBs due to the low-income sources, majority of the slum dwellers however accessed health care services through their employers who would provide insurance services to its employees or cleared hospital bills out of pocket. The average monthly income of slum dwellers was <Ksh 15,000 which equates to less than <100\$ a monthly. This concurs with a study on impact of COVID-19 on livelihoods of Kenyan slum dwellers that reported the average monthly household income of slum population was 78\$ which is less than 100\$, (Solymari, et al, 2022). Income has great influence on multiple measures of healthcare-seeking behavior, where by higher income earners are more likely to use high-quality health services compared to low-income earners, (Govender et al, 2021), (Udenweze, 2019). In contrast to above study, low-income earners have high probability of seeking treatment but low probability of doctor consultation while high income earners have lower probability of seeking disease treatment but higher probability of doctor consultation, (Li et al, 2020). This finding guide that policymakers need to work on reducing health inequality among the public by increasing medical subsidies to achieve health equality between slum and non-slum dwellers.

Regarding state of housing, the study reported housing to be semi-permanent and clean, a few were characterized with congestion and unclean. This agrees with the Reuters Foundation report on cities and urbanization (Bhalla, 2023) and proven state of poor housing structures from a study on livelihoods on quality of life and wellbeing in slum areas of Uganda, (Renzano, 2020). Urban slums are overcrowded, have poor access to basic amenities such as adequate housing including sharing single room, water, sanitation, power and waste collection (UN-Habitat, 2018), (Nzau & Trillo, 2020). Such unhealthy setting predisposes the slum dwellers to diseases including COVID-19. Residential crowding has been linked to poor physical health such as COVID-19, tuberculosis and other respiratory conditions. COVID-19 pandemic magnified the importance of good housing

especially during lockdowns, curfews and mandatory quarantines across the world, (Mwoka et al, 2021). These findings confirm the linkage between housing status and public health risks, hence encourages need for policy change in urban slum housing and planning to change the substantial double jeopardy experienced in case of re-emergence of pandemic. The affordable housing in Kenya recognizes existence of informal settlements around major cities in Kenya including the health risks engaged, hence have been included in the social housing project i.e. low-cost housing reserved for people earning below Ksh,15,000 monthly which comprises of majority of slum dwellers who are low-income earners. The housing development programme aims to achieve slum upgrading and it will have one or two roomed units, (Omenya, 2018), (Ministry of Land and Housing, 2016). Studies have shown that upgrading of slum setting leads to reduction of communicable diseases such as diarrheal diseases and water related illnesses, (Renzano, 2020).

4.6.2: COVID-19 Health Seeking Behavior among slum dwellers

The study established that majority of the slum dwellers were aware of COVID-19 preventive and control measures which agrees with a comparative study of five slums in Bangladesh that indicated good knowledge of the COVID-19 measures among slum dwellers. The knowledge was also higher among the dwellers who had attained primary and secondary level of education compared to the uneducated, (Hasan et al, 2022) while men indicated less knowledge towards COVID-19 than women and older adults were likely to have better knowledge and practice than younger people, (Al-Hanawi et al, 2020). In contrast to our findings, slum dwellers were observed not to have a very clear idea about COVID-19 causes and prevention mechanism though they were aware of some methods of self-protection and deterrence of transmission in Dhaka city, (Mamun & Fatima, 2021). Other study showed that COVID-19 level of awareness of slum dwellers influenced their prevention practices, perceived vulnerability, perceived self-efficacy, severity and protective

behaviors, (Nguyen et al, 2022). People with strong self-efficacy and response efficacy have the higher preventive motivation. In dealing with COVID-19 pandemic knowledge sharing and health education programs are effective methods for improving self-protection of vulnerable people, (Al-Hanawi et al, 2020).

Regarding COVID-19 control practices, majority preferred wearing masks (93.2%) complimented by hand washing (70.7%) and social distancing (54.1%). Minority did not implement any measures towards prevention of the COVID-19. This agrees with a study where 94% of respondents-maintained hand hygiene sanitizing, wearing facemasks and social distance. This could be attributed to the high level of knowledge among the slum dwellers and availability of information through media. (Hasan, et al, 2022), (Shrestha et al, 2022). Another study on Kenyan slums revealed similar findings where residents practiced personal protective measures especially hand washing such that local shops and traders would set up simple hand washing stations for their customers. Partners were also mobilized to install hand washing stations in busy spots like local markets and bus stops.

Although Railways slum dwellers practiced social distancing, there was a challenge of congestion and communal living, a state that is in agreement with (Solymari et al, 2020) who described slums as congested and poorly spaced while (Islam & Kibria, 2020) who defined physical distancing as keeping at least 3 feet away from nearest person while coughing, sneezing or speaking in slums, reported high population density as a challenge, (Islam & Kibria, 2020).

Wearing of facemask emerged the prominent strategy to reduce SARS-CoV-2 before vaccination option was confirmed. However, its implementation was inherently reported difficult. It was found that dwellers wore facemasks as an escape mechanism with the rule of law compared to preventive

purpose. Location determined consistency of wearing the facemask among slum dwellers such that consistent mask use was significantly higher in public than home (Jabubowki et al, 2021).

Under the prevention sub-domain of sanitizing, 94% of the respondents reported that cleaning office, home and regularly used equipment with Sanitizer / soap / detergent could reduce the risk of COVID-19. Sanitizing was also done concurrently with hand washing with soap or sanitizer, (Hasan et al, 2022). The practice included direct sanitization of individuals through hand sanitization, indirect sanitization of surfaces and airborne sanitization of environment and ambience, (Khan & Yadav, 2020). Provision of safe water, sanitation and hygienic conditions were considered important to protecting slum dwellers from disease outbreak including COVID-19 outbreak, (Cheptarus, 2020).

In this study, some respondents implemented religious practices (prayers) and traditional practice as a preventive measure. Studies show that spirituality is a force that helps to overcome mental crisis and facilitate adaptation to the disease (COVID-19) and the restrictions that resulted from the COVID-19 pandemic. Studies declare religious belief in protective power of faith increases sense of security during a crisis, (Kowalczyk, 2020). Spirituality in context of healthcare is becoming increasingly important and recent year research has shown religious beliefs strongly associated with health aspect such as disease coping, diagnosis recovery and positive attitude in crisis, (Anastasiadou et al, 2023) (Kowalczyk, 2020). This is a concept that should be studied further.

The option of home remedies and concoctions was practiced but at low scale. Steam inhalation, drinking herbal juices and hot water are identified as home remedies. These concoctions are used for treatment, prevention and purpose of immune boosters, (Malapela et al, 2023). Common ingredients including fruits high in Vitamic C, such as turmeric, cinnamon, Black pepper, ginger,

Ayurveda and garlic are used as home remedies (Charan et al, 2020). In Sub Saharan Africa, Zimbabwe and South Africa, concoctions included garlic, lemon, ginger are used during steam inhalation while tobacco snuff is reported to help sneeze and decongest the respiratory airways, (Marevesa et al, 2021) (Schmidt et al, 2020). On immune boosters, multivitamins, supplementary diets, spices and certain herbs tend to boost immunity such that turmeric was used to treat cold and inflamed wounds during the pandemic. The diverse use of concoction and herbs during pandemic is alluded to fear of outcome of the infections while other used it as complementary to modern medicine (Marevesa et al, 2021). These findings on concoction though according to this study were minimally used by the slum dwellers in Railways, titillate further research on effectiveness and safety of home remedies to boost immunity and fight COVID-19 since this is a scope that this study did not explore.

With regards to quarantine and self-isolation, few respondents reported practicing quarantine and isolation. It is possible that majority could not practice because slums are congested and majority lived in shared rooms with family members. The quarantine required the suspected contact person to be in a separate room for at least 14 days. This was difficult to implement provided their state of housing and living conditions. This finding agrees with Balamurugan et al, (2021). The government of Kenya, additionally had segmented specific quarantine and isolation centers where suspects would be admitted, (MoH, 2020). The responsibility of the government official to participate in contact tracing also could have contributed to the reluctance to practice self - quarantine and isolation since engagement in contact tracing was positively correlated with isolation and quarantine, (Oeltmann et al, 2023). It is unfortunate that some respondents did nothing in preventing themselves from COVID-19. Those who did not take any preventive

measures viewed COVID-19 as unreal and a hoax. This is a case of negative attitude towards the disease.

Regarding HSB choices towards COVID-19 symptoms, 59% of participants responded active consultation of a physician from both public and private health facilities. This could be associated with the fact that physicians have specialized and in-depth knowledge and skills on management of COVID-19 symptoms hence strengthens the level of confidence and trust of patients in their physicians and encourage them to make suitable choices and decisions, (Zhang et al, 2019). This could also be associated to easy accessibility of physicians via mobile phones hence they could use the tollfree line provided by MoH during the pandemic to seek information and clarification regarding their symptoms and management.

Other practices that were at play to minimize the symptoms included consumption of home-made concoctions, quarantine and self –isolation, self-medication and self-resolution of symptoms. Observation of quarantine and self-isolation was due to government protocol upon contact tracing or suspecting of COVID-19 positive symptoms. Home-made concoctions were used mainly as treatment options and immune boosting, also due to easy availability in the community at the grocery shops. The practice of self-medication might be prompted by the curfews imposed during the pandemic that limited movement hence reduction in seeking formal care in health facilities, this could similarly be applied for the respondents who opted for self-resolution of the symptoms. A study from Saudi Arabia showed that COVID-19 affected the health seeking behavior of individuals such that there was a notable decline in number of patients visiting health facilities by 65.5% with more decline in men than women (18.5% vs 15.9% respectively), (Bader et al, 2022). Similarly in Ethiopia there was reported missed follow-up appointments leading to a tendency in the population to self-medicate. Increase in misinformation and conspiracies lead to public doubt

on COVID-19 severity changing society attitude on seeking formal health care services including choosing to let the symptoms to resolve on their own, (Khan et al, 2024). Seeking informal care is a sign of gap in the healthcare delivery system and thus county governments in Kenya should incorporate available, affordable and accessible health care services to community members during outbreaks, crisis or pandemic. This also indicate need for robust health education initiatives to demystify severity and outcome of infections during declaration of future pandemic e.g. through community awareness forums, social media or distribution of education fliers for reference.

COVID-19 screening and vaccination rate was reported at 76.7% Regular testing and vaccination is an effective approach to mitigate COVID-19 spread, (Song et al, 2022). In China, the willingness and uptake of COVID-19 testing and vaccine was associated with occupation while Kawuki et al (2023), reported vaccine acceptance and uptake was positively associated with older age, higher educational level, income i.e. access to insurance services, perceived need for prevention and treatment, gender and level of awareness. In this study, vaccine hesitancy was alluded to fear of stigma, lack of perceived need, negative beliefs, misconceptions that COVID-19 was not real and fear of testing positive. Some respondents stated that the lack of symptoms did not necessitate them to test or vaccinate. In Dhaka slums there was reported negative advocacy from friends and family regarding COVID-19 testing that COVID-19 was not a disease of the slum people instead it is an affliction of the rich people, (Sharmin et al, 2021). This study revealed that upon community awareness the vaccine uptake increased, as reported by the chief during key informant interview, “they refused vaccination at first but later agreed to it,” the chief said, indicating that to remove barriers to testing and vaccination, tailored behavioral change communication and sensitization are necessary to curb spread of COVID-19 in the slums.

A study on perceived health status and access to health services during pandemic in Italy showed that majority of the respondents reported good perceived health status, (Pelullo et al, 2022) which agrees with this study findings where there is good perceived health status after HSB choices undertaken by the slum dwellers in Railways. Available studies indicate that early implementation of HSB choices is associated with high effectiveness especially when one uses behavioral interventions (Moyana et al, 2023) including social distancing, quarantine and vaccination (Quinn, 2024). These results suggest importance of availability of formal health care services in health emergency situations avoiding risk of missed access and poor outcome.

Challenges experienced by slum dwellers during implementation of COVID-19 HSB included lack of funds, limited movement, masking fatigue, inadequate water supply for hand washing and hygiene, vaccine side effects, stigma, long waiting hours at the health facilities, high cost of quarantine and isolation and police brutality. Agreeing with a study on challenges in implementation of COVID-19 in slums, (Dubey et al, 2022). Dubey et al, described that slum dwellers experience inadequate housing, water and sanitation. The houses lack adequate lighting, ventilation and were overcrowded which challenged the practice of social distancing, quarantine and isolation.

COVID-19 had a negative impact on the livelihoods of many Kenyans and the impact was severe among low-income earners. Due to curfews and lock down, slum dwellers could not work and generate income. Majority lost their jobs and experienced reduction in income, (Solymari et al, 2021). Additionally, the curfews were declared indefinite hence there was a public outcry that led to police brutality that birthed more stringent laws including fines if Kenyans did not abide to COVID-19 control measures. Compulsory masking was introduced when in public spaces which led to enforcement fatigue and discomfort among the public leading to reduction in self-reported

face masking while adherence tended to be observed on public transportation and crowded areas like bus stops only, (Jabubowki et al, 2021).

The long waiting hours at health facilities during the pandemic could be due to the understaffing in the health care facilities as MoH directives guided any healthcare worker who had pre-existing conditions to be exempted from active roles and responsibilities. This included pregnant women, old and premorbid cases.

The selected quarantine and isolation centres set aside to serve the suspected cases in the country were charging admissions care rates for services. Majority could not afford the costs as payment was out of pocket. The limited movements and curfew rules curtailed access health facilities due to unavailability of transport means beyond 4.00pm especially during emergency cases. The negative side effects of COVID-19 vaccines (malaise, fatigue, fever, diarrhea, chills, muscle pains, headache) demotivated the slum dwellers from undertaking the vaccines (Latunji & Akimenyi, 2018), leading to low adherence and non-compliant behaviors. Initially, suspected cases were to report to health facility for COVID-19 testing, however there was a lot of stigma, fear and anxiety regarding testing, isolation, quarantine and vaccination. Level of ignorance being high in the slum population due to limited public awareness, positive cases had to be managed in the isolation centres, this precipitated the stigma and fear, (Seruwagi et al, 2022). Therefore, addressing all forms of barriers (predisposing, enabler, need barriers) to adherence of COVID-19 preventive measures should be the goal of all actors and stakeholders seeking to achieve intended outcome of impactful national response to future pandemics.

4.6.3: Predisposing, Enabling and Need for Care factors influencing COVID-19 HSBs

Predisposing factors (attitude, religion, health belief, knowledge and personal values) had extreme influence on COVID-19 HSBs of slum dwellers, however in bivariate analysis, none of the

predisposing factors were statistically significant at $p < 0.05$ in explaining the health care use in this study. At univariate analysis, all the predisposing factors were associated with the despondence to formal care. Literature discusses the strong correlation between formal health care use and risk factors to disease exposure, (Park et al, 2022). Park et al exposed the multifactorial association of health care use including knowledge, perception, social support and social cultural expectations. A study established that low level of knowledge on disease was associated with reduction in likelihood of seeking care from formal sources. Myths and misconceptions influenced largely on the community level of awareness leading to delay in treatment and non-adherence allowing condition to worsen. Positive attitude towards the conditions encourages healthy choices while experiences of other patients with the condition provides a motivation to positively cope with management of disease. Majority of respondents reported avoiding any anyone who tested positive for COVID-19 causing social isolation, agreeing with Tesfaye et al (2020) study on attitude of community towards mental health problems.

Religion and culture serve as a positive channel for patients to express their concerns and find consolation, as majority believe that God would not give them something they could not handle, (Latunji & Akimenyi, 2018). Majority of the respondents expressed fear and anxiety based on the severity of the pandemic, more so associated with the reported outcome of affected and reported death cases. Respondents reported stigmatization as a barrier that hindered seeking of formal services during the COVID-19 pandemic. Fear was associated with unscientific belief and improper understanding of common masses catapulting it to social stigma for the confirmed cases. 20 studies affirmed the prevalence of social stigma due to COVID-19 infection highlighting common effect of anxiety and reduction in socialization, (Alinaghi et al, 2023). Respondents exhibited positive value to their health and feared being infected with COVID-19. This reflected

on their experience and personal view of wellbeing. Belief about health, mostly shaped by culture has been attributed to shaping individual behavioral patterns towards health, (Eley et al, 2019).

Enabling factors; financial capacity, access to insurance, access to health facility, self-efficacy; had influence on HSB choices towards COVID-19. At bivariate analysis, enabling factors except access to insurance, were significance in HSBs of slum dwellers. The study established that participants who were in the higher income stratum (Ksh.30,001- 45,000) demonstrated higher utilization of formal care than those in the low-income stratum (<Ksh. 15,000). This could be associated with ability to afford health insurance, specialized medical care and basic amenities. Literature discusses the strong correlation between healthcare use and ability to purchase, the higher the income the higher the ability to purchase healthcare services (Latunji, 2018), (Zeng et al, 2019). Access to health insurance was not significance in influencing the formal care use in this study conflicting with a facility based cross-sectional study in Turkey, (Abuduxike et al, 2019) and in Nigeria, (Onyemaechi & Ezenwaka, 2022). This could be associated with the low socioeconomic status of the slum dwellers hence could not afford the insurance premiums required. The NHIF contribution in Kenya stand at Ksh.500 per month for the lowest payer. Majority of the slum dwellers could not afford this. However, it is mandatory for all employers to register and pay for NHIF contributions for employees, a case that presents to be non-complacent in this study. The availability of national insurance fund in Kenya is a great step in realizing universal health coverage however, there is presence of people who are not covered by insurance i.e. slum dwellers, a barrier that could threaten the improvement of health care access and utilization of services.

Access to health facility had an influence in the HSB choices of slum dwellers during COVID-19 pandemic. Respondents who lived near a health facility displayed increased odds of seeking

healthcare services than their counter parts. Majority preferred using public health facilities concurring with Kosasih et al (2022) where majority of Indonesian preferred public facilities after development of acute illnesses. Indonesian government provides UHC care in the country enabling citizens to spend less during their routine check-up reducing the burden of paying out of pocket. Latunji & Akinyemi (2018) added that proximity of health facility is also supplemented by other factors such as availability of drugs, quality of care, attitude of health workers and affordability of the care cost.

In this study, self- efficacy influenced use of health care services among the slum dwellers agreeing with a similar study of self-efficacy and mental health help-seeking behaviors among PTSD victims. The study established that increase in self-efficacy led to observed increase odds in mental health help-seeking and having treatment, (Garrey et al, 2022). An understanding of individual self-efficacy helps improve on disease treatment especially during pandemic. Self-efficacy is a construct rooted on viewing individuals as autonomous and capable of self-reflection and able to determine needed adaptation in times of change, (Nygaard et al, 2016). The relationship established in this study could be associated with the level of self-awareness of slum dwellers and access to information on COVID-19 and its management from public and media channels.

Need has been identified as the main driver for health care use. It is based on an individual's health perceptions of his/her general health status. In the study, slum dwellers reported very good perceived health status. 63.2% of the sample were healthy with no pre-existing conditions, while among those with a positive history of illnesses, hypertension was the leading condition (33.3%). In the logistic regression analysis, pre-existing conditions, self- reported health status and increasing severity of COVID-19 were associated with changing odds in HSBs among the slum dwellers. This was in agreement with Abuduxike et al (2019) who established that need factors of

existing history of smoking, poor perception of health and having chronic diseases had about twice the odds of seeking routine check-ups.

In this study respondents who had positive history of illness were observed with higher odds of seeking physician consultation from public facilities. This could be associated to increased self-reported status and perceived level of health. Respondents stated that the increased risk to complications on the verge of COVID-19 could have precipitated their need to seek attention from a physician. During declaration of COVID-19 as a pandemic, citizens who were diagnosed with comorbidities and on treatment were categorized as high risk to COVID-19 severity hence advised to be on close monitoring and report any symptoms to nearest facility. Sun et al (2021), reported that patients who experienced persistent cough for more than 8 weeks with accompanying symptoms indicated higher odds of seeking medical treatments than their counter parts who manifested cough for less than 8 weeks indicating that increase in severity of disease increased need for formal treatment. Similar to tuberculosis studies done to determine health seeking behaviors of persons coughing for more than 2 weeks in high burden TB communities in South Africa (Christian et al, 2019) and Zambia (Kapata et al, 2016). These studies are in tandem, as COVID-19 presented with similar symptoms of cough and other accompanying symptoms. The health seeking behaviors of patients with cough is important as it is conducive for early diagnosis, treatment and prompt prevention and control of respiratory infectious diseases including COVID-19.

4.6.4: Preventive strategies for future SARS illness among slum dwellers

Key Informant interviews revealed need for mass education, attitude change, mass testing and vaccination against COVID-19 and future SARS illness as effective strategies to control and preventive future SARS illness. Appropriate health seeking behaviours are linked with health

status of a country and long-term economic development. Preventive approaches for future SARS among slum dwellers should thus not only target reduction of spread of SARS but also provide economic support through stimulus, upgrading of slum settings and policy formulation and change.

On infection prevention and control, the study emphasized vaccination, mass education and creation of awareness on preventive and control measures of SARS illnesses. The global message about reducing spread of SARS viruses is to increase personal hygiene especially regular hand washing with soap, physical distancing, and reduction of congestion and avoiding of contaminated surfaces, (Fevre, 2020). Informal settlements face overcrowding and space constraints hence presenting impracticality of physical distancing, quarantine and self-isolation, (Corbun et al, 2020). In tandem with the stated jeopardy, future plans should therefore complement with mass vaccination, provision of free quarantine and isolation facilities, provision of affordable housing with proper ventilation, supply of clean water and waste management to prevent future spread of SARS illnesses. Similar to Ebola pandemic in Uganda (Okware et al, 2015) and West Africa (Snyder et al, 2014), early detection yielded the best outcome and results. The community introduced contact tracing and quarantine through community mobilization and leadership. WHO (2023), suggest that to control outbreaks such as Ebola and COVID-19, vaccination is the most effective control measure. Additionally, good outbreak control measures rely on taking many types of actions i.e. patient direct care, disease surveillance, good laboratory services and social mobilization.

Secondly, there is community need to dampen the spread through public awareness and health education. Through community mobilization and engagement, there is need to engage local community members and pass health messages in a manner that is relatable and understandable to the affected population to avoid myths and misconceptions. This will consequently reduce risk of

mismanagement of positive cases and non-adherence to treatment, eliminating fear, anxiety and social-stigma and promoting informed health seeking choices among the slum dwellers. Community engagement is key to successful management of outbreak, (WHO, 2023). Authentic health messages will ensure slum dwellers are updated hence able to practice positive attitude, self-efficacy and improved self-reported health status.

Implementation of proper solid and liquid waste management helps reduce risk of exposure to COVID-19. To reduce severity, there is need to cater for continuity of care among pre-existing conditions such as HIV/AIDS, diabetes, respiratory conditions and others which increases susceptibility to infection. Through encouraging of urban slum dwellers to migrate back to their rural and ancestral homes this will lower the number of older people and avoid the risks of overcrowding, lessen the morbidity and mortality in slum areas, (Seildlein et al, 2021).

During the COVID-19 pandemic, majority of slum dwellers lost their source of income due to lock down, curfew and controlled movement exposing them to harsh realities of poverty and lack of livelihood, (Nuwematsiko, 2022). Economic stimulus of urban slum dwellers through payments to poor would be effective as a disaster response strategy to cushion slum dwellers from income instability (Corbun et al, 2020). Due to majority of slum dwellers being low-income earners, large percentage could not adhere to stipulated control measures of COVID-19. There were reported cases of individuals wearing unclean masks for weeks before acquiring a new one. Other approaches would be through provision of free personal protective equipment and supplies such as face masks, hand sanitizers, soaps and gloves, immediate provision of food assistance to minimize risk of starvation which could increase the prevalence of malnutrition-related infections, maintaining hygiene in the slums to meet international humanitarian standards for water, sanitation and hygiene, (Islam and Kibria, 2020).

Policy review and change would promote social economic balance across communities. Informal settlement being the most affected by COVID-19 pandemic, to promote safety in future pandemic government should incorporate slum health in their health system management. Disaster response activities should be contextualized to different settings and protocols to protect the vulnerable groups in the community such as slum dwellers in informal settlements. The housing policy in Kenya recognizes slums and have been incorporated in the affordable housing project in which low-income earners will be able to afford modern and upgraded housing units, (Ministry of Land and Housing, 2016).

During the 1st wave of COVID-19, implementation of preventive and control measures were enforced by law makers eliminating opportunity for community engagement and participation. This approach led to rise incidence of police brutality and insecurity in slum areas, (Corpuz, 2021). Community engagement policies should be developed such that the government stipulates clear implementation of by-laws for monitoring and surveillance emphasizing conjunction with community responders. This will ensure two-way exchange between responders and community stakeholders, (Hrdlickova et al, 2023).

COVID-19 lead to lockdown, curfew and limited movement, disrupting the normal delivery of healthcare services leading to need for embracing virtual modalities of health care delivery. Digital health technologies are necessary to enable health care provision without physical interactions. Research shows that there is need for employment policy changes that covers for cushioning in the helm of pandemics such as providing income tokens and over draft and allowing workers to work from home, (Whitsel et al, 2023). Allowing employees to work from home decreases physical contact and minimize risk of transmission.

CHAPTER FIVE: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.0 Introduction

This chapter presents the summary and conclusions derived from the study which was to determine the COVID-19 health seeking behaviours among slum dwellers of Railways in Mombasa. The chapter also provides recommendations that can be pursued based on the salient findings of the study.

5.1 Summary of the Findings

Based on the obtained data from the respondents and its interpretation, the study addressed three specific objectives i.e. identify various COVID-19 health-seeking behaviours among slum dwellers, determine factors influencing the COVID-19 HSB choices and identify preventive strategies for future SARS illness among slum dwellers of Railways in Mombasa County. The study acquired the following results.

5.1.1 What are the various COVID-19 health-seeking behaviours among slum dwellers of Railways, Mombasa County?

The respondents reported adhering to wearing of mask (93%), social distancing, hand washing, sanitizing, isolation, quarantine and vaccination as key steps to prevent and keep safe during the COVID-19. Other respondents stated use of home remedies, concoctions and traditional medicine as treatments of symptoms, some resorted to prayers and religious practices. They viewed these measures as positive approaches to maintained healthy outcomes. Though vaccination hesitancy was displayed leading to low COVID-19 testing and vaccination, behavior change was restored through community engagement and mass education/ awareness to increase uptake. In the cases of symptomatic management, slum dwellers resorted to seeking consultation from physicians from

both public and private health facilities, quarantine and self-isolated, while few opted to allow the symptoms to resolve on its own. Interestingly, majority of slum dwellers reported very good health status after the various HSB choices.

5.1.2 What are the factors influencing the COVID-19 HSB choices among slum dwellers of Railways, Mombasa County, Kenya?

The study established that level of awareness on COVID-19 preventive measures was good and these guided their initial HSB choices. Predisposing factors such as marital status, age, level of education, religion, poor housing and family status had influence on the HSB choices selected by the slum dwellers. For instance, divorced dwellers were three times likely to seek physician services than single slum dwellers. Negative attitude towards COVID-19 was the leading predisposing factor that influenced HSB choices. Enabling factors of level of income, access to insurance, pre-existing conditions and access to health facility influenced the odds of seeking cares from formal care. The enabling factors of access to health facility and self-efficacy had extreme influence on HSB choices. Need for care factors included pre-existing conditions, self-reported health status and COVID-19 severity had moderate influence on the health-seeking behavior of the slum dwellers. 63.2% of the sample were healthy with no pre-existing conditions, while among those with a positive history of illnesses, hypertension was the leading condition (33.3%).

5.1.3 What are the preventive strategies for future SARS illnesses among slum dwellers of Railways, Mombasa County?

The respondents stated that the MoH should conduct mass health education and awareness among the slum dwellers on the cause and management of SARS illness. They stated that this approach would lead to more informed understanding and approaches to the dwellers helping reduce stigma

and discrimination of positive cases. Increased access to clear information would also increase tests and vaccine uptake leading to herd immunity and prevention of spread of SARS cases. Media materials emphasizing social distancing, hand washing techniques, coughing and sneezing hygiene should be distributed.

5.2: Conclusion

Regarding COVID-19, Railways slum dwellers preferred wearing facemasks to other control and preventive measures. Community engagement and health education was viewed as key to increasing awareness and adherence to the control and preventive measures. Single and divorced participants, state of the house, pre-existing conditions, access to insurance, and access to health facility, self-efficacy, and self-reported health status, and increasing severity COVID-19 were major factors that influenced HSB. Regarding preventive strategies for future SARS illnesses, there is need for mass education and awareness to promote attitude change, mass testing and vaccination and promotion of adherence to control and preventive measures. Thus, understanding slum dwellers health-seeking behaviours and the influencing factors towards COVID-19 HSBs choices during the pandemic informs on development of effective preventive strategies for future SARS illnesses.

5.3 Recommendations

To develop long terms strategies on ensuring positive health seeking-behavior among slum dwellers during future pandemics, the study offers the following recommendations to National government, Ministry of Health, Ministry of Housing, County government of Mombasa, slum dwellers and other stakeholders:

5.3.1 Recommendation to Authorities

The National Government through the Ministry of Housing need to improve state of housing among slum dwellers. The slums need to be decongested and houses upgraded to have good sanitation and ventilation. The county government of Mombasa need to conduct clean-up in the slums installing good drainage and waste management system to prevent rampant spread of infections. There is need to improve health service delivery in Mombasa County through health facility improvement to ensure early detection and treatment of pre-existing conditions among slum dwellers and reduce waiting hours at the queues. Through the local authorities such as chief enforcement of control measures should be inclusive through community dialogue and engagement to promote adherence and acceptance by the slum dwellers. Ministry of health needs to conduct mass education on preventive approaches during pandemics to reduce stigma and misinformation.

5.3.2 Recommendations to slum dwellers

Slum dwellers need to embrace education. Attaining higher level of education at college and university level will help improve their employability score and also their income index. There is need to embrace remote working among slum dwellers to avoid loss of income during lock downs. Building of trust is needed to enhance seeking for formal health care as opposed to concoctions and traditional medicines. Lastly, the slum need sensitization on control and preventive approaches to SARs illness to eliminate stigma and non-adherence to testing and vaccination.

5.4 Areas of Further Research

1. Researchers need to conduct a comparative study between COVID-19 HSB among urban slum dwellers and rural slum dwellers in Kenya in order to establish differences and similarities in the two groups
2. Researchers need to conduct a qualitative study on the decision-making process underlying HSB of slum dwellers in a household to unearth the factors that determine power dynamics in seeking health.
3. Researchers should investigate the correlation of religion to HSB during pandemic as existing studies could not clearly highlight the concept of influence of religion on health outcome.



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REFERENCES

1. Abuduxike, G., Aşut, Ö., Vaizoğlu, S. A., & Cali, S. (2019). Health-seeking behaviors and its determinants: A facility-based cross-sectional study in the Turkish Republic of Northern Cyprus. *International Journal of Health Policy and Management*. <https://doi.org/10.15171/ijhpm.2019.106>
2. Adiga, A., Chu, S., Eubank, S., Kuhlman, C. J., Lewis, B., Marathe, A., Marathe, M., Nordberg, E. K., Swarup, S., Vullikanti, A., & Wilson, M. L. (2018). Disparities in spread and control of influenza in slums of Delhi: Findings from an agent-based modelling study. *BMJ Open*, 8(1), e017353. <https://doi.org/10.1136/bmjopen-2017-017353>
3. Akinyemi, J. O., Banda, P., De Wet, N., Akosile, A. E., & Odimegwu, C. O. (2019). Household relationships and healthcare seeking behaviour for common childhood illnesses in sub-Saharan Africa: A cross-national mixed effects analysis. *BMC Health Services Research*, 19(1). <https://doi.org/10.1186/s12913-019-4142-x>
4. Alex Armand, Britta Augsburg, & Antonella Bancalari. (2020). Coping with COVID-19 in Slums: Evidence from India. *International Growth Centre*. <https://www.theigc.org/sites/default/files/2021/01/Armand-et-al-2020-Final-report.pdf>
5. Al-Hanawi, M. K., Angawi, K., Alshareef, N., Qattan, A. M., Helmy, H. Z., Abudawood, Y., Alqurashi, M., Kattan, W. M., Kadasah, N. A., Chirwa, G. C., & Alsharqi, O. (2020). Knowledge, attitude and practice toward COVID-19 among the public in the Kingdom of Saudi Arabia: A cross-sectional study. *Frontiers in Public Health*, 8. <https://doi.org/10.3389/fpubh.2020.00217>
6. Allen Ulrich. (2017). *The health belief model – Methods for stress management*. The Pennsylvania State University – Open Resource Publishing. <https://psu.pb.unizin.org/kines082/chapter/the-health-belief-model/>
7. Amu, H., Dowou, R., Boateng, L. A., & Tarkang, E. E. (2020). Implications of COVID-19 for the management of chronic non-communicable diseases in sub-Saharan Africa: Application of the chronic care model. *Pan African Medical Journal*, 35. <https://doi.org/10.11604/pamj.supp.2020.35.2.24047>
8. Anastasiadou, P., Tsironis, C., Cheristanidis, S., Andreadis, D., & Pouloupoulos, A. (2023). The impact of religious beliefs and practices on coping with health challenges posed by COVID-19. *European Scientific Journal*, ESJ, 19(11), 1. <https://doi.org/10.19044/esj.2023.v19n11p1>

9. Andersen, R. M. (1995). Revisiting the behavioral model and access to medical care: Does it matter? *Journal of Health and Social Behavior*, 36(1), 1. <https://doi.org/10.2307/2137284>
10. Andersen, R. M. (2008). National health surveys and the behavioral model of health services use. *Medical Care*, 46(7), 647-653. <https://doi.org/10.1097/mlr.0b013e31817a835d>
11. Andersen, R., & Newman, J. F. (1973). Societal and individual determinants of medical care utilization in the United States. *The Milbank Memorial Fund Quarterly. Health and Society*, 51(1), 95. <https://doi.org/10.2307/3349613>
12. Augustine C. Ugwu. (2023). Effect of religious domain on healthcare seeking behavior among the adolescents in enugu state, Nigeria. *Journal of Advanced Research in Education and Literature*, 8(5). <https://doi.org/10.53555/nnel.v8i5.1253>
13. Austrian, K., Pinchoff, J., Tidwell, J. B., White, C., Abuya, T., Kangwana, B., Ochako, R., Wanyungu, J., Muluve, E., Mbushi, F., Mwanga, D., Nzioki, M., & Ngo, T. D. (2020). COVID-19 related knowledge, attitudes, practices and needs of households in informal settlements in Nairobi, Kenya. <https://doi.org/10.2471/blt.20.260281>
14. Awel, S., Ahmed, I., Tilahun, D., & Tegenu, K. (2022). Impact of COVID-19 on health seeking behavior of patients with chronic disease at public hospitals in Jimma zone, south west Ethiopia. *Risk Management and Healthcare Policy*, 15, 1491-1500. <https://doi.org/10.2147/rmhp.s367730>
15. Balamurugan, DrPH, A., Greenfield, W., Knox, DrPH, M., & Brown, NRP, G. (2021). undefined. *American Journal of Disaster Medicine*, 16(3), 203-205. <https://doi.org/10.5055/ajdm.2021.0402>
16. Barmania, S., & Reiss, M. J. (2020). Health promotion perspectives on the COVID-19 pandemic: The importance of religion. *Global Health Promotion*, 28(1), 15-22. <https://doi.org/10.1177/1757975920972992>
17. Birgit Babitsch, Daniela Gohl, & Thomas von Lengerke. (2012). *Re-visiting Andersen's behavioral model of health services use: A systematic review of studies from 1998–2011*. PubMed Central (PMC). <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3488807/>
18. Borges, A. L., Moreau, C., Burke, A., Dos Santos, O. A., & Chofakian, C. B. (2018). Women's reproductive health knowledge, attitudes and practices in relation to the Zika virus outbreak in Northeast Brazil. *PLOS ONE*, 13(1), e0190024. <https://doi.org/10.1371/journal.pone.0190024>

19. Boushey, C. J., Coulston, A. M., Rock, C. L., & Mosen, E. (2001). *Nutrition in the prevention and treatment of disease*. Elsevier.
20. Carmen Christian, Cobus Burger, Mareli Claassens, Virginia Bond, & Ronelle Burger. (2019). Patient predictors of health-seeking behaviour for persons coughing for more than two weeks in high-burden tuberculosis communities: the case of the Western Cape, South Africa. *PubMed*. <https://doi.org/10.1186/s12913-019-3992-6>
21. Carter, J. Y., Khamadi, S., Mwangi, J., Muhula, S., Munene, S. M., Kanyara, L., Kinyua, J., Lagat, N., Chege, J., Oira, R., Maiyo, A., Stewart, R., Postma, M., Stekelenburg, J., Osur, J., & Van Hulst, M. (2025). Seroprevalence and demographic characteristics of SARS-Cov-2-infected residents of Kibera informal settlement during the COVID-19 pandemic in Nairobi, Kenya: A cross-sectional study. *BMJ Open*, 15(4), e094546. <https://doi.org/10.1136/bmjopen-2024-094546>
22. *The challenge of slums - Global report on human settlements 2003* | UN-habitat. (n.d.). UN-Habitat - A Better Urban Future | UN-Habitat. <https://unhabitat.org/the-challenge-of-slums-global-report-on-human-settlements-2003>
23. Charan, J., Bhardwaj, P., Dutta, S., Kaur, R., Bist, S. K., Detha, M. D., Kanchan, T., Yadav, D., Mitra, P., & Sharma, P. (2020). Use of complementary and alternative medicine (CAM) and home remedies by COVID-19 patients: A telephonic survey. *Indian Journal of Clinical Biochemistry*, 36(1), 108-111. <https://doi.org/10.1007/s12291-020-00931-4>
24. Chen, N., Zhou, M., Dong, X., Qu, J., Gong, F., Han, Y., Qiu, Y., Wang, J., Liu, Y., Wei, Y., Xia, J., Yu, T., Zhang, X., & Zhang, L. (2020). Epidemiological and clinical characteristics of 99 cases of 2019-Novel coronavirus (2019-nCoV) pneumonia in Wuhan, China. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.3523861>
25. Corburn, J., Vlahov, D., Mberu, B., Riley, L., Caiaffa, W. T., Rashid, S. F., Ko, A., Patel, S., Jukur, S., Martínez-Herrera, E., Jayasinghe, S., Agarwal, S., Nguendo-Yongsi, B., Weru, J., Ouma, S., Edmundo, K., Oni, T., & Ayad, H. (2020). Slum health: Arresting COVID-19 and improving well-being in urban informal settlements. *Journal of Urban Health*, 97(3), 348-357. <https://doi.org/10.1007/s11524-020-00438-6>
26. *Coronavirus disease 2019 (COVID-19) Situation Report – 51*. (2020, March). World Health Organization (WHO). <https://www.who.int/docs/default-source/coronaviruse/situation-reports/20200311-sitrep-51-covid-19.pdf>
27. Corpuz, J. C. (2021). ‘Pandemic within a pandemic’: A call to end police brutality. *Journal of Public Health*, 44(2), e344-e345. <https://doi.org/10.1093/pubmed/fdab250>

28. COUNTY GOVERNMENT OF MOMBASA COUNTY TREASURY. (2021). PROGRAMME BASED BUDGET ESTIMATES FISCAL YEAR 2021/2022. <https://www.mombasaassembly.go.ke/wp-content/uploads/2022/02/Mombasa-County-PBB-Estimates-2021-2022-1.pdf>
29. *COVID-19 - Global situation*. (n.d.). World Health Organization (WHO). <https://www.who.int/emergencies/disease-outbreak-news/item/2025-DON572>
30. *COVID-19 deaths in African region to fall by nearly 94% in 2022: WHO analysis*. (2022, February 6). WHO | Regional Office for Africa. <https://www.afro.who.int/news/covid-19-deaths-african-region-fall-nearly-94-2022-who-analysis>
31. *COVID-19 isolation guidelines: What to do in April 2025*. (2025, April 4). ASSURE Rapid Tests - Spread Aloha, Not COVID. <https://assure-test.com/covid-19-isolation-guidelines-what-to-do-in-april-2025/>
32. DAC, & OECD. (2020). *COVID-19 GLOBAL PANDEMIC: Joint Statement by the Development Assistance Committee (DAC) of the Organisation for Economic Co-operation and Development (OECD)*.
33. Dahab M, Van Zandvoort K, & Flasche S et al. (2020, July 31). *COVID-19 control in low-income settings and displaced populations: What can realistically be done?* BioMed Central. <https://doi.org/10.1186/s13031-020-00296-8>
Confl Health 14, 54
34. Daniel Solymári, Edward Kairu, Ráhel Czirják, & István Tarrós. (2022, August 2). *The impact of COVID-19 on the livelihoods of Kenyan slum dwellers and the need for an integrated policy approach*. PLOS. <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0271196>
35. Das, M., Angeli, F., Krumeich, A. J., & Van Schayck, O. C. (2018). The gendered experience with respect to health-seeking behaviour in an urban slum of Kolkata, India. *International Journal for Equity in Health*, 17(1). <https://doi.org/10.1186/s12939-018-0738-8>
36. Dubey, S., Sahoo, K. C., Dash, G. C., Sahay, M. R., Mahapatra, P., Bhattacharya, D., Barrio, M. O., & Pati, S. (2022). Housing-related challenges during COVID-19 pandemic among urban poor in low- and middle-income countries: A systematic review and gap analysis. *Frontiers in Public Health*, 10. <https://doi.org/10.3389/fpubh.2022.1029394>
37. Duy, H. M., Lee, J., Han, W., Rajaguru, V., & Jang, S. (2023). The health-seeking behavior of the elderly with non-communicable diseases in coastal areas of Vietnam. *Healthcare*, 11(4), 465. <https://doi.org/10.3390/healthcare11040465>

38. *Ebola virus disease*. (2023, April 20). World Health Organization (WHO). <https://www.who.int/news-room/fact-sheets/detail/ebola-virus-disease>
39. Ehsanul Huq, K. A., Moriyama, M., Zaman, K., Chisti, M. J., Long, J., Islam, A., Hossain, S., Shirin, H., Raihan, M. J., Chowdhury, S., & Rahman, M. M. (2018). Health seeking behaviour and delayed management of tuberculosis patients in rural Bangladesh. *BMC Infectious Diseases*, 18(1). <https://doi.org/10.1186/s12879-018-3430-0>
40. Eley, N. T., Namey, E., McKenna, K., Johnson, A. C., & Guest, G. (2019). Beyond the individual: Social and cultural influences on the health-seeking behaviors of African American men. *American Journal of Men's Health*, 13(1), 155798831982995. <https://doi.org/10.1177/1557988319829953>
41. Elizabeth Boskey. (2008, January 4). *How the health belief model influences your behaviors*. Verywell Mind. <https://www.verywellmind.com/health-belief-model-3132721>
42. Elizabeth Boskey. (2024). *How the health belief model influences your behaviors*. Verywell Mind. <https://www.verywellmind.com/health-belief-model-3132721>
43. Emre Aytekin. (2020, April). *Steps taken by countries in fighting COVID-19 pandemic*. <https://www.aa.com.tr/en/health/steps-taken-by-countries-in-fighting-covid-19-pandemic/1812009>
44. Eric Fevre. (2020, April 6). *Kenya's slums are a haven for viruses: Here's what we know*. PreventionWeb.net: the knowledge platform for disaster risk reduction. <https://www.preventionweb.net/news/kenyas-slums-are-haven-viruses-heres-what-we-know>
45. Ezeh, A., Oyebode, O., Satterthwaite, D., Chen, Y., Ndugwa, R., Sartori, J., Mberu, B., Melendez-Torres, G. J., Haregu, T., Watson, S. I., Caiaffa, W., Capon, A., & Lilford, R. J. (2017). The history, geography, and sociology of slums and the health problems of people who live in slums. *The Lancet*, 389(10068), 547-558. [https://doi.org/10.1016/s0140-6736\(16\)31650-6](https://doi.org/10.1016/s0140-6736(16)31650-6)
46. Filip, R., Gheorghita Puscaselu, R., Anchidin-Norocel, L., Dimian, M., & Savage, W. K. (2022). Global challenges to public health care systems during the COVID-19 pandemic: A review of pandemic measures and problems. *Journal of Personalized Medicine*, 12(8), 1295. <https://doi.org/10.3390/jpm12081295>
47. *First case of coronavirus disease confirmed in Kenya*. (2020, March). MINISTRY OF HEALTH – REPUBLIC OF KENYA. <https://www.health.go.ke/first-case-of-coronavirus-disease-confirmed-in-kenya/#:~:text=Port%20Health%20Services->

[.FIRST%20CASE%20OF%20CORONAVIRUS%20DISEASE%20CONFIRMED%20IN%20KENYA,in%20China%20in%20December%202019](#)

48. Friesen, J., & Pelz, P. F. (2020). COVID-19 and slums: A pandemic highlights gaps in knowledge about urban poverty. *JMIR Public Health and Surveillance*, 6(3), e19578. <https://doi.org/10.2196/19578>
49. Gabrani, J., Schindler, C., & Wyss, K. (2021). Health seeking behavior among adults and elderly with chronic health Condition(s) in Albania. *Frontiers in Public Health*, 9. <https://doi.org/10.3389/fpubh.2021.616014>
50. Ganeshkumar, P., Kamaraj, P., Mageswari, S., Gayathri, K., Gajendran, S., Selvi, S. K., Rajan, H. M., Balusamy, M., & Vijayaprabha, R. (2023). Health-seeking behaviour and its determinants of health of under-5 children living in urban slums of Chennai, India 2018. *Journal of Family Medicine and Primary Care*, 12(11), 2934-2941. <https://doi.org/10.4103/jfmpe.jfmpe.817.23>
51. Gibson, L., & Rush, D. (2020). Novel coronavirus in Cape Town informal settlements: Feasibility of using informal dwelling outlines to identify high risk areas for COVID-19 transmission from a social distancing perspective. *JMIR Public Health and Surveillance*, 6(2), e18844. <https://doi.org/10.2196/18844>
52. Ginette Azcona, Antra Bhatt, & Robert Ndugwa. (2020). *COVID-19 exposes the harsh realities of gender inequality in slums*. UN-Habitat - A Better Urban Future | UN-Habitat. <https://unhabitat.org/news/03-jun-2020/covid-19-exposes-the-harsh-realities-of-gender-inequality-in-slums>
53. *Goal 3: Good health and well-being*. (2023, April 18). The Global Goals. <https://www.globalgoals.org/goals/3-good-health-and-well-being/>
54. Govender, K., Girdwood, S., Letswalo, D., Long, L., Meyer-Rath, G., & Miot, J. (2021). Primary healthcare seeking behaviour of low-income patients across the public and private health sectors in South Africa. *BMC Public Health*, 21(1). <https://doi.org/10.1186/s12889-021-11678-9>
55. Hasan, M. Z., Hasan, A. M., Rabbani, M. G., Selim, M. A., & Mahmood, S. S. (2022). Knowledge, attitude, and practice of Bangladeshi urban slum dwellers towards COVID-19 transmission-prevention: A cross-sectional study. *PLOS Global Public Health*, 2(9), e0001017. <https://doi.org/10.1371/journal.pgph.0001017>
56. Hasan, M. Z., Rabbani, M. G., Ahmed, M. W., Mehdi, G. G., Tisha, K. I., Reidpath, D. D., Hanifi, S. M., & Mahmood, S. S. (2024). Assessment of socioeconomic

- and health vulnerability among urban slum dwellers in Bangladesh: A cross-sectional study. *BMC Public Health*, 24(1). <https://doi.org/10.1186/s12889-024-20425-9>
57. *Health services consultation: Reuben segment 1 (Feed the children, Gatope & Mombasa)*, 22.11.2018 — *Muongano wa Wanavijiji*. (2021, June 8). Muungano wa Wanavijiji. <https://www.muungano.net/spa-materials/2018/11/22/health>
 58. *Health*. (2023, September 7). United Nations Sustainable Development. <https://www.un.org/sustainabledevelopment/health/>
 59. Hirner, S., Pigoga, J., Naidoo, A., Calvello Hynes, E., Omer, Y., Wallis, L., & Bills, C. (2021). 101 potential solutions for screening, triage, and severity scoring of suspected COVID-19 positive patients in low-resource settings: A scoping review. *Annals of Emergency Medicine*, 78(2), S46. <https://doi.org/10.1016/j.annemergmed.2021.07.103>
 60. Hossain, M. R., Parray, A. A., Sultana, R., Aktar, B., & Rashid, S. F. (2023). Exploring healthcare-seeking behavior of most vulnerable groups amid the COVID-19 pandemic in the humanitarian context in Cox's Bazar, Bangladesh: Findings from an exploratory qualitative study. *PLOS Global Public Health*, 3(3), e0000382. <https://doi.org/10.1371/journal.pgph.0000382>
 61. *How to protect yourself and others*. (2024, July 24). COVID-19. <https://www.cdc.gov/covid/prevention/index.html>
 62. Hrdlickova, Z., Macarthy, J., Conteh, A., Ali, S., Blango, V., & Sesay, A. (2023). Ebola and slum dwellers: Community engagement and epidemic response strategies in urban Sierra Leone. <https://doi.org/10.2139/ssrn.4272199>
 63. <https://www.the-star.co.ke/authors/charlesmghenyi/>. (2020, May 24). *Mombasa slums flirt with COVID-19 explosion*. The Star. <https://www.the-star.co.ke/news/big-read/2020-05-24-mombasa-slums-flirt-with-covid-19-explosion/>
 64. Hussein, S. N., Omoto, A. L., & Audi, G. (2023). Urban slums morbidity spectrum: A cross sectional study on Korogocho slum, Kenya. *Asian Journal of Research in Infectious Diseases*, 14(4), 103-112. <https://doi.org/10.9734/ajrid/2023/v14i4313>
 65. Ifeanyi Livinus Udenweze (Walden University). (2019). Impact of Socioeconomic Status and Health-Seeking Behavior on Malaria in Pregnancy. *WALDEN DISSERTATIONS AND DOCTORAL STUDIES*. <https://scholarworks.waldenu.edu/dissertations/7438/>
 66. *In WHO global pulse survey, 90% of countries report disruptions to essential health services since COVID-19 pandemic*. (2020, August 31). WHO | World Health

Organization. <https://www.who.int/news/item/31-08-2020-in-who-global-pulse-survey-90-of-countries-report-disruptions-to-essential-health-services-since-covid-19-pandemic>

67. Islam, T., & Kibria, M. G. (2020). Challenges to the prevention of COVID-19 spread in slums of Bangladesh. *Journal of Public Health*, 42(3), 637-638. <https://doi.org/10.1093/pubmed/fdaa088>
68. Jahan, N., Akter, S., Heme, M. A., Chandra, D., Polly, A., Siddiqua, L., Rahman, R., Mohsin, K. F., & Hossain, M. T. (2022). Healthcare-seeking behaviour of marginalised older people in urban slums: A cross-sectional survey study in Khulna city, Bangladesh. *BMJ Open*, 12(11), e066376. <https://doi.org/10.1136/bmjopen-2022-066376>
69. Jahangir, E., Irazola, V., & Rubinstein, A. (2012). Need, enabling, predisposing, and behavioral determinants of access to preventative care in Argentina: Analysis of the national survey of risk factors. *PLoS ONE*, 7(9), e45053. <https://doi.org/10.1371/journal.pone.0045053>
70. Jakubowski, A., Egger, D., Nekesa, C., Lowe, L., Walker, M., & Miguel, E. (2021). Self-reported vs directly observed face mask use in Kenya. *JAMA Network Open*, 4(7), e2118830. <https://doi.org/10.1001/jamanetworkopen.2021.18830>
71. Jalloh, M. F., Sengeh, P., Monasch, R., Jalloh, M. B., DeLuca, N., Dyson, M., Golf, S., Sakurai, Y., Conteh, L., Sesay, S., Brown, V., Li, W., Mermin, J., & Bunnell, R. (2017). National survey of Ebola-related knowledge, attitudes and practices before the outbreak peak in Sierra Leone: August 2014. *BMJ Global Health*, 2(4), e000285. <https://doi.org/10.1136/bmjgh-2017-000285>
72. Jason Corburn, & Chantal Hildebrand. (2015, April). *Slum sanitation and the social determinants of women's health in Nairobi, Kenya*. PubMed Central (PMC). <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4427764/>
73. Jebiril, N. (2020). World Health Organization declared a pandemic public health menace: A systematic review of the coronavirus disease 2019 “COVID-19”. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.3566298>
74. Jensen L, & Molina GG. (2020, July). *COVID-19 and health system vulnerabilities in the poorest developing countries*. *Transitions Series: UNDP Global Policy Network Brief*.
75. Kadushin, G. (2004). Home health care utilization: A review of the research for social work. *Health & Social Work*, 29(3), 219-244. <https://doi.org/10.1093/hsw/29.3.219>
76. Kawuki, J., Chen, S., Fang, Y., Liang, X., Chan, P. S., & Wang, Z. (2023). COVID-19 vaccine acceptance, attitude and perception among slum and underserved communities: A

- systematic review and meta-analysis. *Vaccines*, 11(5), 886. <https://doi.org/10.3390/vaccines11050886>
77. Kenya National Bureau of Statistics (KNBS). (2019). KENYA POPULATION AND HOUSING CENSUS: POPULATION BY COUNTY AND SUB-COUNTY. <http://www.knbs.or.ke>
 78. Khan, M. H., & Yadav, H. (2020). Sanitization during and after COVID-19 pandemic: A short review. *Transactions of the Indian National Academy of Engineering*, 5(4), 617-627. <https://doi.org/10.1007/s41403-020-00177-9>
 79. KIBET JEROTICH PHYLIS. (2016). CAREGIVERS HEALTH SEEKING BEHAVIOUR FOR HOME INJURIES AMONG CHILDREN BETWEEN 0- 12 YEARS IN KAPTEMBWA , NAKURU COUNTY, KENYA. <chrome-extension://efaidnbmninnibpcapjpcgclclefindmkaj/https://ir-library.ku.ac.ke/bitstream/handle/123456789/24607/Caregivers%20Health%20Seeking%20Behaviour%20For%20Home%20Injuries%20Among%20Children.....pdf?sequence=1&isAllowed=y>
 80. Koh, G. (2020). Faculty opinions recommendation of report of the WHO-China joint mission on coronavirus disease 2019 (COVID-19). *Faculty Opinions – Post-Publication Peer Review of the Biomedical Literature*. <https://doi.org/10.3410/f.737509210.793572110>
 81. Kosasih, D. M., Adam, S., Uchida, M., Yamazaki, C., Koyama, H., & Hamazaki, K. (2022). Determinant factors behind changes in health-seeking behaviour before and after implementation of universal health coverage in Indonesia. *BMC Public Health*, 22(1). <https://doi.org/10.1186/s12889-022-13142-8>
 82. Kowalczyk, O., Roszkowski, K., Montane, X., Pawliszak, W., Tylkowski, B., & Bajek, A. (2020). Religion and faith perception in a pandemic of COVID-19. *Journal of Religion and Health*, 59(6), 2671-2677. <https://doi.org/10.1007/s10943-020-01088-3>
 83. Laura Cheptarus. (2020, March 21). *Slum dwellers decry poor water access as COVID-19 pushes for hand-washing culture*. The Star. <https://www.the-star.co.ke/business/2020-03-21-slum-dwellers-decry-poor-water-access-as-covid-19-pushes-for-hand-washing-culture/>
 84. Laurie P Whitsel, Funke Ajenikoko, Paul J. Chase, Janay Johnson, Brooke McSwain, Melanie Phelps, Reyna Radcliffe, & Mark A. Faghy. (2023). Public policy for healthy living: How COVID-19 has changed the landscape. *Pubmed Central*, 76, 49-56. <https://doi.org/10.1016/j.pcad.2023.01.002>

85. Lei, Z., Cao, H., Jie, Y., Huang, Z., Guo, X., Chen, J., Peng, L., Cao, H., Dai, X., Liu, J., Li, X., Zhu, J., Xu, W., Chen, D., Gao, Z., He, J., & Lin, B. (2020). A cross-sectional comparison of epidemiological and clinical features of patients with coronavirus disease (COVID-19) in Wuhan and outside Wuhan, China. *Travel Medicine and Infectious Disease*, 35, 101664. <https://doi.org/10.1016/j.tmaid.2020.101664>
86. Li, X., Deng, L., Yang, H., & Wang, H. (2020). Effect of socioeconomic status on the healthcare-seeking behavior of migrant workers in China. *PLOS ONE*, 15(8), e0237867. <https://doi.org/10.1371/journal.pone.0237867>
87. Lonnidis JP. (2020). *Coronavirus disease 2019: The harms of exaggerated information and nonevidence-based measures*. *European Journal of Clinical Investigation*. <https://doi.org/10.1111/eci.13223>
88. Mahajan, S., Sharma, S., & Lal, M. (2020). Morbidity pattern, availability and utilization of health services: A study among the male youth (15–24 years) living in the slums. *International Journal of Applied and Basic Medical Research*, 10(1), 17. https://doi.org/10.4103/ijabmr.ijabmr_275_19
89. Malapela, R., Baratedi, W., & Thupayagale-Tshweneagae, G. (2023). Use of home remedies for the treatment and prevention of coronavirus disease: An integrative review. <https://doi.org/10.54985/peeref.2306p3703876>
90. Mamun, M., & Fatima, K. (2021). Slum dwellers' perception about COVID-19: A study in Dhaka metropolis slums. *Technium Social Sciences Journal*, 21, 728-764. <https://doi.org/10.47577/tssj.v21i1.3797>
91. Mehrolhassani, M. H., Yazdi-Feyzabadi, V., Rafiee, N., & Ghasemi, S. (2022). Health protection challenges of slums residents during the COVID-19 pandemic, according to the social determinants of health framework. *Journal of Education and Health Promotion*, 11(1), 197. https://doi.org/10.4103/jehp.jehp_958_21
92. Miller, J., & Burger, L. (2020, November 16). *Breakthrough COVID vaccine tech could help defeat other diseases*. U.S. <https://www.reuters.com/article/idUKKBN27W2PJ>
93. Ministry of Health, Kenya. (2020). *GUIDANCE FOR INFECTION PREVENTION AND CONTROL FOR CORONAVIRUS DISEASE (COVID-19) IN HOMES AND RESIDENTIAL COMMUNITIES*. <https://www.health.go.ke/wp-content/uploads/2020/03/COVID-19-Plan-Prevention-and-Control-in-Communities.pdf>
94. Ministry of Land, Housing and Urban Development (Republic of Kenya). (2016). National Slum Upgrading and Prevention Policy. <chrome-extension://efaidnbmnribpcajpcglclefindmkaj/https://www.urbanagendaplatform.org/sit>

[es/default/files/2022-04/National%20Slum%20Upgrading%20%26%20Prevention%20Policy.pdf](#)

95. Mombasa County. (2018). County Integrated Development Plan (CIDP). <https://repository.kippra.or.ke/bitstream/handle/123456789/410/2018-2022%20Mombasa%20County%20CIDP.pdf?sequence=1&isAllowed=y>
96. Mombasa. (n.d.). Slum Dwellers International. <https://sdinet.org/tag/mombasa/>
97. Moses Ngware (APHRC). (2018, October 29). *The irony of poor urban children left out from free schooling June*. aphrc.org. <https://aphrc.org/blogarticle/the-irony-of-poor-urban-children-left-out-from-free-schooling-june/>
98. Mou, T. J., Afroz, K. A., Haq, M. A., Jahan, D., Ahmad, R., Islam, T., Chowdhury, K., Kumar, S., Irfan, M., Islam, M. S., Islam, M. F., Adnan, N., & Haque, M. (2022). The effect of socio-demographic factors in health-seeking behaviors among Bangladeshi residents during the first wave of COVID-19. *Healthcare*, 10(3), 483. <https://doi.org/10.3390/healthcare10030483>
99. Muchangi, J. M., Munai, D., Moraro, R., Thorseth, A. H., Tupeyia, V., Muriithi, J., Lamb, J., Gichuki, R., Greenland, K., & Simiyu, S. (2024). Lessons from the deployment and management of public handwashing stations in response to the COVID-19 pandemic in Kenya: A cross-sectional, observational study. *PLOS ONE*, 19(6), e0303073. <https://doi.org/10.1371/journal.pone.0303073>
100. Mukeku, J. (2018). Urban slum morphology and socio-economic analogies: A case study of Kibera slum, Nairobi, Kenya. *Urbanisation*, 3(1), 17-32. <https://doi.org/10.1177/2455747118790581>
101. Munyaradzi Makoni. (2022, February). *Africa prepares for coronavirus*. The Lancet. [https://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(20\)30355-X/fulltext](https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(20)30355-X/fulltext)
102. Mwoka, M., Biermann, O., Ettman, C. K., Abdalla, S. M., Ambuko, J., Pearson, M., Rashid, S. F., Zeinali, Z., Galea, S., Valladares, L. M., & Mberu, B. (2021). Housing as a social determinant of health: Evidence from Singapore, the UK, and Kenya: the 3-D commission. *Journal of Urban Health*, 98(S1), 15-30. <https://doi.org/10.1007/s11524-021-00557-8>
103. N Taffa, G Chepngeno, & M Amuyunzu-Nyamongo. (2005). *Child morbidity and healthcare utilization in the slums of Nairobi, Kenya*. PubMed. <https://doi.org/10.1093/tropej/fmi012>

104. Naomi Nyambura Ngaruiya (University of Nairobi). (2017). Factors Influencing sexual behaviors among slum dwellers in Kenya: A case of behavior change and communication project in Nyeri Town.
105. Nasibo Kabale. (2020, March 24). *Coronavirus: Kenya takes bold steps after cases rise to three*. Nation Media Group. <https://nation.africa/kenya/news/coronavirus-kenya-takes-bold-steps-after-cases-rise-to-three-278692>
106. Nayak, S., & Jatav, S. S. (2023). Are livelihoods of slum dwellers sustainable and secure in developing economies? Evidences from Lucknow, Uttar Pradesh in India. *Heliyon*, 9(9), e19177. <https://doi.org/10.1016/j.heliyon.2023.e19177>
107. Nguyen, T. P., & Pattanarsi, S. (2022). WASH, vulnerability, severity, and the response of urban slum dwellers to the COVID-19 pandemic. *Journal of Water, Sanitation and Hygiene for Development*, 12(8), 600-611. <https://doi.org/10.2166/washdev.2022.076>
108. Nita Bhalla. (2023, June). *Slum populations are set to surge as the housing crisis bites*. World Economic Forum. <https://www.weforum.org/agenda/2023/06/slum-population-affordable-housing-united-nations/>
109. Nuwematsiko, R., Nabiryo, M., Bomboka, J. B., Nalinya, S., Musoke, D., Okello, D., & Wanyenze, R. K. (2022). Unintended socio-economic and health consequences of COVID-19 among slum dwellers in Kampala, Uganda. *BMC Public Health*, 22(1). <https://doi.org/10.1186/s12889-021-12453-6>
110. Nygaard, E., Hussain, A., Siqveland, J., & Heir, T. (2016). General self-efficacy and posttraumatic stress after a natural disaster: A longitudinal study. *BMC Psychology*, 4(1). <https://doi.org/10.1186/s40359-016-0119-2>
111. Nzau, B., & Trillo, C. (2020). Affordable housing provision in informal settlements through land value capture and Inclusionary housing. *Sustainability*, 12(15), 5975. <https://doi.org/10.3390/su12155975>
112. O.O. Latunji, & O.O. Akinyemi. (2018, June). *Factors influencing health-seeking behaviour among civil servants in Ibadan, Nigeria*. PubMed Central (PMC). <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6143883/>
113. OECD. (2020, June). *Strengthening health systems during a pandemic: The role of development finance*. <https://www.oecd.org/coronavirus/policy-responses/strengthening-health-systems-during-a-pandemic-the-role-of-development-finance-f762bf1c/>
114. Oeltmann, J. E., Vohra, D., Matulewicz, H. H., DeLuca, N., Smith, J. P., Couzens, C., Lash, R. R., Harvey, B., Boyette, M., Edwards, A., Talboy, P. M., Dubose, O., Regan, P.,

- Loosier, P., Caruso, E., Katz, D. J., Taylor, M. M., & Moonan, P. K. (2023). Isolation and quarantine for coronavirus disease 2019 in the United States, 2020–2022. *Clinical Infectious Diseases*, 77(2), 212-219. <https://doi.org/10.1093/cid/ciad163>
115. Okware, S., Omaswa, F., Talisuna, A., Amandua, J., Amone, J., Onek, P., Opiro, A., Wamala, J., Lubwama, J., Luswa, L., Kagwa, P., & Tylleskar, T. (2015). Managing Ebola from rural to urban slum settings: Experiences from Uganda. *African Health Sciences*, 15(1), 312. <https://doi.org/10.4314/ahs.v15i1.45>
 116. Olenja J. (2003). *Editorial health seeking behaviour in context | East African medical journal*. Digital Object Identifier System. <https://doi.org/10.4314/eamj.v80i2.8689>
 117. Onuegbu, C., Harlock, J., & Griffiths, F. (2023). Use, characteristics and influence of lay consultation networks on treatment-seeking decisions in slums of Nigeria: A cross-sectional survey. *BMJ Open*, 13(5), e065152. <https://doi.org/10.1136/bmjopen-2022-065152>
 118. Onyemaechi, S., & Ezenwaka, U. (2022). Influence of sub-national social health insurance scheme on enrollees' health seeking behaviour in Anambra state, Nigeria: A pre and post study. *BMC Public Health*, 22(1). <https://doi.org/10.1186/s12889-022-13606-x>
 119. Otieno, P. O., Wambiya, E. O., Mohamed, S. M., Mutua, M. K., Kibe, P. M., Mwangi, B., & Donfouet, H. P. (2020). Access to primary healthcare services and associated factors in urban slums in Nairobi-Kenya. <https://doi.org/10.21203/rs.2.17010/v2>
 120. Owiti, A., Oyugi, J., & Essink, D. (2018). Utilization of Kenya's free maternal health services among women living in Kibera slums: A cross-sectional study. *Pan African Medical Journal*, 30. <https://doi.org/10.11604/pamj.2018.30.86.15151>
 121. Park, J., Kibe, P., Yeboah, G., Oyeboode, O., Harris, B., Ajisola, M. M., Griffiths, F., Aujla, N., Gill, P., Lilford, R. J., & Chen, Y. (2022). Factors associated with accessing and utilisation of healthcare and provision of health services for residents of slums in low and middle-income countries: A scoping review of recent literature. *BMJ Open*, 12(5), e055415. <https://doi.org/10.1136/bmjopen-2021-055415>
 122. Pascalina Chanda-Kapata, Nathan Kapata, Felix Masiye, Mwendaweli Maboshe, Eveline Klinkenberg, Frank Cobelens, & Martin P Grobusch. (2016). Health Seeking Behaviour among Individuals with Presumptive Tuberculosis in Zambia. *PubMed*, 11(10). <https://doi.org/10.1371/journal.pone.0163975>
 123. Pelullo, C. P., Tortoriello, P., Angelillo, S., Licata, F., Napolitano, F., & Di Giuseppe, G. (2022). Assessment of perceived health status and access to health service during the

- COVID-19 pandemic: Cross-sectional survey in Italy. *Vaccines*, 10(12), 2051. <https://doi.org/10.3390/vaccines10122051>
124. Prof. Alfred Omenya. (2018). STATE OF HOUSING IN KENYA, Will Government Strategy Deliver on Social Housing? *Economic and social rights centre (Haki Jamii)*.
125. Qian, X., Ren, R., Wang, Y., Guo, Y., Fang, J., Wu, Z., Liu, P., & Han, T. (2020). Fighting against the common enemy of COVID-19: A practice of building a community with a shared future for mankind. *Infectious Diseases of Poverty*, 9(1). <https://doi.org/10.1186/s40249-020-00650-1>
126. Quinn, G. A., Connolly, M., Fenton, N. E., Hatfill, S. J., Hynds, P., ÓhAiseadha, C., Sikora, K., Soon, W., & Connolly, R. (2024). undefined. *Journal of Clinical Medicine*, 13(2), 334. <https://doi.org/10.3390/jcm13020334>
127. Ramos, H. (2009). Patrick white, developing research questions: A guide for social scientists. *Canadian Journal of Sociology*, 34(4), 1145-1147. <https://doi.org/10.29173/cjs6675>
128. Rasna Warah. (2023, November 6). *Kenya cannot wish away slums like Kibera*. The Elephant - African analysis, opinion and investigation. <https://www.theelephant.info/opinion/2023/10/11/kenya-cannot-wish-away-slums-like-kibera/>
129. Renzaho, A. M., Doh, D., Mahumud, R. A., Galukande, M., & Kamara, J. K. (2020). The impact of the livelihoods and income fortification and socio-civic transformation project on the quality of life, wellbeing, self-esteem, and quality of neighbourhood social environment among the youth in slum areas of in Kampala, Uganda. *BMC Public Health*, 20(1). <https://doi.org/10.1186/s12889-020-09868-y>
130. Rizwan Khan, A. Y., Aziz Rana, M., Naqvi, D. E., Asif, A., Najeeb, F., & Naseem, S. (2024). Health-seeking behaviour and its determinants following the COVID-19 pandemic. *Cureus*. <https://doi.org/10.7759/cureus.52225>
131. Rizwan Khan, A. Y., Aziz Rana, M., Naqvi, D. E., Asif, A., Najeeb, F., & Naseem, S. (2024). Health-seeking behaviour and its determinants following the COVID-19 pandemic. *Cureus*. <https://doi.org/10.7759/cureus.52225>
132. Robert E Snyder, Mariel A Marlow, & Lee W Riley. (2014). Ebola in urban slums: the elephant in the room. *Lancet Global Health*, 2(12). [https://doi.org/10.1016/S2214-109X\(14\)70339-0](https://doi.org/10.1016/S2214-109X(14)70339-0)

133. Ronald M. Andersen, & Pamela L. Davidson. (2014). Improving access to care in America: Individual and contextual indicators. https://www.researchgate.net/publication/237675193_Improving_access_to_care_in_America_Individual_and_contextual_indicators
134. Rosenstock, I. M. (1966). Why people use health services. *The Milbank Memorial Fund Quarterly*, 44(3), 94. <https://doi.org/10.2307/3348967>
135. Rosenstock, I. M., Strecher, V. J., & Becker, M. H. (1988). Social learning theory and the health belief model. *Health Education Quarterly*, 15(2), 175-183. <https://doi.org/10.1177/109019818801500203>
136. Salon, D., & Gulyani, S. (2010). Mobility, poverty, and gender: Travel ‘Choices’ of slum residents in Nairobi, Kenya. *Transport Reviews*, 30(5), 641-657. <https://doi.org/10.1080/01441640903298998>
137. Sami, W., Almeahmadi, B., Althewaikh, T., ALhussain, A., Bin Saqyan, A., Alosaimi, M., Alhayden, B., & Medani, K. (2022). Effect of COVID-19 on patients health-seeking behaviour in Zulfi city. *Advances in Human Biology*, 0(0), 0. https://doi.org/10.4103/aihb.aihb_67_22
138. Sascha K. Garrey, Erin Takemoto, Lysa Petrsoric, & Lisa M. Gargano. (2022). Self-Efficacy and Mental Health Help-Seeking Behavior of World Trade Center Health Registry Enrollees, 2015–2016. *International Journal of Environmental Research and Public Health*.. <https://doi.org/10.3390/ijerph19127113>
139. Schmidt, T., Cloete, A., Davids, A., Makola, L., Zondi, N., & Jantjies, M. (2020). Myths, misconceptions, othering and stigmatizing responses to COVID-19 in South Africa: A rapid qualitative assessment. *PLOS ONE*, 15(12), e0244420. <https://doi.org/10.1371/journal.pone.0244420>
140. Seddiky, M. A., Madeha Chowdhury, N., & Ara, E. (2023). Satisfaction level of slum dwellers with the assistance of the city Corporation during COVID 19: The Bangladesh context. <https://doi.org/10.20944/preprints202306.1474.v1>
141. Seruwagi, G., Masaba, H. N., Kyamulabi, A., Nzesei, C. N., Magumba, D., Ssematiko, M., Abura, F., Luswata, B., & Lugada, E. (2022). Slum dwellers’ adherence to COVID-19 guidelines: Application of the COM-B model to barriers and facilitators of behavioural change in Uganda’s urban slums. <https://doi.org/10.21203/rs.3.rs-1295790/v1>
142. SeyedAlinaghi, S., Afsahi, A. M., Shahidi, R., Afzalian, A., Mirzapour, P., Eslami, M., Ahmadi, S., Matini, P., Yarmohammadi, S., Saeed Tamehri Zadeh, S., Asili, P., Paranjkhoo, P., Ramezani, M., Nooralioghli Parikhani, S., Sanaati, F., Amiri Fard, I.,

- Emamgholizade Baboli, E., Mansouri, S., Pashaei, A., ... Hackett, D. (2023). Social stigma during COVID-19: A systematic review. *SAGE Open Medicine*, 11. <https://doi.org/10.1177/20503121231208273>
143. Shadia Sharmin, & Farhanaz Luna. (2015). The Socio-Economic Condition of Female Slum Dwellers: A study on Slums in Dhaka. *IOSR Journal Of Humanities And Social Sciences*, 20(3), 26-32. <https://doi.org/10.9790/0837-20352632>
144. Shadmi, E., Chen, Y., Dourado, I., Faran-Perach, I., Furler, J., Hangoma, P., Hanvoravongchai, P., Obando, C., Petrosyan, V., Rao, K. D., Ruano, A. L., Shi, L., De Souza, L. E., Spitzer-Shohat, S., Sturgiss, E., Suphanchaimat, R., Uribe, M. V., & Willems, S. (2020). Health equity and COVID-19: Global perspectives. *International Journal for Equity in Health*, 19(1). <https://doi.org/10.1186/s12939-020-01218-z>
145. Sharmin, R., Rayna, S. E., Khalequzzaman, M., Rahman, K. M., & Islam, S. S. (2021). COVID-19 testing: Perceived barriers among the urban slum dwellers of Dhaka, Bangladesh. *Journal of Health and Medical Sciences*, 4(4). <https://doi.org/10.31014/aior.1994.04.04.194>
146. Shrestha, A., Kunwar, B. M., & Meierhofer, R. (2022). Water, sanitation, hygiene practices, health and nutritional status among children before and during the COVID-19 pandemic: Longitudinal evidence from remote areas of Dailekh and Achham districts in Nepal. *BMC Public Health*, 22(1). <https://doi.org/10.1186/s12889-022-14346-8>
147. Shupler, M., Mwitari, J., Gohole, A., Anderson de Cuevas, R., Puzzolo, E., Čukić, I., Nix, E., & Pope, D. (2021). COVID-19 impacts on household energy & food security in a Kenyan informal settlement: The need for integrated approaches to the SDGs. *Renewable and Sustainable Energy Reviews*, 144, 111018. <https://doi.org/10.1016/j.rser.2021.111018>
148. Silubonde-Moyana, T. M., Draper, C. E., & Norris, S. A. (2023). Effectiveness of behavioural interventions to influence COVID-19 outcomes: A scoping review. *Preventive Medicine*, 172, 107499. <https://doi.org/10.1016/j.ypmed.2023.107499>
149. *Slum-dwellers disproportionately affected by COVID-19, study suggests*. (2022, May 6). Gavi, the Vaccine Alliance. <https://www.gavi.org/vaccineswork/slum-dwellers-disproportionately-affected-covid-19-study-suggests>
150. Snyder, R. E., Boone, C. E., Cardoso, C. A., Aguiar-Alves, F., Neves, F. P., & Riley, L. W. (2017). Zika: A scourge in urban slums. *PLOS Neglected Tropical Diseases*, 11(3), e0005287. <https://doi.org/10.1371/journal.pntd.0005287>

151. Solymári, D., Kairu, E., Czirják, R., & Tarrósy, I. (2022). The impact of COVID-19 on the livelihoods of Kenyan slum dwellers and the need for an integrated policy approach. *PLOS ONE*, 17(8), e0271196. <https://doi.org/10.1371/journal.pone.0271196>
152. Song, S., Zang, S., Gong, L., Xu, C., Lin, L., Francis, M. R., & Hou, Z. (2022). Willingness and uptake of the COVID-19 testing and vaccination in urban China during the low-risk period: A cross-sectional study. *BMC Public Health*, 22(1). <https://doi.org/10.1186/s12889-022-12969-5>
153. *Steps taken by countries in fighting COVID-19 pandemic*. (n.d.). Anadolu Ajansı. <https://www.aa.com.tr/en/health/steps-taken-by-countries-in-fighting-covid-19-pandemic/1812009>
154. Tay, M. Z., Ang, L. W., Wei, W. E., Lee, V. J., Leo, Y., & Toh, M. P. (2022). Health-seeking behavior of COVID-19 cases during the first eight weeks of the outbreak in Singapore: Differences between local community and imported cases and having visits to single or multiple healthcare providers. *BMC Public Health*, 22(1). <https://doi.org/10.1186/s12889-022-12637-8>
155. Tenforde MW, Self WH, & Gaglani M et al. (2022, March 23). *Effectiveness of mRNA Vaccination in Preventing COVID-19–Associated Invasive Mechanical Ventilation and Death — United States, March 2021–January 2022* (MMWR Morb Mortal Wkly Rep 2022;71:459–465.). DOI: <http://dx.doi.org/10.15585/mmwr.mm7112e1>
156. Teo, K., Churchill, R., Riadi, I., Kervin, L., & Cosco, T. (2021). Help-seeking behaviours among older adults: A scoping review protocol. *BMJ Open*, 11(2), e043554. <https://doi.org/10.1136/bmjopen-2020-043554>
157. Tesfaye, Y., Agenagnew, L., Terefe Tucho, G., Anand, S., Birhanu, Z., Ahmed, G., Getenet, M., & Yitbarek, K. (2020). Attitude and help-seeking behavior of the community towards mental health problems. *PLOS ONE*, 15(11), e0242160. <https://doi.org/10.1371/journal.pone.0242160>
158. Tobias Marevesa, Esther Mavengano, & Paul Nepapleh Nkamta. (2021). Home Remedies as a Medical Development in the Context of the Covid-19 Pandemic in Zimbabwe: A Cultural Memory Paradigm. *Sabinet African Journal*, 19(1). https://hdl.handle.net/10520/ejc-genbeh_v19_n1_a20
159. Tune, S. N., Hoque, R., Naher, N., Islam, N., Mazedul Islam, M., & Ahmed, S. M. (2020). Health, illness and healthcare-seeking behaviour of the street dwellers of Dhaka City, Bangladesh: Qualitative exploratory study. *BMJ Open*, 10(10), e035663. <https://doi.org/10.1136/bmjopen-2019-035663>

160. UN Habitat, & UN Women. (2020). Harsh Realities: Marginalised women in Cities of Developing World. *Spotlight on the SDGs*. <https://doi.org/10.18356/ab4994f9-en>
161. UN-Habitat. (2018). SDG Indicator 11.1.1 Training Module: Adequate Housing and Slum Upgrading. *United Nations Human Settlement Programme (UN-Habitat), Nairobi*.
162. Von Seidlein, L., Alabaster, G., Deen, J., & Knudsen, J. (2021). Crowding has consequences: Prevention and management of COVID-19 in informal urban settlements. *Building and Environment*, 188, 107472. <https://doi.org/10.1016/j.buildenv.2020.107472>
163. Walker P, Whittaker C, Watser O, Baguelin M, Bhatia S, & Ainslie K et al. (2020). *The Global Impact of COVID-19 and Strategies for Mitigation and Suppression*. Imperial College London. Imperial College COVID-19 Response Team. <https://doi.org/10.25561/77735>
164. WHO. (2021, April 23). *COVID-19 continues to disrupt essential health services in 90% of countries*. WHO | World Health Organization. <https://www.who.int/news/item/23-04-2021-covid-19-continues-to-disrupt-essential-health-services-in-90-of-countries>
165. WHO. (2022). *Coronavirus disease (COVID-19): Vaccines*. World Health Organization (WHO). [https://www.who.int/emergencies/diseases/novel-coronavirus-2019/question-and-answers-hub/q-a-detail/coronavirus-disease-\(covid-19\)-vaccines?adgroupsurvey={adgroupsurvey}&gclid=Cj0KCQjw48OaBhDWARIsAMd966DKy9rY0JeCTh-J-3HbbNI4MTqupavcb054ff5GX3xL1Y2zI3KGXowaAiniEALw_wcB](https://www.who.int/emergencies/diseases/novel-coronavirus-2019/question-and-answers-hub/q-a-detail/coronavirus-disease-(covid-19)-vaccines?adgroupsurvey={adgroupsurvey}&gclid=Cj0KCQjw48OaBhDWARIsAMd966DKy9rY0JeCTh-J-3HbbNI4MTqupavcb054ff5GX3xL1Y2zI3KGXowaAiniEALw_wcB)
166. WHO. (2022). *Measuring the effectiveness and impact of public health and social measures*. World Health Organization (WHO). <https://www.who.int/activities/measuring-the-effectiveness-and-impact-of-public-health-and-social-measures>
167. WHO. (2023, April 20). *Ebola virus disease*. World Health Organization (WHO). <https://www.who.int/news-room/fact-sheets/detail/ebola-virus-disease>
168. World Bank Group. (2020). *COVID-19 and the Urban Poor: Addressing those in slums. Building Sustainable cities and Communities*. <https://thedocs.worldbank.org/en/doc/304801589388481883-0200022020/original/AddressingCOVID19andtheUrbanPoorSHORTversionrev3logos.pdf>
169. *World cities report 2016: Urbanization and development - Emerging futures* | UN-habitat. (n.d.). UN-Habitat - A Better Urban Future | UN-Habitat. <https://unhabitat.org/world-cities-report-2016>

170. Wüthrich-Grossenbacher, U., Midzi, N., Mutsaka-Makuvaza, M. J., & Mutsinze, A. (2023). Religious and traditional beliefs and practices as predictors of mental and physical health outcomes and the role of religious affiliation in health outcomes and risk taking. *BMC Public Health*, 23(1). <https://doi.org/10.1186/s12889-023-17030-7>
171. Xiaoyan Sun, Xiaoyan Sun, Shuying Luo, Lingqiao Lou, Hang Cheng, Zhen Ye, Jianwei Jia, Yina Wei, Jingbo Tao, & Hanqing He. (2021). Health seeking behavior and associated factors among individuals with cough in Yiwu, China: a population-based study. *BMC Public Health*, 21(1157). <https://doi.org/10.1186/s12889-021-11250-5>
172. Yanbing Zeng, Weiqian Xu, Lele Chen, Fan Chen, & Ya Fang. (2020). The Influencing Factors of Health-Seeking Preference and Community Health Service Utilization Among Patients in Primary Care Reform in Xiamen, China. *Patient and Adherence*, 14. <https://doi.org/10.2147/PPA.S242141>
173. Zhang, R., Lu, X., Wu, W., & Shang, X. (2019). undefined. *BMC Health Services Research*, 19(1). <https://doi.org/10.1186/s12913-019-4127-9>
174. Zulu, E. M., Beguy, D., Ezeh, A. C., Bocquier, P., Madise, N. J., Cleland, J., & Falkingham, J. (2011). Overview of migration, poverty and health dynamics in Nairobi city's slum settlements. *Journal of Urban Health*, 88(S2), 185-199. <https://doi.org/10.1007/s11524-011-9595-0>

APPENDIX

Appendix 1: Consent form

**Title of the study: COVID-19 Health Seeking Behaviour among slum dwellers of Railways,
Mombasa County, Kenya.**

1.1. Purpose

I am Winnie Barawa, a student at Mount Kenya University pursuing a MSc. Public Health (International Health and Development). I am conducting a study on COVID 19 health seeking behavior among slum dwellers in Railways, Mombasa County, Kenya.

1.2. Procedures

Upon your acceptance to participate I request you to respond to a questionnaire which has both open and close ended questions. In case of further clarification, the interviewer will assist as needed.

1.3. Time

It will take us between 10 minutes to 15 minutes to complete this questionnaire,

1.4. Confidentiality

Your name will not appear anywhere. Anonymity and confidentiality have been maintained through coded questionnaires. The study will not require of any personal details such as your telephone number, home address or official name.

1.5. Potential Risks

There is no any potential risks in participating. The responses obtained will not be used in any form against you or any one related to you.

1.6. Possible Benefits

Your participation is fully voluntary and there is no reward or payment to be given from the study.

1.7. Withdrawal rights

You retain the right to withdrawal from study including skipping a section if you are uneasy around it. It will not bring any consequences or effects.

1.8. Concerns

You have a right to raise questions about the study and reach out to the researcher for clarifications.

1.9. Consent

I have been explained through the study details and understood my rights and participation to the study. In case of any questions, I have been accessed the contact details. I thus agree to participate in study.

Sign.....

Date.....

Researcher: Winnie Barawa Tel: 0707087443 Email: winniebarawa@gmail.com

Appendix 2: Questionnaire

Appendix 2.1: Questionnaire (English Version)

Questionnaire number.....

Date.....

A. DEMOGRAPHIC DATA

a. Gender: (Tick as appropriate)

Female..... Male.....

b. Year of Birth.....

c. Marital status. (Tick as appropriate)

Married..... Single..... Divorced..... Separated..... Widowed.....

d. Religion (Tick as appropriate)

Christian..... Muslim..... Hindu..... Others.....

e. Education level (Tick as appropriate)

Informal..... Primary..... Secondary..... College..... University..... Others.....

f. Occupation.....

g. Monthly Income estimate (Ksh) (Tick as appropriate)

14,999 and below

15,000 – 39,999

40,000 – 99,999

100,000 – And above

h. State of the house.....

i. Living status

Alone

With Family

With non-Family members

j. Any pre-existing chronic conditions? Yes No

Is Yes, Be specific.....

B. COVID-19 HEALTH-SEEKING BEHAVIORS AMONG SLUM DWELLERS OF RAILWAYS, MOMBASA COUNTY, KENYA

a. Which measures did you put in place to prevent yourself from contacting COVID 19 when it was declared a pandemic?

.....

b. Which choices did you take in responding to COVID 19 symptoms? Choose all that apply

| HSB Choices | Tick all that Apply | Remarks |
|---|---------------------|---------|
| Consulted a physician in a public hospital | | |
| Consulted a physician in a private hospital | | |
| Self-quarantined / Self Isolation | | |
| Self-Medicated | | |
| Consulted a traditional practitioner | | |
| Took home made concoctions | | |
| Consulted a spiritual leader | | |
| Did nothing | | |

c. What was your perceived health status after the choice made in (b) above? (Tick the appropriate only)

| Perceived Health Status | |
|------------------------------|--|
| Unable to express the status | |
| Bad | |
| Fair | |
| Good | |
| Very Good | |
| Excellent | |

d. Did you do screening test for COVID-19 ?

Yes No

If No, what were the reason/s?.....

.....

e. Have you been vaccinated against COVID-19?

Yes No

f. What challenges did you experience while implementing the interventions in (a), (b), (d) and (e) above?

.....

.....

C. FACTORS INFLUENCING COVID-19 HSB CHOICES BY SLUM DWELLERS OF RAILWAYS, MOMBASA COUNTY, KENYA

a. In a scale of 1 to 5 rate how the following factors influenced your measures/choices in section B question (a) and question (b).

1- No influence 2- Little influence 3- Moderate influence 4-Major influence 5-Extreme

| | 5 | 4 | 3 | 2 | 1 |
|---------------------------------|---|---|---|---|---|
| a. Predisposing Factors | | | | | |
| Attitude towards COVID 19 | | | | | |
| Religion | | | | | |
| Health belief | | | | | |
| Knowledge on COVID 19 | | | | | |
| Personal Values | | | | | |
| b. Enabling Factors | | | | | |
| Financial capacity | | | | | |
| Access to insurance | | | | | |
| Access to health facility | | | | | |
| Self-efficacy | | | | | |
| c. Need for Care Factors | | | | | |
| Pre-existing chronic conditions | | | | | |
| Self-reported health status | | | | | |
| COVID 19 severity | | | | | |

Appendix 2.2: Questionnaire (Swahili Version)

Nambari ya dodoso Tarehe.....

A. DATA YA KIDEMOGRAFIA

a. Jinsia: (Chagua Ipasayo)

Mke..... Mume.....

b. Mwaka wa kuzaliwa.....

c. Hali ya ndoa. (Chagua Ipasayo)

Ndoa.....Sijaoa/oeleka.....Talaka.....Tengenisho.....Mjane.....

d. Dini (Chagua ipasavyo)

Mkiristo.....Muislamu.....Mhindi.....Zinginezo.....

e. Kiwango cha elimu (Chagua ipasayo)

Elimu Isiyorasmi Msingi Sekondari Chuo Chuo Kikuu Zinginezo

f. Kazi ufanyayo.....

g. Mapato ya kila mwezi (Ksh) (Chagua ipasayo)

Chini ya 14,999

15,000 – 39,999

40,000 – 99,999

Juu ya 100,000

h. Hali ya nyumba.....

i. Hali ya kuishi

Peke yake Na wanafamilia Na wasiokua wanafamilia

j. Kuna magonjwa yoyote uliyokuwa nayo hapo awali? Ndio La

Iwapo yapo (Ndio), yataje.....

B. TABIA ZA KUTAFUTA AFYA YA KORONA MIONGONI MWA WAKAZI WA KITONGOJI CHA RAILWAYS, KAUNTI YA MOMBASA, KENYA.

a. Je ni hatua gani ulizoweka au kuchukua ili usiambukizwe ugonjwa wa Korona ulipotangwazwa kuwa janga mwaka wa 2020?

.....

b. Ni hatua ipi uliyochukua iwapo ulikua na dalili za ugonjwa wa Korona, mfano kihohozi, mwili joto, uchovu na kadhalika? Chagua zote ulizotumia

| Hatua | Chagua ulizotumia | Maelezo zaidi |
|---|-------------------|---------------|
| Nilimwona daktari katika hospitali ya umma | | |
| Nilimwona daktari katika hospitali ya binafsi | | |
| Karantini / Kujitenga mwenyewe | | |
| Kujitibu mwenyewe | | |
| Nilishauriwa na daktari ya kienyeji | | |
| Nilitumia tiba ya kinyumbani | | |
| Nilishauriwa na kiongozi wa dini | | |
| Sikuchukua hatua yoyote | | |

c. Je hali yako ya kiafya ilikuwa vipi baada ya chaguo ulilofanya katika (b) hapo juu? (Weka alama inayofaa pekee)

| Hali ya afya baada ya chaguo katik b | Weka alama panapo faa |
|--------------------------------------|-----------------------|
| Siwezi kujieleza | |
| Mbaya | |
| Kiwango cha kato | |
| Nzuri | |
| Nzuri sana | |
| Nzuri zaidi | |

d. Je, ulifanya uchunguzi/Kupimwa ugonjwa wa Korona ?

Ndio La

Iwapo jibu ni la, Toa sababu zilizofanya usipimwe?.....

e. Je, umechanjwa dhidi ya ugonjwa wa korona?

Ndio La

f. Ni changamoto zipi ulikumbana nazo wakati wa kutekeleza hatua za (a), (b), (d) na (e) hapo juu ili kujikinga kutokana na ugonjwa wa Korona?

.....

C. MAMBO YANAYOATHIRI CHAGUO LA HATUA DHIDI YA KORONA KWA WAKAZI WA KITONGOJI CHA RAILWAYS, KAUNTI YA MOMBASA, KENYA

Kiwango cha 1 hadi 5, je unadhani mambo yafuatayo yalikushawishi kuchukua hatua ya kujikinga, kutibiwa ama kupimwa dhidi ya ugonjwa wa Korona? 1-Haina ushawishi 2-Ushawishi kidogo 3-Ushawishi wastani 4-Ushawishi Mkubwa 5-Ushawishi mkubwa zaidi

| | 5 | 4 | 3 | 2 | 1 |
|---|---|---|---|---|---|
| a. Vipengele vya kutabiri | | | | | |
| Mtazamo kuhusu Korona | | | | | |
| Imani yako kidini | | | | | |
| Mtazamo wako wa kiafya | | | | | |
| Maarifa/Ujuao kuhusu Korona | | | | | |
| Maadili yako kibinafsi | | | | | |
| b. Vipengele vya kuwezesha | | | | | |
| Uwezo wako kifedha | | | | | |
| Upatikanaji wa bima ya afya | | | | | |
| Upatikanaji wa kituo cha afya | | | | | |
| Kujiamini | | | | | |
| c. Vipengele kwa haja ya kujitunza | | | | | |
| Ugonjwa mwingine unaogua kabla Korona | | | | | |
| Uwezo wa kujiripoti hali ya afya mwenyewe | | | | | |
| Makali ya ugonjwa wa Korona | | | | | |

Appendix 3: Key Informant Interview guide

Interview session.....

Date.....

A. DEMOGRAPHIC DATA

a. Gender: (Tick as appropriate)

Female..... Male.....

b. Year of Birth.....

c. Religion (Tick as appropriate)

Christian.....Muslim..... Hindu..... Others.....

d. Education level (Tick as appropriate)

Informal.....Primary.....Secondary.....College.....University..... Others.....

e. Role in the community/institution

.....

B. INTERVIEW QUESTIONS

a. Based on your observation, which measures were mostly adhered to by the Railways slum dwellers in preventing COVID 19 when it was declared a pandemic?

b. In cases of contact tracing of COVID 19 patients, which were the first choices clients took to seeking interventions? (Interviewer will probe and align them in hierarchical order)


c. In a scale of 1 to 5 rate how the following factors influenced community choices on COVID 19 interventions. 1- No influence 2- Little influence 3- Moderate influence 4-Major influence 5-Extreme

| | 5 | 4 | 3 | 2 | 1 |
|--------------------------------|---|---|---|---|---|
| a. Predisposing Factors | | | | | |
| Attitude towards COVID 19 | | | | | |
| Religion | | | | | |
| Health belief | | | | | |

| | | | | | |
|---------------------------------|--|--|--|--|--|
| Knowledge on COVID 19 | | | | | |
| Personal Values | | | | | |
| b. Enabling Factors | | | | | |
| Financial capacity | | | | | |
| Access to insurance | | | | | |
| Access to health facility | | | | | |
| Self-efficacy | | | | | |
| c. Need for Care Factors | | | | | |
| Pre-existing chronic illnesses | | | | | |
| Self-reported health status | | | | | |
| COVID 19 severity | | | | | |

- d. What were the challenges experienced by the community in implementing the COVID 19 interventions?
- e. What is the community attitude towards COVID 19 vaccination?
- f. What are your recommendations on preventive strategies for future SARS illnesses among slum dwellers of Railways, Mombasa County?

Appendix 4: ERC Certificate



Mount Kenya University

REF: MKU/ISERC/3218 Date: 02 October 2023
TO: WINNIE CHONI BARAWA REG: MPH/2019/5776B

Dear Sir/Madam,

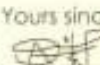
RE: COVID-19 HEALTH SEEKING BEHAVIOUR AMONG SLUM DWELLERS OF RAILWAYS, MOMBASA COUNTY, KENYA

This is to inform you that **Mount Kenya University** has reviewed and approved your above research proposal. Your application approval number is **2262**. The approval period is **02/10/2023 - 01/10/2024**.

This approval is subject to compliance with the following requirements:

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


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

Yours sincerely,  **The Chairman**
Mount Kenya University
Ethics Review Committee
P.O. Box 342 - 41000, Thika

Dr. Alfred Owino, PhD
Chairman, Mount Kenya University ISERC

Main Campus, General Kago Road, P.O. Box 342-01000 Thika,
Cell: +254 709 153 000 / +254 709 153 200
Email: info@mku.ac.ke, Web: www.mku.ac.ke
Chartered and ISO 9001 : 2015 Certified Institution.
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Appendix 5: Introduction letter from Mount Kenya University


Mount Kenya University

DIRECTORATE OF GRADUATE STUDIES

MPH/2019/57768

2nd October, 2023

*National Commission for Science Technology & Innovation (NACOSTI)
Off Waiyaki Way, Upper Kabete,
P.O Box 30623- 00100
NAIROBI, KENYA*

Dear Sir/Madam,


RE: WINNIE CHONI BARAWA – REGISTRATION NO. MPH/2019/57768

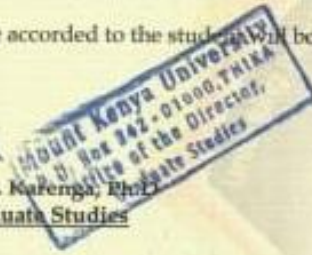
The purpose of this letter is to introduce the above named student who is pursuing **Master of Public Health** in the department of **Epidemiology and Biostatistics** in the school of **Public Health**.

The title of the research is **“COVID-19 Health Seeking Behaviour among Slum Dwellers of Railways, Mombasa County, Kenya.”** It has been cleared by the University’s Ethics Review Committee (Certificate attached) and now has to proceed to the field to collect data between **October, 2023 and December, 2023**.

Any assistance accorded to the student will be highly appreciated.

Thank you.


Dr. Samuel M. Kafenga, PhD
Director, Graduate Studies
Enc.



Main Campus, General Kago Road, P.O. Box 342-01000 Thika.
Tel: 020-2878 000, Cell: +254 709 153 000
Email: info@mku.ac.ke, Web: www.mku.ac.ke
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Appendix 6: NACOSTI Research License


REPUBLIC OF KENYA
National Commission for Science, Technology and Innovation

NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY & INNOVATION

Ref No: **383635** Date of Issue: **06/October/2023**

RESEARCH LICENSE



This is to Certify that Ms. Winnie Chomi Barasa of Mount Kenya University, has been licensed to conduct research as per the provision of the Science, Technology and Innovation Act, 2013 (Rev.2014) in Mombasa on the topic: **COVID-19 Health Seeking Behavior among Slum Dwellers of Railways, Mombasa County, Kenya for the period ending : 06/October/2024.**

License No: **NACOSTIP/23/30308**

383635
Applicant Identification Number


Director General
NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY & INNOVATION

Verification QR Code



NOTE: This is a computer generated License. To verify the authenticity of this document, Scan the QR Code using QR scanner application.

See overleaf for conditions

Appendix 7: Mombasa County Research Authorization



**DEPARTMENT OF HEALTH SERVICES
OFFICE OF THE COUNTY DIRECTOR, PUBLIC HEALTH**

Uhuru Na Kazi Building, 5th Floor
Email: prev.promotivehealth@gmail.com

P.O Box 91040 – 80103
MOMBASA

REF: MJA/CH/ADM.37/VOL.1/85

DATE: 24th October 2023

Winnie Chani Barawa
P o Box 95-80108
KISumu, Kenya

RE- APPROVAL TO CARRY OUT RESEARCH IN MOMBASA COUNTY

We refer to your application letter dated 19th October 2023 on the request for authorization to carry out a Research titled "Covid-19 health seeking behavior among dwellers of roadways"

This is to inform you that the Secretariat for Mombasa Ethics Review Committee has no objection to your request and hereby approve the study to be done in Changamwe/Jamvu.

On completion of the study, you are required to disseminate the findings to the County Health Management Team for the recommendations to be considered.

Thank you.

COUNTY DIRECTOR OF HEALTH
P. O. BOX 91040 – 80103
MOMBASA COUNTY

A handwritten signature in blue ink, appearing to read 'Salma'.

**DR. SALMA IWALEH MOHAMED
COUNTY DIRECTOR, PUBLIC HEALTH
DEPARTMENT OF HEALTH SERVICES
MOMBASA COUNTY**

Copy to: Sub County Medical Officer of Health Changamwe/ Jamvu



Appendix 8: Turnitin Report

Final Copy_ Winnie Barawa- MPH- Research Report.docx

by Winnie Barawa

Submission date: 25-Jul-2024 03:45PM (UTC+0300)

Submission ID: 2422253060

File name: Final_Copy__Winnie_Barawa-_MPH-_Research_Report.docx (927.13K)

Word count: 25643

Character count: 153753

Final Copy_ Winnie Barawa- MPH- Research Report.docx

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Appendix 9: Railways slum Mombasa County, Kenya



A picture showing residence of Railways slums in Mombasa County (Source: Aljazeera).

Mount Kenya