INFLUENCE OF JIGGER INFESTATION ON ATTENDANCE RATES OF STUDENTS IN PUBLIC DAY SECONDARY SCHOOLS OF BUMULA SUB-COUNTY, BUNGOMA COUNTY, KENYA

OLITA I. FAITH

A Research Thesis Submitted to the School of Arts, Humanities, Social Sciences, and Creative Industries in Partial Fulfilment of the Requirements for the Conferment of Master of Arts in Social Work of Maasai Mara University.

2024

DECLARATION AND APPROVAL

Declaration by the student

I hereby declare that this is my original work and has not been submitted to any other university for any academic award.

Signature…… **Date**……..

OLITA I. FAITH

AM12/JP/MN/13742/2021

Approval by University Supervisors

The research thesis has been submitted for examination with the approval of the following University supervisors

Signature…… **Date**…….

DR. ZEDDY KAURIA LEMEIN

Maasai Mara University

School of Arts, Humanities, Social Sciences and Creative Industries

Department of Social Studies

Signature……. **Date**…….

DR. KWEINGOTI REUBEN GIBSON

Maasai Mara University

School of Arts, Humanities, Social Sciences and Creative Industries

Department of Humanities and Public Administration

DEDICATION

I dedicate this thesis to my lovely parents Mr. Saul Olita and Mrs Phyllis Olita, for their moral, and financial support and love. They have been my pillars of strength throughout my academic journey. I also dedicate this thesis to my child, Patience Amsugut, my sisters, Reality Marian, and Salome Akello, for their moral support during this research period. To my friends and mentors, your valuable guidance and inspiration have made this work to be a success. I also dedicate this thesis to those individuals whose research paved the way for the knowledge contribution of this work.

ACKNOWLEDGMENTS

I would like to acknowledge God for His strength and grace throughout the research process. I would also like to acknowledge my Supervisors Dr. Zeddy Kauria Lemein and Dr. Gibson Reuben Kweingoti, for their guidance, patience, expertise, mentorship and unfailing support have been instrumental throughout this study. Special thanks to the Department of Social Sciences of Maasai Mara University for their valuable input in this study, I would also like to acknowledge my examiners for their valuable input in this study. I also thank my colleagues who gave me academic support during this academic journey.

ABSTRACT

Studies showed the severity of jigger infestation, among community members generally from the children, youth, and aged population. Still, there is little documented evidence of, how jigger infestation influences students' attendance, therefore, this study established the influence of jigger infestation on students' attendance rates in public day secondary schools in Bumula Sub-County, Bungoma County, Kenya. The specific objectives were; to determine the extent of jigger infestation among students, to assess the influence of jigger infestation on attendance rates, and to examine strategies employed to mitigate jigger infestation among students in Bumula Sub-County, Bungoma County, Kenya. The study used Ecological Systems theory and adopted a mixed-method research design. The study targeted 10,000 students 15- 20 years from public day secondary schools. A sample of 370 students was obtained from Krejcie and Morgan's 1970 formulae. The study purposively sampled 20 Key informants the CHPs (community health promoters), head teachers, and local Chiefs to participate in the study. The study employed primary data which was collected using structured questionnaires and interviews. secondary data was collected by studying the progress records, attendance registers, and end-term report forms. A pilot study was conducted at Kabuchai Sub-County, of Bungoma County. Data was analyzed using SPSS version 27 to determine the study's findings. Data was presented using descriptive statistics in the form of frequencies, graphs, tables, and charts. The study also revealed a high prevalence of persistent infestation in 56.7% of students (They were absent from school due to pain, itching, and social isolation). It also indicated jigger infestation had influenced attendance rates. It highlighted that most schools lag behind in implementation of key measures to address the infestation. The study recommended establishing and strengthening school health clinics, conducting regular check-ups. Implement community hygiene and education programs to lessen the impact. This multi-stakeholder approach is essential to address poverty and improve hygiene in schools and homes. These findings, if adopted, will guide policymakers, teachers, parents, and the community in managing and reducing jigger infestation in public secondary schools.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS AND ACRONYMS

CHFs	Chiefs
CHPs	Community Health Promoters
CHWs	Community Health Workers
HIV/AIDs	Human Immunodeficiency Virus/ Acquired Immunodeficiency Syndrome
HT	Headteacher
MOE	Ministry of Education.
MOH	Ministry of Health
NACOSTI	National Commission for Science, Technology and Innovation
NGOs	Non-Governmental Organizations
SDGs	Sustainable Development Goals
SPSS	Statistical Packages for Social Sciences
SSA	Sub-Saharan Africa
USA	United States of America
WHO	World Health Organization

OPERATIONAL DEFINITION OF TERMS

Attendance rates: According to this study attendance rates refer to the measurement of students present at school, and the extent to which they attend classes daily.

Epidemiology: this refers to the distribution and determinants of the health-related status of Jigger infestation in students of Bumula Public Secondary Schools.

Extent: In this study, it refers to the measurement or evaluation of the prevalence and severity of jigger infestation among students of public day secondary schools of Bumula Sub-County. It focuses assessing the number of individuals affected and the level of intensity.

Infestation: This refers to, the penetration of jigger flea that hinders the ability of students to continue with their normal school activities, thus affecting their attendance.

Jigger: According to this study, it's a flea that burrows into the students' host skin and inflicts pain, causing low attendance.

Mitigate: It is the act to lessen the intensity of the jigger infestation or to reduce the rate at which students will be infested with jiggers. This will further increase their attendance in school.

Psychological effects: According to this study, it refers to the factors that influence the mental health of a student when infested with jiggers (stress, concentration difficulties, self-esteem, school trauma, emotional

strain, worrying, and sadness) and intern negatively influence their attendance rates.

Social effects: According to this study, social influence refers to the effect or outcome on an individual or group of students that causes them to withdraw from school activities thus leading to absenteeism.

Strategies: According to this study, strategies refer to the means through which goals are achieved. In this study, strategies refer to measures put in place to eradicate jigger infestation, which improves students' attendance in public day secondary schools.

Students: In this study, a student refers to a person who engages in learning in secondary school education under the supervision of a teacher 15-19 years old and in public day secondary schools of Bumula Sub-County, Bungoma County.

Tungiasis: In this study, it is a painful and itchy condition on students caused by jigger flea that leads to low school attendance rates.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

According to Michael et al (2018), the persuasive issue of jigger infestation exists worldwide with varying degrees of incidences and extent of up to 50% and it is known to be a public health concern in poor communities in developing countries. Without prompt and comprehensive intervention strategies addressing the root causes of jigger infestation, it threatens the educational opportunities of children in the affected regions of the world. When children are affected, it reduces school attendance because of physical pain and discomfort, thus perpetuating the cycle of poverty and limiting opportunities for personal development. In addition, it is also believed to hinder progress and development.

School attendance problems are a significant global issue, with no universally accepted definition, but the phenomenon is prevalent worldwide. In regions like Sub-Saharan Africa, and Southern and Western Asia, school attendance issues are especially pronounced. Globally, nearly 17.8% of children adolescents are not attending school, a figure that increases to 36.3% among upper secondary school-age youth. Girls and those in low-income countries are particularly affected. Even in Europe and North America, the out-of-school rate stands at 4.3% (UNESCO Institute for Statistics, 2016

Maco et al (2011) assert that jigger infestation is caused by female parasitic fleas (chigoe, chigger, or Tunga penetrans), by penetrating the skin of the host. It is believed to have caused lesions to many people in Pre- Hispanic America and the West Indies, especially during the 14TH Century. It was transported to Eastern Hemisphere by transatlantic Voyages, during the first half of the 19th century AD. He further observes that they are

now present in the Caribbean, Central and South America, India, and Sub-Saharan Africa. Later it spread to other tropical and sub-tropical regions via shipping routes.

Wolf et al, (2017), assert that above 6.5 million children in the US miss school each year. Chronic absenteeism rates differ across states, communities, and educational institutions, influenced by factors such as income inequality and racial demographics. This phenomenon poses significant risks to students, potentially leading to diminished academic performance, increased likelihood of dropping out of school, and long-term ill health. Students fail to attend school due to illness caused by parasites, and unsafe conditions.

Meghan and Niileksela (2016) note that nearly one-third of public secondary students in American society drop out annually addressing truancy and promoting graduation is a critical countrywide issue that presents a major challenge for schools and educational communities students disengage and withdraw from school for numerous motive and there are no universal solutions to ensure every student succeeds educators must tackle the problems leading to poor attendance and assess the effectiveness of school completion programs.

Harvey et al (2021) noted that jigger infestations are widespread among humans and pets, especially dogs in Brazil this issue is connected to inadequate accommodation and health disparity, and going barefoot the infestation can cause severe pain nail loss, or major deformities the resulting inflammation often prevents impacted individuals from walking properly and leads to a wide range of clinical problems and serious health risks in underprivileged communities in northeast Brazil posing a considerable burden on those afflicted

Di Nucci et al (2017) noted that jigger infestation shows in skin lesions that if untreated can progress to severe complications. He added that, in Argentina, it has been described to cause lesions in wild animals (giant anteaters). Scott et.al (2020) assert that monkeys are considered hosts of jigger fleas, therefore when they come into close contact with humans in indigenous villages, people are capable of being infested. Otega et.al (2021), assert that jigger infestation is highly prevalent in Popayan, a City in South West Colombia. It affects individuals of all ages (children, youths, adults, and the elderly). Such that the inhabitants described negatively the way people infested with jiggers used to walk. The infestation was associated with migrant dogs from the local areas of Colombia of the Pacific with suspicious lesions of Tungiasis.

The British introduced jiggers to Africa during the time of the slave trade, whereby Africans were treated as Cargo on the British ships. These ships were loaded with boulders and sand for stabilizing vessels so that they would not capsize when hit by the raging waves. The sand carried jigger flea also known as Chigoe in South America. They later spread jiggers into tropical Africa and this has remained a burden to poverty-stricken African communities up to date (Ahadi Kenya, 2020).

Obebe (2020) asserts, jigger infestations was largely overlooked in sub-Saharan African nations the infestation with a rate of 334 95 CI 276-398 the prevalence rates in Ethiopia, Cameroon, Tanzania, Kenya, Nigeria, Rwanda, and Uganda were 46.5%, 44.9%, 42.0%, 37.2%, 28.1%, 22.7% and 20.1% respectively factors contributing to jigger infestations included gender age groups of 4-15 years and over 60 years earthen floors infrequent use of closed shoes contact with domestic animals.

There is a lot of impact of tungiasis in Nigeria which affects poverty-stricken rural agricultural communities and is one factor that inhibits progress in development serious

infestation leads to severe inflammation causing deformities leading to death due to other secondary infections of the affected there is also a high risk of contracting tetanus infection the menace causes children to leave school thus lowering their attendance and retention rates because they cannot concentrate in class or participate in any school activity adults too withdraw from work or any economic activity thus there is a high dependency rate on others for survival (Michael et al, 2018).

Ansar (2015) highlights that per capita income is a significant determinant affecting children's educational participation. Instances of school absenteeism and dropout rates can be attributed to several factors, including high illiteracy rates among parents in rural areas, a lack of interest in education among students, family illnesses, biased attitudes from teachers, and issues related to parasitic infestations. Furthermore, Obanya (2017) emphasizes that pervasive poverty, the considerable distances to educational institutions, and inadequate school facilities further restrict school attendance.

MOH (2017), estimated that 6 million people in Uganda are at risk of contracting the infestation. Three million already are infected with Tungiasis, 50% are in an endemic region of Busoga and the rest are spread in regions of Karamoja and Central of Uganda. Adriko (2022) in Busoga region Uganda asserts that the prevalence of Tungiasis caused by jigger infestation was 40.6% and the risk factors associated with poor hygiene and sanitation, people sleeping in mud houses, poor disposal of wastes around their compound and sharing residential houses with domestic animals. He adds that burdens continue to escalate with high school dropouts, absenteeism, poor academic performance, and low self-esteem.

The Ministry of Health has alerted the public that more than 10 million Kenyans across 42 counties are at risk of jigger infestation if no eradication measures are taken this parasite

infestation severely affects socio-economic conditions by immobilizing those affected and reducing their economic productivity it also negatively impacts education leading to lower school attendance rates diminished participation in physical activities and overall lower retention among children moreover 26 million Kenyans suffer from tungiasis caused by jigger infestations particularly affecting school-aged children and individuals with mental and physical disabilities this situation forces children to drop out of school renders many economically unproductive and strips them of their dignity and self-esteem (MOH 2022).

According to the Ministry of Health, (2014) severe infestations can result in physical consequences like inflammation ulceration sepsis and increased susceptibility to opportunistic infections children experience stigma and due to the poverty in their families often drop out of school the infestation also poses a risk of spreading other infections when unsterilized equipment is used specifically extracting jiggers with a shared pin can expose individuals to communicable diseases.

The Kenya Health Policy (2012-2030) recognizes the New Constitution of Kenya as a significant advancement in enhancing health standards, reducing poverty, and tackling disparities in health and education, among other critical concerns. The policy asserts that every citizen of Kenya is entitled to the highest attainable standard of health, which encompasses adequate sanitation and the right to a clean and healthy environment. However, numerous segments of the population continue to experience limited access to quality healthcare and social services.

Ahadi Kenya (2020) indicates that the impact of jigger infestation is widespread, affecting various body parts such as the feet, fingers, knees, and elbows. This condition leads to significant challenges in performing daily activities, impeding the ability to walk normally, seek employment to support the family, or attend educational institutions.

Furthermore, the health status of individuals is closely associated with poverty, as it influences families' access to adequate housing, clean water, sanitation, and proper nutrition

In addition, Jigger infestations are often associated with inadequate community engagement in hygiene and sanitation education, detrimental health-related behaviors, and careless waste elimination practices. The absence of numerous children from school results in experiences of discrimination and stigmatization, thereby perpetuating a continuous cycle of poverty.

Matendechere (2020) indicated that numerous individuals have been enduring jigger infestations without expressing their plight. The absence of a thorough survey has hindered efforts to ascertain the precise number of those impacted. In addition, poverty and a lack of proper hygiene are the leading causes of jigger infestation in Kenya. For example, eight Counties have reported cases of jigger infestation including; Murangá County, Bungoma, Busia, Siaya, Kakamega, Marakwet, Migori, and Nairobi County.

The severity The impact of jigger infestations is exacerbated by societal stigma, a lack of community engagement, and a general lack of awareness regarding effective control strategies. As a result, individuals affected by this condition often face social exclusion, which hinders efforts to assist them in eradicating the fleas, sanitizing their living environments, and notifying public health officials to initiate appropriate interventions. Furthermore, it is crucial for these individuals to receive medical attention to address their health needs, as they often endure a cycle of poverty, diminished self-worth, infringement of their civil rights, and increased susceptibility to secondary infections such as HIV/AIDS and tetanus (Ruttoh, K., et al., 2012). Additionally, the presence of jiggers significantly

disrupts the daily activities of infested children, leading to symptoms such as itching, pain, and challenges in attending school (Makena & Mwoma, 2014).

Kimotho et.al (2015), in Murangá County, Kenya, on managing communication surrounding jigger infestation stigma, this study revealed that jigger infestation relates to the issues of stigma and discrimination. Some families have struggled for years with severe infection, so he recommends alternative stigma management techniques for the community as well as interpersonal communication strategies.

In the Karugu Division of Migori County, Kenya, the prevalence of jigger infestation among school-aged children is alarmingly high at 33.2%. This condition significantly impacts school attendance and retention rates. This showed that children are at greater risk of factors associated with jigger infestation including mud-walled houses, living in dusty environments, and walking barefoot. Individuals that were infested with jiggers were separated from others. This increased stigma and psychological issues among children infested, thus causing them to miss school (Magento, 2017).

Alal (2014) indicated that approximately 2,500 children in certain regions of Kisumu County were not attending school due to jigger infestations. This situation suggests that the educational and classroom settings are inadequate and pose risks to the safety of students. Additionally, parasites like jiggers inflict physical harm on children's bodies, particularly affecting their feet. As a result, these students often experience challenges in walking to school. The associated discomfort may also hinder their ability to focus during lessons.

Nyangacha (2019) examines the spatial distribution, prevalence, and potential risk factors associated with jigger infestation in Vihiga County, Kenya, highlighting that this health issue significantly impacts the local population, primarily due to their low economic

status. The findings indicate that various elements indicative of poverty contribute to the prevalence of this infestation. like; living in earthen floor houses, lack of toilet facilities, and lack of regular use of closed footwear contribute to the occurrences of the infestation. He further asserts that the infestation causes mobility or death to the individuals who are severely infested.

According to Everlyne (2014), she argued that the rate of public day secondary school drop-outs and absenteeism is high, due to socio-economic background, cultural beliefs, and school environment, in Bumula Sub-County. These factors too determine the completion of secondary education. The study recommended educationists and policymakers come up with strategies for helping them eradicate poverty around the community.

According to the standard media report (2024) there are schools in Bungoma where even teachers have jiggers. For many years now, both teachers and pupils in St Jude Nabuyeywe primary school of Bumula sub-county have been infested with jiggers in silence, this has made their lives difficult because they share the same environment. Learners sit on the dusty ground due to insufficient desks. This has also caused high rates of school absenteeism. Locals are also poor, which has made it difficult for them to control the menace. They are not the only affected school, neighboring schools including the day secondary schools too and the main cause is poverty and ignorance.

However, the available study highlights the issue of low school attendance rates in global, national, and within specific regions of Sub-Saharan Africa and Kenyan regions. Despite various efforts to improve access to education, factors such as poverty, lack of infrastructure, health-related issues like jigger infestation, and distance to walk to school hinder educational opportunities for children, particularly in rural communities. It is upon

this background therefore that the current study established the influence of jigger infestation on attendance rates of students in public day Secondary schools of Bumula Sub-County, Bungoma County, Kenya.

1.2 Statement of the Problem

School absenteeism is a crucial factor contributing to low school attendance in various parts of the world. Health-related issues, disparities in income, and jigger infestation are some of the factors contributing to low school attendance. Despite various guidelines and control measures provided by the Ministry of Health to Curb jigger infestation, it still poses a threat to students when they are infested.

Studies have been conducted on, school absenteeism and dropouts, for various reasons and there is no common solution. In addition, studies also show the severity of jigger infestation, among community members generally from the children, youth, and aged population. Still, there is little documented evidence of the influence of jigger infestation on attendance rates of students in Public Day Secondary school students. Consequently, this is associated with the attainment of the National Education Goal, which aims to provide inclusive and equitable quality education while fostering lifelong learning opportunities for everyone. Additionally, this is connected to Sustainable Development Goal (SDG) four, which focuses on quality education, as well as to goal one, which addresses the eradication of poverty, and Goal Three, which emphasizes good health and sanitation. Therefore, this study sought to fill the gap by examining the extent, influence, and strategies employed to mitigate jigger infestation on attendance among students in Bumula Sub–County, Bungoma County, Kenya.

1.3 General Objective of the Study

The main purpose of this study was to establish the influence of jigger infestation on attendance rates of students in public day secondary schools of Bumula Sub-County, Bungoma County, Kenya.

1.4 Specific Objectives of the Study

i. To determine the extent of jigger infestation among students in public day Secondary schools of Bumula Sub-County, Bungoma County, Kenya.
ii. To assess the influence of jigger infestation on attendance rates of students in public day secondary schools of Bumula Sub-County, Bungoma County, Kenya.
iii. To examine strategies employed to mitigate jigger infestation among students in public day secondary schools of Bumula sub- County, Bungoma County, Kenya.

1.5 Research Questions

i. What is the extent of jigger infestation among students of public day Secondary schools of Bumula Sub-County, Bungoma County, Kenya?
ii. What is the influence of jigger infestation on attendance rates of students in public day secondary schools of Bumula Sub-County, Bungoma County, Kenya?
iii. What strategies are employed to mitigate jigger infestation among students in public day secondary schools of Bumula sub- County, Bungoma County, Kenya?

1.6 Justification and Significance of the Study

From a philosophical point of view, this research aligns with the ethical principle of promoting well-being and improving the quality of life of students within the community. It reflects the commitment to evidence-based decision-making by emphasizing the importance of implementing strategies for curbing jigger infestation. Consequently, this is associated with the attainment of the National Education Goal, which aims to provide

inclusive and equitable quality education while fostering lifelong learning opportunities for everyone. Additionally, this is connected to Sustainable Development Goal (SDG) four, which focuses on quality education, as well as to goal one, which addresses the eradication of poverty, and goal three, which emphasizes good health and sanitation. To achieve these goals, students should be put as the central agenda to improve their school attendance rates. Therefore, this study provides data on jigger infestation by examining the influence of jigger infestation on the attendance rates of students in Bumula Sub-County, Bungoma County, Kenya.

On policy recommendation, the research holds significance as it offers practical insights for policymakers in Kenya. The study findings can guide the refinement of guidelines and control measures for jigger infestation to better align with the unique needs of students in Bumula Sub-County, Bungoma County, Kenya thereby improving students' attendance rates. The policymakers, the MOE, and MOH strengthen the policies that address the jigger infestation problem. The study findings are also useful to school managers and teachers if adopted. They can act as reference guides to sensitize parents, students, and other stakeholders on the negative effect of jigger infestation on the attendance rates of students in their schools.

The academic justification for this study lies in the contribution of the existing body of knowledge by establishing the influence of jigger infestation on attendance rates of students in Bumula Sub-County, Kenya. The study aims to generate insights that can inform the academic discourse on strategies employed to curb jigger infestation, especially in rural settings. The profession of social work will gain knowledge and skills to assess the social care need to promote social change, development, and empowerment, and provide psychological support.

1.7 Scope of the Study

The scope of this study is centered on examining the impact of jigger infestation on attendance rates within Bumula Sub-County, located in Bungoma County, Kenya. The primary objective was to investigate the extent of jigger infestation and its correlation with attendance among public day secondary school students aged 15-20 years in the specified region. This is because Bumula is one of the sub-counties in Bungoma with significant challenges linked to rural poverty, low health infrastructure, and high rates of parasitic infestations. Its demographic and geographic factors support Jiggers to thrive. The study aimed to identify the factors contributing to jigger infestation, assess their influence on students' attendance, and explore strategies implemented to mitigate the effects of jigger infestation on attendance rates. The focus was specifically on the ongoing challenges faced by students within the mentioned age group, as they interact daily with both home and school environments, making them more susceptible to jigger infestation and absenteeism issues. The ultimate goal was to propose effective solutions to address and alleviate the impact of jigger infestation on students' education in the targeted area.

1.8 Limitations and Delimitations of the Study.

The researcher employed a mixed-methods research design, which posed challenges in the integration of quantitative and qualitative data, as well as in synthesizing the findings to derive significant conclusions. To address these challenges, the researcher implemented triangulation by comparing and contrasting results obtained from various methods, thereby enhancing the validity and reliability of the conclusions. Additionally, the researcher took into account the validation of techniques to mitigate potential bias. The public secondary schools of Bumula Sub-County are scattered because of the terrain, and the distance to cover was a big challenge. The researcher was required to enlist local research assistants to aid in the distribution of questionnaires and interview guides for the study.

There was potential for sampling bias as the researcher relied on a purposive sampling technique to select the key informants who participated in the study, which may casually exclude certain perspectives. To address this, the researcher ensured the sample was diversified by including, headteachers from various schools, community health promoters, and various chiefs.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This chapter covers a literature review on the influence of jigger infestation on attendance rates. It discusses the literature on the dependent variable, the life cycle of jigger flea, the empirical literature, a summary of existing literature gaps per the objectives, the theoretical literature, and the conceptual framework.

2.1 Literature Review on Attendance Rates of Students in Bumula Sub-County, Kenya.

Gubbles et al (2019) conducted a meta-analytic review on the risk factors associated with school absenteeism, highlighting that absenteeism and dropout rates are linked to various life-course challenges that ultimately result in decreased school attendance. Their analysis encompassed 75 studies from around the globe, identifying 781 potential risk factors for school absenteeism and 635 for dropout. Key factors identified include negative attitudes towards school, insufficient parental involvement, learning difficulties, low academic performance, adverse family circumstances, and mental health issues in children. These elements are significant contributors to economic disadvantage and can lead to various cognitive, social, occupational, and literacy challenges in adulthood. Based on the findings mentioned some gaps in the study, it has not specifically highlighted how jigger infestation has influenced school attendance rates.

The research aimed to explore the underlying reasons for dropout rates in primary education within Pakistan. A descriptive research methodology was employed, incorporating both quantitative and qualitative data collection techniques. The study involved 208 educational managers and 281 teachers, and it included focus group

discussions with community members to identify the factors contributing to high dropout rates at the primary level. The findings indicated that socio-economic, physical, geographical, teacher-related, and family-related factors significantly influenced these dropout rates, and facilities in schools contributed to low school attendance rates. (Shah et al 2019). The above study introduces the causes of low school attendance rates which gives insights to the current study.

Chrine et al (2020) Performed a thorough examination of the elements influencing low student attendance in public primary schools in Zambia. Their findings indicated that the quality of school environments, including classrooms, sanitation facilities, and desks, was not uniformly adequate to ensure service quality and foster student motivation. Socioeconomic factors, particularly poverty, emerged as significant barriers to the effective progression of learners. Consequently, this situation led to a substantial rise in the number of children not attending school, increasing from over 195,000 in 2015 to 800,000 in 2019. Thus, increasing low attendance rates of pupils. The present study acknowledges the above study in that it gives statistics on the increased school absenteeism and dropout rates which shows it as a problem that needs to be addressed.

The study assessed factors that perpetuate pupil absenteeism in rural primary schools of Nyimbo District in Zambia. A descriptive research design was utilized with interview guides and focused group discussions. A sample of 36 pupils and 6 teachers participated in the study. The study revealed that poverty, hygiene, and sanitation caused pupils not to attend school and these factors affected the teaching and learning process by creating poor performance in schools. (Muyatwa, 2022). The gap in the study is the incompetence in capturing strategies to incorporate students' educational concerns hence necessitating for the present study.

Omolo (2013) examines the socioeconomic factors that contribute to the dropout rates among public secondary school students in Rongo District. The research utilized a descriptive design, incorporating qualitative methods for data collection. The study aimed to include a total of 755 participants, comprising pupils, teachers, and headteachers. Ultimately, a sample of 235 individuals, including teachers, students, and headteachers, was selected, with questionnaires and interview schedules serving as the primary research tools. The results indicated that peer pressure accounted for 43.75% of the dropout cases, while family headship was associated with 50%, and parental financial status was linked to 81.25%. The study highlighted that poverty significantly impacted students' access to necessary school supplies. Consequently, it was concluded that socioeconomic factors play a crucial role in influencing student retention in secondary education. The above study provides some statistics on factors influencing the attendance rates of pupils, which is a major concern, that the present study needs to address.

Kipkemboi (2021) examines the factors affecting pupil retention in public primary schools within the Trans Mara East Sub-County of Narok County, Kenya, an explanatory research design was employed to engage various stakeholders, including school administrators, parents, students, members of boards and committees, as well as sub-county directors. The results of the research demonstrated that economic variables, socio-cultural factors, and geographical closeness exert a positive and substantial influence on retention of learners. As Kipkemboi focused on factors of pupil retention in public primary schools, the present study focused on various effects of jigger infestation that in turn affect the attendance rates in the study area.

Makorani (2017) on Factors Affecting the Retention Rate of Pupils in Public Primary Schools within the Hindi Division of Lamu West Sub-County, Lamu County, are integral to the educational framework outlined in Kenya's Vision 2030. This initiative emphasizes

the social pillar of Education and Training, which aims to significantly diminish illiteracy rates by the year 2012. Key objectives include enhancing access to education, improving the transition rates between primary and secondary education, and elevating the quality and relevance of educational offerings to promote student retention.

Makorani Makorani (2017) emphasizes that numerous factors have influenced the low attendance rates of students in public primary schools. In nearly all developing nations, the issues of school dropout and retention have garnered significant attention from scholars, researchers, and policymakers over an extended period. The research employed a survey research design, focusing on selected public primary schools for data collection. The findings indicated that family background elements, including parental education levels, the gender of children within the family, the family's economic status, and the family's aspirations, significantly impact the retention rates of students in public primary schools located in the Hindi Division of Lamu West Sub-County.

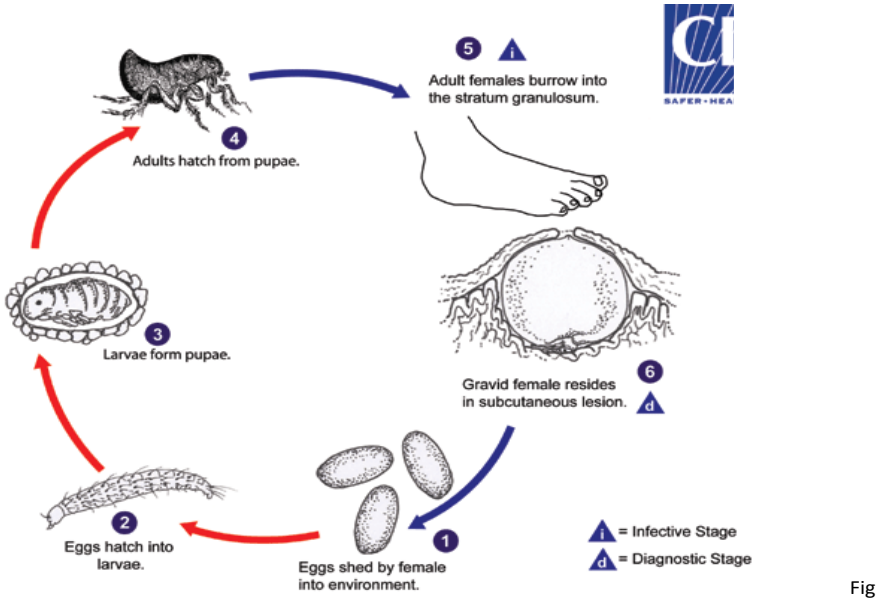
Overall, the literature points to the multifaceted nature of low school attendance issues, influenced by socio-economic, environmental, and cultural factors. Addressing these challenges requires integrated approaches prioritizing equitable access to education, basic resources, and support systems for students and families. Efforts to improve attendance rates must consider local contexts and tailor interventions to meet the diverse needs of learners.

2.1.1 Life Cycle of Jigger Flea

Collins et al (2009) described the natural progression of clinical human tungiasis as occurring in five distinct phases. Phase I is characterized by the adult flea penetrating the skin, which results in significant swelling and the dilation of blood vessels within the dermis. In Phase II, the flea embeds its head into the upper layers of the dermis, where it

feeds on the blood vessels. The posterior segment of the flea remains on the skin's surface, maintaining contact with the external environment, which facilitates respiration as well as the expulsion of waste and eggs. During Phase III, the parasite generates as many as 200 white, ovoid eggs, leading to an increase in its size, which can reach up to 7 mm. At this stage, the flea becomes visible as a yellowish-white lesion encased in a hardened layer of hyperkeratotic skin.

Phase Phase IV commences following the deposition of eggs, at which point the female flea perishes and is expelled from the environment. In Phase V, a reorganization of the epidermis takes place, a process that spans approximately four weeks and results in minimal remnants that can persist for several months. Concurrently, the eggs laid during Phase III hatch within three to four days, releasing larvae that subsequently progress into pupae. After a duration of two weeks, these pupae mature into adult fleas, thereby completing the life cycle (Heemskerk et al., 2005).



Fig

Figure 2.1 Life Cycles of Jigger Fleas.

Source: **CDC (2016).**

2.2 Empirical Literature

This This section reviews prior research aligned with the study's objectives, which include: evaluating the prevalence of jigger infestation among students in public day secondary schools within Bumula Sub-County, Bungoma County, Kenya; analyzing the impact of jigger infestation on student attendance rates in these schools; and investigating the strategies implemented to address jigger infestation among students in the public day secondary schools of Bumula Sub-County, Bungoma County, Kenya.

2.2.1 Extent of Jigger Infestation among Students in Bumula Sub-County, Bungoma County, Kenya.

Elson et al (2017) surveyed different sorts of writing on the control of jigger pervasion within the nonattendance of a guide around the world, utilizing Grassroots and worldwide approaches. It was found that there was no successful and secure strategy to control the invasion. Elson et al (2017) surveyed different sorts of writing on the control of jigger pervasion within the nonattendance of a guide around the world, utilizing Grassroots and worldwide approaches. It was found that there's no successful and secure strategy to control the invasion, chemicals utilized to expel the insect are profoundly poisonous to people, Children, impaired people, the rationally sick, and the elderly bear the most noteworthy illness burden. Children miss school. The current study delves deeper into understanding specific challenges faced by secondary school students.

Tamene (2021) conducted a cross-sectional study to investigate the factors associated with the prevalence of jigger infestation among children aged 5 to 14 in rural Ethiopia. Utilizing systematic random sampling, the research selected four primary schools for analysis. The findings indicated that a significant number of affected children experienced impairments and lesions, which hindered their ability to walk to school, and these issues were closely linked to poverty. The study advocates for improvements in housing

conditions, community education regarding the separation of animals from living areas, and the promotion of hygiene practices. By examining the prevalence and related factors of Tungiasis in children from similar environments, the research sheds light on how the infestation impacts school attendance and retention rates, thereby highlighting the burden of complications associated with this condition, which is relevant to explore the extent of jigger infestation on students' attendance rates.

Girma et al (2018) on the prevalence risk factors of jigger infestation among children in Southern Ethiopia, used a community-based crossectional study to target 366 children of 5-14 years, the study used interview and observation methods, it revealed that the severity of the infestation was very high among children with high mobility rate. It was related to factors like walking bare feet, low educational level of parents that causes illiteracy, poor personal hygiene, and poor house sanitation. This led to low school enrolment and attendance rates among children.

The study further The adoption of prevention strategies for tungiasis is advised, which includes encouraging the use of footwear, delivering health education, conducting fumigation of homes, and administering insecticides to domestic animals.. The literature provides insights into the severity of jigger infestation among children and the factors contributing to the infestation. However, the weakness lies in the lack of direct relevance to specific studies in Bungoma County and the limited focus on students' school attendance rates.

Nakuya (2015) on examining the factors contributing to jigger infestation among students at Kivubuka Primary School in Namulesa Town, Jinja District, Uganda, employed a cross-sectional design and utilized questionnaires administered to 368 pupils. The findings revealed a notably high prevalence of jigger infestation among students residing in rural

areas, particularly those living in mud houses, lacking footwear, and those who kept pigs at home. The infestation adversely impacted school attendance and led to various physiological changes in the affected children. The study advocates for the effective recruitment of public health officials, heightened awareness regarding the epidemiological context, the launch of anti-jigger initiatives, and the treatment of domestic animals with insecticides. Based on the findings mentioned some gaps in the study include, dealing with poverty issues which increase jigger vulnerability and reduce pupils' school attendance which will form the basis for the current study.

Namuhani and Kiwanuka (2016) investigated the persistence and related factors affecting households in Mayuge District, Uganda. The research involved a random sample of 296 households. Data collection was conducted using semi-structured questionnaires, an observation checklist, and a guide for key informant interviews. The findings revealed a significant prevalence of the issue 58.3% of individuals who had persistent infestation and children from both primary and secondary schools absent themselves from school due to pain, itching, and deformities. The present study adopted one of the recommendations from the above study that, It is essential to enhance the awareness among community members. Research conducted by Makena and Mwoma (2014) examined the impact of jigger infestations on school attendance among children in Kiambu County, specifically in the Gatundu District of Kenya. This investigation focused on the correlation between jigger infestations and participation rates in both lower and upper primary education. Employing Ecological Systems Theory, the study adopted a descriptive survey design and included a sample of 44 children affected by jiggers from the population of public primary school students. Data collection methods comprised questionnaires and observational schedules. The findings revealed that jigger infestations pose a significant threat to the educational aspirations of children because they drop out of school, and recommends

school managers to lairs with stakeholders to seek strategies for curbing infestation, carry out routine check-ups, and sensitize communities. The present study borrowed from the above study in the sense that, they both look at attendance rates and utilized ecological systems theory. However, the key difference is that the current study targets public day secondary school students in Bumula Sub-County.

Ochieng (2019) Ochieng (2019) investigated the impact of jigger infestations on school enrollment and retention among children in South-East Alego Ward, Siaya County, utilizing a cross-sectional descriptive design. The findings indicated that jigger infestations were a significant concern in public primary schools, with 92% of teachers attributing low enrollment rates to this issue. Among the 1,065 school children surveyed, 279 (26%) were found to be infested with jiggers. Notably, 80% of the respondents acknowledged that jigger infestations adversely affected school attendance, while 96% recognized its detrimental impact on academic performance and student participation in class.

Additionally, the study revealed that jigger infestations had negative consequences on students' academic achievements, physical health, and psychosocial well-being. In light of these findings, the study recommended enhancing capacity for maintaining cleanliness in both home and school environments, as well as providing adequate training for community members and medical assistance for those affected. The current study also acknowledges the physical and psychological issues faced by students infested with jiggers which makes it difficult to attend school.

Juma et al. (2017) employed a descriptive statistics design to investigate the prevalence of tungiasis and its related factors among primary school children in the Karemo Division of Siaya County, Kenya. A total of 432 pupils, aged between 5 and 14 years, were randomly

chosen from classes one to eight to take part in the research.The results indicated that 39.7% reported to have jigger infestation. On the social effects, children were teased, ridiculed, and stigmatized, thus contributing to school absenteeism. The study further recommended implementing an integrated approach to address the factors associated with jigger infestation. Compared to the current study, it targeted public day secondary school students and used a mixed-methods research design. This study also used simple random sampling to select students who participated in the study.

The literature collectively emphasizes the severity of jigger infestation as a neglected tropical disease and highlights its impact on public health and children's education. The findings emphasize the need to combat the infestation which is persistent in the community with highly prevalent cases. Despite the valuable insights gained from these studies, there is still limited focus on the attendance rates of students. This new study assesses the extent of jigger infestation on attendance rates of students in public day secondary schools of Bumula Sub-County, Bungoma County, Kenya.

2.2.2 Influence of Jigger Infestation on the Attendance Rates of Students in Bumula Sub-County, Bungoma County, Kenya.

Mphande (2020) conducted a comprehensive review of the literature, analyzing 300 sources, to assess the impact of skin diseases in resource-limited countries. The findings revealed that skin diseases, including jigger infestation, are recognized as the fourth leading cause of health burden worldwide, affecting both high- and low-income nations. This has been associated with poverty, it also attributed to low school attendance.

The author adds that the social and psychological ramifications of the infestation are particularly evident in economically disadvantaged communities. The constraints on mobility adversely influence individual livelihoods, leading to social exclusion and

stigma, which compel many individuals to conceal their condition and distance themselves from their community. The study advocates for low-income countries to prioritize specific diseases in order to allocate their resources effectively. Some potential gaps of the study the incompetence in capturing barriers to incorporate students' educational concerns hence necessitating for the present study.

Bradby and Ahlberg (2014) in Northern Europe, on holiday parasites and furry friends, applied a crossectional study and found that jigger infestation is not regarded as a primary concern by the WHO due to its relatively low death rate in humans, even though it causes considerable morbidity, particularly in the form of foot deformities. This condition poses a significant public health challenge in the regions where it is prevalent. The incidence of jigger infestation is notably high among children, decreases in working-age adults, and then increases again in the aged. If left untreated, jigger infestations can severely impair mobility, thereby disrupting education, agricultural activities, and social interactions. The present study gives more attention to the influence of jigger infestation on the attendance and retention rates of students.

Barbosa et al (2019) on Jigger infestation in Brazil, used descriptive crossectional design to study a A 10-year-old girl, previously in good health, visited a primary care clinic due to the presence of numerous itchy papules located on the soles of her toes, each exhibiting a central black clot and causing significant pain. Upon examination, it was revealed that the family had recently travelled to rural Brazil, where the patient had engaged in activities involving pigs while barefoot. Jigger infestation had caused lesions on her skin, thus also resulting in psychological distress, persistent worrying, and sadness, because of continual itching, this would, in turn, cause mental health problems. The study recommends treatment by removal of fleas, treatment of wounds, and getting tetanus vaccines to avoid secondary infection. Barbosa gave more attention to a 5-year-old child

while the current study gives more attention to students while it acknowledges the influence of the infestation in Bumula Sub-County.

Chilala et al. (2021) conducted a study examining the factors contributing to student absenteeism, its effects on academic achievement, and potential strategies for reducing absenteeism in Zambia. Employing a mixed-methods approach, the research involved a sample of 120 participants, which comprised 40 education administrators and teachers, 40 randomly selected parents, and 40 purposefully selected students. The results showed that the primary reason for student absenteeism was related to issues at home. This study did not explore deeply on factors that contribute to the absenteeism rates of students. The current study gives more attention to how jigger infestation has contributed to low school attendance and retention rates

Nsanzimana et al. (2019) conducted a research investigation aimed at assessing the prevalence and contributing factors related to jigger infestation among primary school children in Rwanda. Employing a descriptive correlational design, the researchers utilized systematic random sampling to select a sample of 384 children for participation. The findings indicated that factors linked to jigger infestation encompassed walking barefoot, wearing unclean clothing, and residing in homes with earthen floors houses. He adds that children with jigger infestation attended class less frequently than those who were not infested did. Students may disengage from active learning, and their subpar performance can be partially attributed to challenges in mobility, difficulties in maintaining focus during educational activities, and experiences of isolation or discrimination from their peers. The present research draws upon the aforementioned study in the context of, it explores various influences of the infestation but about attendance and retention rates of students

Dassoni et.al (2014) on Jigger infestation in Bahati District Northern Tanzania examined the psychological and educational consequences on school children 6-14 years and applied descriptive research design to the study. The study revealed, that there was a high number of lesions, pain itching, and difficulty walking, fever was also observed caused by the infestation, deformity of the figure and toes posed a threat to the education goals of children infected.

He adds that jigger infestation is an issue of public health significance in Tanzania and is associated with high mobility. The present study adopted one of the recommendations from the above study in that, there is a need for housing hygiene and an increased awareness of health education to take control of the burden of infestation to increase the attendance and retention rates of students.

Komakech and Osuu (2014) conducted a study to identify the primary factors contributing to student absenteeism and to explore potential remedies for these issues within Secondary Schools in Uganda. The researchers employed a descriptive cross-sectional research design, integrating both qualitative and quantitative methodologies. Data collection involved the use of both secondary and primary sources. The results of the study revealed that the ten most significant causes of student absenteeism included: insufficient academic resources, domestic responsibilities, apathy towards education pursuit, food insecurity at school, experiences of sexual harassment, long commuting distances, health issues related to jigger infestations, bereavement of a parent or close relative, peer pressure, and severe disciplinary measures within the school environment. The present study acknowledges this study in that it has introduced factors that lead to school absenteeism and dropout rates, which is useful in the present study.

Musangi (2017) highlights that the Government of Kenya allocates substantial resources annually to public secondary education. However, despite this significant investment, the provision of quality secondary education encounters numerous obstacles. A primary issue is educational wastage, characterized by high rates of grade repetition and student dropout. This study examines the factors contributing to educational wastage in Kathiani Sub-County, employing a descriptive survey design. The findings indicate that factors related to schools, homes, and students themselves all play a role in influencing educational wastage in the area. The study advocates for the active participation of all stakeholders in addressing the school-related factors that contribute to this wastage. The above study introduces the biggest challenge that causes low attendance and retention rates in secondary schools which gives insights to the current study.

Gitau (2021) conducted a case-control study to evaluate the relationship between domestic animals and jigger infestation among the inhabitants of Sandarac Sub-County in Central Kenya, he interviewed 300 households. The study found that disparities in the sources of income and the level of education were significant factors contributing to jigger infestation, the study recommended that there is essential to enhance awareness of hygiene and sanitation to combat jigger infestation. As Gitau focused on households, the current study concentrates on the influence of jigger infestation on students' attendance and retention rates.

Wiese et al. (2018) undertook an investigation into the effects of jigger infestations on the quality of life of children residing in rural Coastal Kenya. Utilizing a descriptive research design, the authors discovered that both the prevalence and the severity of jigger infestations were significantly elevated. The infestation caused intense pain and itching thus resulting in disturbances in sleeping and concentration difficulties, these results in mental distress and also results in absenteeism in school children.

The author further emphasizes that the impact of jigger infestation on quality of life extends beyond mere physical health, highlighting the significant mental and emotional burdens experienced by the affected children. He further recommends effective treatment to improve the quality of the infected children. Using descriptive research, the current study proposed to investigate how jigger infestation has influenced the attendance rates of students.

Ngujiri et al. (2015) conducted a study that quantified the disease burden associated with jigger infestation in children aged 5 to 14 years, utilizing disability-adjusted life years as a metric in Murangá County used a questionnaire method to observe that, jigger infestation causes severe physical disability (loss of nails, difficulty in walking, itching, persistent pain, burning sensation and unable to write). Further, it results in mental illness, isolation, withdrawal from school, sleepless nigths, stigma, stress, and fear of being stepped on.

Thus, this poses a big threat to both the physical and mental health of children. The current study also borrowed from the above study in that it utilized its recommendation for the maintenance of hygiene around schools, to address the influence of jigger infestation on attendance rates of students.

In Murangá County, a study conducted by Kimotho and Miller (2016), on stigmatizing beliefs stereotypes, and communication surrounding jigger infestation, adapted a descriptive phenomenological research design with four focused group discussions and twelve in-depth interviews, between 18 and 60 years. The study revealed that besides physical suffering, individuals whose family members have been affected by jigger infestation suffer from stigma and are often stereotyped and socially excluded. They are associated with curses, witchcraft, being lazy and unhygienic, and possessing jiggers attracting blood. This in turn affects the mental health of the affected individual. The

current study also acknowledges the physical suffering, stigma-related issues, and cultural beliefs of those who are infested with jiggers and points out ways in which those jigger-related influences are addressed to increase students' attendance rates in schools.

Research conducted by Matage and Begi (2017) in Musaba Sub-County Kenya on factors related to socio-economic status and the educational environment contribute significantly to absenteeism among students in lower primary schools. A questionnaire was employed as the primary data collection instrument, revealing that students who maintain regular attendance tend to achieve higher academic performance compared to their absent counterparts. This discrepancy in performance is attributed to several issues, including an unfavourable school environment and strained relationships with both peers and educators. Additionally, students affected by jigger infestations face further challenges that hinder their participation and success in school activities. The study recommended strict implementation of school rules to avoid school absenteeism. However, the weakness lies in the direct relevance of the specific study in Bumula Sub-County and the limited focus on attendance rates of students in public day schools.

A research investigation conducted by Mukhavali (2021) in the Teso North Sub-County of Busia County, Kenya, examined the impact of climate variability on the prevalence of jigger infestation. It adopted descriptive, historical, and correlational designs. It was found that changes in climate increase jigger parasites thus affecting the community at large; absenteeism in school among school-going children, some repeat classes, drop out of school, stigmatization increases while others contract secondary infections such as tetanus and death. Based on the findings mentioned, some potential gaps in the study include the provision of closed shoes by foundations and well-wishers and the intensification of awareness programs to curb jigger infestation.

Mørkve (2013) discusses the implementation of a jigger removal program in Bungoma, Kenya, which utilized qualitative participatory research methods. This approach included in-depth interviews, group discussions, and observational techniques. The findings revealed that individuals affected by jigger infestations experience significant distress due to the painful and physically debilitating nature of multiple jigger penetrations on their hands and feet. This condition leads to a loss of work capacity and contributes to school dropout rates. However, the study identified a gap in the thorough examination of students' school attendance and retention rates, highlighting the necessity for further research on how jigger infestations impact these educational metrics.

The researcher emphasizes that individuals experience feelings of stigma, neglect, and reliance on external support for the removal of jiggers. Particularly at risk are the elderly, who are susceptible to blood-borne pathogens, including tetanus and HIV/AIDS. Consequently, communities with high prevalence rates require coordinated interventions from the public health sector to address both the recurrence of these conditions and the associated environmental infestations. Furthermore, there is a pressing need for research focused on the prevalence, prevention, and treatment of these issues.

Mørkve et al (2023) carried out a qualitative case study to investigate the experiences of communities affected by Tungiasis in villages characterized by a high prevalence of the condition in Bungoma County, Kenya. The research employed a qualitative case study design, incorporating methods such as observations, home visits, comprehensive interviews, and collective discussions. The findings revealed that individuals affected by the condition experienced numerous penetrating wounds on their hands and feet, leading to disabilities that hindered their ability to work and contributed to school absenteeism.

Furthermore, individuals reported experiencing stigma, and within the school environment, students tended to avoid engaging in play with classmates who were infected. There was a prevailing perception that the sand flea infestation stemmed from poverty, leading to the conclusion that those impacted struggled to meet even their fundamental needs. Many of these individuals resided in sandy huts, often sharing their living space with animals, and lacked access to soap and clean water. Furthermore, the rest of the community often viewed those infected as ignorant. Further, he recommended that research is needed to control and eliminate these neglected tropical diseases. This study can be linked to the present study in terms of stigma-related issues among students infested with jiggers. It provides insights for accessing the influence of the infestation on attendance and retention rates.

Despite previous study contributions in understanding the influence of jigger infestation on attendance rates with significant implications on the health, education, and social well-being of individuals. There is still a need to call for integrated approaches that address the root causes of the infestation like poverty, and lack of education, while emphasizing the importance of awareness, and hygiene programs, there is also a need to comprehensively explore how the infestation has influenced attendance rates of students, to improve quality education standards for students around the study area.

2.2.3 Strategies Employed to Mitigate the Influence of Jigger Infestation among Students.

Saboyá-Díaz et al. (2022) conducted a comprehensive analysis of the existing literature on the epidemiology of jigger infestation in the Americas, reviewing a total of 83 articles that provided pertinent data regarding tungiasis cases, their geographical distribution, and prevalence. Their findings indicate significant deficiencies in the available information and understanding of jigger infestation. To effectively design and execute integrated control strategies that are appropriate for specific contexts and patterns, it is essential to gain insights into the burden, epidemiology, distribution, magnitude, associated risk factors, and potential reservoirs, among other relevant elements transmission in the affected communities. Therefore, as opposed to this study, the current study looks at aspects that cause low school attendance and explores strategies that have been employed to mitigate the infestation.

Deka (2020) conducted a study on the geographical distribution of Tungiasis in Sub-Saharan Africa, utilizing geostatistical modelling to illustrate the transmission of jiggers in the region. The findings indicated that approximately 688 million individuals inhabit areas conducive to the disease, with 46% (or 304 million) of this population located in East Africa. The study emphasizes the necessity of informing disease control initiatives, advising policymakers, and enhancing global awareness by equipping decision-makers with essential data aimed at reducing morbidity and mortality in communities situated in environmentally favourable regions. This study can be linked to the present study in terms of the provision of guidelines for disease control programs and awareness to community members. It provides insights into strategies employed to mitigate the infestation in the study area.

Kampamba (2015) examined the frequency and contributing risk factors of Jigger infestation in the districts of Chipata and Vumbwi, Zambia. 384 households were interviewed on the demographic characteristics and household living conditions. He found out that jigger infestation was prevalent among rural communities and their awareness of the infestation was high, though they were not able to link the risk factors associated with jigger infestation and the intervention for prevention. The research suggested that further investigation into risk factors is necessary to assess the economic impact of infestation. The literature provides valuable information on the prevalence of infestation among the rural community and their awareness, gaps exist on how it has influenced attendance and rates of students which is the focus of the current study in Bumula.

Nannyonga et al. (2021) employed a mathematical modelling approach to address the Strategies for the prevention and management of jigger infestations in Mayuge District, Uganda, focusing on community engagement. Their research indicated that jigger infestations not only lead to severe health consequences, including death and tissue necrosis in affected individuals but also result in secondary infections such as tetanus. This situation has significantly exacerbated the already precarious educational standards in the region despite utilizing an inexpensive sterile safety pin to extract the fleas from the skin of the individuals who are infested. However, there is a gap directly in addressing strategies used to curb the infestation, the use of safety pins to extract jiggers from the skin can lead to other secondary infections like tetanus hence worsening the situation. The current study addresses strategies that could better be used to curb the infestation to improve the attendance rates of students.

A research investigation by Nyangínja et al (2018) in Mombasa, Kenya, focused on the mathematical modelling of public health education's impact on Tungiasis, a neglected disease that poses numerous challenges in endemic regions. The findings indicate that

jigger infestation constitutes a significant public health threat to affected individuals. Despite the limited availability of reliable data regarding the prevalence of this disease, it is often termed a "hidden disease" due to the general neglect it receives from healthcare providers and policymakers. The authors emphasized that public health education is a crucial strategy for mitigating the jigger problem, as it effectively lowers the threshold for disease transmission. The gap in this study is the focus on addressing the infestation as the hidden disease of the community, the present study utilized its recommendation on public health education to reduce the impact of the menace on attendance rates of students in the study area.

According to Mbuthia (2019) in the Mathematical modelling of jigger disease dynamics, Murangá Sub-County, incorporated hygiene as a control strategy of jigger infestation. She found out that, there was no proper hygiene practice within the community. She further recommends protection measures of wearing shoes to be incorporated with hygiene as a control strategy of jigger infestation, watering of dusty floors, consistent use of natural repellents such as coconut oil, and the routine spraying of household pets, including dogs and cats, which serve as hosts for these parasites. The literature provides various strategies to eradicate the infestation and insights into the present study on addressing the importance of using those strategies in improving attendance and retention rates of students.

Orucho et al. (2022) carried out an investigation on the psychological support for children affected by jigger infestation in Kisii County from the viewpoint of social work, employing a descriptive survey design. The research involved a sample of 50 pupils, 50 parents, 20 key informants, and 20 social workers in training. The findings indicated that to address Tungiasis, it is essential to tackle the underlying risk factors contributing to its spread, including poverty, poor hygiene, inadequate sanitation, and insufficient health

facilities. This current study draws upon the insights gained from Orucho et al.'s research, aiming to identify strategies to reduce infestation among students, thereby enhancing their attendance and retention rates. Furthermore, the study advocates for a shift in community behavior and a revaluation of superstitions surrounding the causes of Tungiasis.

2.3 Summary and Gaps in Literature Review

The chapter has defined absenteeism as school-going children being absent from attending. Many factors make learners fail to attend or drop out of school. Various factors encompass physical, health, economic, home, and educational environments. Nevertheless, the existing literature fails to provide a comprehensive understanding of the enduring elements that lead to low attendance and retention rates in public day secondary schools. If these issues remain unaddressed, a significant number of rural children may ultimately discontinue their education, thereby reinforcing the cycle of poverty and hindering the attainment of lifelong and inclusive education as outlined in Vision 2030 and the Sustainable Development Goals (SDGs), particularly SDG 4.

Despite the valuable insights and statistics gained from the extent of jigger infestation, there is still limited focus on the attendance rates of students. This new study assesses the extent of jigger infestation on attendance rates of students in public day secondary schools of Bumula Sub-County, Bungoma County, Kenya.

Despite various strategies employed to mitigate the influence of jigger infestation, the literature reveals that there is a significant gap for more comprehensive strategies to raise awareness and change behavior within communities and schools around the jigger-infested areas. There is also a need to identify crucial evidence-based, culturally appropriate, and sustainable interventions. There is also a limited exploration of how

communities can actively participate in designing and implementing interventions to curb jigger infestation.

2.4 Theoretical Review

This study was guided by Ecological systems theory, which is one of the social work theories that inform this study because it answers all the objectives of the study which are the extent of jigger infestation on attendance and retention rates, the influence of jigger infestation on attendance the retention rates of students and strategies employed to mitigate jigger infestation on attendance and retention rates of students.

2.4.1 Ecological Systems Theory

Bronfebrina (1979) formulated a framework aimed at comprehending the individual and their interactions with the surrounding environment. The process of individual development is influenced and moulded by the dynamic relationship between their biological evolution, the immediate familial and communal context, and the broader societal framework.

Alterations or conflicts in any one layer will have effects that spread through the other layers. To understand an individual's development, it's crucial to examine not only the individual and their immediate surroundings but also their interactions with the broader environment.

The central principle of this theory emphasizes the individual's engagement with their immediate surroundings, encompassing both the social and physical environments, which facilitates development. Changes and events within these environments can have cascading effects on other layers. Bronfenbrenner's theory delineates intricate "layers" of the environment, each of which plays a significant role in influencing a child's

development (Ryan 2001). These layers include the microsystem, mesosystem, exosystem, and macrosystem

The immediate environment in which an individual functions is referred to as the microsystem. This setting includes the individual's family, educational institution, friends, and local community. Interactions within these contexts are characterized by direct engagement with various social agents. Students rely on these agents for essential care and support. Insufficient health care from these sources can create conditions conducive to the proliferation of jiggers. Once a student becomes infested, they may suffer from discomfort and pain in the affected areas, which can hinder their school attendance.

Moreover, prolonged absence from school due to health issues can result in the child lagging behind their peers in understanding academic concepts. This situation can adversely affect their self-esteem and diminish their participation in school activities, ultimately leading to subpar academic performance. Such performance can result in significant stigma for the child, potentially culminating in school dropout. Conversely, when social agents demonstrate concern and support, they can promote the healthy development of children, assisting them in overcoming jigger infestations and mitigating their adverse effects.

Its criticism is that it tends to be more descriptive than explanatory, offering less insight into the underlying mechanisms driving developmental processes. Despite these criticisms, Ecological Systems Theory remains a valuable framework, but researchers and practitioners should be mindful of its limitations and consider complementing it with other perspectives for a more comprehensive understanding of human development.

2.5 Conceptual Framework

This study was conceptualized to investigate the influence of jigger infestation on the attendance rates of students in public day secondary schools in Bumula Sub-County, Bungoma County Kenya. The independent variables were; to determine the extent, assess the influence, and examine strategies employed to mitigate jigger infestation. all three objectives were moderated by community sensitization and empowerment which improved the attendance rates which was the dependent variable. Under each objective, the study developed indicators that were measured to determine the relationships between study variables.

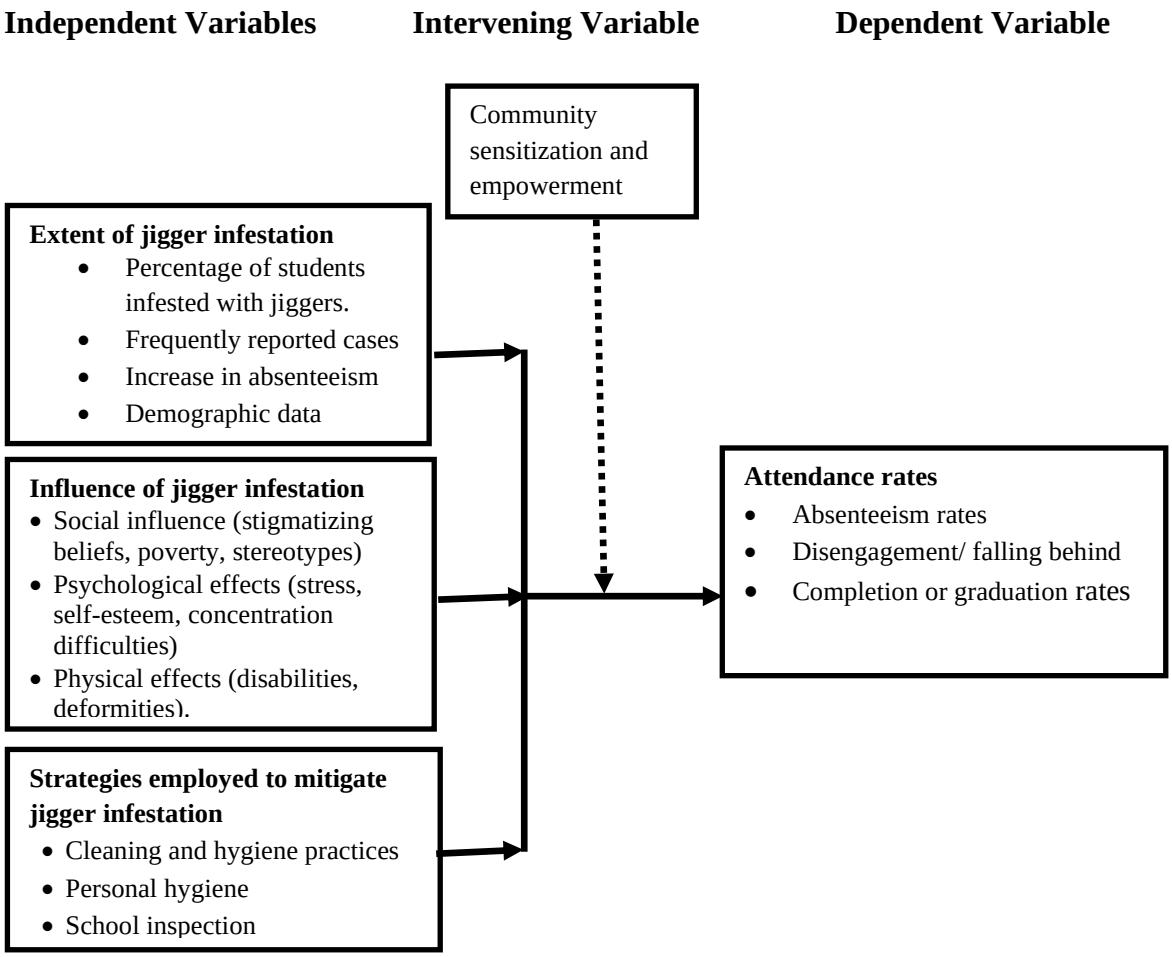


Fig 2.2 Conceptual Framework

Source: Researcher, 2023

2.5.1 Explanation of the Conceptual Framework Variables.

In the study, extent refers to the measurement or evaluation of the prevalence and severity of jigger infestation among students of public secondary schools of Bumula Sub-County, which can be high, medium, or low. It is measured through the Percentage of students infested with jiggers which was done by calculating the percentage of students who absent themselves from school due to jigger infestation which was measured as follows, (high above 40%, medium 30% to 40%, and low below 30%). It was also identified through frequently reported cases, which were measured by identifying and documenting the number of reported cases among students in public day secondary schools of Bumula (high frequency above 30%, medium frequency 20% to 30%, low below 20%). Increased absenteeism is measured by looking at the significant increase in absenteeism of students (high), moderate increase in absenteeism(medium), and minimal increase in absenteeism (low). Demographic information, including variables such as gender, age, and geographic location, is assessed by analyzing patterns and correlations associated with the prevalence of jigger infestations.

The influence of jigger infestation refers to the effect that jigger infestation has on different dimension of individuals' lives, including social, psychological, and physical dimensions. the specified factors measure the influence of jigger infestation. Social Influence (Stigmatizing Beliefs, Poverty, Stereotypes). This refers to the impact of jigger infestation on students' interactions, relationships, and societal perceptions. This can include stigmatizing beliefs, increased poverty due to health issues, and stereotypes associated with jigger infestation**.** it was measured through Conducting interviews to assess societal attitudes and beliefs about individuals affected by jiggers.

Psychological Effects (Stress, Self-esteem, Concentration Difficulties)**,** involve the impact of jigger infestation on students' psychological wellness, including stress levels, self-

esteem, and concentration difficulties. This variable was done by assessing whether students infested with jiggers face psychological distress and drop out of school. In addition, Physical Effects (Disabilities, Deformities)**,** refers to the impact of jigger infestation on individuals' physical wellness, leading to disabilities and deformities. It was measured by Recording and analyzing data on physical health indicators, such as mobility within the study area, and also collecting interviews from key informants to understand the physical influence of the infestation among students.

Strategies employed refer to measures put in place to eradicate jigger infestation which in turn improves the attendance rates of students in public day secondary schools of Bumula Sub-County. This was measured through assessing and evaluating the effectiveness of those measures, and if they have been able to improve the attendance and retention rates of students. Cleaning and hygiene practices**,** referred to the extent to which cleaning practices were implemented within schools to reduce the presence of jiggers were Measured through, (High level) Consistent and thorough cleaning practices were observed in more than three out of every five, schools. (Medium level) Consistent and thorough cleaning practices were observed in two out of five, schools. (Low level) Consistent and thorough cleaning practices were observed in less than one out of five, schools.

Personal hygiene, this study conceptualized this as, the level of personal cleanliness and care practices among students to prevent jigger infestation. this was Measured by assessing whether students exhibit consistent personal hygiene practices such as regular washing and cleaning of feet, wearing closed shoes, and maintaining clean living environments, a significant portion of students demonstrate some adherence to personal hygiene practices, but not consistently or universally and Few individuals demonstrate consistent personal hygiene practices, with many neglecting proper foot care and cleanliness.

School inspection refers to the frequency and thoroughness of inspections carried out in public day schools of Bumula Sub-County to identify and address jigger infestations and improve students' attendance and retention rates. It was measured by assessing whether schools conduct regular and comprehensive inspections in more than three out of every five schools, with prompt action taken to address any infestation, whether they conduct regular inspections in two out of five schools with some delays, and whether they conduct infrequent or inconsistent inspections in less than one of five schools with limited or no action taken to address jigger infestation in Bumula Sub- County.

Community sensitization and empowerment refers to the level to which communities are educated and empowered to understand the causes and consequences of jigger infestation, as well as equipped with the knowledge and resources to prevent and address it effectively. The variable was measured through interviews with key informants about community awareness who demonstrated a deep understanding, medium level of awareness, or low level of awareness of jigger infestation, its impacts on students' attendance and retention rates, and actively engaging in preventive measures and support programs.

Absenteeism is the frequency and extent of students' non-attendance or absence from school due to, jigger infestation. Measured at a high level above 30%, indicating frequent and widespread absences, a medium level of 20% to 30% indicating significant absences in public day secondary schools of Bumula, and a low level, of less than 20% indicating infrequent instances of absenteeism in schools. Disengagement/ falling behind is measured through participation in classroom activities, homework completion, and engagement in school events. Lower participation can indicate disengagement. It can also be measured by Collecting qualitative teacher data regarding student engagement and classroom behavior.

Completion or graduation rates, the percentage of students who complete their education and graduate from their respective academic programs, accounting for factors such as jigger infestation. This was measured by assessing the level of completion or graduation rates above 50% indicating a high level of graduation rates, 20%- 40% indicated moderate completion rates, and below 20% indicated a low level of success in completion of education.

CHAPTER THREE

RESEARCH METHODOLOGY

3.0 Introduction

This chapter presents the research methodology that was employed by this study. It focuses on research site description, design, target population, sample and sampling procedures, research instruments, data collection and analysis procedures, and ethical considerations.

3.1 Study Area

Bumula Sub-County in Bungoma County, Kenya covers an area of 347.8 square kilometers with 44,954 households making up a population of 215, 546 as per the 2019 census. It consists of the following wards; Siboti, Bumula, Mukwa, and Kimaeti wards. According to the Sub-County Education officer's report of 2023, Bumula Sub-County has 10 public day secondary schools accounting for the number of enrolments of 10000 students. Bumula Sub-County is situated adjacent to Kanduyi Sub-County on the eastern side, bordered by Busia County to the west, Sirisia Sub-County to the north, and Kakamega County to the south...

This Sub-County encompasses ten locations: Mukwa, Siboti, Kimaeti, West Bukusu, South Bukusu, Bumula, Mabusi, Khasoko, Siritanyi, and Kabula, and it is further divided into 24 sub-locations.. According to the Bungoma County Integrated Development Plan 2018- 2022, Bumula sub- County's main socio-economic activity is farming, many people are from poor households and hence struggle with hygiene and sanitation issues. It was added that the rate of public day secondary school absenteeism is high due to socioeconomic background, cultural beliefs, and school environment. Jigger infestation is one of the ailments that is experienced among the poverty-stricken community.

3.2 Research Design

Grove and Gray (2018) state that it is a guideline for the research process to achieve the intended results reflecting reality. This study utilized a mixed-method design and descriptive research design. First gathering and analyzing quantitative data, then followed by qualitative data. The design allowed comprehensive understanding by combining numerical data with contextual information.

The quantitative component allows the measurement of attendance rates in a systematic and standardized manner. The qualitative component of research design enables exploration of the contexts experiences and perceptions related to jigger infestation and how it influences attendance rates, providing interpretations of qualitative findings. The mixed method therefore allows the triangulation of data which increases validity and reliability of the study by cross-verifying findings from different data sources and methods. This strengthens the overall credibility results, to build strength to gain better insights into the phenomenon (Clark et al 2022). The study also used descriptive research design. Descriptive research design helps in tackling research inquiries concerning the aspects of what, how, when, who, and where

3.3 Target Population

Mugenda and Mugenda (2012) defined a target population as a collection of individuals or items sharing common attributes. This group encompasses all instances that meet specific criteria, thereby delineating the elements that are either included or excluded from the study population. The target population therefore constituted of 10,000 students, 15-20 years from all the 10 public day secondary schools in Bumula Sub-County, Bungoma County, Kenya. These included 1300 from Khasoko Secondary School, 850 from Myanga Secondary School, 800 from Maliki Mix Secondary, 1800 from St Elizabeth Lunao Public Day, 1050 from Mikokwe Secondary School, 900 from Chiliba Secondary School, 800

from Namusasi Secondary School, 850 from St Kizito Mayanja secondary school, 700 from Mateka Secondary School and 950 from Bumula FYM secondary school.

3.4 Sample Size

Kothari (2019) suggests that in social research, a sufficiently large sample size is essential to minimize sampling errors, which can impact the precision of the findings. The required sample size for this study was obtained using Krejcie and Morgan's (1970) formulae as shown below.

$$n = \frac{X^2 \times N \times P(1-P)}{(ME^2 \times (N-1)) + (X^2 \times P \times (1-P))}$$

Source: Krejci and Morgan 1970

The formulae provide that;

n= sample size

X^2= Chi-square for specified confidence level at 1-degree freedom= (3.841) from tables

N= Population size

P= Population proportion (0.50) in the table.

ME= The Desired margin of error (expressed as proportion =0.05)

$$n = \frac{3.841 \times 10000 \times 0.5 \times 0.5}{(0.05)^2 \times (10000-1) + 3.841 \times 0.5 \times 0.5}$$

n= 370 students

The study involved determining the sample size of 370, calculated using Krejci and Morgan formula 1970 formula to proportionately represent 10000 students. The researcher

proportionally allocated the ten schools to calculate the sample that participated in the study, this formula took into account the proportion size as indicated below;

Table 3.1 Sample Size (as per the School).

Population Category	Target Population	Sample Size
Khasoko secondary	1300	48
Myanga secondary	850	31
Maliki Mix Secondary	800	30
Lunao Secondary	1800	67
Mikokwe Secondary	1050	39
Chiliba Secondary	900	33
Namusasi Secondary	800	30
St Kizito Mayanja	850	31
Mateka Secondary	700	26
Bumula FYM secondary	950	35
Total	**10000**	**370**

Source: Researcher, 2024

3.5 Sampling Techniques and Sampling Procedure.

According to the Sub-County Education officer records, Bumula Sub-County has 10 public day secondary schools, the researcher used a census technique to select all the 10 public day schools for the study. In each school, two categories of respondents participated in the research, that is students and the 1 head teacher as key informants. The researcher used simple random sampling (lottery method) to select students from 10 public day secondary schools who participated in the study. The researcher assigned a unique number and mixed them thoroughly. Then, without looking, the researcher selects n numbers. The students that were assigned the number were then included in the sample.

For key informants, a sample size of 20 respondents was obtained, 5 CHPs, 5 local administrators, and 10 head teachers. Purposive sampling was applied for the key informants because they have adequate knowledge about jigger infestation in the study area.

3.6 Data Collection Instruments

The researcher developed questionnaires that were administered to students by the researcher and research assistants (APPENDIX III), which had open and close-ended questions that had two sections; sections A and B. A contained questions looking for demographic data while B contained questions derived per research objectives. These are; the extent of jigger infestation among students, the influence of jigger infestation on attendance rates, and strategies employed to mitigate jigger infestation among students. The participants were requested to articulate their opinions utilizing a five-point scale, which included SA for Strongly Agree, A for Agree, NS for Not Sure, D for Disagree, and SD for Strongly Disagree. This approach aligns with the observations made by Abma et al. (2016). questionnaires are an effective method for data collection, allowing for the efficient and timely collection of substantial information.

The researcher administered interview guides, which comprised open-ended questions to get a deep understanding of the topic of interest, from the Key informants as seen in APPENDIX IV. It was administered by the researcher with the help of three research assistants to selected teachers, CHWs/ CHPs, and the local administrators and parents who were purposively sampled as the main key informants for the study. This is because teachers deal with students directly during school sessions, they understand their students better, CHWs/CHPs have broad knowledge and understanding of jigger infestation around the community, while local administrators know and have knowledge on how jigger infestation has affected students from where they come from., which collected qualitative data that were later analyzed through thematic analysis.

The interviews were structured around questions derived from the study's objectives. The researcher also obtained data from secondary sources by conducting document analysis and studying progress records, attendance registers, and end-term report forms. To

determine a couple of days, students absent themselves from school due to jigger infestation.

3.7Piloting of Research Instruments

Questionnaires were piloted before the actual study to assess their suitability to improve the data collection process. The researcher administered 37 questionnaires (10% of the total number of questionnaires) as indicated in APPENDIX III, in Kabuchai Sub-County in Bungoma County, Kenya. The 4 key informants (10%) from the same Sub-County were issued with the interview guides for piloting. Mugenda and Mugenda (2012) noted that 1-10 percent of the total sample is the best fit for a pilot study. Following the pilot test, any instrument shortcomings were identified and addressed, and ambiguous items were revised to enhance both validity and reliability.

3.7.1 Validity of Research Instruments

Validity refers to how accurately the research instrument measures what it is intended to measure (Orodho, 2012). Both face validity and content validity were assessed. Face measured how well information was generated. The content of questionnaires was analyzed.The researcher used the model coefficient validity index of Amin (2005) as follo ws:

$$CVI = \frac{\text{Number of items with the same response}}{\text{Total number of questions in the survey}}$$

CVI= 20/26

According to Amin (2005), if the CVI is higher than 0.6, the research tool is considered va lid. In this study, the validity calculation of 20 out of 26 items was made and the validity i ndex of 0.769 shows that the questionnaire is valid and therefore suitable for use.

3.7.2 Reliability of Research Instruments

Reliability refers to the degree of stability or consistency exhibited by an instrument in assessing a specific trait (Orodho, 2012). To evaluate the reliability of the research instruments, the researcher employed the test-retest method. As noted by Lee et al. (2016), this method is widely recognized as a standard approach for measuring the reliability of research tools. A cohort of respondents sharing similar characteristics was utilized for this assessment and randomly selected for this purpose (Test 1), questionnaires were administered to the respondents to the same group of subjects after two weeks (Test 2) and the response from two tests was analyzed and computed using Cronbach Alpha test. A correlation of 0.7 was considered appropriate for this study. According to the study results the alpha coefficient of 0.818 was realized making the instrument suitable for the study. Mahajan (2017) asserts that a reliability coefficient of 0.7 or higher is deemed suitable for application.

Table 3.2: Reliability Table

Cronbach Alpha	**Number of Items**
0.818	20

3.8 Data Collection Procedure

The researcher obtained an introductory letter from the Board of Postgraduate Studies at Maasai Mara University (see Appendix VIII) and applied for a research permit from the National Commission of Science, Technology, and Innovation (NACOSTI), as shown in Appendix IX. Additional approvals were then secured from the relevant County and sub-county offices and departments (Appendices X, XI, and XII). With the assistance of research aides, the researcher distributed the questionnaires (Appendix III) to gather quantitative data and interview guides (Appendix IV) to collect qualitative data from

selected participants. Prior to data collection, contact was established, and rapport was built with the respondents. A mutually convenient time was set for retrieving completed questionnaires, and interview sessions were scheduled on agreed-upon dates and times with the respondents. From each school, data was collected using secondary sources, whereby records from students' class attendance registers, and health clinic records were recorded to provide quantitative data on attendance rates.

3.9 Data Analysis and Presentation

According to Brown, et. al (2000), analysis of data involves computation to establish which variables should be examined and which relationships to be explored from the data. Both quantitative and qualitative data methods were applied. First Quantitative data was examined using descriptive statistics, including calculation of frequencies, measures of central tendencies like means, and measures of variability like standard deviations for continuous data. Categorical were presented as percentages. The study utilized SPSS version 27 to calculate, leveraging an adopted Likert scale for data interpretation.

Qualitative data was analyzed thematically. This was done in the following processes; transcription of data collected from interviews, taking notes of items collected, coding across all data sets, identifying themes, refining themes by mapping out preliminary themes and their connections, defining and labeling themes, and completing the analysis. This is in line with (Maguire & Delahunt 2017).

Data presentation for Quantitative analysis was done using tables, charts, and graphs while qualitative data findings were displayed through the development of codes and sub-themes. Which gave deeper insights obtained responses gathered.

3.10 Ethical Considerations

The researcher ensured respondents' privacy and confidentiality throughout the study. The researcher provided clear and detailed instructions to teachers and students in selected schools regarding the study aim and how to complete the questionnaires, emphasizing the importance of thoughtful and honest responses that contribute to more reliable data. The researcher involved teachers in the data collection process, they acted as elements of supervision and guidance and also asked for consent from parents before conducting the study. They helped in clarifying uncertainties that students had while filling out questionnaires. They were given instructions by the teacher to fill out questionnaires then it was collected from them after a week.

The researcher addressed issues and clarifications needed by students and clearly illustrated how questionnaires were to be answered by communicating directly with students and teachers. Before the main research, the researcher conducted pre- pre-test before the main study which contributed to refining of instruments to make it more reliable and ensure the questionnaire was appropriate for the target group. The study's findings were disseminated by publishing the thesis and placing a copy in the university library, making it accessible to students and other interested individuals. Additional copies were submitted to NACOSTI and distributed to various County government offices in Bungoma.

CHAPTER FOUR

DATA PRESENTATION ANALYSIS AND DISCUSSIONS

4.1ntroduction

The research outlined the results derived from the data gathered in the study area. This chapter provides a comprehensive analysis, assessing the adequacy of the response rate for further analysis was assessed. Excel was utilized as the main tool for data analysis, enabling the computation of means, frequencies, and percentages to improve the interpretability of the gathered data. The results are elaborated upon in the subsequent sub-sections.

4.2 Findings of the Study

Table 4.1: Findings from Record Source (Class Attendance Registers, Health Records)

Range of days students were absent.	No of the students were infested with jiggers	%	No students without jiggers.
0-10	35	4.8	30
10-15	75	10.4	20
15-30	100	13.8	-
30-70	200	27.7	-
Percentage %	**400**	**56.7**	**12.5%**

The findings derived from various sources, including class attendance logs, health care services within educational institutions, and additional school documentation, suggest that a significant proportion of students affected by jiggers (56.7%) exhibited irregular school attendance in comparison to their peers. Analysis of class attendance records indicated that these students were absent for 30 or more days during a term that comprised a total of 70 days. Furthermore, the study indicated that 12.5% of students who were not afflicted by jiggers also experienced absences, albeit for different reasons such as common illnesses.

4.2.1 Response Rate

The researcher issued 370 questionnaires, of which 310 were completed and returned for analysis. The study established that this represents 83.8% of the total questionnaires distributed. The results are shown in Table 4.2 below.

Table 4.2: Response Rate

Response	**Distributed**	**Returned**	**Non-response**
Number of questionnaires	370	310	60
Percentage %	**100%**	**83.8%**	**16.2%**

The table above presents an 83.8% the response rate deemed suitable for analysis. Merton (2006) states that a response rate of 70% or higher is deemed suitable for a quantitative survey. In line with the above, the study concluded that the questionnaires were enough for data analysis. The non-response rate accommodated questionnaires that were poorly answered and zero responses (blank questionnaires). This accounted for a 16.2% non-response rate of the total number of questionnaires.

4.3 Analysis of Demographic Data

For descriptive studies, demographic data is paramount because such data influences the response and overall results of a given study. In other words, demographics form a basis within which the responses of the target population are analyzed and evaluated to deduce their opinion on a given subject. For this study, gender, age, class (Form), level of education of parents, parent's occupation, and whether the students lived with their relatives were the demographic variables that were considered for this study. The results are presented in the sub-sections below.

4.3.1 Gender of Respondents

The initial demographic variable analyzed was gender. The results are presented in Figure 4.1 below.

Figure 4.1: Gender of the Respondents

Regarding the gender of respondents, the researcher established that 52% of the respondents were female while 48% of respondents were male. An indication that there were slightly more female students than male students who took part in the study. This depicts that the response between male and female students on the above subject was nearly equal. This also indicates that male and female students were equally affected by jiggers in the study site.

4.3.2 Age of Respondents

Secondly, the study aimed to identify the ages of respondents within the study area. The study results are presented in Figure 4.2 below.

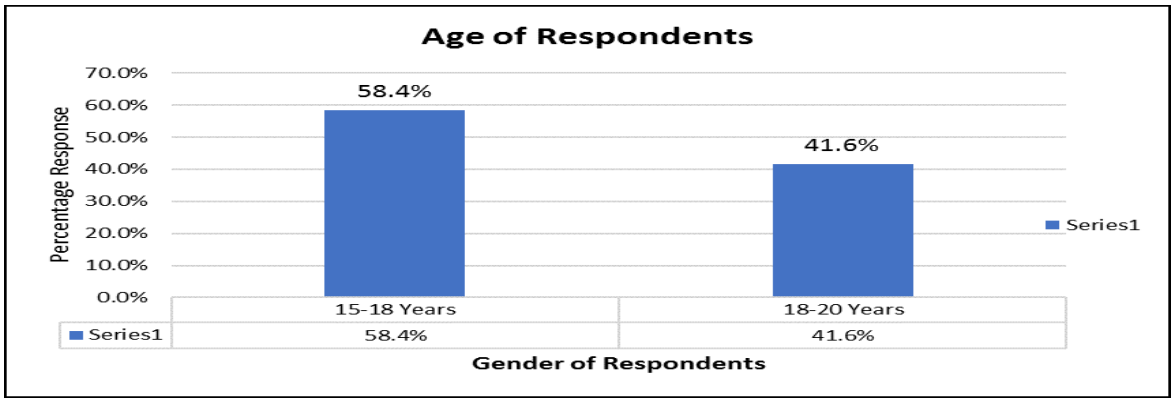


Figure 4.2: Age of Respondents

This study aimed to determine the age of the participants involved. Results revealed that 58.4% of the participants were between ages 15 and 18 while those who were above 18 years was 41.6%. This indicates that all the students who took part in the study were old enough to understand how the infestation has influenced students' retention in the study area

4.3.3 Level of Education

Thirdly, the research aimed to identify the class to which the respondents belonged. All the schools sampled had classes beginning from form one to form four. This was important because it shaped the opinions of respondents of the above research. The study revealed that the percentage of students who participated in the study in both form four and form three was 31% respectively.

The study also found that 24.5% of the respondents were in form two, while 13.5% were in form one. These showed that the students who participated in the study were mostly from the upper classes in secondary schools. The results are shown in Table 4.2 below.

Table 4.3: Level of Education of Respondents

Class/Form	Frequency	Percentage
Form 1	41	13.5
Form 2	76	24.5
Form 3	96	31.0
Form 4	96	31.0
Total	**310**	**100**

4.3.4 Number of Siblings of Respondents

This research also aimed to determine the number of siblings the participants had at home. The study findings are presented in Figure 4.3 below

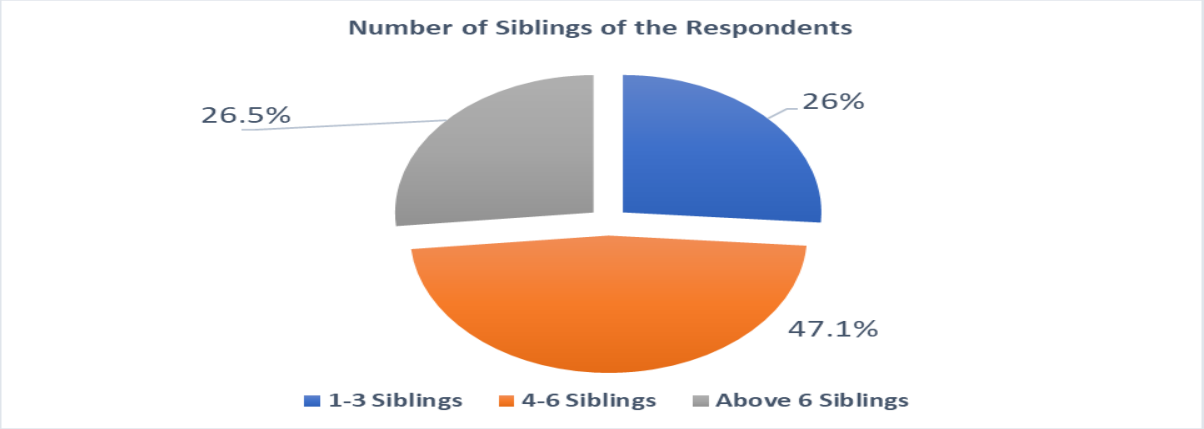


Figure 4.3: Number of Siblings

The study additionally aimed to examine the number of siblings each respondent had in their families. It was established that 47.1% of respondents had between four and six siblings, 26.5% had above six siblings and 26.1% of the respondents had between one and three siblings. This showed that most of the respondents came from families that had many siblings and hence this could have an influence on how families were able to handle issues related to jigger infestation.

4.3.5 Level of Education of Mother

The study aimed to ascertain the educational levels of the respondents' parents. The study revealed that the mother's educational levels were analyzed and presented in Figure 4.4 below.

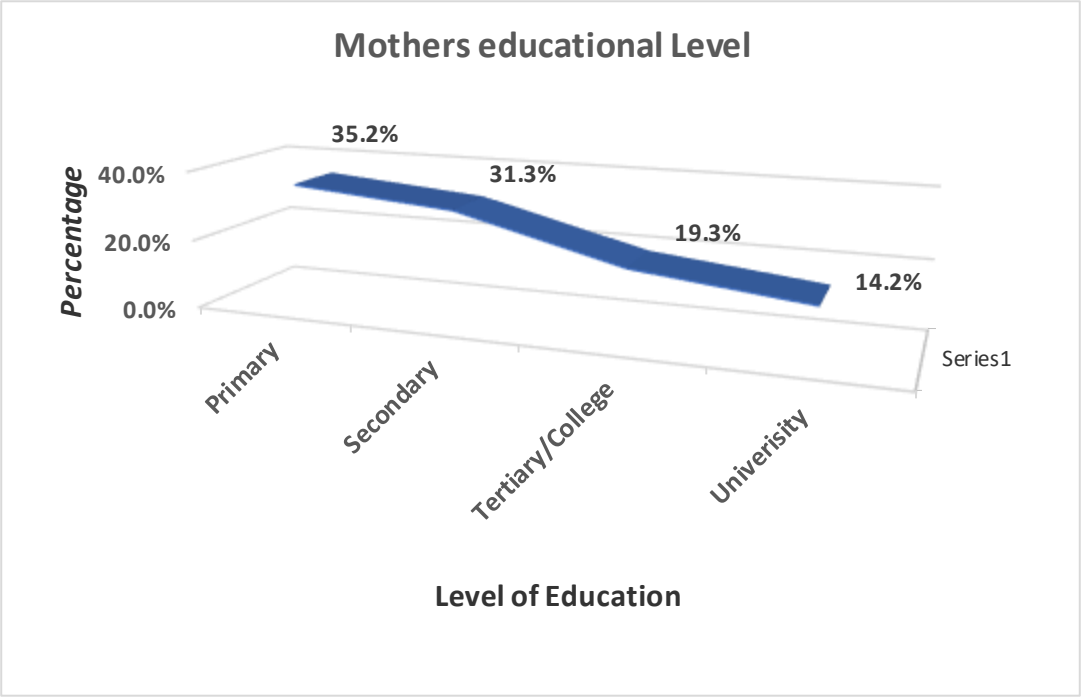


Figure 4.4: Mothers Educational Levels

The study also sought to establish the extent to which parents' level of education had an influence on the topic under study. The study sought to examine the influence of the mother's educational level and how it influenced jigger infestation in the study site. The research established that 35.2% of participants had only acquired primary education while 31.3% of respondents had attained high school education. While 19.3% of respondents had acquired college education while 14.2% of respondents had gotten university education. This showed that most mothers in the Bumula Sub-County had attained basic education which was not enough to propel them to opportunities related to employment that could have affected their living standards appropriately. Education should enable

women to access information related to sanitation and hygiene which was not the case for many mothers in Bungoma County, Kenya.

4.3.6 Fathers Educational Level

Table 4.4: Fathers Educational Level

Level of Education	Frequency	Percentages
Primary School	91	29.4
Secondary School	92	29.7
Tertiary	60	19.4
University	67	21.6
Total	**310**	**100**

Fathers' educational levels were computed as shown in table 4.3 as shown above. The study established that 29.7% of fathers had attained secondary education while 29.4% had attained primary education. This research further established that 21.6% of the participants had acquired University education. It was further established that 19.4% of the respondents had attained tertiary level. This indicates that the majority of the respondent's parents had low educational levels which, made it difficult for them to propel in employment sector thus, they were poor. In line with the above, high poverty levels have made families have challenges in combating the jigger infestation menace..

4.3.7 Mother's Occupation

The study also aimed to determine how parents occupations impacted efforts to combat jiggers at the household level it found that 46.2% of the respondents mothers were unemployed 31.9% were self-employed and 21.9% were employed further questioning revealed that even self-employed mothers struggled to meet basic household needs affecting their ability to address jigger infestations effectively the findings are detailed in Table 4.4 below.

Table 4.5: Mothers Occupation

Mothers' occupation	Frequency	Percentage
Employed	68	21.9
Unemployed	143	46.2
Self-employed	99	31.9
Total	**310**	**100**

4.3.8 Father's Occupation

Further, an additional analysis of the father's occupations is illustrated in Figure 4.5 below The findings showed that 50.3% of the participants' fathers were unemployed 26.8% were employed and 22.6% were self-employed This suggests that most of the respondents' fathers lacked employment making it difficult for them to meet basic household needs this situation exacerbated household poverty and hindered their ability to combat the jigger infestation problem

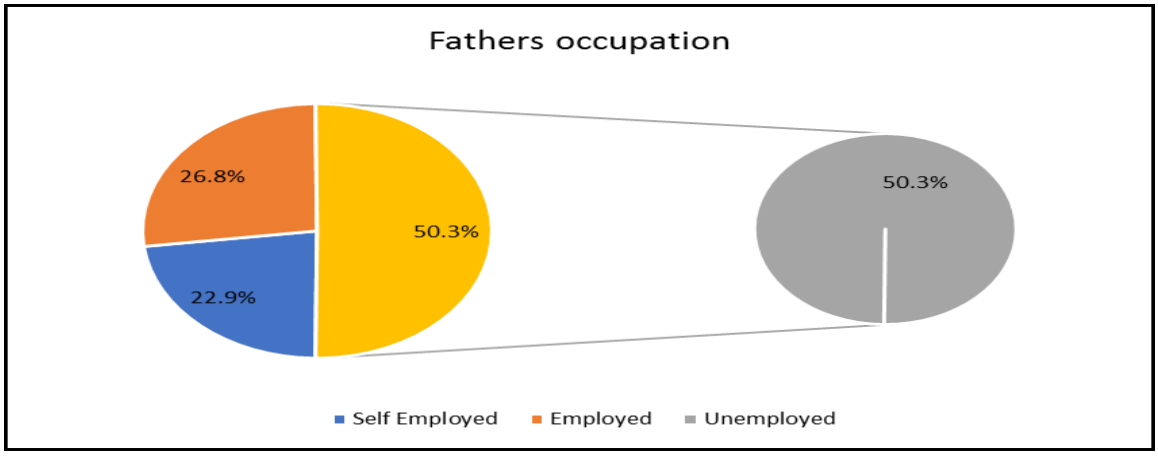


Figure 4.5: Father's Occupation

4.3.9 Place of Residence

Lastly, the study sought to analyze whether respondents were living at home with parents or guardians and other relatives. The study findings are illustrated in Figure 4.5 below. The findings revealed that 67.7% of the participants were living with their relatives and

guardians while 32.3% of respondents lived at home with their parents. Most of the respondents believed that living with their guardians and relatives was very difficult as it made them more susceptible to the vulnerabilities of jigger infestation. The study revealed that people who lived with their relatives and guardians were more susceptible to social issues like jigger infestation which made them drop out of school.

/

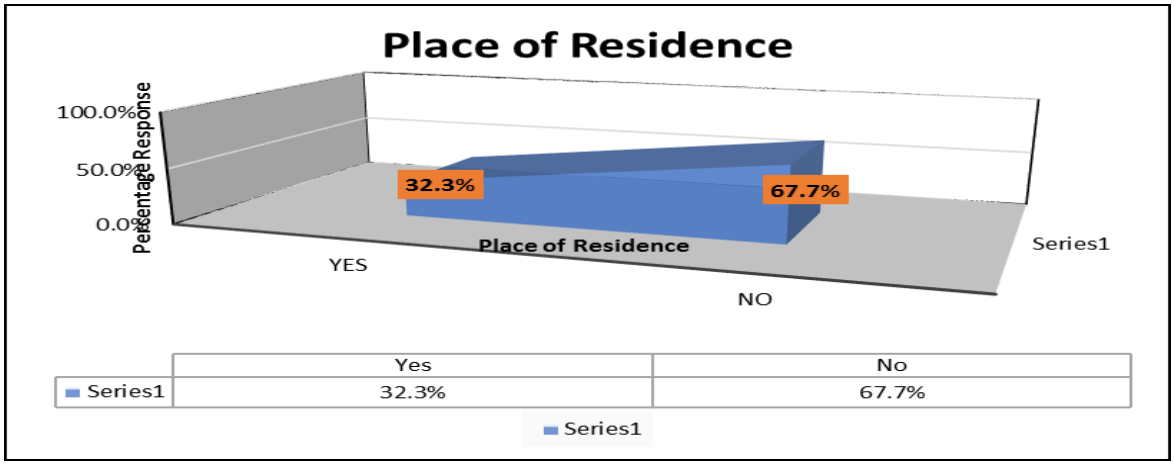


Figure 4.5: Place of Residence by Respondents

4.4 Analysis of the Descriptive Statistics

4.4.1 Extent of Jigger Infestation on Attendance Rates among Students

The first objective of the study sought to establish the extent of jigger infestation on attendance rates of students in public day secondary schools in Bumula Sub-County, Bungoma County, Kenya. The respondents were asked to express their opinions by marking how much they agreed or disagreed with the various statements contained in Table 4.5. The findings of the study were examined through descriptive analysis, employing percentages, means, and standard deviations. The results are subsequently presented as shown below. On a scale of **5= Strongly Agree; 4 = Agree; 3 = Not Sure; 2= Disagree; 1 = strongly Disagree,** the respondents were required to give their opinion on the statements provided **in Table 4.6**

Table 4.6: Extent of Jigger Infestation on Attendance Rates of Students

Statements	SA	A	NS	D	SD	M	S. D
Students become absent from school due to jigger infestation.	44.8%	43.5%	4.8%	4.5%	2.3%	4.45	0.967
Students infested with jiggers miss school more than non-affected.	37.7%	45.8%	10%	4.8%	1.6%	4.47	1.004
Jigger infestation affects school attendance rates.	34.5%	38.4%	21.9%	4.2%	0.6%	3.89	1.343
There are cases of jigger infestation among students in your school.	39%	49%	4.8%	4.2%	2.9%	4.65	0.976
Jigger infestation contributes to chronic absenteeism among students in your school.	40.3%	44.2%	7.4%	3.9%	4.2%	4.58	0.897

The research aimed to investigate the extent to which jigger infestation contributed to student absenteeism in Bumula Sub-County, Bungoma County, Kenya. The findings indicated that 44.8% of participants strongly agreed with this assertion, while 43.5% expressed agreement. Additionally, 4.8% of respondents were not sure, and 4.5% disagreed with the claim. Notably, only 2.3% strongly disagreed. These results suggest that a significant majority of respondents recognized jigger infestation as a factor leading to school absences among students in Bumula sub-County, Bungoma County, Kenya..

The study investigated the correlation between jigger infestation among students and their school attendance, revealing that a significant portion of respondents perceived that infested students missed more school than their non-infested peers. Specifically, 37.7% of participants strongly agreed with this assertion, while 45.8% expressed general agreement. Additionally, 10% of respondents were uncertain about the impact of jigger infestation on school attendance. Conversely, 4.8% disagreed with the statement, and 1.6% strongly disagreed, indicating that they did not believe infested students missed more school. These findings suggest that a majority of respondents recognize jigger infestation in the Bumula sub-county as a contributing factor to increased absenteeism among students

The research further aimed to investigate the impact of jigger infestation on school attendance rates in Bumula sub-county, Bungoma County, Kenya. The findings indicated that 34.5% of participants strongly agreed, while 38.4% agreed that jigger infestation influences school attendance rates in this region. Additionally, 21.9% of respondents expressed uncertainty regarding the effect of jigger infestation on school attendance and retention rates. Conversely, 4.2% disagreed, and 0.6% strongly disagreed with the assertion that jigger infestation affects school attendance in Bumula sub-county. These results suggest that a significant majority of respondents perceive jigger infestation as having a detrimental effect on attendance rates in the area.

When solicited for their views on the prevalence of jigger infestation among students in schools within Bumula sub-county, 39% of respondents strongly agreed, and 49% agreed. The study also found that 4.8% of participants were uncertain about the existence of jigger infestation cases among students, while 4.2% and 2.9% disagreed and strongly disagreed, respectively. This data indicates that a substantial majority of respondents recognized the occurrence of jigger infestation among students in schools in Bumula sub-county, Bungoma County, Kenya.

Lastly, Lastly, on whether jigger infestation contributes to chronic absenteeism among students in the study area, the study established that 40.3% of the participants strongly agreed while 44.2% of the participants agreed with the aforementioned statement. Further analysis revealed that 7.4% of the respondents were not sure as to whether jigger infestation contributes to chronic absenteeism among students in Bumula sub-county, Bungoma County, Kenya. The study results further revealed that 3.9% of respondents disagreed while 4.2% of the respondents strongly disagreed that jigger infestation contributes chronic absenteeism among students in the Bumula sub-county. This suggests that a significant proportion of respondents believed that jigger infestation plays a role in

student chronic absenteeism rates in many schools in the Bumula sub-county, Bungoma County, Kenya.

4.4.2 Influence of Jigger Infestation on Attendance Rates of Students in Bumula Sub-County.

The second objective of the study assessed the influence of jigger infestation on attendance rates of students in public day secondary schools of Bumula Sub-County, Bungoma County, Kenya. The respondents were required to give their opinion by indicating the extent to which they agreed or disagreed with the various statements as presented in Table 4.6. The results of the study were analyzed descriptively using percentages, mean, and standard deviation. The results are presented as shown below. On a scale of **5= Strongly Agree; 4 = Agree; 3 = Not Sure; 2= Disagree; 1 = strongly Disagree,** the respondents were required to give their opinion on the statements provided in the table below

Table 4.7: Influence of Jigger Infestation on Attendance Rates of Students in Bumula Sub-County, Bungoma County, Kenya.

Statement	SA	A	NS	D	SD	M	S. D
Students affected by jigger infestation are more likely to disengage themselves from school school.	32.9%	53.5%	7.4%	5.2%	1.0%	4.45	0.975
Students who have been affected by jigger infestation face social isolation making them absent from schools	33.9%	47.1%	11.9%	5.5%	1.6%	4.12	1.112
Many students have low motivation in class when infested with jiggers, due to the psychological issues related to infestation.	24.5%	52.6%	13.5%	7.4%	1.9%	3.89	1.451
External elements such as socioeconomic status, poverty, and environmental conditions promote the influence of jigger infestation on the attendance rates of students.	35.5%	45.8%	12.3%	4.8%	1.6%	3.95	1.134
Students infested with jiggers face psychological effects.	36.8%	44.8%	10.3%	4.8%	3.2%	3.85	1.485

Students affected by jigger infestation are more likely to disengage from school, the study results established that 53.5% of participants strongly agreed while 32.9% of the respondents agreed that students affected by jigger infestation are more likely to disengage themselves from school. The research additionally demonstrated that 7.4% of the respondents were not sure as to whether students affected by jigger infestation are more likely to drop out of school. The study results further revealed that 5.2% of the respondents disagreed while 1% of the respondents strongly disagreed that students affected by jigger infestation are more likely to disengage themselves from school. This suggests a strong consensus that jigger infestation is a risk factor for students disengaging themselves from school.

The research additionally aimed to investigate whether students who had been affected by jigger infestation face social isolation making them to be absent from schools. The study established that 47.1% of respondents agreed while 33.9% of respondents strongly agreed that students influenced by jigger infestation face social isolation that leads to absenteeism in schools. The study further established that 11.9% were uncertain as to whether students who had been affected by jigger infestation face social isolation making them to be absent from schools in the study area. Only 5.5% of the respondents disagreed while 1.6% strongly disagreed that students who had been affected by jigger infestation faced social isolation making them to be absent from school. This indicates that jigger infestation has made students avoid going to school because they face stigma and isolation from their fellow students. This has had a negative impact on student attendance in schools in the study area

The research additionally demonstrated 52.6% agreed while 24.5% of respondents strongly agreed that psychological issues related to jigger infestation led to low motivation for many students in Bumula sub-County, Kenya. The study further established that 13.5% of respondents could not tell whether psychological issues related to jigger infestation had led to low motivation in schools of Bumula sub-County, Kenya. Results also indicate that 7.4% of the respondents disagreed while 1.9% of the respondents strongly disagreed that psychological issues related to jigger infestation had led to low motivation among students of the school in Bumula sub-County, Kenya. This indicates that majorly, psychological issues led to low motivation in schools but they also recognized that other factors like lack of basic needs in school also led to school low school attendance in the study area.

The study also sought to establish whether external factors such as socio-economic status, poverty, and environmental factors had an impact on jigger infestation on attendance rates

of students in Bumula sub-County, Kenya. The study results revealed that 45.8% of respondents agreed while 35.5% of respondents strongly agreed that external factors like socio-economic status, poverty, and environmental factors contribute to the impact of jigger infestation on the attendance rates of students. The study also established that 12.3% of respondents could not tell whether external factors such as socio-economic status, poverty, and environmental factors had an impact on jigger infestation on attendance rates of students in Bumula sub-County, Kenya. The study also found that a paltry 4.8% of respondents and 1.6% of respondents strongly disagreed respectively with the above statement. This indicates that apart from jiggers, other external factors have an impact on the attendance and retention rates of students in Bumula sub-County, Kenya

Lastly, the study also sought to establish whether students infested with jiggers face psychological effects. The study results revealed that 44.8% of the respondents agreed while 36.8% of respondents strongly agreed that students infested with jiggers experience psychological effects. However, it's worth noting that 10.3% of respondents were uncertain about whether students infested with jiggers face psychological effects in Bumula sub-county, Bungoma County, Kenya. Further analysis also revealed that 4.8% of the respondents disagreed while 3.2% strongly disagreed that students infested with jiggers face psychological effects. From the study results, it can be established that students infested with jiggers face psychological effects including stigma, isolation, and other effects.

4.4.3: Strategies Employed to Mitigate Jigger Infestation among Students in Bumula Sub-County, Bungoma County Kenya.

The third objective of the study sought to analyze the actions taken to mitigate jigger infestation among students of public day secondary schools of Bumula Sub-County, Bungoma County. The respondents were required to give their opinion by indicating the extent to which they agreed or disagreed with the various statements as presented in Table 4.7. The results of the study were analyzed descriptively using percentages, mean, and standard deviation. The results are presented as shown below. On a scale of **5= Strongly Agree; 4 = Agree; 3 = Not Sure; 2= Disagree; 1 = strongly Disagree,** the respondents were required to give their opinion on the statements provided in the table below

Table 4.8: Strategies Employed to Mitigate Jigger Infestation among Students in Bumula Sub-County, Bungoma County, Kenya.

Statements	SA	A	NS	D	SD	M	S.D
Jigger infestation is adequately addressed in school health education.	39%	49%	4.8%	4.2%	2.9%	4.15	0.754
School inspection is always done often to reduce the influence of jigger infestation on the attendance rates of students.	40.3%	44.2%	7.4%	3.9%	4.2%	2.85	1.545
Schools have implemented measures to address jigger infestation and its impact on attendance rates.	32.9%	53.5%	7.4%	5.2%	1%	2.95	1.445
The school has provided support resources necessary to address issues of jigger infestation and its impact on attendance rates.	33.9%	47.1%	11.9%	5.5.%	1.6%	2.25	1.755

The study sought to assess whether Jigger infestation is adequately addressed by the school's health education in Bumula Sub-County, Bungoma County. The findings of the study demonstrated that 49% of participants expressed agreement, while 39% indicated

strong agreement with the aforementioned statement. Additional analysis showed that 4.8% of respondents were uncertain regarding the statement. Furthermore, the results indicated that 4.2% and 2.9% of participants strongly disagreed that Jigger infestation is adequately addressed in school health education in Bumula Sub-County, Bungoma County. This suggests that the public has a positive perception among respondents regarding the effectiveness of the strategies that are available in addressing jigger infestation through school health education in schools across the study area.

The study sought to establish whether school inspection is always done often to reduce the jigger infestation and its impact on the attendance of students in Bumula sub-county, Bungoma County, Kenya. The research indicated that 44.2% of participants expressed agreement, while 40.3% expressed disagreement with the aforementioned statement. Additionally, the findings showed that 7.4% of respondents were uncertain about the frequency of school inspections aimed at mitigating the impact of jigger infestations on student attendance and performance. Furthermore, the results highlighted that 4.2% of the respondents disagreed, whereas 3.9% strongly agreed with the statement. that school inspection is always done often to reduce the influence of jigger infestation on attendance rates of students. This is a clear indication that school inspection as one of the strategies proves to be inadequate in mitigating jigger infestation in schools in the study area.

On whether schools had implemented measures to address jigger infestation and its impact on attendance rates, the study established that 53.5% agreed while 32.9% of participants agreed with the statement above. Further, the study demonstrated that 7.4% of the participants and 5.2% of the respondents were not sure and strongly agreed respectively that schools have implemented measures to address jigger infestation and its impact on attendance rates. It was further demonstrated that 1% of respondents strongly disagreed with the statement above. This still indicates that this strategy has effectively helped in

mitigating jiggers in schools in the study area since there are public reactions amongst the respondents on this subject.

Lastly, the study sought to establish whether schools have provided support resources necessary to address issues of jigger infestation and its impact on attendance and retention rates in Bumula sub- County. The study indicated that 47.1% of respondents and 33.9% of participants agreed and strongly disagreed with the above statement. The study findings further indicated that 11.9% of the respondents noted that schools had provided support resources necessary to address issues of jigger infestation and its impact on attendance and retention rat in Bumula sub- County. Further, it was illustrated that 5.5% and 1.6% of the respondents disagreed and strongly agreed that schools have provided support resources necessary to address issues of jigger infestation and its impact on attendance and retention rates in Bumula sub- County. This also indicates that the above strategy has not been effective in addressing jigger infestation in schools in the study area and therefore has proven to be an ineffective strategy.

4.4.4 Attendance Rates of Students in Bumula Sub-County, Bungoma County, Kenya.

The respondents were also required to rate the various indicators of attendance rates of students in Bumula Sub-County. The dependent variable was established through this process. The results underwent descriptive analysis, employing percentages, means, and standard deviations to draw conclusions regarding the respondents' evaluations of the different statement items that illustrated the degree to which schools are involved Sub-County dealt with jigger infestation and how it affected attendance and retention rates of students. The results are presented in Table 4.8 as shown below.

Table 4.9: Attendance Rates of Students in Bumula Sub-County, Bungoma County, Kenya.

Statements	SA	A	NS	D	SD	M	S. D
Jigger infestation has a direct impact on the completion rates of students in public day secondary schools who are infested in Bumula Sub-County.	35.8%	39.0%	17.1%	7.1%	1.0%	4.15	0.875
Students affected by jiggers are more likely to be absent from school.	24.2%	56.5%	13.9%	4.2%	1.3%	3.85	1.005
Students affected by jiggers tend to miss more classes compared to those who are not affected.	31.3%	44.2%	12.3%	9.0%	3.2%	3.95	0.995
Jigger infestation negatively affects students' attendance in schools in Bumula sub-County, Kenya.	28.1%	54.8%	10.3%	4.2%	2.6%	3.75	1.225
Implementing measures to eradicate jiggers can lead to can lead to increased students' attendance rates.	55.0%	36.6%	3.9%	1.6%	2.9%	4.08	0.925
Jigger infestation awareness and prevention programs can help improve students' attendance rates in public day secondary schools of Bumula Sub- County.	55.2%	37.7%	2.9%	2.9%	1.3%	4.17	0.905

The research aimed to investigate the potential correlation between jigger infestation and the completion rates of students attending public day secondary schools in Bumula Sub-County. Findings from the study indicated that 39% of participants agreed, while 35.8% strongly agreed with the assertion regarding the impact of jigger infestation. Additionally, 17.1% of respondents expressed uncertainty about this statement. The results also showed that 7.1% and 1% of the participants disagreed and strongly disagreed, respectively, with the notion that jigger infestation directly affects the completion rates of students in the aforementioned schools. From the above results, the study results generally established that it was due to jigger infestation that attendance and retention rates of students had plummeted in the study area. This had led to massive dropout rates which impacted the overall student enrolment and retention in the study area.

The study sought to establish whether students affected by jiggers are more likely to be absent from school. The study results revealed that 56.5% agreed while 24.2% of the respondents agreed and strongly agreed with the statement above. Further analysis revealed that 13.9% of the respondents were not sure whether students affected by jiggers are more likely to be absent from school. It was also established that 4.2% and 1.3% of respondents agreed and disagreed respectively that students affected by jigger are more likely to be absent from school. This indicates that students who are affected by jiggers are more likely to be absent from school based on the results above and this affected enrolment and retention rates generally.

On whether students affected by jiggers tend to miss more classes compared to those who are not affected, the study results revealed that 44.2% agreed and 31.3% strongly agreed with the statement above. The study also further revealed that 12.3% were not sure as to whether students affected by jiggers tend to miss more classes compared to those who are not affected. Further analysis established that 9% and 3.2% agreed and strongly agreed that students affected by jiggers tend to miss more classes compared to those who are not affected. The study generally established that the majority of the respondents believed that indeed students affected by jiggers were more likely to miss classes compared to those who are not affected based on the above study findings. This impacted on the attendance and retention of students in schools in the study area.

The findings of the study indicated that 54.8% of participants agreed, while an additional 28.1% strongly agreed, that jigger infestation adversely impacts student attendance in schools located in Bumula sub-County, Kenya. Furthermore, the results showed that 10.3% of respondents were uncertain about the negative effects of jigger infestation on student attendance in this region. Additionally, 4.2% and 2.6% of the respondents acknowledged that jigger infestation detrimentally influenced student attendance in

Bumula sub-County schools. The study ultimately concluded that these findings suggest a significant negative effect of jigger infestation on the promotion of quality education within the area under investigation.

The findings of the study indicated that 55% of the participants agreed, while an additional 36.6% strongly agreed with the assertion that the implementation of measures aimed at eradicating jiggers could enhance student attendance rates in the examined region. Furthermore, it was found that 3.9% of the respondents were uncertain about the potential impact of such measures on student attendance. Additionally, the results revealed that 2.9% of the respondents expressed agreement, and 1.6% indicated strong agreement with the statement that implementing measures to eradicate jiggers can lead to students' retention rates. From the above study results, it was established that if proper measures to eradicate jigger infestation in the study area are put into practice, then attendance of students in schools are likely to be improved.

On whether jigger infestation awareness and prevention programs can help improve students' attendance rates in public day secondary schools of Bumula Sub-County, the findings of the study indicated that 55.7% of participants strongly concurred, while 37.7% agreed with the aforementioned statement. Additionally, the results showed that 2.9% of respondents expressed uncertainty regarding the potential impact of jigger infestation awareness and prevention initiatives on enhancing student attendance rates in public day secondary schools located in Bumula Sub-County, Kenya.This is a clear indication that the majority of the respondents believed that jigger infestation awareness and prevention programs can help improve students' attendance rates in public day secondary schools of Bumula Sub-County, Bungoma County, Kenya if well implemented.

4.4.5 Correlation Analysis

The research aimed to investigate the dynamics of the relationship between the severity of jigger infestation, its impact, and the strategies implemented to mitigate jigger-related issues among students in public day secondary schools located in Bumula Sub-County, Bungoma County, Kenya. The analytical approach adopted for this study involved the application of correlation coefficients, as outlined by Cohen, West, and Aiken (2003). Correlation analysis is instrumental in assessing the linear relationships among the study variables, thus enabling informed conclusions. The study employed Pearson correlation (r) to ascertain the significance of the relationships between the variables at a 95% confidence level, with a p-value threshold of 0.05 indicating statistical significance. Additionally, a correlation coefficient (r) value of less than 0.5 was considered in the analysis which indicated a weak relationship, while a coefficient greater than 0.5 signified a strong relationship. The findings are detailed in Table 4.10.

Table 4.10 Correlation Analysis

		Extent of jigger infestation	**Influence of Jigger infestation**	**Strategies employed in the mitigation of jiggers**
Attendance Rates	Pearson Correlation	.459**	.469**	.461**
	Sig. (2-tailed)	.000	.000	.000
	N	307	307	307

**. Correlation is significant at the 0.005 level (2-tailed).

The findings indicate a weak yet statistically significant correlation between the level of jigger infestation among students and their attendance rates in public day secondary schools within Bumula Sub-County, as evidenced by the research results (r = .459** and a p-value of .000). This suggests that, though extent of jigger infestation has a very significant influence on attendance rates of students in public day secondary schools of Bumula Sub-County, but the influence is very weak. This means that some students could be infested by jiggers but they still manage to attend school and do well in their studies

The results also show that there was a weak positive correlation between the influence of jigger infestation and attendance rates of students in public day secondary schools of Bumula Sub-County, which was not significant (r = 0.469 and p-value =0.000). This implies that infestation is exacerbated by walking barefoot and wearing dirty clothes amongst other factors in the study area. It is established that students with jigger infestation attend class less frequently than those who are not infested. Research indicates that these students tend to disengage from active learning, and their low attendance rates can be attributed, in part, to challenges related to mobility, difficulties in maintaining focus during educational activities, and experiences of isolation or discrimination from their peers.

The results further show that there is a weak positive and significant correlation between strategies employed to mitigate jiggers in Bumula sub-County and attendance rates of students in public day secondary schools of Bumula Sub-County (r = .461** and a p- value of 0.000). This implies that the relationship between the variables is very significant and but weak correlation between strategies employed to mitigate jiggers in Bumula sub-County and attendance rates of students.

4.5 Thematic Analysis of the Interviewee Responses.

The respondents were required to give their opinions about the questions at hand. This section presented data from key informant interviews by analyzing data thematically to generate a sound interpretation of the data. The following themes were established from the data collected from key informants. The key informants for the study in Bumula Sub-County included 10 Head Teachers, 5 community Health Volunteers, and 5 Area Chiefs. These officials were coded as **HT** for Headteachers (HT001A to HT010A) **CHPs** (CHP001B to CHW005B) for Community Health Workers and **CHF** for Chiefs (CHF001D to CHF005D). In total, the key informants were 20. The following themes were generated from the data collected from key informants in Bumula Sub-County, Kenya. The analysis of their responses is shown below.

4.5.1 Extent of Jigger Infestation on Student Attendance Rates in Bumula Sub-County, Bungoma County, Kenya.

The first objective of the study sought to examine the extent to which jigger infestation influences attendance rates in Bumula Sub-County, Kenya. The study results established that all the key informants were in agreement that jigger infestation has had an impact on student's attendance in schools. This is because healthy children will have an advantage in school enrolment over unhealthy children.

4.5.2 Jigger Infestation and Student Enrolment

While many children get enrolled in schools in Kenya, it is established that those children from jigger-prone areas always get disadvantaged because of the challenges of jigger infestation. The study results from some of the key informants (CHF001D to CHF005D) established that jigger infestation affects school enrolment because children may be unable to walk, write properly, participate in school co-curricular activities, and mingle with their peers. All these factors compounded together influence the extent to which children are

enrolled in schools. This in return has a dent on how quality education is achieved in the areas prone to jigger infestation.

According to HT001A to HT010A, school heads from the sampled schools, jigger infestation affects the most vulnerable parts of students' bodies specifically the feet and hands. The respondent verbatim was analyzed and recorded and they noted that;

> *'It makes it hard for a student to move from one place to another or with a lot of difficulties. When school is a bit distant from the home it becomes very hard for students to walk to school, especially in public day secondary schools of Bumula. There are frequently reported cases of jigger infestation in students in public day secondary schools. Students fail to attend school because of lack of concentration due to itching and uncomfortableness. Additionally, students fear being laughed at by their peers who may not be affected or infected.'*

The above verbatim was complemented by CHW001B to CHW005B who are area community health workers/promoters who agreed that jigger infestation was a very big menace when it comes to student enrolment in schools. This has led to low enrolment in nearly all the schools in the study area.

4.5.3 Jigger Infestation and Student Attendance

One of the themes that also emanated from the above study was student attendance in schools. It was established by all the 20 key informants that attendance of students in many schools in Bumula Sub-County, had been affected by jigger infestation. For instance, all the community health promoters (CHP001B to CHP005B) established that jigger infestation varies depending on the region where students come from within the sub-county. Their verbatim was recorded as follows;

> *'Some cases of jigger infestation are so prevalent and others are low. There were frequently reported cases of jigger infestation among students who stopped coming to school to go for check-ups. Beyond physical pain, they fear coming to school to associate with others because they will be ridiculed and stigmatized.'*

All the head teachers from all the schools sampled (HT001A, HT005A, HT008A, and HT010A) also noted that jigger infestation significantly impacts the attendance rates of the

secondary school students of Bumula Sub-County. Mostly after students are infested the itching and inflammation caused by jiggers contribute to difficulties in concentrating both in class or participating in any school activity. This lowers school attendance and in the long run school dropout rates increase. The infestation also leads to secondary infections like tetanus that may be severe. Students infested with jiggers cannot be retained in schools because of fear of being ridiculed, nicknamed, or laughed at and also this may cause them to drop out of school.

4.5.4 Jigger Infestation, School Absenteeism

The study further established from all the key informants that school absenteeism and dropout rates were rising in the study area due to jigger infestation. According to area local administrators (CHF001D to CHF005D) jigger infestation has a very bad effect on students and community well-being across Bungoma County. The above respondents noted that;

> *'The extent of jigger infestation is very high not only to students but also to the community generally especially in the Bumula sub-county. When a student is infested with jiggers it forces them to drop out of school for almost three months to go for treatment and even others fear being ridiculed This forces students to repeat the same class because others would have graduated to the next level. Other students fail to attend school for some days. It causes discomfort in class thus low concentration because of itching. Jiggers highly contribute to school dropouts and absenteeism.'*

The above sentiments were further supported by sentiments from head teachers like HT001A, HT003A, and HT004A who noted that students who have jiggers fail to attend class, others drop out of school because some people laugh at them, and others go for treatment or stay at home for more than three months. When they later resume school most of them fail to transition to the next class so that they can cover the previous syllabus. This has affected students within the area as many of them choose to drop out of school permanently. In many schools in the larger Bungoma County, absenteeism and dropout rates are higher.

4.5.4 Jigger Infestation and Poverty

Poverty the biggest factors that has hampered school enrolment, retention, and dropout rates. Poverty makes students not to afford decent shoes while some who have the shoes are in dilapidated conditions. The attendance rates of students are very poor as most of them come from very far and they walk about 5 to 10 kilometers to reach School. According to local administrators (CHF001D to CHF005D) attendance rates of students are nearly 50% or even less due to jigger infestation and this means that absenteeism and dropout rates are very high in this region. The frequency of jigger infestation is very high weekly and this disrupts normal learning across Bungoma County generally.

All Community health promoters (CHP001B TO CHP005B) further noted that the extent of jigger infestation in public day secondary schools of the Bumula sub-county is extreme. The respondent noted that they usually receive cases of jigger infestation from students every week. Other cases happen at extreme to an extent when students cannot be able to walk to school or wear shoes thus causing school dropouts and absenteeism. Students with jiggers are not comfortable because jiggers cause itching on their legs and hands. The head teachers from the study area (HT001A and HT004A) had their verbatim recorded as follows;

> *'We have handled various cases when we follow up in the community or homes where students come from. These students come from very poor backgrounds with very dirty environments. They do not have toilets in their compounds and they mostly lack proper hygiene and sanitation which causes jiggers to thrive. Living in mud houses further makes the jigger menace more complicated. Most of the areas in Bumula have red soil types which support jiggers to thrive'.*

The sentiments expressed by respondents CHF001C to CHF003C were consistent with one another. The key informants observed that, although certain non-governmental organizations are actively working to combat the issue by raising awareness and promoting education to ensure that all individuals attain a basic level of education, these

initiatives are insufficient in the face of persistent high poverty levels, particularly in Bumula sub-County. The respondents concurred that the absence of essential basic needs such as adequate housing, appropriate footwear, clean clothing, and the practice of sharing living spaces with domestic animals due to poverty exacerbates the problem and perpetuates the cycle of poverty in the study area. R010 had this to say about the jigger menace in the study area;

> *'In many parts of Bungoma County, including Bumula Sub-County, low domestic income levels for many inhabitants translate to high poverty levels. Across the sub-county, most schools harbor people from these backgrounds and hence these Inadequate resource allocations exacerbate the epidemic. A significant portion of the individuals impacted lack robust economic foundations, suggesting their inability to fulfill essential requirements leading to aggravated poverty in the study area. This then will cause an increase in absenteeism of students and dropouts, hence affecting their attendance and retention rates.'*

4.5.2 Influence of Jigger Infestation on Attendance Rates of Students in Bumula Sub-County, Bungoma County, Kenya.

The second objective sought to establish the extent to which jigger infestation influenced school attendance in the study area. All the respondents ranged from head teachers, community health promoters/workers, and area administrators (Chiefs). CHF001C to CHF003C noted that geographically, red soil in the study area supports jiggers to thrive. Furthermore, the study results established that those students come from humble backgrounds and are infested, fearing to associate with others because they will be ridiculed by those who are not affected.

4.5.2.1 Jigger Infestation and Hygiene

Generally, school heads, that is, HT005A to HT007A noted that jigger infestation was worse in some homes as a result of poor hygiene. Furthermore, the above respondents believed that poverty further worsened the situation due to poor hygiene and sanitation. Additionally, the respondents established that it was due to poor hygiene that some

children developed psychological issues that have led to stigma and stress causing them to fail to attend school. In addition to that, some students have domestic animals, and their homes harbor jigger fleas thus increasing cases of infestation among school-going children.

CHP002, 003, and 004 asserted that jigger infestation had done irreparable damage to students. This was complemented by CHF001, 003, and 004 who further reported that;

> *'When a student is infested with jiggers, he or she will be discriminated by their peers. This promotes social stigma because they believe that jiggers are transmitted from one person to another. Thus, students fear to mingle with others while infested because of poor hygiene. Even the infested persons themselves can decide not to associate with their peers. This is because jiggers mostly affect hands, legs, toes, knees and hence causing physical discomfort'.*

The conventional practice of keeping domestic animals within human living spaces, particularly in the study area, has heightened the risk of jigger infestations, particularly when humans are in proximity to infected animals. In this context, both the likelihood and severity of infestation are significantly elevated. These animals serve as reservoirs for the sand fleas, perpetuating their spread and facilitating the continuous transmission of infestations within the community, as long as these animals remain in close association with humans. In the study area, this was one of the problems that people were facing and as such, the majority of the infections they got came from domestic animals.

4.5.2.2 Jigger Infestation and Stigma

According to Community Health Promoters, CHP001 TO CHP005, the study established that jigger infestation had emotional discomfort and stigma associated with it. From the sentiments of the above respondent, it was established that jigger infestation further translates to emotional discomfort and stigma which affects somebody's esteem wholesomely. This means that when students are infected, due to the pain and stigma they face, they disassociate from others.

According to area administrators/area chiefs (CHF001C to CHF003C) when students are infested, they are bullied and side-lined by others and this affects the psychological state and parents generally. It was further established that jiggers majorly affect students who come from low socio-economic backgrounds or poor backgrounds. Others who have no family members or are mentally challenged do not know issues of hygiene and are infested until they become deformed. These factors when compounded together, they not only affect these students physically but also emotionally.

CHF001C and CHF005C noted that jigger infestation has a significant impact on attendance rates of students due to poverty, stigma, and the associated factors. In most cases, they experience psychological issues discomfort, and physical pain and this makes it difficult for them to attend school and focus on their studies thus affecting both retention and attendance rates of students. This has made students drop out of school and hence making attendance drop drastically hence propagating illiteracy rates.

Some of the head teachers from these schools (HT006A and HT009A), noted that Bumula Sub County is the leading sub-county in Bungoma County on the issues concerning jigger infestation. The above respondents had their verbatim recorded as follows;

> *'Mostly, affected our primary pupils and also public day secondary school students from particular schools. The Sub-County terrain encourages the existence of jigger infestation because the soil colour (red loam) encourages the converging of jigger female fleas which hatch eggs to produce jiggers in the long run. These jiggers when infest students they drop out of school, affecting attendance and retention rates of students.'*

In line with the above, area administrators noted that most of the cases of jigger infestation in Bumula Sub-County are about 50% in some of the public day secondary schools.

School head teachers (HT001A, HT005A and HT008A) had their verbatim recorded as follows;

> *'Strategies to mitigate jigger infestation are close to zero since these schools do not have facilities like good classrooms, toilets, and playgrounds. In addition, overpopulation also hampers the extent to which schools can be able to deal with jigger infestation. All key informants indicated that in certain communities, jigger infestation is perceived as a manifestation of witchcraft, a curse, a bad omen, or a mental illness. Additionally, there is a belief in some areas that if a family member succumbs to jigger infestation, it may lead to a similar fate for subsequent generations. In conclusion, all respondents observed that students' school attendance was adversely affected by low self-esteem, which stemmed from the stigmatization and dependency associated with the debilitating consequences of jigger infestation, resulting in feelings of shame and social withdrawal from groups.'*

Key informants additionally observed that children affected by jigger infestations endure significant trauma due to the intense pain associated with their removal. Furthermore, the stigma surrounding this condition may drive individuals to resort to self-medication, as they may avoid seeking assistance from healthcare facilities to escape potential public humiliation and hence fails to get the necessary support regarding treatment. Because of the above factors, the majority of students have failed to attend classes leading to high levels of dropout rates in schools in the study area.

4.5.3 Strategies Employed to Mitigate Jigger Infestation in Bumula Sub-County, Bungoma County, Kenya.

The third objective of the study sought to examine strategies employed to mitigate jiggers in Bumula Sub-County, Kenya. The results from key informants were analyzed as per the themes generated. All the key informants (Head teachers, Community health promoters, and area administrators/chiefs), noted that to mitigate jiggers, relevant stakeholders have to put in place measures to ensure they are mitigated. Measures are usually put in place to ensure that cases of jigger infestation are minimized or even eradicated as much as possible

4.5.3.1 Hygiene and Mitigation of Jiggers

One of the strategies that were suggested by the key informants included hygiene of both the home and the school environments. Al, the school heads (HT001A to HT010A) noted that One of the primary factors contributing to jigger infestations is inadequate hygiene, characterized by a lack of proper grooming and personal care practices. This issue is particularly prevalent in resource-limited environments, where both humans and animals are susceptible to infestation. The level of hygiene within a household significantly influences the health of its inhabitants; therefore, maintaining cleanliness in both home and school settings is crucial for managing pests and parasites, as well as fostering a healthy and pleasant living environment for all members. The respondents verbatim were analyzed, transcripted, and recorded as follows;

> *'Most of the students and parents do not come from clean environments both at home and school. In Bumula sub-County for example, it is established that some schools have teachers who are also infested by jiggers. In the Bumula sub-county, some strategies that have been employed in schools include constant cleaning in schools to mitigate jigger infestation and secondly jigger removal from infected students and teachers in schools by community health promoters. However, these strategies have not yielded minimum results because school-related strategies are not replicated in their homes and hence this problem cannot be dealt with completely.'*

CHP001A to CHP005A noted that the jigger flea thrives optimally in sandy and dusty conditions. Following an infestation, this parasite leads to significant debilitation, rendering individuals incapacitated and unable to perform daily activities. Consequently, it stands as a primary contributor to poor health among the local population in the study area. Individuals from impoverished backgrounds residing in unsanitary living conditions are particularly susceptible to jigger infestations, which stem from inadequate hygiene and sanitation practices in their homes.

The above sentiments were supported by CHF002, 003,004 who noted that;

> *'School Managers must collaborate with various stakeholders to develop strategies for addressing infestations, conduct regular health assessments children and seeks to inform communities regarding the origins, dangers, and preventive strategies related to the jigger parasite. This strategy is designed to guarantee that every child can reach their fullest educational potential'.*

This was a clear indication that even if there were strategies for dealing with the above menace, there was still the need to intensify the campaigns against jigger infestation by ensuring that the above strategies were being adhered to. This would ensure that the above issue has been mitigated. Furthermore, all the key informants agreed that improving hygiene was the main strategy that could limit jigger infestation in the study area. They noted the following;

> *"When you walk around Bumula sub-county, most people including children and adults are infested with jiggers and they live in areas where there are no clean toilets and other social amenities.'*

The respondents noted that living in places where toilets are not clean and other social amenities increased the vulnerability of the affected people, thus increasing the life cycle of poverty. Furthermore, these people cannot be able to afford decent clothing and shoes. Some schools have classes with earthen floors in the Bumula sub-county which makes it a breeding path for jiggers. When students walk barefoot, it makes it easier for them to the infested.

4.5.3.2 Sensitization Campaigns and Mitigation of Jiggers

Another key theme that was established in this study was sensitization campaigns for both teachers and students. According to area administrators, that is CHF002C, 003C, and 004C noted that parents and students needed to be sensitized about the quagmire that surrounds jiggers in the study area. The study established that all the key informants (Head teachers, area chiefs, and Community health workers) noted that the prevalence of infestation among adults adversely impacts their children, who are students in schools located in the Bumula sub-county. Additionally, the issue of jigger infestation is often

clouded by various myths held by some of those affected. The infestation is not only found in the Bumula sub-county but also in other poverty-stricken counties across the County.

According to the verbatim of CHW001C, 002C, and 003C it was transcribed and recorded as follows;

> *Jigger infestation has exposed significant negative effects on learners' access, participation, retention, achievements, and transitions within the educational context in the study area. This has everlasting negative impacts on Vision 2030 and SDGs achievement. Therefore, there is a need to sensitize members of the study area and create awareness so that they can understand the challenges associated with jigger infestation and work towards ameliorating the situation.*

Therefore, the above verbatim was complemented by all community health promoters (CH0P01B to CHP001B) opinions which established that learners affected by jigger infestations encounter a multitude of risk factors, including inadequate sanitation, as well as psychological and social challenges such as stigma, withdrawal symptoms, diminished self-esteem, frequent absenteeism, compromised health, poverty, and habitation with domestic animals Jigger infestation further causes obstruction in the cognitive development of learners which affects attention, retention, motor responses, and motivation to study. Jigger-infested learners are limited from actively participating in verbal interactions during learning due to pains and associated stigma and this negatively affects their academic performance in the long run.

4.5.3.3 Learner Environment and Mitigation of Jiggers

According to all the key informants, learners need a holistic environment to produce learning across the years that students are in school. This means that there is a need for all stakeholders (parents, students, teachers, local administrators, County Governments, CBOs, and NGOs) to work tirelessly towards bringing about sustainable solutions and mitigating poverty in the study area.

For instance, all the Headteachers (HT001A to HT003A) noted, the seriousness of the jigger infestation is exacerbated by social stigma, a lack of community engagement, and a general lack of awareness regarding effective control strategies.. In light of the above, instead of the community shunning those infected with jigger infestation, There is a necessity for assistance in eliminating fleas, sanitizing their living environments, and notifying public health authorities to initiate appropriate measures or facilitate hospital treatment for improved health outcomes. However, this is usually hampered especially in poverty-stricken families and physical remoteness especially in rural areas.

The above sentiments were complemented by the verbatim from community health workers/promoters (CHW001B to CHV005B) who had the following to say;

> *The involvement of the community serves a vital function in facilitating school attendance among children. This participation encompasses support for children's educational experiences by engaging in their activities, supplying necessary physical resources, and delivering services that foster healthy development during early childhood. As such, collaborative community development as a strategy would mean people have come together for the common good of the school-going children in the study area.*

The above opinions were complemented by results from area administrators who further revealed that unhealthy Children impacted by jiggers often display symptoms of depression, anxiety, and diminished self-esteem. As a result, these children struggle to obtain a quality basic education and essential skills, thereby hindering the objective of achieving universal education in the study area and across the nation is hampered. In this regard, therefore, there is a need to ensure that those who have been affected by jiggers are given counseling to ensure that they are reintegrated into the system so that they can benefit on issues related to schooling. This was echoed by all the respondents from 001 to 012 in the study.

4.6 Discussion of Research Findings

4.6.1 Extent of Jigger Infestation among Students in Bumula Sub-County, Bungoma County, Kenya.

The first objective of the study sought to determine the extent of jigger infestation among students. The study results revealed that the majority of the respondents 44.8% noted that children do not go to school because of jigger infestation. It was also established that students disengage themselves from school because they are stigmatized and feel rejected and side lined by their fellow students and to some extent by their teachers.

It is due to this that they felt victimized and hence avoided going to school as a result of the same. The study further established that the majority of those who failed to attend school were from poor backgrounds, and they could not afford proper treatment when infected with jiggers. The study further revealed that generally, jigger infestation had a negative impact on student attendance rates in schools as the majority of those who were infected could not continue attending schools because of the challenge. The above results were in agreement with Tamenes' study of 2021 which established that most children infested with jigger infestation were impaired and had lesions, hence causing difficulties in walking to school which was associated with poverty. The study recommends there is a need to improve housing conditions, educational initiatives aimed at ensuring the separation of animals from residential areas, alongside the advocacy for proper hygiene practices.

Data from key informants revealed that jigger infestation had a significant impact on the attendance rates of the secondary school students of Bumula sub- County. It was established that when they are infested with jiggers, the itching and inflammation caused by jiggers contribute to difficulties in concentrating both in class or participating in any school-related activities like games and sports this lowers school attendance and also

retention rates due to victimization and stigma that these students undergo. The infestation also leads to secondary infections like tetanus that may be severe. Students infested with jiggers always absent themselves from school because of fear of being ridiculed named or laughed at and also this may cause them to disengage themselves from school school.

The respondents also established that there are cases of jigger infestation among students in their school at a very high rate and persistent, which lowers attendance rates of students in the study area, especially for those. This was supported by Namuhani and Kiwanuka (2016), who noted that children from both primary and secondary schools were absent from school due to persistent infestation of jiggers.

Respondents additionally indicated that, despite the initiatives undertaken by non-governmental organizations such as the Kenya Red Cross aimed at raising awareness and providing education to the population, the outcomes demonstrated that these efforts were insufficient in the context of persistently high poverty levels within the study area. The findings further highlighted that the absence of essential basic needs, including adequate housing, appropriate footwear, clean clothing, and the practice of cohabiting with domestic animals, significantly contributed to the ongoing challenges faced by the community not only sped up the scourge of jigger infestation but also contributed to the vicious cycle of poverty in the study area. It was further noted that should this continue, it was becoming worse every day. The above results were in agreement with the study of Elson et.al, (2017) who noted that children fail to attend of school because of discomfort, pain, and difficulties in walking to school.

Generally, the study revealed that walking barefeet, the low educational level of parents, poor personal hygiene, and poor sanitation of the houses were the main reasons as to why many school-going students were infested with jiggers. This in turn led to low school attendance rates hence affecting literacy levels in the study area. This is supported by

Ochieng's (2019), study which says that jigger infestation affects school enrolment and attendance rates.

Linking the above studies to ecological systems theory, the is a need to understand issues through multiple interconnectedness of systems of students' environments like the characteristics of the immediate environment (microsystem) like parental education level influences personal hygiene practices. The exosystem involves external factors like community sanitation and the macro system includes broader cultural and societal influences. Jigger infestation affects both micro and macro systems within students' environment thus, disrupting their attendance rates in schools.

Lastly, correlation revealed that there is a weak but strong significant correlation between extent of jigger infestation on students and attendance rates in public day secondary schools of Bumula Sub-County, indicated by the study results ($r = .459^{**}$ and a p-value of .000). This implies that though extent of jigger infestation has a very significant influence on attendance rates of students in public day secondary schools of Bumula Sub-County, but the influence is very weak. This means that some students could be infested by jiggers but they still manage to attend school and do well in their studies. This means that jigger infestation and a combination of other factors could deter students from attending school regularly.

4.6.2 Influence of Jigger Infestation on Attendance Rates of Students in Bumula Sub-County, Bungoma County, Kenya.

The second objective of the study was to assess the influence of jigger infestation on the attendance rates of students. The study results established that the majority of the respondents thought that jigger infestation influenced the attendance of students in schools in the study area. Most participants believed that attendance of students in public schools

in Bumula sub-County was being hampered because most students come from poor backgrounds and hence, they could not afford good health care services.

The results further established that schools had not implemented measures to address jigger infestation and its impact on attendance and retention rates because students were being stigmatized in schools by both their teachers and students. According to the study results, it was established that those students come from poor backgrounds and are infested, and fear to associate with others because they are ridiculed by those who are not affected. The study further established that poverty further worsened the situation due to hygiene and sanitation levels both in many schools and at home. Furthermore, the respondents established that psychological issues had led to stigma and stress causing them to fail to attend school in the long run.

The findings are consistent with Mphande's study of 2020, which noted that the social and psychological impact of the infestation is visible in resource-poor communities because mobility individual livelihoods are impacted by social exclusion and stigma, compelling many to conceal their identities and distance themselves from their communities.. This study recommends that low-income countries prioritize human development in people by investing in health, education, and income for their populace.

Moreover, the research revealed that the traditional practice of housing domestic animals within human dwellings, especially in the examined region, has increased the likelihood of jigger infestations, particularly when humans are near infected animals. The findings suggest that these animals act as reservoirs for sand fleas, facilitating the ongoing transmission of infestations within the community as long as they maintain close contact with humans. In the area under investigation, the study found that the majority of the

infections they got came from domestic animals, especially from houses that keep these animals.

Findings reveal that jigger infestation significantly affects attendance, primarily due to students' inability to afford healthcare services, lack of implementation of preventive measures in schools, and the stigma associated with infestation, leading to social exclusion and stress. Poverty exacerbates the situation by impacting hygiene levels both at home and in schools. Additionally, traditional beliefs, such as housing domestic animals near humans, contribute to the spread of jigger infestation. The findings are in line with Miller (2016), who revealed that, besides physical suffering, individuals whose families have been affected by the infestation suffer from stigma and are socially excluded, they are associated with unhygienic conditions.

When linked with the Ecological Systems Theory of Eurie Bronfebrina in 1970, the microsystem involves individual factors like poverty and personal hygiene, while the meso system encompasses interactions between students, teachers, and the school environment. The exosystem includes societal factors, such as traditional beliefs impacting housing practices. Furthermore, the macro system encompasses broader cultural and economic influences, where poverty is identified as a significant contributor. The study highlights how these interconnected systems contribute to the perpetuation of jigger infestation and its impact on attendance rates in public day schools of Bumula Sub-County, emphasizing the need for comprehensive interventions that address multiple levels of influence within the ecological framework.

The results also show that there was a weak positive correlation between influence of jigger infestation and attendance rates of students in public day secondary schools of Bumula Sub-County, which was not significant ($r = 0.469$ and p-value $=0.000$). This

implies that infestation is aggravated by factors like waking barefoot, and poor hygiene amongst other factors in the study area. The study results revealed that children with jigger infestation attend class less frequently than those who are not infested.

4.6.3 Strategies Employed to Mitigate Jigger Infestation in Bumula Sub-County, Bungoma County, Kenya.

The third aim of the research was to examine the measures implemented to combat jigger infestation among students in public day secondary schools located in Bumula Sub-County, Bungoma County. Participants were tasked with evaluating the initiatives that pertinent stakeholders have established to alleviate the jigger problem within the region under investigation. Findings indicated that the issue of jigger infestation was insufficiently managed in numerous schools within the study area. The results of the study demonstrated that a significant proportion of the respondents noted that many schools lacked facilities to address the jigger infestation menace in Bumula sub-county schools.

It was established that other schools employed strategies like counseling the infected victims which had good outcomes in the long run. However, it was established that schools were grappling with many other bigger problems like inadequate teachers, desks, books, and classes amongst other problems. In many schools, the school administration promised to enhance some of these interventions to ensure jigger infestation had been minimized. As such Nyanginja et. al, (2018), proposed that public health education is an important measure of controlling the jigger menace as it reduces the spreading threshold. In this therefore there was the need to promote collaboration amongst relevant stakeholders including NGOs, County Government, and civil society organizations to work together to mitigate the situation.

Results from key informants revealed that the majority of schools had improved in some of the interventions they were employing in order to mitigate the jigger infestation problem. However, it was established that some schools in the study area were lagging in implementing measures to address jigger infestation and its impact on attendance rates because students were being stigmatized in schools by majorly their peers. According to the study results, it was established that those students came from poverty-stricken backgrounds and were infested, feared to associate with their peers because they were ridiculed and stigmatized. Furthermore, the respondents established that psychological issues had led to stigma and stress causing them to fail to attend school in the long run. It was established that some schools had employed counselling as a strategy to integrate the affected students in schools in the study area.

One of the key strategies that is employed in the study area is community participation. This was deemed to be a very excellent strategy for assisting school-going students to attend school. It encompasses actively engaging in children's educational experiences by participating in their activities, supplying necessary physical resources, and delivering services that foster healthy development during early childhood. As such, collaborative community development as a strategy would mean people have come together for the common good of the school-going children in the study area. In the study area, this was done by NGOs majorly but did not yield much results because the majority of the children came from poverty-stricken households and much could not be done to ameliorate the situation.

While Mbuthia (2019), recommends that protection measures of wearing shoes be incorporated with hygiene as a control strategy for jigger infestation, by watering dusty floors, regular applications of natural repellents like coconut oil, and routine spraying of

domestic animals such as dogs and cats that act as reservoirs for jigger fleas. The study results revealed that this was not possible in the study area because many households were poor and lacked relevant support to actualize some of the recommendations above. Orucho's study of 2022 revealed that there was a need to mitigate Tungiasis by mitigating risk factors like poverty, poor hygiene conditions, poor sanitization of homes and schools and inadequate health facilities. However, it was established that due to poverty and other associated factors, many residents of the Bumula sub-county were not in a position to actualize the above requirements.

While some schools employed counseling for infected students, the overall impact was limited due to broader challenges such as insufficient facilities, teachers, desks, and books. Public health education and collaboration among stakeholders, including NGOs, County Government, and civil society organizations, were proposed as essential measures to control the jigger menace. Stigma and psychological issues were identified as barriers to implementing effective strategies, with counseling mentioned as an attempt to integrate the affected students. Community participation, particularly through NGOs, was recognized as a strategy, though its effectiveness was constrained by widespread poverty in the study area. Nyanginja et.al, (2018), proposed public health education is an important measure of controlling the jigger menace.

The study's findings can be linked to ecological systems theory by examining the various systems influencing the effectiveness of jigger infestation mitigation strategies. The microsystem includes individual factors like stigma and psychological issues impacting students, while the meso system involves interactions between students, teachers, and the school environment affecting the implementation of strategies. The exosystem encompasses broader societal influences, such as the collaboration of stakeholders and

community participation. The macro system involves cultural and economic factors, with poverty identified as a significant barrier to implementing recommended measures.

The study underscores the importance of addressing multiple levels within the ecological framework to develop comprehensive strategies that account for the interconnectedness of various systems in the context of jigger infestation mitigation. The results were further supported by correlation analysis showing that there is a weak positive and significant correlation between strategies employed to mitigate jiggers in Bumula sub-County and attendance rates of students in public day secondary schools of Bumula Sub-County ($r = .461^{**}$ and a p-value of 0.000). This means that strategies being utilized in the Bumula sub-County are important in mitigating jiggers in the study area.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter shows the summary of research findings, conclusions, and recommendations according to the study objectives. The study's main objective was to establish the influence of jigger infestation on students' attendance rates in public day secondary schools of Bumula Sub-County, Bungoma County, Kenya. The specific objectives of the study were to determine the extent of jigger infestation, the influence of jigger infestation, and strategies employed to mitigate jigger infestation among students of public day Secondary school students of Bumula Sub-County, located in Bungoma County, Kenya, serves as the focal point of this research. Additionally, the findings of this study highlight potential avenues for future research based on the analysis of the collected data. The investigation incorporated both quantitative and qualitative methodologies in its data collection process. which were, analyzed and interpreted to provide generalizations to the entire research population.

5.2 Summary of Findings

5.2.1 Demographic Variables

The research achieved a response rate of 83.8%, as indicated in Table 4.2, which is considered satisfactory for the purposes of this study. Merton (2006) posits that a response rate of 70% or higher is sufficient for descriptive surveys. Furthermore, the study recorded an equal distribution of male and female participants among the respondents. This indicates that the disparities that existed before in male and female enrollments may been minimized in academic institutions as shown in figure 4.1. The majority of the paticipants who participated in the study were above the age of 16 years in figure 4.2, a clear

indication they were old enough to explain the implications of jigger infestation in the study area on students. The study also indicated that the participants came from backgrounds of more than four siblings in figure 4.3 which indicated that many households in the study area are moderately large. It was further demonstrated that most parents had low education levels which translated to poverty and vulnerability in the study area in figure 4.4 and table 4.4. The study further revealed that the majority of caregivers were unemployed a justification for the high poverty levels in the study area as indicated in table 4.5 and figure 4.5.

5.2.2 Extent of Jigger Infestation among Students in Bumula sub-county, Bungoma County, Kenya.

The first objective sought to determine the extent of jigger infestation on students' attendance rates in Table 4.6. The study results revealed that jigger infestation had adversely affected students' attendance rates in the study area where 45.8% agreed with the statement. It was further established that students fail to attend school because they feel stigmatized and sidelined by their fellow students and to some extent by their teachers. This led to depression and hopelessness amongst students which led to low attendance of many students in day schools in the study area.

The study further established that jigger infestation had a significant impact on the student's attendance rates in day secondary schools in Bumula sub- County. The study results revealed that mostly after students are infested, the itching and inflammation caused by jiggers contribute to the difficulties of coming to school because the majority of them walk to school. Secondly, jigger infestation also made it difficult for students to concentrate both in class or participate in any school activities which lowered school attendance rates with 56.7% shown in record source table 4.1.

The infestation also led to secondary infections like tetanus which in turn out to be severe. Students infested with jiggers were always absent from school because of fear of being ridiculed or laughed at and this caused them to drop out of school. In summary, jigger infestation had adversely affected student enrolment, and attendance in many public day schools in the study area and this had an impact on education in the study area. Generally, the study revealed that walking bare feet, the low educational level of parents in figure 4.4 and table 4.4, poor personal hygiene, and poor sanitation of the houses were the main reasons as to why many school-going children were infested with jiggers. This in turn led to low school attendance rates among school-going students, thus affecting literacy levels in the study area.

5.2.3 Influence of Jigger Infestation on Student Attendance in Bumula sub-County, Bungoma County, Kenya.

The second objective sought to assess the influence of jigger infestation on attendance rates of students in public day secondary schools of Bumula sub- County, Bungoma County, Kenya shown in table 4.7. Generally, the study results revealed that jigger infestation influenced the attendance of students in day schools in the study area 53.5% respondents shown in table 4.7. It was further established that attendance of students in public schools of Bumula sub-County was being hampered because most students come from poor and vulnerable backgrounds and that indicated that they could not get the support they needed at home with 45.8%. This further made things worse for them both in school and at home.

It was further noted that schools had not implemented measures to address jigger infestation and its impact on attendance rates because students were being stigmatized in schools by both their teachers and students. Generally, it was established that those

students come from poor backgrounds and are infested, fearing to associate with others because they are ridiculed by those who are not affected, indicated in table 4.7, 52.6% agreed. The study further established that poverty further worsened the situation due to poor hygiene and sanitation levels both in many schools and homes where these students come from. Furthermore, the respondents established that psychological issues had led to stigma and stress among students causing them to fail to attend school in the long run 44.8% of respondents agreed.

In conclusion, conventional perspectives regarding the housing of domestic animals within human living spaces, particularly in the examined region, have heightened the likelihood of jigger infestations, particularly when humans maintain proximity to infected animals. The research findings indicate that these animals serve as reservoirs for the fleas that cause jiggers, perpetuating the transmission of sand fleas as long as the infected animals remain in close contact with humans. In the study area, the study established that the majority of the infections that residents got came from domestic animals, especially from houses that keep these animals as evidenced in Figure 4.7.

5.2.4 Strategies Employed to Mitigate Jigger Infestation in Bumula Sub-County, Bungoma County, Kenya.

The third objective of the study sought to analyze the strategies taken to mitigate jigger infestation on attendance and retention rates of public day secondary schools of Bumula Sub-County, Bungoma County in table 4.8. The study results revealed that jigger infestation was inadequately addressed in many schools in the study area. The study results revealed that the majority of the respondents noted that many schools lacked facilities to address the jigger infestation menace in Bumula sub-county schools.

It was established that schools employed strategies like counseling the infected victims and regular inspections. However, these strategies had minimal outcomes because schools were grappling with many other bigger problems like inadequate teachers, desks, books, and classes amongst other problems. Therefore, there was a need to promote collaboration amongst relevant stakeholders including NGOs, County Government, and civil society organizations to work together to mitigate the situation.

Results also show that the majority of schools were lagging in the implementation of key measures to address jigger infestation and its impact on attendance rates. Students were being stigmatized in schools by their peers. In summary, the study results revealed that those students came from poverty-stricken backgrounds and were infested, feared to associate with their peers because they were ridiculed and stigmatized. It was further established that psychological issues had led to stigma and stress leading to low attendance in public day schools in the long run. Lastly, the study revealed that there was a need to mitigate Tungiasis by mitigating risk factors like poverty, poor hygiene conditions, poor sanitization of homes and schools, and inadequate health facilities to mitigate the above menace.

5.3 Conclusions

Based on the findings of this study, the study draws the following conclusions

i). First, the study concluded that jigger infestation had adversely affected the attendance of students in the study area. Generally, the study also concluded that the itching and inflammation caused by jiggers contributed to the difficulties experienced by students while reporting to schools in the study area. This is because the majority of them walked to school. Also, the study concludes that jigger infestation has adversely affected the

concentration of students both in class and participation in school activities which has lowered school attendance rates.

ii). The study further concludes that jigger infestation influenced students' attendance rates in day schools in the study area. The study concludes that poverty had impacted the extent to which attendance rates of students in many schools in the study area. The study further concludes that students infested with jiggers failed to attend school because of social stigma and discrimination by their peers and, to some extent their teachers. This tortured them emotionally and they decided just to stay at home for treatment so that they cannot be ridiculed.

iii). The study also concludes that the strategies employed to mitigate jigger infestation were inadequate in many schools and homes in the study area. The study concludes that many schools lacked facilities to address the jigger infestation menace in Bumula sub-county schools. It was further concluded that collaborative community development had not been embraced by many residents in the study area to mitigate jigger infestation. Many stakeholders were not offering enough support to children's learning by providing physical facilities and services that promote healthy early childhood development for many students in the study area.

5.4 Recommendations for the Study

The conclusions derived from this research lead to the formulation of the subsequent recommendations.

First establish School- check-up clinics and Community-Based Preventive Health Programs for Jigger Control Schools, in collaboration with local health departments and community organizations, should implement preventive health programs that focus on educating students, parents, and teachers about jigger control, improving hygiene practices, and providing basic health resources. The program should include regular

distribution of footwear, periodic health screenings for early detection and treatment, and workshops on maintaining proper hygiene and home sanitation. Community outreach efforts should also target parents, emphasizing the importance of clean living environments and discouraging practices like walking barefoot and keeping animals within living spaces. The study highlights poor hygiene, walking barefoot, and lack of parental awareness as significant factors in jigger infestation among students. Implementing a health program focused on prevention and early intervention can reduce infestation rates, alleviate the stigma associated with jigger infestation, and support students' consistent attendance and engagement in school activities.

Secondly, there is a need to implement a Community-Based Hygiene and Education Program to Reduce Jigger Infestation. Schools, local health authorities, and community organizations should collaborate to implement a hygiene and health education program focused on jigger prevention and sanitation improvements. This program should provide resources for regular cleaning, workshops on the dangers of housing domestic animals within living quarters, and distribution of basic hygiene supplies like disinfectants and footwear. Additionally, public health campaigns should target both school environments and community settings to address misconceptions, promote clean living spaces, and reduce the stigma associated with jigger infestation.

Thirdly, it is essential to establish Comprehensive School-Community Health and Support Programs. Schools, local governments, and NGOs should collaborate to establish health support programs specifically targeting jigger prevention and management. This program should include resources for regular health screenings, hygiene education, and free distribution of supplies, such as footwear and disinfectants. Additionally, community awareness campaigns should be conducted to reduce stigma and educate families on

maintaining clean, jigger-free environments at home. The study highlighted the limitations of current efforts, such as counseling and inspections, which were hindered by inadequate resources and the stigma faced by affected students. By focusing on both prevention and community involvement, this program would address the root causes of jigger infestation—poverty, poor hygiene, and lack of awareness—while fostering a supportive environment to increase attendance.

5.5 Areas for Further Study

The research suggests several domains for future investigation and scholarly inquiry;

i. Since there were difficulties in integrating both quantitative and qualitative data analysis synthesizing the findings and drawing meaningful conclusions. There is a need to conduct a study specifically focusing on the effectiveness of different triangulation techniques in enhancing the validity and reliability of research findings. This could involve comparing various methods of data triangulation and their impact on drawing meaningful conclusions.

ii. Conduct a study on the potential biases introduced by different sampling techniques. Explore the impact of purposive sampling compared to other sampling methods, such as random sampling, on the representation of diverse perspectives in research. To avoid sampling techniques bias.

iii. Investigate strategies for overcoming geographical challenges in research, especially in areas with scattered populations due to terrain. This could include exploring technology-assisted data collection methods or developing innovative ways to address logistical challenges. This is to be done to avoid geographical challenges in research.

iv. There is a need to Investigate different validation techniques used in research to reduce bias and enhance the credibility of study findings. Compare and contrast the effectiveness of various validation methods in different research contexts.

v. Conduct longitudinal studies to track the impact of interventions over an extended period, providing insights into the sustainability and long-term effectiveness of measures taken to address jigger infestation in schools.

REFERENCES

Adriko, M. (2022). *The Prevalence and Risk Factors Associated with Tungiasis Infestations in Uganda:* Implications for Vector Borne and Neglected Tropical Disease Control. In Zoonosis of Public Health Interest. IntechOpen

.

Allison, M. A., Attisha, E., Lerner, M., De Pinto, C. D., Beers, N. S., Gibson, E. J., ... & Weiss-Harrison, A. (2019). *The link between school attendance and good health. Pediatrics,* 143(2).

Amin, A. (2005). Local community on trial. *Economy and society,* 34(4), 612-633.

Ansar A.,(2015), Non-enrolment and drop-out of slum children in schools: an explanatory analysis of Jamia Nagar locality. *International journal of 226 jimoh Abdulrazak Owolabi, Abdullahi Umaymah Danladi &Hadiza Ibrahim*

Barbosa, M. M., & Barbosa, A. D. (2019). *Tungiasis. The New England Journal of Medicine*, 380(14), e19. https://doi.org/10.1056/NEJMicm1810588.

Bashahun, G. M., Chaltu, F., & Taye, T. (2018). Tungiasis: *An overview. Journal of parasitology and vector biology,* 10(6), 66-72.

Berk, L.E. (2000). Child Development (5th ed.). Boston: Allyn and Bacon. 2 3 -3 8
Bradby, H., & Ahlberg, B. M. (2014). *Holiday parasites and furry friends.*
Bronfenbrenner, U. (1992). *Ecological Systems Theory.* Jessica Kingsley Publishers.
Bungoma County Integrated Development Plan 2018 – 2022.

Carvalho, R. W. D., Almeida, A. B. D., Barbosa-Silva, S. C., Amorim, M., Ribeiro, P. C., & Serra-Freire, N. M. (2003). The patterns of tungiasis in Araruama township, state of Rio de Janeiro, Brazil. *Memórias do Instituto Oswaldo Cruz,* 98, 31-36.

Chrine, C. H., Kukano, C., Siwale, J., & Waithaka, C. N. (2020). *A Critical Analysis of Factors Accounting for Low Pupil Retention Rate in Public Primary Schools in Zambia.* Int. J. Sci. Res. Publ., 10(6).

Clark, V.L.P., Walton, J.B., &Foote, L.A. (2022). Designing for integration in public methods case studies. *In the Routledge Handbook for Advancing Integration in Public Methods Research* (pp.213-228). Routledge.

Collins G, Thomas M, Njilah IK, Clarisse BL, Leo N, Nfor LN (2009). Tungiasis: A neglected Health Problem in Rural Cameroon. *International Journal of Collaborative Research on Internal Medicine* 1(1):2-10.

Creswell, J. W. (2009). Research design: *qualitative, quantitative, and public methods approaches.* Thousand Oaks, California: Sage Publications.

Daka, H., Chilala, M. M., Hamatanga, O. H., Chirwa, B., Mumba, A., Kaoma, C., & Chikopela, C. (2021). Averting Learner Absenteeism in Zambian Urban and Rural

Primary Schools: A Case of Kalingalinga and Simweendengwe Primary Schools. *Journal of Lexicography and Terminology* (Online ISSN 2664-0899. Print ISSN 2517-9306)., 5(1), 33-55.

Dassoni, F., Polloni, I., Margwe, S. B., & Veraldi, S. (2014). Tungiasis in northern Tanzania: a clinical report from Qameyu village, Babati district, Manyara region. *The Journal of Infection in Developing Countries,* 8(11), 1456-1460.

Deka, Mark A. (2020). "Mapping the geographic distribution of tungiasis in Sub-Saharan Africa." *Tropical medicine and infectious disease* 5, no. 3:122.

Di Nucci, D. L., Ezquiaga, M. C., & Abba, A. M. (2017). Tunga penetrans in Giant anteater (Myrmecophaga tridactyla) from Argentina. *Veterinary parasitology, regional studies, and reports,* 10,82–84.

Ecker-Lyster, M., & Niileksela, C. (2016). Keeping students on track to graduate: A synthesis of school dropout trends, prevention, and intervention initiatives. *Journal of At-Risk Issues,* 19(2), 24-31.

Elson, L., Wright, K., Swift, J., & Feldmeier, H. (2017). Control of Tungiasis in Absence of a Roadmap: Grassroots and Global Approaches. *Tropical medicine and infectious disease,* 2(3), 33. https://doi.org/10.3390/tropicalmed2030033.

Everlyne, M. P. (2014*). Factors influencing girl child dropout rate in public secondary Schools in Kenya*: A case of Bumula sub- County (Doctoral dissertation, University of Nairobi).

Feldmeier, H., S. E. & K. I. (2013). Tungiasis (sand flea disease). A parasitic Disease with Particular Challenges for Public Health. *European Journal for Clinical Microbial Infectious Diseases,* 32, 19–26

Girma, M., Astatkie, A., & Asnake, S. (2018). *Prevalence and risk factors of tungiasis among children of Wensho district, southern Ethiopia. BMC Infectious Diseases,* 18(1), 1-7.

Gitau, A. K., Oyieke, F. A., & Mukabana, W. R. (2021). Assessment of the role played by domestic animals in jigger infection in Kandara sub-county, Kenya (case-control study). *The Pan African Medical Journal, 39,* 231. https://doi.org/10.11604/pamj.2021.39.231.25106.

Grove, S. K., & Gray, J. R. (2018). Understanding nursing research e-book: Building an evidence-based practice. *Elsevier Health Sciences*.

Gubbels, J., van der Put, C. E., & Assink, M. (2019). Risk factors for school absenteeism and dropout: A meta-analytic review. *Journal of youth and adolescence,* 48, 1637-1667.

Harvey, T. V., Linardi, P. M., Carlos, R. S. A., & Heukelbach, J. (2021). *Tungiasis in domestic, wild, and synanthropic animals in Brazil. Acta tropica,* 222, 106068. https://doi.org/10.1016/j.actatropica.2021.106068.

Heemskerk J, Empel IV, Jakimowicz JJ (2005*). Tunga penetrans:* a case report and review of the literature. Acta Chirurgica Belgica 105:548-550.

https://www.research-advisors.com/tools/SampleSize.htm. (2006)

https://www.standardmedia.co.ke/education/article/2000195072/school-in-bungoma-where-even-teachers-have-jiggers.

Juma, S. (2017). *Prevalence of tungiasis and its associated factors among primary school children in Karemo division, Siaya county Kenya* (Doctoral dissertation, Kenya Medical Research Istitute).

Kampamba, K. M. (2015). *Prevalence and associated risk factors of tungiasis in Chipata and Vubwi districts of eastern Zambia* (Doctoral dissertation, The University of Zambia).

Karuga J (2011). jiggers: *Kenya tackles its most primitive affliction*. Available at: http://backup.home.co.ke/index.php/lifestyle/health-abeauty/1135-jiggers-Kenya-tackles-itsmost-primitive-affliction.

Kimotho, S., & Miller, A. (2016). *Stigmatizing beliefs, stereotypes, and communication surrounding tungiasis in Kenya.*

Kimotho, S., Miller, A. N., & Ngure, P. (2015). Managing communication surrounding tungiasis stigma in Kenya. Communication, 41(4), 523-542.

Kipkemboi, J. (2021). *Factors Influencing Pupils Retention In Public Primary Schools: A Case Of Trans Mara East Sub-County–Narok County, Kenya* (Doctoral dissertation, Strathmore University).

Kiprono SR, Denis OO, Nafula IW (2012). Tunga penetrans: A Silent Setback to Development in Kenya. *Journal of Environmental Science and Engineering B,* 1:527-534.

Komakech, R. A., & Osuu, J. R. (2014). Students' absenteeism: A silent killer of universal secondary education (use) in Uganda. *International Journal of Education Research*, 2(10), 418-436.

Kothari, C.R. (2019). *Research methodology*: Methods and Techniques. New Age International.

Kothari, D., Partel, S., & Kim, S.K.(2019). Probiotic Supplements Might not be Universally Effective and Safe: *A Review. Biomedicine & Pharmacotherapy,* 111, 537-547.

Krejcie, R. V., & Morgan, D. W. (1970). Determining Sample Size for Research Activities. *Educational and psychological measurement*, 30(3), 607-610.

Lee, W., Chinna, K., Bulgiba, A., Abdullah, K., Abidin, I., & Hofer, S. (2016). Test-retest reliability of HeartQoL and its comparability to the MacNew heart disease health-related quality of life questionnaire. *Quality of Life Research,* 25(2), 351-357.

Maco, V., Tantaleán, M., & Gotuzzo, E. (2011). *Evidence of tungiasis in pre-Hispanic America.* Emerginginfectiousdiseases,17(5),855–862. https://doi.org/10.3201/eid1705.100542.

Maguire, M., & Delahunt, B. (2017). Doing a thematic analysis: A practical, step-by-step guide for learning and teaching scholars. *All Ireland Journal of Higher Education,* 9(3).

Makena, B., & Mwoma, T. (2014). Jigger infestation is a menace to children's school attendance. *Journal of education and practice,* 5(1), 90-4.

Maldavsky, D. (2013). *Convergent validity test, construct validity test and external validity test of the David Liberman algorithm.*

Matage, J. M., & Begi, N. (2017). Socioeconomic And School Factors Causing Pupils' Absenteeism in Lower Primary Schools In Masaba Sub-County, Kenya. *European Journal of Education Studies.*

Mbuthia, F. K., & Chepkwony, I. (2019). Mathematical modeling of tungiasis disease dynamics incorporating hygiene as a control strategy. *Journal of Advances in Mathematics and Computer Science,* 33(5), 1-8.

McDonald, N. S. (2019). *Reliability and inter-rater reliability in qualitative research:* Norms and guidelines for CSCW and HCI practice.

Merton, (2003). The sociology of vindictiveness and the criminology of transgression. *Theoretical criminology,* 7 (3), 389-141.

Michael, B. G., Fikru, C., & Teka, T. (2018). Tungiasis: *An Overview*. *Journal of Parasitology and Vector Biology,* 10(6), 66-72.

MOH (2014) *National policy guidelines on prevention and control of jigger infestation. Ministry of Health, Division of Environmental Health, Kenya.*

MOH. *Uganda Master Plan for National Neglected Tropical Diseases Programmes:* 2017-2022. 2017

Mohajan, H. K. (2017). Two criteria for good measurements in research: Validity and reliability. Annals of Spiru Haret University. *Economic Series,* 17 (4), 59-82.

Mørkve, Å. (2013). " *Getting rid of the plague": Jiggers removal program in Bungoma, Kenya.* Community and health workers perspectives on tungiasis in a high prevalence area (Master's thesis, The University of Bergen).

Mphande, F. A. (2020). Impact of Skin Diseases in Limited Resource Countries. *In Skin Disorders in Vulnerable Populations* (pp. 65-72). Springer, Singapore.

Muehlen, M., Feldmeier, H., Wilcke, T., Winter, B., & Heukelbach, J. (2006). Identifying risk factors for tungiasis and heavy infestation in a resource-poor community in northeast Brazil. *Transactions of the Royal Society of Tropical Medicine and Hygiene*, 100(4), 371-380.

Mugenda, A. G., & Mugenda, A. G. (2012). Research methods dictionary. Nairobi, Kenya: *Applied Research & Training Services.*

Mukhavali, C. (2021). *The Influence of Climate Variability on Jigger Infestation in Teso North Sub County, Busia County, Kenya* (Doctoral dissertation, Masinde Muliro University of Science and Technology).

Murugi, O. J., Wafula, R., & Walumoli, L. A. (2018). *Factors Influencing participation of children in early childhood development and education program In Bungoma south sub-county, Bungoma county–Kenya.*

Mutebi, F., Krücken, J., Feldmeier, H., & von Samsom-Himmelstjerna, G. (2021). Clinical implications and treatment options of tungiasis in domestic animals. *Parasitology Research*, 120(12), 4113–4123.

Muyatwa, F. K. (2022). *Assessment of factors that perpetuate pupil absenteeism in rural primary schools in Nyimba district, Zambia* (Doctoral dissertation, The University of Zambia).

Mwai, J., Abdi, M. H., & Githinji, E. (2020). Factors Associated with Tungiasis Infestation among School-age Children in Ugenya Sub-County, Siaya County, Kenya. *African Journal of Health Sciences*, 33(4), 80-91.

Mwai, J., Nyole, D., Abdia, M. H., & Omogi, J. (2022). *Factors Associated with Tungiasis among School-age Children in Kwale County, Rural Kenya*.

Mwandoe Mdindi, R. I. C. H. M. O. N. D. (2022). Determinants of Jigger Infestation: Knowledge, Attitude, And Practices Among Household Members In Kilifi County, Kenya (Doctoral dissertation, Pwani University).

Mwangi, J. N., Ozwara, H. S., & Gicheru, M. M. (2015). Epidemiology of tunga penetrans infestation in selected areas in Kiharu constituency, Murang'a County, Kenya. Tropical diseases, travel medicine, and vaccines, 1(1), 1-6.

Mwebia, M. B. (2013). *Relationship between jigger infestation and children's participation in school activities in Gatundu district, Kiambu County, Kenya* (Doctoral dissertation, PhD Thesis). Kenyatta University).

Nakuya, P. (2015). *Factors Influencing the Occurrence of Jiggers Among Pupils of Kivubuka Primary School Namulesa Town, Jinja district in Uganda* (Doctoral dissertation, International Health Sciences University).

Namuhani, N., & Kiwanuka, S.N. (2016). Jigger Persistence and Associated Factors among Households in Mayuge District, Uganda. *International Journal of Health Sciences and Research,* 6, 376-386.

Nannyongaa, B., Mangoa, J. M., & Rugeihyamub, S. (2021). *Modeling prevention and control of jigger infestation in Mayuge district: a mathematical approach. J. Math. Compu. Sci., 22, 252-265.*

Ngunjiri, J. W. (2015). *Impact of Tungiasis on school-age children in Muranga county, Kenya* (Doctoral dissertation, University of Nairobi).

Ngunjiri, J., Keiyoro, P. N., & Mwanda, W. (2015). The quantifying burden of disease caused by Tungiasis using disability-adjusted life years metric among the children aged 5–14 years in Murang′ a County, Kenya. *Int Res J Public Environ Health [Internet],* 2, 152-8.

Nyang'inja, R. A., Angwenyi, D. N., Musyoka, C. M., & Orwa, T. O. (2018). *Mathematical modeling of the effects of public health education on tungiasis—a neglected disease with many challenges in endemic communities*. Advances in Difference Equations, 2018(1), 1-19.

Nyangacha, R. M., Odongo, D., Oyieke, F., Bii, C., Muniu, E., Chasia, S., & Ochwoto, M. (2019). *Spatial distribution, prevalence and potential risk factors of Tungiasis in Vihiga County, Kenya. PLoS Neglected Tropical Diseases,* 13(3), e0007244. https://doi.org/10.1371/journal.pntd.0007244.

Obanyi P (2017) African education in the EFA era.Ibadan. *Mosuro Publishers*

Obebe, O. O., & Aluko, O. O. (2020). Epidemiology of tungiasis in sub-Saharan Africa: a systematic review and meta-analysis. *Pathogens and global health*, 114(7), 360–369. https://doi.org/10.1080/20477724.2020.1813489.

Omollo, A. E. (2013). *Socio-Economic Factors Influencing Students Drop Out in Public Secondary Schools in Rongo District, Migori County, Kenya* (Doctoral dissertation, University of Nairobi,).

Orodho, A.J. (2012). *Techniques of Writing Proposals and Research Reports in Education and Social Science Research Methods:* Maseno, Kenya: Kanezja Publishers.

Ortega-Narváez, A., Vásquez-Arteaga, L. R., Cujar-Otero, O., Madroñero Daza, J., & Cabra-Bautista, G. (2021). Tungiasis in the urban area of Popayán, Colombia: A case report. Tungiasis en el área urbana de Popayán, Colombia: reporte de caso. Biomedica : *revista del Instituto Nacional de Salud,* 41(Supl. 1), 8–16. https://doi.org/10.7705/biomedica.5851

Orucho, J., Olita, F., Otieno, K., & Njeru, E.K. (2022). Psycho-social support to children infested by jigger in Kisii county: social work perspective. *African Journal of Science, Technology and Social Sciences*.

Palicelli, A., Boldorini, R., Campisi, P., Disanto, M. G., Gatti, L., Portigliotti, L., Tosoni, A., & Rivasi, F. (2016). Tungiasis in Italy: An imported case of Tunga penetrans and review of the literature. *Pathology, research and practice*, 212(5), 475–483. https://doi.org/10.1016/j.prp.2016.02.003.

penetrans—a silent setback to development in Kenya. J. Environ. Sci. Eng. B, 1(1).

Phoenix, M., Nguyen, T., Gentles, S. J., VanderKaay, S., Cross, A., & Nguyen, L. (2018). Using qualitative research perspectives to inform patient engagement in research. *Research involvement and engagement*, 4(1), 1-5.

Ruttoh, S. K., Ochieng, K., Omondi, D., Inviolata, N., & Wanyama, M. (2012). Tunga

Ryan, D. P. J. (2001). *Bronfenbrenner's ecological systems theory*. Retrieved January 9, 2012.https://scholar.google.com/scholar?cluster=11389543255295983026&hl=en&as_sdt=0,5#:~:text=DPJ%20Ryan%20%2D%20academia.edu

Saboyá-Díaz, M. I., Nicholls, R. S., Castellanos, L. G., & Feldmeier, H. (2022). Current status of the knowledge on the epidemiology of tungiasis in the Americas. *Revista panamericana de salud publica = Pan American journal of public health*, 46, e124. https://doi.org/10.26633/RPSP.2022.124.

Samuel, S. M. (2017). *Factors that influence educational wastage in public secondary schools in Kathiani Sub-County, Machakos County, Kenya* (Doctoral dissertation) , South Eastern Kenya University.

Schott, D., Ribeiro, P. R., de Souza, V. K., Surita, L. E., de Amorim, D. B., Bianchi, M. V., Anicet, M. Z., Alievi, M. M., Pavarini, S. P., de Carvalho, R. W., & Soares, J. F. (2020). Clinical and pathological aspects of the first report of Tunga penetrans infestation on southern brown howler monkey (Alouatta guariba clamitans) in Rio Grande do Sul, Brazil. *Journal of Medical Primatology*, 49(6), 315–321. https://doi.org/10.1111/jmp.12491.

Singh, A. S., & Masuku, M. B. (2014). Sampling techniques & determination of sample size in applied statistics research: An overview. *International Journal of economics, commerce and management*, *2*(11), 1-22.

Shah, D., Haider, G., & Taj, T. (2019). Causes of Dropout Rate at Primary Level in Pakistan. *International Journal of Curriculum and Instruction,* 11(2), 38-74.

Tamene A. (2021). Prevalence and associated factors of Tunga penetrans infestation among 5-14-year-olds in rural Ethiopia. *PloS one*, 16(10), e0259411. https://doi.org/10.1371/journal.pone.0259411.

Teater, B. (2019*). An Introduction to Applying Social Work Theories and Methods* 3e. McGraw-Hill Education (UK).

Thielecke M, Raharimanga V, Rogier C, Stauss-Gabo M, Richard V, Feldmeier H (2013). Prevention of tungiasis and tungiasis-associated morbidity using the plant-based repellent Zanzarin: a randomized, controlled field study in rural Madagascar. *PLoS Negl Trop Dis.* 2013 Sep; 7(9):e2426. doi:10.1371/journal.pntd.0002426.

UNESCO *Institute for Statistics (2016). Monitoring education participation: Framework for monitoring children and adolescents who are out of school or at risk of dropping out*. Vol. 1. Washington, D.C.: UNESCO: World Health Organization. Availableat: https://books.google.com/books?hl=en&lr=&id=ZIpHdPD9n4QC&pgis=1

Wafula, S. T., Ssemugabo, C., Namuhani, N., Musoke, D., Ssempebwa, J., & Halage, A. A. (2016). Prevalence and risk factors associated with tungiasis in Mayuge district, Eastern Uganda. *The Pan African Medical Journal*, 24.

Wiese, S., Elson, L., & Feldmeier, H. (2018). *Tungiasis-related life quality impairment in children living in rural Kenya*. PLoS Neglected Tropical Diseases, 12(1), e0005939.

Wolf, D. A. P. S., Butler-Barnes, S. T., & Van Zile-Tamsen, C. (2017). American Indian/Alaskan Native college dropout: Recommendations for increasing retention and graduation. *Journal on Race, Inequality, and Social Mobility in America*, 1(1).

APPENDICES

APPENDIX I: PARTICIPANT ASSENT

Dear student,

I am a postgraduate student at Maasai Mara University pursuing a Master of Arts in Social Work. I am researching the influence of jigger infestation on attendance rates of students in Bumula Sub-County, Bungoma County, Kenya. I would like to invite you to participate in the research study. It will determine the extent of jigger infestation among students, the influence of jigger infestation on attendance rates of students, and the strategies employed to mitigate jigger infestation among students of public day secondary schools of Bumula Sub-County. The findings will benefit teachers, parents, and the community at large in implementing strategies for curbing and managing jigger infestation.

We kindly request your assistance in completing the questionnaire regarding your experiences and perspectives. Participation in the study is voluntary, there will be no penalty if you do not participate, and note that it is basically for academic purposes.

By completing this form, you consent to participate in the questionnaire should you wish to do so. Thank you.

ACCEPTANCE

I have reviewed the letter outlining the specifics of this research. I consent to take part in this study

Signature …… Date …….

APPENDIX II: KEY INFORMANT INTERVIEW ASSENT

Dear respondent,

OLITA FAITH,

PO BOX 861- 20500

NARROK- KENYA.

Dear participant,

I am currently enrolled as a postgraduate student at Maasai Mara University, where I am pursuing a Master's degree in social work and conducting research on **the Influence of jigger infestation on attendance rates of students in public day secondary schools of Bumula Sub-County, Bungoma County, Kenya**. I am requesting you to be part of this study.

Note that participation in the study is voluntary and your responses will be kept confidential and purely for academic purposes. Your acceptance to answer this interview guide will be greatly appreciated.

Yours faithfully,

Olita I. Faith

APPENDIX III: STUDENTS QUESTIONNAIRE

Please refrain from including your name on the questionnaire. Instead, please indicate your response by ticking or writing your answer where applicable. Answer all questions in the questionnaire.

Section A: Social Demographic Data

i) What is your gender

1. 1.Male ☐
2. Female ☐

ii) What is your age bracket?

1. 15-18 years ☐
2. 18-20 years ☐

iii) Which form are you in?

1. Form 1 ☐
2. Form 2 ☐
3. Form 3 ☐
4. Form 4 ☐

iv) How many siblings are you in your family?

1. 1-3 Siblings ☐
2. 4-6 Siblings ☐
3. Above 6 Siblings ☐

v) What is the highest level of education of your mother?

1. Primary school ☐

2. Secondary school ☐

3. Tertiary ☐

4. University ☐

vi) What is the highest level of your father's education?

1. Primary school ☐

2. Secondary school ☐

3. Tertiary ☐

4. University ☐

vii). What is your mother's occupation?

1. Employed ☐
2. Unemployed ☐
3. Self Employed ☐

viii). What is your father's occupation?

1. Self employed ☐
2. Employed ☐
3. unemployed ☐

ix). Do you live with any of your relatives or guardians?

1. Yes ☐
2. No ☐

SECTION B

i). Extent of jigger infestation

Please provide your response to each of the following statements using a five-point scale, focusing on the impact of jigger infestation on student attendance and retention rates in public day secondary schools located in Bumula Sub-County, Bungoma County, Kenya. **SA- STRONGLY AGREE, A- AGREE, NS- NOT SURE, D- DISAGREE, and SD- SRONGLY DISAGREE** by Marking.

STATEMENT	SA	A	NS	D	SD
students absent themselves from school due to jigger infestation.					
Students infested with jiggers miss school more than non-affected.					
Jigger infestation affects school attendance rates.					
There are cases of jigger infestation among students in your school.					
Jigger infestation contributes to chronic absenteeism among students in your school.					

ii). Influence of jigger infestation on attendance rates

Please consider the following statements with regards to the influence of jigger infestation on attendance and retention rates of students in public day secondary school of Bumula Sub- County Bungoma County. Indicate the response that best reflects your opinion. SA- Strongly Agree, A- Agree, NS- Not Sure, D- Disagree, SD- Strongly Disagree by marking a tick.

STATEMENT	SA	A	NS	D	SD
Students affected by jigger infestation are more likely to disengage themselves from school.					
Students who have been influenced by jigger infestation face social isolation making them to absent from school.					
Many students have low motivation in class when infested with jiggers, due to the psychological issues related to infestation.					
External influences such as socioeconomic status, poverty, and environmental conditions promote the influence of jigger infestation on attendance and rates of students.					
Students infested with jiggers face psychological effects.					

iii) Strategies employed to mitigate jigger infestation among students.

Please provide your suitable response to each of the subsequent statements using a five-point scale, concerning the actions taken to mitigate jigger infestation on attendance and retention rates of public day secondary schools of Bumula Sub-County, Bungoma County. Indicate if you SA- STRONGLY AGREE, A- AGREE, NS- NOT SURE, D- DISAGREE, SD- STRONGLY DISAGREE by marking with a Tick.

STATEMENT	SA	A	NS	D	SD
Jigger infestation is adequately addressed in school health education.					
School inspection is always done often to reduce the influence of jigger infestation on attendance and retention rates of students.					
Schools have implemented measures to address jigger infestation and its impact on attendance and retention rates.					
School has provided support resources necessary to address issues of jigger infestation and its impact on attendance and retention rates.					

SECTION E: Attendance and retention rates of students in Bumula Sub- County.

STATEMENT	SA	A	NS	D	SD
Jigger infestation has direct impact on completion rates of students in public public day secondary schools who are infested in Bumula Sub- County.					
Students affected by jigger infestation are more likely to absent themselves from school.					
Students affected by jiggers tend to miss more classes compared to non-affected students.					
Jigger infestation negatively affects students' attendance.					
Implementing measures to eradicate jiggers can lead to improvement in students' attendance rates.					
Jigger infestation awareness and prevention programs can help improve students' attendance rates in public day secondary schools of Bumula Sub-County.					

Briefly, provide additional comments or insights related to the influence of jigger

infestation on students attendance rates

…….

…….

…….

APPENDIX IV: KEY INFORMANTS' INTERVIEW GUIDE

PART 1: Background Survey

1. **AGE**

i. 18-35 ☐

ii. 35-50 ☐

iii. Above 50 ☐

2. **Gender**

i. Male ☐

ii. Female ☐

3. **Level of education**

i. Secondary level ☐

ii. Tertiary level ☐

iii. university ☐

4. **Occupation**

i. teacher ☐

ii. CHVs ☐

iii. local administrato ☐

5. **Period of service**

i. Below 5 years ☐

ii. 5- 10years ☐

iii. above 10 years ☐

PART 11: Semi-Structured Interview

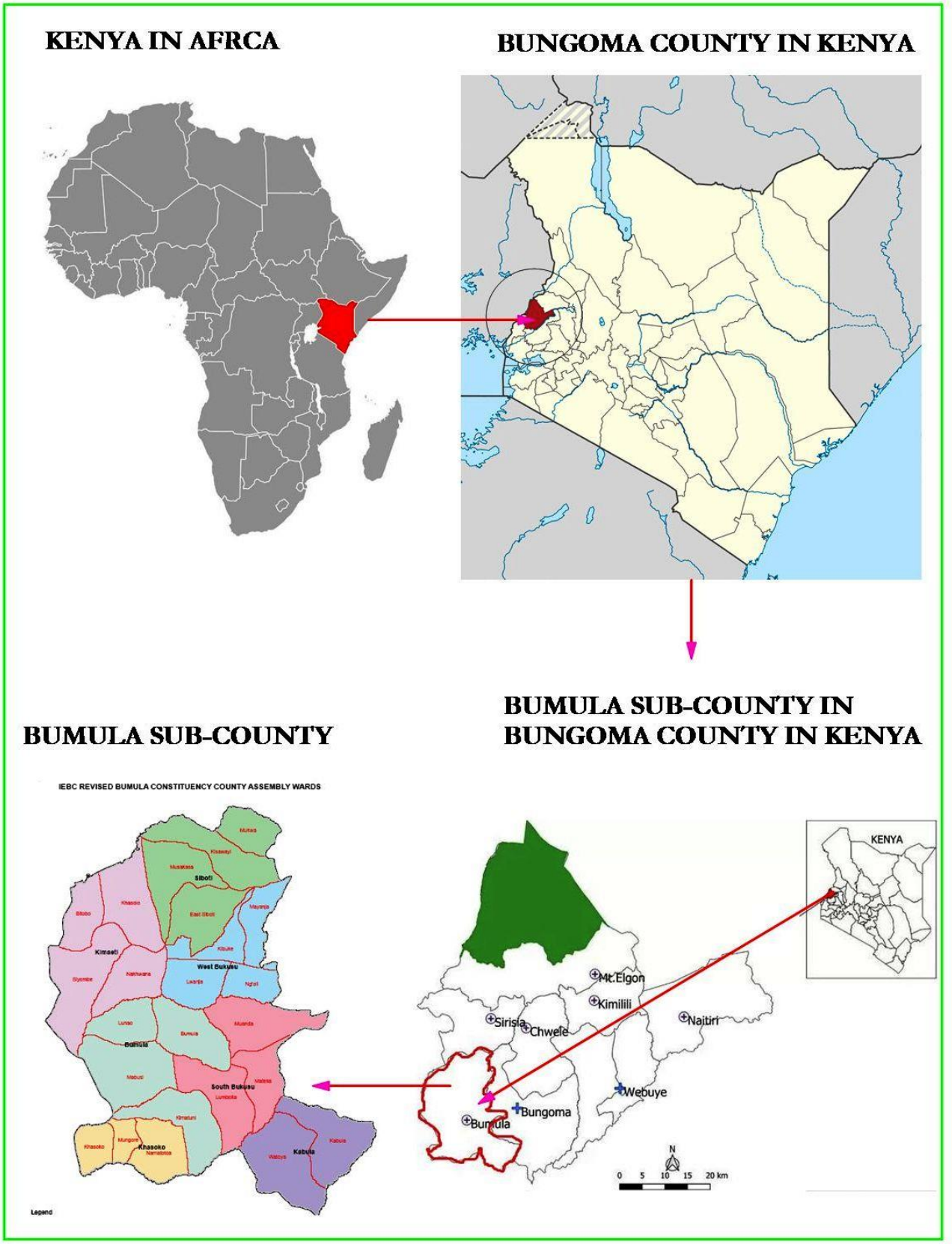
i. Based on your understanding, explain the extent of jigger infestation on attendance and retention rates of public day Secondary school students of Bumula Sub-County.

ii. What do you think is the main influence of jigger infestation on attendance rates of students in public day secondary schools of Bumula Sub-County?

iii. In your own opinion, suggest strategies that can be employed to mitigate jigger infestation on attendance and retention rates of students in public day secondary schools of Bumula sub- County.

iv. Briefly, provide additional comments or insights related to the influence of jigger infestation on students' attendance and retention rates in Bumula Sub-County.

APPENDIX VII: MAP OF STUDY SITE



APPENDIX VIII: BOARD OF POST GRADUATE LETTER.

Maasai Mara University

BOARD OF POSTGRADUATE STUDIES

OFFICE OF THE DIRECTOR

P.O. BOX 861 – 20500
Narok, Kenyawww.mmarau.ac.ke

Tel: +254 – 20 -2066042
+254 – 20 - 8081874

28th August, 2023

RESEARCH PERMITS SECTION
NACOSTI
UTALII HOUSE

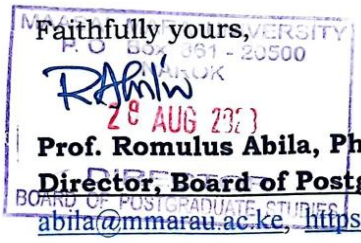
REF: OLITA I. FAITH (REG. NO. AM12/JP/MN/13742/2021)

We wish to confirm that the above named is a *bona fide* Master's student at Maasai Mara University pursuing M.A.in Social Work in the School of Arts, Humanities, Social Sciences & Creative Industries. Her proposed research is ***"Influence of Jigger Infestation on Attendance and Retention Rates of Students in Mixed Day Secondary Schools of Bumula Sub-County, Kenya"***. She would like to apply for a research permit from NACOSTI before she can proceed for field work and data collection.

We further confirm that the candidate has adhered to all research protocol requirements of Maasai Mara University and the proposed research has been rated as having no known adverse impacts on the environment and does not pose any ethical concerns.

This is therefore to request your office to issue her with a research permit.

Faithfully yours,



Prof. Romulus Abila, PhD.
Director, Board of Postgraduate Studies
abila@mmarau.ac.ke, https://orcid.org/0000-0001-8762-7153

APPENDIX IX: LETTER FROM NARCOSTI.

REPUBLIC OF KENYA

NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Ref No: **119268**

Date of Issue: **11/September/2023**

RESEARCH LICENSE

This is to Certify that Miss.. FAITH INYELE OLITA of Maasai Mara University, has been licensed to conduct research as per the provision of the Science, Technology and Innovation Act, 2013 (Rev.2014) in Bungoma on the topic: INFLUENCE OF JIGGER INFESTATION ON ATTENDANCE AND RETENTION RATES OF STUDENTS IN MIXED DAY SECONDARY SCHOOLS OF BUMULA SUB-COUNTY,KENYA for the period ending : 11/September/2024.

License No: **NACOSTI/P/23/29366**

119268

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

THE SCIENCE, TECHNOLOGY AND INNOVATION ACT, 2013 (Rev. 2014)
Legal Notice No. 108: The Science, Technology and Innovation (Research Licensing) Regulations, 2014

The National Commission for Science, Technology and Innovation, hereafter referred to as the Commission, was the established under the Science, Technology and Innovation Act 2013 (Revised 2014) herein after referred to as the Act. The objective of the Commission shall be to regulate and assure quality in the science, technology and innovation sector and advise the Government in matters related thereto.

CONDITIONS OF THE RESEARCH LICENSE

1. The License is granted subject to provisions of the Constitution of Kenya, the Science, Technology and Innovation Act, and other relevant laws, policies and regulations. Accordingly, the licensee shall adhere to such procedures, standards, code of ethics and guidelines as may be prescribed by regulations made under the Act, or prescribed by provisions of International treaties of which Kenya is a signatory to
2. The research and its related activities as well as outcomes shall be beneficial to the country and shall not in any way;
    i. Endanger national security
    ii. Adversely affect the lives of Kenyans
    iii. Be in contravention of Kenya's international obligations including Biological Weapons Convention (BWC), Comprehensive Nuclear-Test-Ban Treaty Organization (CTBTO), Chemical, Biological, Radiological and Nuclear (CBRN).
    iv. Result in exploitation of intellectual property rights of communities in Kenya
    v. Adversely affect the environment
    vi. Adversely affect the rights of communities
    vii. Endanger public safety and national cohesion
    viii. Plagiarize someone else's work
3. The License is valid for the proposed research, location and specified period.
4. The license any rights thereunder are non-transferable
5. The Commission reserves the right to cancel the research at any time during the research period if in the opinion of the Commission the research is not implemented in conformity with the provisions of the Act or any other written law.
6. The Licensee shall inform the relevant County Director of Education, County Commissioner and County Governor before commencement of the research.
7. Excavation, filming, movement, and collection of specimens are subject to further necessary clearance from relevant Government Agencies.
8. The License does not give authority to transfer research materials.
9. The Commission may monitor and evaluate the licensed research project for the purpose of assessing and evaluating compliance with the conditions of the License.
10. The Licensee shall submit one hard copy, and upload a soft copy of their final report (thesis) onto a platform designated by the Commission within one year of completion of the research.
11. The Commission reserves the right to modify the conditions of the License including cancellation without prior notice.
12. Research, findings and information regarding research systems shall be stored or disseminated, utilized or applied in such a manner as may be prescribed by the Commission from time to time.
13. The Licensee shall disclose to the Commission, the relevant Institutional Scientific and Ethical Review Committee, and the relevant national agencies any inventions and discoveries that are of National strategic importance.
14. The Commission shall have powers to acquire from any person the right in, or to, any scientific innovation, invention or patent of strategic importance to the country.
15. Relevant Institutional Scientific and Ethical Review Committee shall monitor and evaluate the research periodically, and make a report of its findings to the Commission for necessary action.

National Commission for Science, Technology and
Innovation(NACOSTI),
Off Waiyaki Way, Upper Kabete,
P. O. Box 30623 - 00100 Nairobi, KENYA
Telephone: 020 4007000, 0713788787, 0735404245
E-mail: dg@nacosti.go.ke
Website: www.nacosti.go.ke

APPENDIX X: LETTER FROM MOH BUNGOMA COUNTY GOVERNMENT.

REPUBLIC OF KENYA

COUNTY GOVERNMENT OF BUNGOMA
MINISTRY OF HEALTH
OFFICE OF THE COUNTY DIRECTOR
HEALTH

Telegrams: "MEDICAL", BUNGOMA
Telephone: (055) 30230 Fax: (055) 30650
E-mail: docakatu@yahoo.com
When replaying please quote

COUNTY DIRECTOR OF HEALTH,
BUNGOMA COUNTY
P O BOX 18-50200
BUNGOMA

Ref: CG/BGM/CDH/RESRC/VOL.1

DATE: 26TH SEPTEMBE2023

FAITH INYELE OLITA
MAASAI MARA UNIVERSITY
P.O BOX 861 -20500
NAROK

Received
SUB-COUNTY PUBLIC HEALTHOFFICER
BUMULA SUB-COUNTY
Date 27/9/2023

RE: AUTHORITY TO CONDUCT A STUDY TITLED INFLUENCE OF JIGGERS INFESTATION OF ATTENDANCE AND RETENTION RATES OF STUDENTS IN MIXED DAY SECONDARY SCHOOLS OF BUMULA SUB- COUNTY ,KENYA

Following your application for authority to conduct a study on _influence of jiggers infestation of attendance and retention rates of students in mixed day secondary schools of bumula sub- county,Kenya. I am pleased to inform you that your request has been granted and thereby you have been authorized to undertake the said study as indicated in your application letter.

Kindly note that, as an applicant who has been licensed under the Science, Technology and Innovation Act, 2013 to conduct research in Kenya, you shall deposit **a copy** of the final research report to the County Director of Health. The soft copy of the same should be submitted through the online Reasearch Information system.

Thank you.

COUNTY DIRECTOR OF HEALTH
BUNGOMA COUNTY

DR. CALEB WATTA WANAMBISI
COUNTY DIRECTOR OF HEALTH
BUNGOMA COUNTY

APPENDIX XI: LETTER FROM MOE BUNGOMA COUNTY.

REPUBLIC OF KENYA

MINISTRY OF EDUCATION
STATE DEPARTMENT FOR BASIC EDUCATION

When Replying please quote
e-mail: bungomacde@gmail.com

Ref No: BCE/DE/19/VOL.III/51

County Director of Education
P.O. Box 1620-50200
BUNGOMA

Date: 25th September, 2023

TO WHOM IT MAY CONCERN

RE: AUTHORITY TO CARRY OUT RESEARCH

NACOSTI/P/28581

This is to confirm that **Ms. Faith Inyele Olita** of Masai Mara University has been authorized to conduct research on '**Influence of Jigger Infestation of attendance and retention rates of Students in Mixed Day Secondary Schools of Bumula Sub County in Bungoma County'** for the period ending **11th October 2024.**

Kindly accord him the necessary assistance

CHRISTINE OWINO
FOR: COUNTY DIRECTOR OF EDUCATION
BUNGOMA COUNTY

FOR: COUNTY DIRECTOR OF EDUCATION
BUNGOMA
P. O. Box 1620,
BUNGOMA - 50200

APPENDIX XII: LETTER FROM MOE BUMULA SUB-COUNTY.

REPUBLIC OF KENYA

MINISTRY OF EDUCATION
State Department of Education- Bungoma County

TEL: OFFICE 020-2639018
TEL: HOUSE 0770469320
deobumula142abc@g.mail.com
When replying please quote
Our Ref: BUM/ED/ADM

SUB-COUNTY EDUCATION OFFICE
BUMULA SUB-COUNTY
P.O. BOX 142-50200,
BUNGOMA.
DATE:27/09/2023

TO WHOM IT MAY CONCERN

RE: AUTHORITY TO CONDUCT RESEARCH IN BUMULA SUB COUNTY.

This is to notify you that the bearer of this letter **Faith Inyele Olita REG. NO. AM12/JP/MN/13742/2021** who is a student at **Masai Mara University** has been given authority to carry out research in Bumula Sub County on a topic **"Influence of Jigger Infestation of Attendance and Retention Rates of Students in a Mixed Day Secondary Schools"**.

Accord her necessary assistance.

Thank you.

SUB COUNTY DIRECTOR
OF EDUCATION, BUMULA
P.O BOX 142-50200, BUNGOMA
DATE:..... SIGN.....

EZRA J.ODONDI (MR)
SUB COUNTY EDUCATION OFFICER
BUMULA SUB COUNTY

APPENDIX XIII: LETTER FROM COUNTY COMMISSIONER BUNGOMA.

REPUBLIC OF KENYA

THE PRESIDENCY
MINISTRY OF INTERIOR AND COORDINATION OF NATIONAL GOVERNMENT

Telephone: 055-30326.
Fax: 055-30326.
E-mail: ccbungoma@yahoo.com
When replying please quote

Office of the County Commissioner
P.O. Box 550-50200
BUNGOMA.

REF:ADM.15/13/VOL.IV/77

25th September, 2023

DEPUTY COUNTY COMMISSIONER,

BUMULA SUB COUNTY

RE: RESEARCH AUTHORIZATION - MISS FAITH INYELE OLITA

Reference is here made on the research license letter Ref: 819268 dated 11th September, 2023, License No. NACOSTI/P/23/29366 signed by Director General, National Commission for Science, Technology and innovation.

The student is hereby granted authority to conduct research in Bumula Sub County on the topic **"Influence of Jigger infestation on attendance and retention rates of students in mixed Day Secondary Schools in Bumula Sub County, Kenya''** for the period ending 11th September, 2024.

The student responsible for this project is Miss Faith Inyele Olita of Maasai Mara University, college number AM12/JP/MN/13742/2021.

Kindly support her accordingly.

CHRISTINE CHACHA
For: County Commissioner
BUNGOMA COUNTY

COUNTY COMMISSIONER
BUNGOMA

APPENDIX XIV: A PHOTO OF A FOOT INFESTED WITH JIGGERS