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## Psycho-social support to children infested by jigger in Kisii County: Social work perspective

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### Abstract

Social workers are critical in assessing the social care needs of individuals and providing psycho-social support. However, the management and containment of jigger infestations are not adequately addressed despite tungiasis being a worldwide social and public health concern. Jigger infestation leads to walking difficulties and affects the quality of life, particularly in children. Infested children may suffer from social and psychological problems, including low self-esteem and stigma. To mitigate the negative impact of jigger infestations, social workers have a crucial responsibility to provide psycho-social support to affected children. The study's goal was to investigate the role of social workers in providing psycho-social support to children infested by jiggers in Kisii County, using a descriptive survey design with a sample size of 50 pupils, 50 parents, 20 key informants, and 20 practicing social workers. The study identified poverty, poor hygiene, inadequate health facilities, sharing homes with domesticated animals, political negligence, and limited family size as risk factors contributing to the spread of tungiasis. Social workers should engage with children to assess their social functioning, provide information to help them maintain body hygiene, develop skills to prevent tungiasis, and create support for behavioral change. The study recommends promoting behavioral change in the community and addressing superstitions about the causes of tungiasis.

**Keywords:** Tungiasis, social worker, psychological problems, stigma, low self-esteem

### Introduction

Jigger infestation is a parasitic disease that affects humans and animals, particularly in sub-Saharan Africa, where it is considered a major public health problem. The condition is caused by sand fleas that burrow into the skin, causing painful lesions and infections. If left untreated, jigger infestation can lead to severe health problems, including amputation and even death.

According to a study conducted by Muehlenbein *et al.* (2010) <sup>[17]</sup>, jigger infestation is a complex health issue that requires a multifaceted approach to prevention and treatment. One critical component of this approach is community education, which can be facilitated by social workers. By raising awareness about the causes, symptoms, and prevention measures of jigger infestation, social workers can help to prevent the spread of the disease and reduce its impact on affected individuals and communities.

In addition to community education, social workers can promote good hygiene practices, essential for preventing jigger infestation. A study by Muehlenbein and colleagues (2013) <sup>[18]</sup> found that using footwear and practicing proper hygiene, such as regular washing and cleaning of living spaces, can significantly reduce the incidence of jigger infestation. Social workers can work with communities to promote these practices and provide information on the safe disposal of waste and the construction of latrines.

Furthermore, social workers can provide counseling and support to individuals and families affected by jigger infestation. A study by Macleod *et al.* (2013) <sup>[16]</sup> found that jigger infestation can have a significant psychological impact on affected individuals, leading to anxiety, depression, and social isolation. Social workers can help to address these issues by providing emotional support, connecting affected individuals to medical care and treatment, and advocating for their needs within the community.

In conclusion, jigger infestation is a serious public health problem that requires a multifaceted approach to prevention and treatment.

Social workers can play a critical role in this effort by providing community education, promoting good hygiene practices, and providing counseling and support to affected individuals and families. Through these efforts, social workers can help to reduce the impact of jigger infestation on the health and well-being of communities in sub-Saharan Africa.

### Background

Tungiasis, also known as *Tunga Penetrans* infestation, is an infection of the host's skin caused by a female sand flea (*Tunga Penetrans*). This tropical parasite disease is one of the most neglected ones. Sub-Saharan Africa, Latin America, and the Caribbean have extremely high tungiasis prevalence rates (Winter *et al.*, 2009) [23]. Jigger fleas, also known by their scientific name *Tunga Penetrans*, are ectoparasites that are typically found in soiled and dusty environments. Tungiasis, a skin condition, is caused by it. The parasite is widespread in rural areas, traditional fishing villages, and urban slums (Ugbomoiko *et al.*, 2007) [22]. Many people are at risk of infection in most developing and underdeveloped countries. The significance of tungiasis is localization in the foot which makes walking extremely difficult and impairs the afflicted person's ability to function normally. The incidence in endemic areas ranges from 15 to 40%. (Julian *et al.*, 2009) [7]. According to Winter *et al.* (2009) [23], children between the ages of 5 and 15 and the elderly have the highest prevalence of infestation intensity. This parasitic infection disease is caused by the burrowing of female sand fleas into the skin of humans and animals, mainly in rural areas of sub-Saharan Africa, the Caribbean, and South America (Muehlenbein *et al.*, 2010) [17]. The disease causes severe discomfort, pain, and inflammation that can lead to secondary infections, amputations, and even death in extreme cases (Muehlenbein *et al.*, 2010) [17].

Jigger infestation is a neglected tropical disease that disproportionately affects vulnerable populations living in poverty, where access to basic sanitation and health care is limited (Macleod *et al.*, 2013) [16]. According to a study conducted by Muehlenbein *et al.* (2010) [17], the prevalence of jigger infestation varies from 2% to 50% among children and adults in rural areas of Kenya, Tanzania, and Uganda. Additionally, the disease has been reported in areas where the incidence of HIV/AIDS is high, further exacerbating the health burden of affected individuals and communities (Macleod *et al.*, 2013) [16].

One of the main risk factors for jigger infestation is poor hygiene, including walking barefoot or with inadequate footwear, living in unsanitary conditions, and inadequate personal hygiene practices (Muehlenbein *et al.*, 2013) [18]. Therefore, promoting good hygiene practices is a crucial component of jigger infestation prevention. A study conducted by Muehlenbein *et al.* (2013) [18] found that using footwear and practicing regular washing and cleaning of living spaces can significantly reduce the incidence of jigger infestation.

Community education and awareness-raising are also essential for preventing the spread of jigger infestation. Social workers can play a critical role in this effort by working with local leaders and healthcare providers to educate communities about the causes, symptoms, and prevention measures of the disease (Muehlenbein *et al.*, 2010) [17]. In addition, social workers can help to dispel myths and misconceptions about the disease and promote

the importance of seeking medical care and treatment for affected individuals (Muehlenbein *et al.*, 2013) [18].

Furthermore, social workers can provide counseling and support to individuals and families affected by jigger infestation. A study by Macleod *et al.* (2013) [16] found that jigger infestation can have a significant psychological impact on affected individuals, leading to anxiety, depression, and social isolation. Social workers can help to address these issues by providing emotional support, connecting affected individuals to medical care and treatment, and advocating for their needs within the community.

In recent years, there have been several efforts to address the issue of jigger infestation in affected communities. For instance, the World Health Organization (WHO) has started the Global Programme to Eliminate Lymphatic Filariasis (GPELF), which incorporates holistic methods to combat neglected tropical diseases, such as jigger infestation (WHO, 2021) [24]. Additionally, community-based jigger infestation control initiatives that incorporate health promotion, hygiene promotion, and medical care and treatment have been implemented by local governments, non-governmental organizations (NGOs), and community-based organizations (CBOs) (Muehlenbein *et al.*, 2013) [18].

Jigger infestation, or ectoparasitosis, is connected with significant morbidity and has detrimental effects on health (Heukelbach J, *et al.* 2001) [4]. According to a clinical-microbiological study, pathogenic bacteria are virtually always present in lesions brought on by *T. penetrans*. Jiggers typically feed by burrowing into their host's skin, which causes the abdomen to swell to an enormous size and form a pea-shaped sac (MOH, 2014). Jiggers can cause physical consequences such as inflammation, fibrosis, ulceration, sepsis, loss of toenails, and an increased risk of infection with opportunistic infections when there is a severe infestation (MOH 2014).

Ten percent of tetanus cases in Brazil are caused by tungiasis, which has been associated with some recorded deaths as well as other illnesses that can result in gangrene and the amputation of limbs (Feldmeier *et al.* 2003) [3]. Additionally, tungiasis may make it difficult to walk or use your hands. The victims' struggles hinder them from having fulfilling lives. In fishing communities, there is a relationship between severe tungiasis and indecent housing. Under such situations, fleas breed in carpets in substandard housing, dust, dirt, trash, cracks in floors or walls, and regions adjacent to the host's resting and sleeping quarters. Furthermore, people with jigger infestations are stigmatized since society often accuses them of failing to practice good hygiene.

Human tungiasis is present across Uganda, however it seems to be more prevalent in the Busoga sub-regions, South Eastern, and Karamoja in North Eastern Uganda. These areas are considered to be some of Uganda's poorest (Ministry of Health Uganda, 2010). Lack of health knowledge, substandard housing, cultural attitudes, and living close to animals are some of the causes linked to tularemia in many nations where *T. penetrans* is most prevalent (Ugbomoiko, 2007) [22].

The severity of the *Tunga Penetrans* is exacerbated by social stigma, apathy in the community, and ignorance of effective control measures because this community shuns those who are infected rather than helping them get rid of the flea, clean their homes, report cases to public health

authorities so that they can take action, or takes them to a hospital for treatment for better health (Ruttoh, K., *et al.*, 2012) <sup>[21]</sup>. A study by Ngunjiri *et al.* (2015) <sup>[20]</sup> reveals that Social stigma associated with children infested with jiggers is a major problem since it disrupts their educational process. Many students prefer not to come to school because of the ridicule and discrimination they receive from their colleagues. Jiggers also hinder children with infestations from functioning normally by making them itchy, painful, and unable to walk to school (Makena & Mwoma 2014) <sup>[26]</sup>. This results in poor academic performance as a result of low concentration.

Despite the fact that armadillos, dogs, cats, cattle, sheep, monkeys, jaguars, elephants, pigs domestic rodents including rats, are significant reservoirs for the spread of jigger infestation (Mutebi *et al.*, 2015) <sup>[15]</sup>. Tungiasis is still regarded as a zoonotic illness that can spread to both domestic and wild animals, affecting a wide range of domestic animals (Eisele *et al.*, 2003) <sup>[2]</sup>. The danger of infection is greater where humans coexist closely with these animals and where human behavior encourages exposure (Feldmeie *et al.*, 2003) <sup>[3]</sup>. Each endemic area has a different level of importance for each animal species in terms of the epidemiology of human tungiasis. Dogs, rats, and cats are the species most frequently infected by *T. penetrans* in metropolitan Brazil. As pigs appear to be the key animal reservoirs in West Africa. (Heukelbach *et al.*, 2003; Pilger *et al.*, 2008; Pampiglione *et al.*, 2009) <sup>[4, 27, 30]</sup>. Jigger cannot be spread from one person to another, although it can spread in an unhygienic environment. Environments that are dusty and sandy are excellent for flea survival. The biggest contributor to poor health in communities is poverty and the incapacity to combat it (Kimani and Nyagero, 2012) <sup>[29]</sup>.

Understanding the social, economic, and political aspects that predispose children to infestation is essential for social workers if they are to properly deal with jigger infestation. They must be aware of cultural practices, values, and the setting in which people live. Despite having well-focused National Health policies and a reform agenda, published information on knowledge, attitude, and practices as well as the jigger situation is scarce and fragmented in Kenya; as a result, there has not been a breakthrough in enhancing the situation of households caught in a vicious cycle of poverty and ill health. Therefore this study set out to collect data in order to clarify the status of knowledge, attitude, and practices about jigger infestation in a rural Kenyan environment.

Traditional beliefs may continue to be a significant obstacle notwithstanding the fight against Tungiasis. It is crucial to determine the current knowledge and community structures that are accessible for changing behaviors in the prevention and control of infestation (Ruttoh *et al.*, 2012) <sup>[21]</sup>. Tungiasis has been designated a neglected disease of disadvantaged populations by the World Health Organization, which has urged more thorough investigations into the condition (Hotez *et al.*, 2008) <sup>[6]</sup>. Health professionals must respect the principles of public and private partnerships to promote sustainable hygienic habits, community empowerment, and sustainable health. If the infestation is to be handled, active community involvement and participation are required. This culminates in the eradication of Tungiasis and improved health and economic benefits for the nation. (Ruttoh *et al.*, 2012) <sup>[21]</sup>.

Tungiasis is thought to be a sign of wealth, witchcraft, a curse, a cult, or a mental disorder in certain groups, while in others it is said that if a family member passes away from jigger infection, the entire generation would be plagued with the same infestation (Lilian, 2009; Feldmeier *et al.*, 2003) <sup>[25, 31]</sup>. The traditional beliefs and conventional wisdom that domestic animals should be kept on the human property increases the risk of jigger infestation, particularly when people come into close contact with diseased animals and the likelihood and severity of infestation are high. As long as the animals remain in close proximity to people, they continue to disseminate the sand flea and contribute to the continued transmission of infection in the neighborhood (Feldmeie *et al.*, 2003; Pilger *et al.*, 2008) <sup>[3, 27]</sup>.

The jigger problem, according to local Tanzanians, was thought to have begun in the 20th century when residents of the Kibondo District began mingling with foreign Indians (Mazigo *et al.*, 2012) <sup>[28]</sup>. Some individuals held the view that it was the result of witchcraft and advised caution in interpersonal interactions to avoid becoming jigger victims. Jiggers are seen as a bad omen by the Maasai in Tanzania's Kioge Village. In rural Uganda, those who were infested with jiggers believed they were enchanted and that was why they were afflicted. So many affected people choose to treat themselves using ancient healing methods rather than seeking out modern healthcare providers (Wanzala and Silai, 2016).

Residents in some areas of central Kenya said that jiggers only affect the feet, that they are the result of witchcraft, that they are unique to that study region, that they only affect youngsters and the old, and that those who have jiggers are mentally retarded. These are only a handful of the myths and misconceptions surrounding the jigger infestation that has claimed lives (Kimani and Nyagero, 2012) <sup>[29]</sup>. In the majority of the affected areas, incidences of isolation and death cases due to a severe jigger infestation epidemic have been observed and reported (Njau *et al.*, 2012) <sup>[35]</sup>.

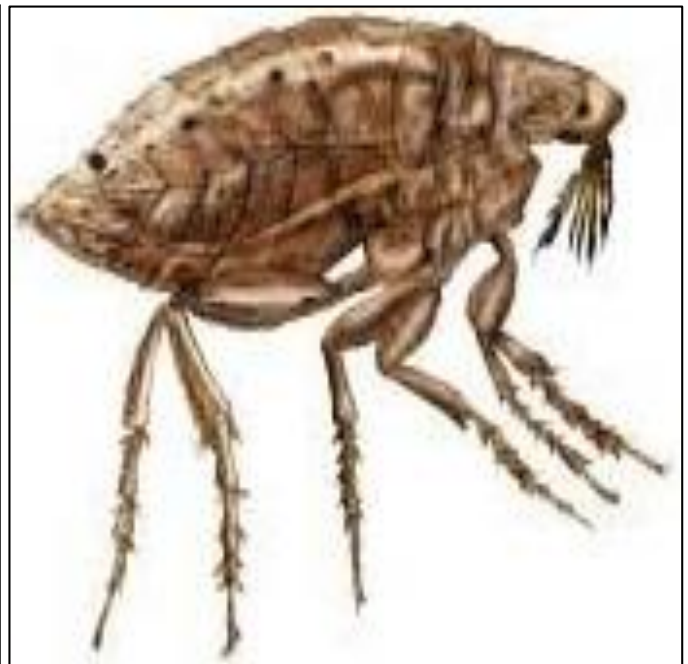
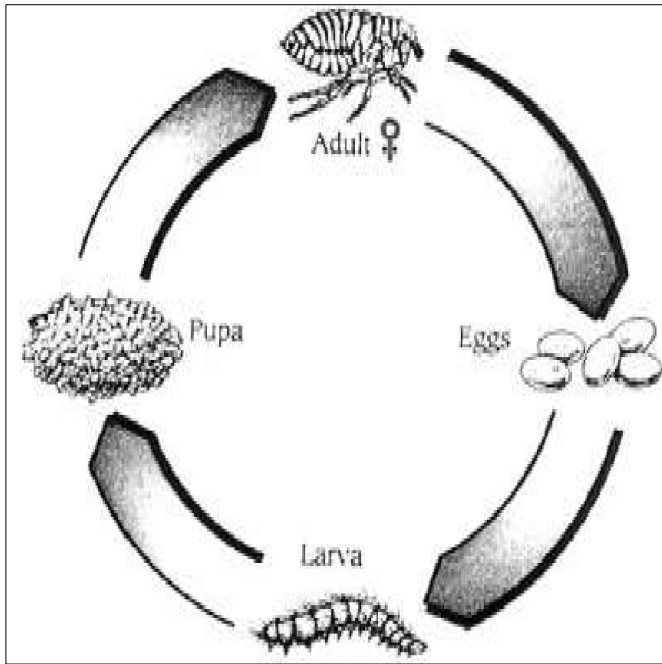
### ***Tunga Penetrans* Cycle**

The average length of a *Tunga Penetrans* egg is 604  $\mu\text{m}$ . Depending on the environmental factors (such as wetness, humidity, etc.), the larva will hatch from the egg in 1 to 6 days (MOH, 2014a). The flea will go through two instar phases after hatching. This is different from the majority of fleas, who go through three stages. The flea will expand to a size of 2,900  $\mu\text{m}$  during that development after first shrinking from 1,500  $\mu\text{m}$  at hatching to 1,150  $\mu\text{m}$  (first instar) (Second instar) (Nagy *et al.*, 2007) <sup>[19]</sup>. The larva pupates and constructs a cocoon around itself approximately 6 to 8 days after hatching. Sand is utilized to stabilize the cocoon and aid in its development as it spends the majority of its time on and below the surface of the sand (Nagy *et al.*, 2007) <sup>[19]</sup>. It has been observed that environmental disturbances like rain or a lack of sand reduce the frequency of tungiasis infestations, most likely because they reduce the environmental variables that the flea depends on for general growth and development. After 9-15 days, assuming nothing disturbs the cocoon, an adult flea will emerge from the puparium (Nagy *et al.*, 2007) <sup>[19]</sup>.

The flea will eat occasionally on gullible animals when it is in the adult stage. In the wild, the male and female have little interest in one another, therefore reproduction cannot take place until the female burrows into the skin (Nagy *et al.*, 2007) <sup>[19]</sup>. Following copulation, the female flea enters

the *in vivo* ecto-developmental stage of life, which is also known as the Fortaleza classification of tungiasis. (Fortaleza

cycle) (Nagy *et al.*, 2007) <sup>[19]</sup>.



**Fig 1:** *Tunga Penetrans* life cycle and an adult Jigger flea

**Methodology**

**Research Design**

A descriptive survey was used in the investigation. A descriptive study strategy is a scientific approach that entails observation and description of a subject's behavior without subject manipulation (Mugenda & Mugenda 2003) <sup>[31]</sup>. Due to its many benefits, the descriptive survey methodology was utilized in this study. Since the research was based on the study community's opinions, attitudes, and experiences with jigger infestation, it first allowed the research to obtain first-hand information from the study population.

**Target Population**

The research focused on 500 students in grades 5-8 from three different schools in Boikang'a Ward in Kisii County. The study included 150 students from Emesa Primary School, 200 students from Nyakorere Primary School, and 150 students from Marongo Primary School. The selection of this group was influenced by the necessity to have respondents who could participate in concentrated group discussions and provided answers to the survey questions. 10 to 15-year-olds made up the respondent pool. Additionally, the study also targeted 30 Practicing Social Workers, 20 Key informants, and 50 Parents.

**Sampling Techniques and Sample Size**

There are fourteen primary schools in Boikang'a ward namely Emesa, Kabonyo, Nyabisase, Rianyamari, Marongo, Kiogosi, Igare, Manywanda A, Manywande B, Nyakorere, Nyabiosi, Nyakembene, Gesonso and Riasobera. The researcher sampled three schools to participate in the study namely Emesa, Marongo and Nyakorere primary schools. Three types of respondents-students, teachers, and parents-participated in the study at each of the schools. The students who took part in the study were chosen through a systematic sampling from student registrations that could be obtained from the relevant schools. Each of the chosen student's

parents or guardians took part in the study as well. This is predicated on the idea that every child has a parent or legal guardian. In order to choose the parents and guardians who would engage in the study, convenience sampling was used in the research. 50 students made up the sample for elementary school students. This amounted to a convenient sample of 50 parents. This represents 10% of the population and is consistent with (Yilmaz, 2013) <sup>[32]</sup>, who noted that in descriptive research, a sample size of between 10% and 30% is representative. Purposive sampling was also utilized in the study to choose the village elders, head teachers, chiefs, and assistant chiefs who served as key informants.

**Table 1:** Sample Size

Population category	Target Population	Sample Size	Percentage
Emesa primary	150	15	30
Nyakorere primary	200	20	40
Marongo primary	150	15	30
<b>Total</b>	<b>500</b>	<b>50</b>	<b>100</b>

*Source:* Ministry of Education, Kisii County (2021)

**Data Collection Instruments**

Data Collection: Focused group discussions, interview schedules, and observation checklists were used to collect data. Data on the prevalence of *T. penetrans*, sociodemographic traits, awareness of tungiasis and prevention, individual (host) factors related to tungiasis, and the function of social workers in jigger prevention were collected using focus group discussions (FGDs).

**Piloting the Research Instruments**

According to Claire and Joy (2017) <sup>[36]</sup>, the goal of the pilot study is to determine the effectiveness and efficiency of the research instruments. This will allow the researcher to spot any questions that are unclear or ambiguous so they can be restated and explained to the respondents. To ensure that the data-gathering tools were producing the desired findings, the

researcher carried out a pilot study. Then, within 10% of the sample region, a group of chosen students, parents, and key informants were given the questionnaires and interview schedules. Before the real study was conducted, the results of the pretest were used to refine the FGDs guide, observational checklist, and interview schedules.

**Validity of the Research Instruments**

Franz *et al.* (2013) [33] state that the validity of the study instruments should be checked prior to data collection. The researcher checked the validity of the study tools' content, concept, and face. The researcher covered all the necessary topics to be investigated because of the content validity. The researcher made an effort to ensure that the questionnaire and interview schedule question items measured the construct it set out to explore. For face validity, the researcher made sure that the study instrument's overall presentation and outlook were pleasing to respondents in terms of text size and spacing. Prior to collecting actual data, the unclear items on the research instruments were rephrased.

**Reliability of the Research Instruments**

The extent to which the method of measuring yields the same results when applied repeatedly is described as a measure's reliability by Orodho (2015) [37]. As a result, the research instruments are more dependable, accurate, and adequate. Through the piloting, the dependability was evaluated. The most often used metric for assessing the dependability of research equipment, according to Lee *et al.* (2016) [34], is test-retest reliability. A pilot study was conducted using a sample of responders who shared the same traits as the study's subjects. On two separate occasions over the course of a fourteen-day period, FGDs and interviews were conducted, and the findings were documented (two weeks). The first test is known as T1, and

the second test is known as T2. The results of the two assessments were then linked. Test-retest reliability or stability coefficient refers to this correlation. Using the gathered information, the Cronbach Alpha test was calculated. The research tools with a dependability rating of 0.7 were approved for the study.

**Data Analysis Plan**

Textual analysis was used to categorize and analyze qualitative data, which was then grouped into similar themes and patterns. Ideas, thoughts, behaviors, interactions, incidents, and terminologies connected to the researcher were recognized, categorized, and summarized into insightful texts. The pertinent extracts from related comments were then compiled and presented in prose.

**Findings**

This study focused on and targeted pupils, their parents, and practicing social workers as its respondents. The Assistant Chief, village elders, and primary school principals, who served as key informants, were also consulted for their opinions.

**Table 2: Response Rate**

Category	Interviews and FGDs conducted	Return rate
Pupils	40	80%
Parents	43	86%
Key informants	17	85%
Practicing Social workers	18	90%

Source: (Author 2021)

The researcher conducted Focused Group Discussions of 5 students per group in three different schools to get their opinions on the predisposing causes of jigger infestation. The responses are shown below in Table 2.

**Table 3: Excerpts from FGDs with pupils on the causes of jigger infestation**

Respondent's suggestion	Respondents Voice
Poverty	Poverty is one of the main causes of jigger infestation because you get that many pupils in the Nyakorere region do not have shoes, they walk barefoot to school. The floors of their houses at home are broken so that is where the Jiggers hide. (FGD CLASS 6 PUPILS at Nyakorere Primary 2022)
Unemployment	Parents that are not employed do not have the money to buy their children good clothes, shoes and build a good house for them to live. This makes the children susceptible to jiggers attack in the Marongo area because during the dry period, the ground is broken and that is where they hide. Unemployment needs to be addressed by the Member of the County Assembly (MCA) and other local leaders (FGD CLASS 7 PUPILS at Marongo Primary 2022)
Dirty school environment	Most of our classes are dirty, the walls have cracks where the jiggers hide. The floors are in bad condition. The place where we dispose of our litter is also an inhabitant for the jiggers. Sometimes it goes for many days before it is burnt. (FGDs Class 7 pupils EMESA PRIMARY 2022)
Body Hygiene	Most students that do not bathe are associated with jiggers. This is because of the long learning hours to compensate for the time lost during the COVID-19 pandemic therefore they don't find time to bathe at home. Sometimes we get out of school very tired. (FGD CLASS 6 Pupils Marongo Primary2022)
Dysfunctional School inspection	There is no regular inspection in our school to ensure that regular hygiene is observed among students. Those that do not have shoes are mostly affected and laughed at. They are referred to as 'Nyamege' Which subjects them to isolation and stigmatization. (FGDs CLASS 7 Pupils at Emesa Primary2022)
Low level of education for Parents	Most pupils that are infested with jiggers are coming from families with ignorant or uneducated parents. Parents who are not well-schooled do not see the need to maintain high standards of hygiene in their children. As a result, they make them vulnerable to attack by jiggers. (FGDs Class 8 Pupils at Nyakorere Primary School)

From the excerpts above, the causes of jigger infestation among the children include: Extreme poverty, high levels of unemployment among the parents, dirty school environment, poor body hygiene and sanitation, dysfunctional school inspection and low level of education among parents. This should be a concern to Social workers

and all the stakeholders in ensuring that the predisposing factors identified by the children are dealt with.

**Opinions of Parents on the Causes of Jigger Infestation among Pupils**

Respondent's suggestion	Respondents Voice
Sharing houses with domestic animals	Most families that put their children to sleep in the same house with domestic animals such as sheep, goats and calves risk them to infestation by jiggers because those animals urinate on the floor of the house making it a suitable hiding place for the jiggers (FGDs with parents at Emesa shopping center 2022)
Dirty bedding	You will not be surprised that children infested with jiggers are sleeping in very dirty houses with thorn blankets which have never 'seen' water for centuries. This is caused by the negligence of most parents who do not see any value in providing a good atmosphere for their children just because they also went through the same when they were growing up. (FGDs with parents at Nyakeiboreire Market 2022)
Inadequate health facilities	In the entire Boikang'a ward, we only have three dispensaries one at Nyakorere, another at Nyakeiboreire and the other at Nyagenke. The one at Nyagenke is not operational. This leaves all residents in this ward to depend on Nyakorere and Nyakeiboreire dispensaries which are overstretched. They therefore do not have enough personnel and resources. When there is an outbreak of jiggers, we go to neighbouring wards such as Tabaka and Bogetenga to seek medical attention. This is a failure of our local leaders (FGDs with parents at Nyabiosi Shopping Center 2022).
Witchcraft/ superstition	Most people here believe that jigger infestation is a curse and anyone who is infested by jiggers is bewitched. That is why they do not take precautions in preventing them but rather seek other related intervention. In this region, superstition is the order of the day. (FGDs with parents at Nyakorere Shopping Center 2022)
Poverty	If you keenly follow the background of pupils infested with jiggers, you will realize that the standard of living of their families is very low. The kind of houses that they live in and even the clothes they put on are very dirty because their parents cannot afford decent houses for them. (FGDs with parents at Nyabiosi Shopping Center 2022)
Negligence by the political leaders.	There is a lot of negligence by the local political leaders on matters of health. They tend to favour areas where they got high support in the last election and leave the rest underdeveloped. The poor conditions of classes in schools for instance are a breeding ground for jiggers yet our children go to the same classes to study. If this will not be changed, then this problem will continue. (FGDs with parents at Ichuni shopping center 2022)

From the excerpts above, it was observed that the causes of jigger infestation among pupils are: Sharing of houses with domestic animals, dirty bedding, inadequate health facilities, witchcraft/superstition, Poverty and Negligence by the political leaders. Poverty and negligence were noted by both parents and pupils as the key causes of this pandemic; therefore, the government needs to economically empower the families in Boikang'a Ward by creating employment opportunities for them so that they can be able to sustain themselves and build good houses.

**Opinions of Key Informants on the Causes and Treatment of Jiggers**

The key informants that consisted of the Head teachers, Chiefs, Assistant Chiefs and Clan elders were also interviewed to get their views on the causes and treatment of jiggers. In an interview with the acting Chief Nyakembene location, he noted that the main causes of jigger infestations are poverty and sharing of houses with domesticated animals because the animals have fleas which increase their vulnerability to being affected by the jiggers. The poor families also tend to walk without shoes making their feet susceptible to jigger attack as indicated in the excerpt below:

'Many families especially from Mochengo and Nyakeringi towards river Kuja are living in abject poverty. Here children share accommodation with animals which cannot be rained on like goats and calves. The urine from the animals favour jiggers and their skin carries fleas' (Chief, Nyakembene Location 2022)

The clan elder Bogwasi Village pointed out that The Failure, corruption and discrimination by the area member of parliament and Member of the County Assembly as the causes of jigger infestation. The underdeveloped schools in the area with broken floors and walls are inhabitants of the jiggers. The political leaders need to develop all areas equally despite the support they are getting in those areas so that this malady is collectively dealt with. This is indicated in the extract below.

*"The big problem with our political leaders is that they are very corrupt and they tend to favor people from their regions in terms of resource allocation to schools and even infrastructure development. This has left some regions underdeveloped and susceptible to attack by all diseases. I think if we are to work towards eradicating this disease, corruption and favoritism should first be dealt with among our leaders. My clan has always been profiled as 'Abagere' and there is no single government project here."* (Clan elder, Bogwasi Village 2022)

On the treatment of jiggers, it was noted that the people use the following ways: Use of cattle urine, physical removal using thorns, surgical removal in the hospital, use of herbs, applying *Magadi*, applying ash from burnt beans' leaves, use of hot water and applying kerosene as indicated in the excerpts below:

'Most people treat the children infested with jiggers locally and others take them to the health facility. In local treatment, we use animal urine especially from cows, physically remove them using thorns then apply *Magadi*, ash from burnt beans' leaves or kerosene.' (Clan Elder 2022)

Another clan elder added that:

' For those that opt to go to the hospital, the jiggers are surgically removed from the feet by a medical practitioner and then the scar is treated to prevent other opportunistic infections. Some people also use hot water to burn the area affected by the jiggers so that they can die, others use herbs to cure the skin.' (Clan Elder, 2022)

**Opinions of Practicing Social Workers on the Role of a Social Worker in the Prevention of Jigger Infestation**

FGDs with Practicing Social workers were also done to get the views on their role in the prevention of jigger infestation. The responses were premised on resource provision, treatment and prevention. Their views are indicated in Table 4 below

**Table 4:** Excerpts from FGDs with Practicing Social Workers

Respondent's suggestion	Respondents Voice
Creation of Public Awareness	A social worker as an activist, needs to create public awareness among the people on the various causes of jiggers and the hygiene standards to observe. In doing so, the public will be made aware of the ways to stay safe from the jiggers. The community 'barazas', social events like funerals, weddings and 'harambees' should be utilized to pass this information to people. The Local FM Radios can also be a good avenue for them to reach the people (FGDs with community Social worker 2022)
Working with NGOs	Social workers in their role as brokers, need to link people with the non-governmental organizations that can give the infested children open shoes and the other children closed shoes to minimize the risk of infection. NGOs can also be a good avenue for the provision of the basic commodities that they may need for their wellbeing. (FGDs Community Social Worker 2022)
Involvement of all stakeholders	A social worker needs to work with the existing authorities and bring all the stakeholders on board such as the pupils, parents, teachers, political leaders and medical practitioners to collectively work towards curbing this menace. (FGDs Generalist Social Worker 2022)
Seeking professional treatment	A social worker should arrange or seek professional treatment for the children infested with the jiggers on behalf of their families. For severe cases, they need to involve the county ministry of health and other community health volunteers and Medical Social workers (FGDs Medical Social workers. (FGDs Generalist Social Worker 2022)
Promotion of body hygiene	Since jigger infestation is associated with poor body hygiene, the social workers should promote general body hygiene that is; bathing regularly, putting on clean clothes, wearing shoes and staying in a clean environment free from the jiggers. (FGDs Generalist Social Worker 2022)
Social-emotional support	There is a lot of stigma and discrimination associated with children and families infested with jiggers. Social workers therefore should offer psychosocial support to ensure that the affected children do not suffer from depression and give them hope of recovery. (FGDs Generalist Social Worker, 2021)
Distribution of shoes	In their role as enablers, social workers should work closely with other social service providing agencies to get shoes for the children in the affected areas to enable them to stay safe from the jiggers. (FGDs Generalist Social Worker 2022)
Distribution of detergents to affected areas	As Social advocates, the social workers should speak and air the needs of the children and their families to the government to get detergents such as Potassium Permanganate which is very useful in treating the skin infested by jiggers. (Medical Social Worker 2022)
Linking the affected families with the government	Since poverty is a major cause of jigger infestation due to poor housing and environment, Social workers should endeavor to link the people with the government to provide them with resources that they need to improve their lives. Flattening the poverty curse should be a starting point in working to end this menace. (FGDs with Children Social Worker, 2022)
Provision of Mobile clinics	One sure way to fight jigger infestation by social workers is through the provision of mobile clinics. This is a collective responsibility where they need to join hands with the medical practitioner and the leaders to ensure that people show up for treatment. (Medical Social Worker, 2022)

From the above FGDs with social workers, the Promotion of body hygiene, creation of public awareness and collaboration with NGOs to offer support was reported by Community Social workers as the intervention strategies to curbing the jigger peril. Generalist Social workers noted that in order to restrain jiggers, all stakeholders such as the government, human service providing agencies, local leaders, community health volunteers, parents and children should come on board and look for a solution collectively. They also suggested that social workers need to provide psycho-social support to the families and children affected by jiggers to relieve them of the stigma and profiling they get from their colleagues. The medical Social workers noted that seeking professional treatment and distribution of detergents to the affected families is key to managing jigger infestation. Lastly, the children reported that Social workers have a role to play in the linking of the affected families to the government in their capacities as advocates, so that the government can empower them economically.

### Discussion of findings

Because of its emphasis on releasing social power to bring about changes in society, social institutions, and social policy that in turn open up opportunities for individuals, social work is a crucial profession that helps people realize their potential and contribute to the greater good of society. With a simultaneous focus on people and their influencing social and physical contexts, this perspective conceptualizes the function of social workers in disease prevention and control. According to Werner and Carmel (2001), social

workers are crucial members of healthcare teams because they deal with the psychological, behavioral, and social issues that may affect patients. Additionally, they encourage patients' adaptation to disease and incapacity (Christ and Diwan, 2008) <sup>[38]</sup>. The prevention of jigger infestations by social workers involves both immediate and long-term strategies. The immediate prevention and treatment measures include: psychosocial support, provision of shoes both closed and open to the children in jigger-prone zones and those infested with jiggers respectively, removal of the jiggers locally by the use of thorns or surgical removal at the hospitals, treatment of the infested skin using animal urine, ash, 'magadi' or kerosene and observing general body cleanliness. The long-term measures include: working closely with the government to address resource allocation discriminations and disparities to lower poverty levels, cleaning or disinfecting the breeding grounds for the jiggers, and creating public awareness through the use of community barazas and local media platforms.

In order to assess social functioning challenges and the causes of jigger infestation, social work practitioners first interact with the affected children and the community. This involves processing information in ways that improve the participants' capacity to find solutions, acquire life-problem-solving skills, and build support for change.

The second is that social workers help affected families find resources and services, which is an essential tactic in any change initiative. Social workers do more than just link people to services; they also promote the best outcomes, create networks of communication among the organizations

involved in the delivery of social services, and open doors to resources. When resources are lacking, professionals create new possibilities, programs, and services.

The third is that the NASW mandates that practitioners seek to create a compassionate and effective system for delivering social services. To do this, social workers promote client-centeredness, coordination, efficacy, and efficiency in the provision of services. This promotes the planning of applicable programs. They play a crucial role in ensuring the implementation of professional standards, ethics, and values in service delivery and strengthening lines of accountability.

The fourth is that social workers are involved in the creation of social policies. In the field of social policy, experts examine social issues for their potential impact on policy, create new policies, and retire ineffective ones. They also transform laws, rules, and regulations into adaptable programs and services that cater to both individual and group requirements.

Finally, social workers conduct research to expand their body of knowledge and expertise. The use of research-based theory and methodologies by practitioners, as well as their own research and evaluation efforts, are essential to the practice of effective and ethical social work.

The social worker's function typically include assisting family members and unpaid caregivers in carrying out the roles in caring that they choose while also assisting them in avoiding becoming overburdened (Reith and Payne, 2009, p. 122) <sup>[39]</sup>.

Environmentalists, educators, and social workers conducted this study to pinpoint the root reasons of the jigger infestation and suggest preventative measures.

### **What is known about this topic**

Jigger infestation is a major problem in Kisii County. Jiggers are associated with witchcraft in Kisii County.

### **What this study adds**

Jigger infestation is mostly caused by extreme poverty among families in Boikang'a Ward.

Sharing accommodation with domestic animals such as goats, sheep and calves leads to jigger infestation.

Social workers are instrumental in the Preventive, curative and restorative functions to jigger infestation in Boikang'a Ward.

### **Conclusion**

In conclusion, the role of social workers in the prevention of jigger infestation is crucial and multifaceted. As this study has demonstrated, environmentalists, educationalists and social workers play a critical role in early diagnosis, environmental modification, and the creation of public awareness about jigger infestation. In addition to prevention efforts, environmentalists and social workers are also involved in curative and restorative functions, such as surgical removal of jiggers and distribution of open and closed shoes to affected children and those in jigger-prone areas, as well as distribution of detergents to promote better hygiene.

It is important to recognize that human behavior is intimately connected to the social and physical environment, and addressing jigger infestation requires a holistic approach that considers both individual and environmental factors. Social workers and environmentalists can help to create the

necessary changes in the environment and modify interactions between individuals and their environment to prevent and reduce the spread of jiggers.

Ultimately, the success of efforts to prevent jigger infestation depends on the collaboration of all stakeholders, including the government, NGOs, environmentalists, healthcare providers, and the community. By working together, we can create a sustainable approach to combating jigger infestation and promote the health and well-being of children in affected areas.

### **Recommendation**

The findings of the study call for urgent action to address the issue of jigger infestation among children in Kisii County, particularly in Boikang'a Ward. Based on these findings, the study makes several recommendations aimed at reducing the prevalence of jigger infestation.

Firstly, the study recommends that the Ministry of Health in the County Government of Kisii, together with the Member of Parliament of South Mugirango and the Resident Member of the County Assembly of Boikang'a ward, should prioritize the purchase of both closed and open shoes for children. This would significantly reduce their risk of infestation and promote better foot hygiene.

Secondly, social workers should collaborate with all stakeholders to ensure that effective measures are taken to reduce the prevalence of jigger infestation in Boikang'a Ward. This includes providing adequate training to parents and pupils in all the schools on cleanliness and hygiene.

Thirdly, the government needs to take urgent action to flatten the poverty curve in this region. Poverty is a major contributing factor to the spread of jiggers, and addressing poverty would go a long way in helping people to fight this menace.

Lastly, access to healthcare services should be made a top priority by the County Government of Kisii. This includes the provision of adequate health facilities, equipment, and personnel to ensure that all members of the community have access to quality healthcare services.

In conclusion, implementing these recommendations would go a long way in addressing the issue of jigger infestation in Kisii County, particularly in Boikang'a Ward. By working together, all stakeholders can make a significant impact in improving the health and well-being of children in the community.

### **Declaration of Conflict of Interest**

The authors declare no conflict of interest.

### **Authors' Information**

Fredrick Kayusi Ondabu is a pragmatic environmental geoscientist who forecasts risks such as slope instability, floods, and earthquakes. He helps miners in planning the extraction of minerals from the earth's crust and slope stabilization. Currently, he is a passionate and highly experienced Geography and Mathematics tutor with over 8 years of experience at TSC-Kenya with a deep like for open-mindedness in learning especially the inquiry mindset. As a professional and enthusiastic researcher, he is generally interested in all areas of earth sciences, Humanities and Social justice. He handles geoscientific issues and focuses on human interactions with land. His unique tutorial pedagogy is premised on minimizing their impact on the environment, and landfill locations, planning quarry waste



disposal, creating soil and water monitoring plans, environmental protection, problem-based inquiry and solving approaches where learners come up with research ideas of their interest, go out in the field to collect data, analyze and make power point presentations of their results. He is an active and collaborative Inter-university Research Fellow in Humanities, Social Justice and Social Sciences.

Orucho Justine Amadi is a highly experienced Pediatric Social worker and researcher with over 10 years of experience in the field. His research interests include child sexual abuse, gender-based violence, and the prevention of obstetric fistula. He is quite passionate about his job. He has over the years organized numerous community outreach programs to assist at-risk children and women in prisons, making substantial contributions to community work. He is currently employed by Maasai Mara University as a Social Work Lecturer, where he imparts his extensive expertise and experience to his pupils. As a lecturer, he is known for his engaging and insightful teaching style, which challenges his students to think critically and deeply about the issues facing vulnerable populations. He is dedicated to instilling in his students a sense of social responsibility and a commitment to social justice and making a positive impact on society. Beyond his teaching responsibilities, he continues to be actively involved in research, publishing numerous papers on his research interests. He is committed to using his research to inform policy and practice, and to help address some of the most pressing social issues of our time.

Bismark K. Agura is a Successful curricula specialist and coordinator, he closely works with large groups to instruct, direct, and coach teachers and administrators. In addition, he is familiar with the current educational curricula guidelines, policies and regulations. He has strong interpersonal and communication skills which he applies to develop and the improvement of educational curricula and evaluation of the performance of curriculum and instruction in educational systems and programs. He advises educators on their pedagogical practices. He focuses on different ways to work with teachers and administrators to evaluate the current curricula and assess the quality of instruction to improve learning opportunities for students and educators. As a researcher, he conducts research and makes recommendations for educational curricula to the administration. He wants to strengthen and upgrade the educational systems and programs.

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