

**PREVALENCE OF SCABIES AMONG CHILDREN IN  
CHARITABLE CHILDREN'S INSTITUTIONS IN NAIROBI  
COUNTY.**

**BY**

**ABDIKADIR HUSSEIN MOHAMED**

*H58/10893/2018*

**A RESEARCH PROJECT SUBMITTED TO THE SCHOOL OF MEDICINE .**

**UNIVERSITY OF NAIROBI, IN PARTIAL FULFILLMENT OF THE  
REQUIREMENT FOR THE DEGREE OF MASTERS MEDICINE (PEDIATRICS  
AND CHILD HEALTH)**

**NOVEMBER 2021.**

## DECLARATION

This dissertation is my original work and has not been presented for the award of a degree in any other university.



Signed

Date..7/11/2021.....

Dr. Abdikadir Hussein Mohamed (M.B.Ch.B.)

Department of Paediatrics and Child Health, University of Nairobi

**This dissertation was presented with the full approval of my supervisors:**

Dr. Bashir Admani

Consultant Paediatrician, Nephrologist and lecturer

Department of Paediatrics and Child Health, University of Nairobi

Signed 

Date.8/11/2021.....

Dr. Florence Murila

Consultant Paediatrician, neonatologist and lecturer

Department of Paediatrics and Child Health, University of Nairobi

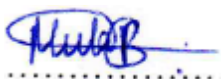


Signe

Date...5/11/21.....

Dr. Beatrice Mutai

Consultant Paediatrician and lecturer, Department of Paediatrics and Child Health, UON



Sign

Date...9/11/2021.....

## **ACKNOWLEDGEMENTS**

I am grateful to the Almighty Allah who gave me the strength and will power to see it through till its fruition.

To my dear wife who endured my struggle and encouraged me to fail forward rather than procrastinate, I am forever indebted to you.

I also thank my supervisors, Dr Bashir Admani, Dr Florence Murila and Dr Beatrice Mutai, for their tireless support and guidance through the journey.

I also appreciate all those children in the orphanages and their care takers who supported me in conducting this research.

## **ABBREVIATIONS**

CCI- Charitable Children's Institution

IACS -International Alliance for the Control of Scabies

NACOTSI -national commission for science technology and innovation

NCCS- National Council of Children Services

OVCs-Orphans and vulnerable children

WHO-World Health Organisation

UON-University of Nairobi

MOH-Ministry of Health

DALY-disability adjusted life year

GBD-Global Burden of Disease.

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## **OPERATIONAL DEFINITIONS**

**Charitable Children's Institution (CCI):** A home or an institution that has been established by a person, corporate or a religious organization and has been granted approval by the NCCS to care, protect and rehabilitate orphaned and vulnerable children(1).

**A CCI manager** is the person recognized by the sub-county children department as the in-charge or the person mandated with day to day activities of the CCI.



## **ABSTRACT**

**Introduction:** Human scabies is an ectoparasitic skin infection caused by the mite *Sarcoptes scabiei* var *hominis*. It is one of the most common skin infections in resource-poor countries. Scabies was responsible for 0.21% of DALYs from all diseases researched by GBD 2015 worldwide with 37.5% of those affected being the pediatric population. It is estimated that there are 2.6 million orphaned and vulnerable children (OVCs) in Kenya today (5), most of whom live in children's homes.

This proposal aimed to determine the prevalence of scabies among children and the knowledge about scabies of the managers in Charitable Children's institutions. The data obtained from this study can be used to plan appropriate intervention measures.

**Objective:** This study's objectives were to determine the prevalence of scabies among children in CCIs in Nairobi County and to evaluate the knowledge level of CCI managers about scabies.

**Methodology:** This was a cross-sectional study. It was quantitative survey of the prevalence of scabies among children aged between 6 months and 18 years in 10 selected CCIs from 2 sub-counties in Nairobi County. We also assessed the knowledge of all the 10 managers from the selected CCIs on scabies.

**Data analysis:** Data was entered into MS Excel and transferred into SPSS version 26. Descriptive summary statistics were analyzed and presented as means or medians for continuous variables and frequencies for categorical variables. The proportion of children with scabies in the CCIs was determined and presented as a percentage with the corresponding 95% confidence interval. Univariate and multivariate analysis for factors associated with scabies were analysed. The Knowledge of CCI managers was analyzed as frequencies and presented as tables.

**Results:** The prevalence of scabies in this study was 6.4% ( 95% CI, 4.1-9.9) with cases reported in 7 out the 10 CCIs studied. Majority of cases were reported among males (66.7%)

and in the age group 6-12 years at 72 %. Ninety percent of the CCI managers had good knowledge about scabies while 1(10.0%) had fair knowledge. The study revealed a significant association between scabies and sleeping with a child with an itchy skin (AOR ,95% CI , 8.1, 2.5 – 26.5, p=0.001)

**Conclusion:** The prevalence of scabies among children in the selected CCIs within Nairobi County was low. CCI managers had good knowledge on the prevention and management of scabies. There was a significant association between scabies and sleeping with a child with an itchy skin.

# **CHAPTER 1: INTRODUCTION**

## **1.1 Background**

Scabies is an intensely pruritic skin infestation caused by the host-specific mite *Sarcoptes scabiei* var *hominis*. It is mainly spread through skin to skin contact with infected persons (2). It is a global public health problem with approximately 300 million cases reported annually(3). Higher prevalence is reported among children and teenagers with epidemics frequently occurring in orphanages due to close contact and overcrowding within these institutions(4). Risk factors for this condition are inadequate water supply, poverty, overcrowding, close contact with affected persons, sharing of beds and clothes, and poor hygiene(4).

## **1.2 Scabies: Signs and Symptoms**

The physical examination findings can be divided into primary and secondary dermatological lesions (5). Primary lesions include general excoriations, erythematous papules, vesicles and burrow lines in the superficial epidermis, which are pathognomonic for scabies infection (5). Burrows lines appear as thin (typically the width of a human hair), short (2-3 mm), gray/brown wavy channels on the skin, which may be visible to the naked eye as a small white dot. Burrow lines are best detected in the web spaces of the fingers and feet, typically discovered once significant skin reactivity has already taken place(5). Primary scabies infections typically cause intense, persistent pruritus, especially at night or after a shower or bath. This cycle typically causes sleep disturbance and discomfort and can lead to secondary disease sequelae in situations of long-term infection, as seen in impoverished populations where the scabies mite is highly endemic(6). Secondary complications of scabies may include skin infections like impetigo, furunculosis, cellulitis and skin abscesses. Scabies can also cause rheumatic heart disease and sepsis(6,7). People with longstanding disease usually suffer from social stigmatization(8,9).

### **1.3 Diagnosing scabies**

The diagnosis of scabies is based on patient history, physical examination, and/or demonstration of mites, eggs on microscopic examination.(10). The diagnosis of scabies can often be made clinically in patients with a history of pruritic rash and characteristic linear burrows. Most of the community-based research studies conducted on scabies in developing countries have relied on clinical diagnosis(2). A systematic review of the diagnosis of scabies by Thomson et al concluded that more than 70% of the studies used clinical diagnosis for scabies(11).

The International Alliance for the Control of Scabies (IACS) established a consensus criteria for scabies diagnosis in 2018 that relies mainly on clinical diagnosis. This criteria is recommended for use in scabies research, mapping projects and surveillance after control interventions(12).

### **1.4 Scabies management**

Management of scabies typically involves both medical intervention and health behavior changes that include treating all primary and secondary infections in the patient, as well as household members and close personal contacts. All bedding and clothing should be washed in hot water and machine dried , washed with bleach or be isolated from all human contacts for at least 3 days (6, 12,16 and18).Scabies infections have historically been treated with topical lotions and creams, including benzyl benzoate, lindane, crotamiton, ivermectin, permethrin, and sulfur (16). Ivermectin is now regarded as the first-line choice when considering scabies control in endemic areas(17).

Scabies is a major health problem in CCIs given its burden and complications. The infection often spreads quite rapidly, owing to the close contact of children and overcrowding within the institutions (18). However, there is a crucial lack of data regarding the burden of human scabies in orphanages in sub-Saharan countries including Kenya. To address this gap, this study aims to determine the prevalence of scabies within CCIs in Nairobi and the knowledge of CCI managers about scabies.

## **CHAPTER 2: LITERATURE REVIEW**

### **2.1 Prevalence of scabies**

Exhaustive and complete data is not available from many countries, but available data suggest that scabies is endemic in tropical regions, with an average prevalence of 5–10% in children. According to the WHO, data from 18 prevalence studies conducted between 1971 and 2001 reported a scabies prevalence ranging between 0.2% and 24%(19). Epidemics frequently occur in orphanages, nursing homes, hospitals, long-term care facilities, and other institutions throughout the world (9). There is a high prevalence of scabies in the orphanages owing to close contact between children and overcrowding within these institutions.

A study on scabies prevalence in a child welfare home in Pulau Pinang (Malaysia) showed that the prevalence was high among children at 31%. Children aged 10-12 years reported the highest prevalence at 46% followed by the 7-9 years age group at 44% and lastly the 4-6 years age group at 24%. More males were affected and crowded living conditions, intimate personal contact, sharing of clothes and lack of personal hygiene were identified as factors that predisposed these children to scabies(20).

Scabies outbreaks have also emerged in orphanages in Chiang Mai, Thailand. The prevalence was reported at 87.3% among children aged 2-13 years. Sulfur was subsequently administered in a mass treatment in two orphanages to cases of scabies and their contacts. The prevalence of scabies dropped to <10% within 2 months post-treatment. Sulfur has subsequently been accepted as the standard treatment for childhood scabies in Thailand(21).

In an Islamic school in Bangladesh, Talukder et al. observed a prevalence of 61–62 % (22). They then conducted a randomized controlled trial involving four intervention madrasahs (total students 2359) and four control madrasahs (total students 2465) in Dhaka Metropolitan area. A baseline scabies sample survey was carried out on between 40 to 44 students for each of the four intervention and the four control madrasahs. This was followed by mass treatment of all students, teachers, and staff with topical 5% permethrin cream in the intervention schools. Four months after mass scabies treatment, the prevalence of scabies reduced to 5% in the intervention schools compared to a prevalence of 50% in the control madrasah (23).

In another study in Kuching (Sarawak, Malaysia), Yap et al. found 8.1 % of cases of human scabies (22). 944 students from 2 out of 9 randomly selected boarding schools participated in the study. Of these, 488 (51.7%) were males and 456 (48.3%) were females. The median age was 16 years, ranging from 13 to 17. Male gender and overcrowding were the risk factors associated with scabies.

In Africa, studies conducted in schools revealed a prevalence of scabies infestation of 4.4, 10.5, 4 and 0.7 % in Egypt, Nigeria, Mali, and Malawi respectively (4,24–27). In a study done on children and adolescents living in boarding schools in Cameroon in 2015, a total of 1,902 students were recruited and 17.8 % were diagnosed with scabies. The male sex, number of students per dormitory  $\geq 10$ , lack of access to the school infirmary and pruritus were the independent factors with a significant association with the occurrence of scabies (28).

Maurice, M. in 2015 conducted a cross-sectional study on the prevalence of scabies among children under five years in Jua Kali slum, Nairobi, Kenya. The researcher visited a 200-sample household selected using a systematic random sampling technique. The clinical diagnosis was based on the completion of a questionnaire by caregivers accompanied by clinical examination of all children living within the household. A total of 288 children were sampled. The prevalence of scabies among these children was 24.31 % with similar infection rates reported

across gender. The Infection rate increased with the age of the child and the low socio-economic status of their household(29).

*Table 1: Prevalence studies of scabies in developing countries (2,29)*

<b>Author,Setting,Year</b>	<b>Study population, the sample size</b>	<b>Study design</b>	<b>Prevalence of Scabies</b>
<b>Muhammad Zayid et al, children welfare home in Malaysia, 2010</b>	<b>Children ages - 4-18 years n = 160</b>	<b>Cross-sectional study</b>	<b>31% had scabies</b>
<b>Talukder et al, Religious school, Bangladesh, 2013</b>	<b>Children ages - 3-15 years n = 4824</b>	<b>Randomized Controlled trial study. Intervention arm received scabicide, sulfur and the control arm did not.</b>	<b>61–62% prevalence at baseline. 4 months of the post- intervention prevalence Intervention arm-5% Control arm-50 %</b>
<b>Pruksachatkunakorn et al, orphanages, Thailand, 2003</b>	<b>Children ages - 1-20 years. n = 117 children</b>	<b>Prospective cohort study over 1 year</b>	<b>Pre-intervention prevalence -87.3%. 2 months post-intervention prevalence &lt;10%</b>
<b>Hegab et al, Rural and urban schools Egypt,2015</b>	<b>Children ages - 8-15 years n = 2104</b>	<b>Cross-sectional study</b>	<b>4.4% had scabies</b>
<b>Kouotou et al, Primary and secondary boarding schools Cameroon,2016</b>	<b>students ages 9 to 22 years. n = 1902</b>	<b>Cross-sectional study</b>	<b>Prevalence of scabies was 17.8%</b>

<b>Maurice M, Jua kali slum households Kenya, 2015</b>	<b>Children aged under 5 years n = 288</b>	<b>Cross-sectional study</b>	<b>24.31% had scabies.</b>
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Studies have associated several epidemiological factors with the distribution of scabies infestation in populations, including age, gender, overcrowding, poverty, and season. Scabies is most commonly observed in the very young (1-8 years), followed by older children and young adults. In situations where scabies is endemic, this age factor most likely reflects low immunity as well as increased exposure(18). Poverty and overcrowding, however, are often concomitant, and overcrowding is believed to have a significant effect on the spread of scabies and reflects the fundamental role of physical contact in person-to-person transmission. Poverty also leads to other associated problems, such as poor nutritional status, which may, in turn, contribute to the low immune status of individuals and high levels of disease within the community. Malnutrition may also predispose individuals to crusted scabies(18). The results of a 14-year nationwide population-based study in Taiwan showed that the incidence of scabies was negatively correlated with average environmental temperature and positively correlated with high relative humidity and cold temperatures(30).

## **2.2 Knowledge of scabies**

A study by Singg S. that sampled 196 college students in the United States used a 10-item Fear of Scabies Scale (FSS-10) and a Scabies Information Sheet (SIS) for educational purposes on scabies. The study reported that only 38% had good knowledge about scabies, perhaps due to the neglected status of the disease. It was suggested that the SIS(scabies information sheet) would be a useful educational tool about knowledge, management, and prevention of scabies in institutions and resource-poor communities worldwide. The FSS-10 was found to be a valuable tool in assessing the emotional reaction to contracting scabies. This study also



recommended that the scabies control program should include educational and psychosocial support components(31).

A cross-sectional study evaluating the knowledge, attitude, and practice of scabies management among medical students in the Kingdom of Saudi Arabia (KSA), was conducted between May to August 2018. The study included 445 medical Saudi students from both genders. A self-administrated questionnaire was distributed among all the participants. This study showed a satisfactory level of knowledge (85.8%), positive attitude (98%) and correct practice (99%) among medical students in KSA regarding scabies, clinical characteristics and its preventive measures(32).

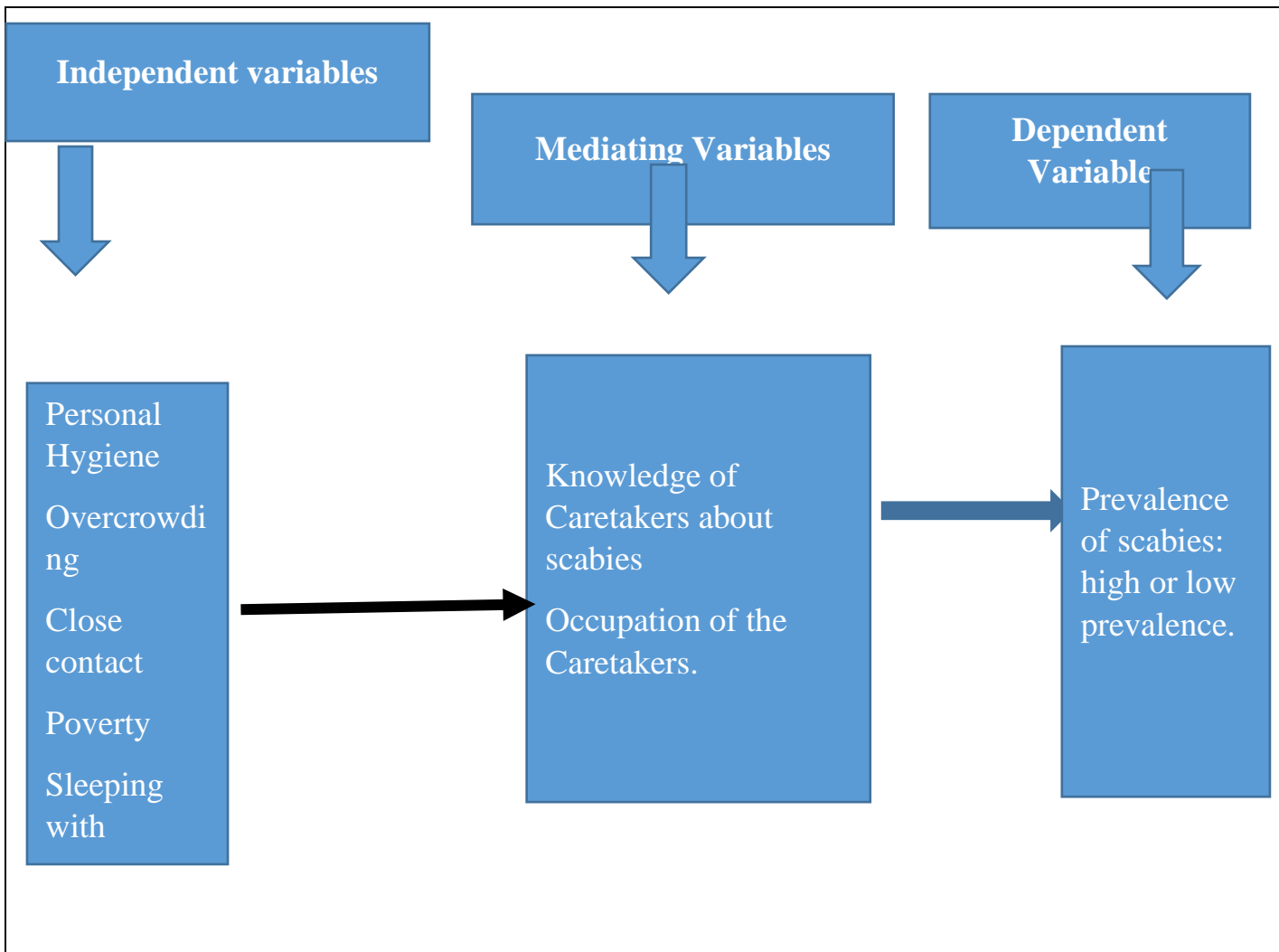
A study that was done in Guinea–Bissau on perceptions, attitudes, and practices towards scabies in communities on the Bijagós Islands, concluded the following: There was a satisfactory awareness about scabies at 96%, but perceptions about the disease, causation, and transmission were imprecise. Amongst the respondents, 96% (n=72/75) reported having heard of scabies infestation but only 42.7% (n=32.75) recognized lesions of scabies when photos with typical skin lesions were shown. Sixty-eight (90.7%) of the questionnaire respondents recognized scabies as an important health problem. Whilst most community members (93.3%, n=70) undertaking the questionnaire reported that they would seek care through the local health center. The same community members reported other treatment-seeking patterns including the fact that they would, in addition, seek care from a traditional healer. Although participants recognized the importance of early treatment to interrupt transmission the treatment of close contacts was not considered to be important(33).

A study in Ethiopia by Ejigu et al in 2019 found that knowledge about scabies was a very important factor in controlling the spread of scabies. This was a case-control study that emphasized on the factors associated with scabies outbreaks in primary schools in Ethiopia. A total of 711 (237 cases and 474 controls) study participants were recruited in the study. The

mean age of study participants was  $17.56 \pm 2.66$  years. Poor knowledge about scabies, male sex and parental illiteracy predicted occurrence of scabies infestation. In addition, socioeconomic variables like sharing of clothes/beds or contact with infected persons, low household annual income and family size greater than five were significantly associated with scabies infestation(34).

### **2.3 Conceptual Framework**

The figure below represents the factors that affect the prevalence of scabies in Children's charitable Institutions. It explains the association between the outcome (dependent) variable; the prevalence of scabies, and the independent variables ; poor personal hygiene, overcrowding, close personal contact, poverty, sharing of clothing and bed linen, and malnutrition on one hand and good knowledge of CCI managers, good hygiene, balanced diet and enough living space on the other hand.



*Figure 1. Conceptual Framework.*

## **CHAPTER 3:JUSTIFICATION AND RESEARCH QUESTION**

### **3.1 JUSTIFICATION**

Scabies remains one of the most frequent skin diseases in resource-poor countries and it causes intense itch, poor sleep, lack of mental focus and low self-esteem. It was added to the WHO list of Neglected Tropical Diseases portfolio in 2017 and further understanding of the burden of scabies is needed. The dire effects of the disease are estimated at 0.21% of DALY (Disability-adjusted life years) but the wider impact of the complications such as kidney disease, skin, and autoimmune infections are far greater.

Whilst high prevalence has been reported in some populations there has been a paucity of data from other populations such as orphanages. It is estimated that there are 2.6 million orphaned and vulnerable children (OVCs) in Kenya today, most of whom live in children's homes. Despite the numerous opportunities in population-based surveys for other diseases, almost none focused on the burden of scabies. There is, therefore, a knowledge gap about the local burden of scabies in these children, and the unique health needs of these children have not been captured within the Kenyan health sector strategic plan(1).

The study will be conducted in Nairobi County, which is home to approximately 500 CCIs, a cosmopolitan city that represents populations from all regions of the country and the study shall seek to identify the burden of scabies within selected CCIs. The data generated will help guide the MOH and Child Welfare society to plan better on creating awareness and preventive measures. The improved care of these children will prevent complications associated with scabies such as sleep loss, poor academic performance, post-streptococcal glomerulonephritis, and stigmatization.

## **3.2 RESEARCH QUESTION AND OBJECTIVES**

### **3.21 Research Question**

What is the prevalence of scabies within Children's Charitable Institutions in Nairobi County and what is the knowledge level of CCI managers of this condition?

### **3.22 Primary Objective**

To determine the prevalence of scabies among children aged between 6 months-18 years in Children's Charitable Institutions in Nairobi County.

### **3.23 Secondary Objective**

1. To determine the knowledge level of CCI managers of scabies.

## **CHAPTER 4: METHODOLOGY**

### **4.1 Study design**

This was quantitative, cross-sectional study. The study was to determine the prevalence of scabies in CCIs and the knowledge of CCI managers of scabies.

### **4.2 Study site**

The study was conducted within 10 randomly selected CCIs from Langata and Dagoretti subcounties in Nairobi County(1). Nairobi County is the capital city of Kenya with an estimated population of 4.4 million in an area of 696 Km<sup>2</sup> and was founded in 1899. There are 17 sub-counties currently in Nairobi County with 9 administrative child service offices representing the 17 sub-counties. There are a total of 500 CCIs within Nairobi County that are either government sponsored, privately owned, community based organisations or faith based organizations (FBOs).

### **4.3 Study period**

The study was carried out in January and February 2021.

### **4.4 Study population**

The study population consisted of:

1. Children between the ages of 6 months and 18 years living in CCIs within Nairobi County.
2. CCI managers.

### **4.5 Inclusion criteria**

- a) children

1. Children living in the CCIs within Nairobi County aged between 6 months and 18 years.
2. The children must have stayed in the CCI for at least 3 months.

**b) CCI managers**

1. The managers of the selected CCIs.

**4.6 Exclusion criteria**

**a) Children**

1. Children who declined assent for participation of the study.

**b) CCI managers**

1. CCI managers that declined consent for participation.

**4.7 Sample size calculation**

Using Fischer's formula as shown below, a total of 280 children were enrolled into the study.

**The sample size for the number of children to be included in the study:**

$$n = \frac{Z_{\alpha/2}^2 \cdot p(1-p)}{d^2} \text{ (Fisher's et al., 1998)}$$

Z= Standard normal deviate at 95% confidence interval (1.96)

p= Estimated prevalence of scabies within our study population (24% estimated prevalence of scabies in CCI based on the study by Maurice M done in Kenya which is the closest prevalence rate we could find)

d=desired margin of error = 0.05.

$$n = \frac{1.96^2 \cdot 0.24(1-0.24)}{(0.05)^2}$$

$$n = 280$$

Sample size was 280 children

- All the 10 CCI managers of the selected CCIs were included to participate in the study.

#### **4.8 Sampling method**

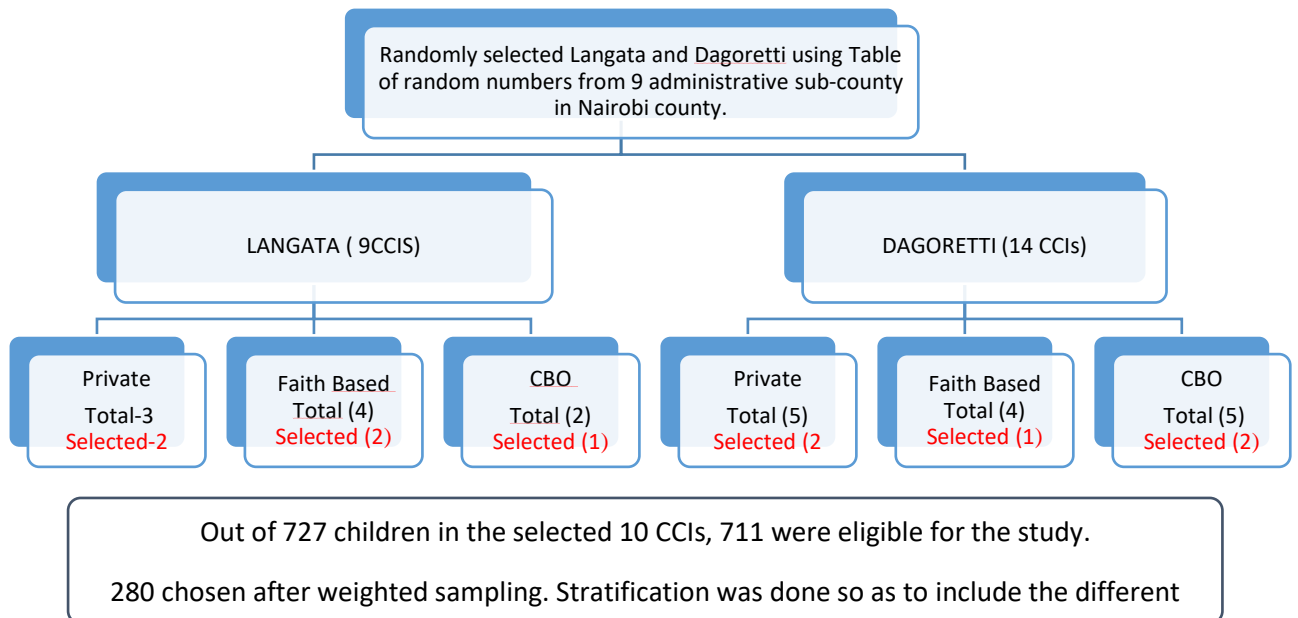
Through a pilot survey, it was established that there are on average 80 children in each CCI.

Multistage sampling technique was used in selecting children from various CCIs.

1. Two sub-counties (Langata and Dagoretti) were randomly selected using tables of random numbers from the 9 administrative sub-county units in Nairobi County.
2. 5 CCI were sampled from each selected sub-county. The type of CCI was considered during selection so that all were representative. Langata had 9 CCIs out of which 4 were faith based (2 selected), 3 were private (2 selected) and 2 were community based(1 selected). Dagoretti had 14 CCIs out which 5 were community based (2 selected), 5 were private ( 2 selected) and 4 were faith based ( 1 selected)
3. Weighted sample sizes based on the number of children living in the different CCIs was then calculated to determine the number of children to be recruited from each CCI to ensure that the sample sizes were representative. Stratification was done to ensure that all the groups were captured. The age group categories included children under 5 years and those aged 6-12 years and 12-18 years.



4. We subsequently obtained informed consent from the CCI managers. Assent was also sought from children older than 9 years once they were selected to participate in the study. The flow chart below summarizes the sampling technique:



**Figure 2: The flow chart summarizes the sampling technique**

All the 10 managers of the selected CCIs who were approached to participate in the study accepted to be assessed for their level of knowledge of scabies. They were issued with a questionnaire that assessed their knowledge on various aspects of scabies.

#### 4.9: Case Definition of scabies: Adapted Summary of IACS criteria

The 2018 IACS Criteria for the Diagnosis of Scabies is recommended for use in scabies research, mapping projects and surveillance after control interventions(12). It uses clinical criteria for the diagnosis of scabies. A recent study that used IACS clinical criteria is a community-based study done in the Solomon Island in 2018 that reported a scabies prevalence rate of 19.2%(95% confidence interval [CI] 17.5– 21.0)(35). ( Table 2)

*Table 2: Case definition of scabies; Adapted from IACS criteria*

<b>Level</b>	<b>Criteria</b>
Clinical scabies	At least one of the following: <ul style="list-style-type: none"> <li>• Scabies burrows</li> <li>• Typical lesions affecting male genitalia</li> <li>• Typical lesions in a typical distribution and two history features</li> </ul>
History features	<ul style="list-style-type: none"> <li>• Itching</li> <li>• Close contact with an individual who has itching or typical lesions in a typical distribution.</li> </ul>

**Typical lesions** include skin burrows, erythematous papules, and vesicles commonly seen in typical distribution in line with scabies. **Atypical lesions** are bullous, crusted, nodular and scalp type.

**Typical locations** include webbed spaces of fingers, axilla, elbows, flexor surfaces of the wrists, scrotum, and areola while **atypical locations** are any other locations

#### **4.10 Study procedure**

Consent was sought from the CCI managers and then assent from children who are older than 9 years. Only children who met the eligibility criteria were recruited into the study. All children were asked questions in person. Caretakers helped in case a child could not answer questions, either due to their young age or their health condition. Then all children were examined by the principal investigator in a private room.

All the CCI managers were issued with a questionnaire that assessed their knowledge about scabies. The questionnaire included questions on etiology of scabies, clinical presentation, diagnosis, management, prevention and complications of scabies.

#### **4.11 Data collection**

Questionnaires were adapted from previous studies (33). The questionnaires were prepared in English and translated into Kiswahili. The facility demographics such as name, code, Sub County, age group of children, staffing levels were captured in the first part of the data collection tool.

The CCI managers were briefed about the purpose of the study and data was collected after a written informed consent was obtained from the managers.

The principal investigator coordinated and accompanied the research assistants to all the CCIs. The research assistant was a clinical officer who was trained for two days about the purpose of the study, research ethics including the rights of study participants and study procedures including the content of the questionnaire in detail.

Data quality was ensured through the careful design of the questionnaire. The case record forms were scrutinized for completeness before leaving the CCI. The findings were transferred to Microsoft excel. Data was checked for completeness and consistency at the end of each day.

#### **4.12 Data management and analysis**

Data was checked daily for completeness and coded for entry. Data was entered into Microsoft excel database and transferred to SPSS version 26. Descriptive summary statistics of baseline child and facility characteristics were analyzed and presented as means or medians for continuous variables and frequencies for categorical variables. The percentage of children with scabies in the CCIs was calculated and presented as a percentage with the corresponding 95% confidence interval. Graphical displays using tables, pie charts, histograms, and bar graphs was also presented based on the data type.

The difference in outcome (prevalence of scabies) by different age categories, sex, and sharing beds was assessed using univariate and multivariate analysis. Associations were tested using Chi-square and correspondent P values. A p-value of <0.05 was used to define statistically significant associations.

#### **4.13 Control of biases and errors**

The following measures were undertaken to reduce errors and bias.

1. The questionnaires were pre-tested for validity and reliability.
2. Stratification was done to ensure that all the age groups were captured.
3. In order to reduce variability in the description of the skin lesions, the principal investigator examined all the children while the research assistant asked the questions.

#### **4.14 Quality assurance procedures**

1. The research proposal was developed with input from my supervisors who have experience with research. I worked under the close supervision of my supervisors.
2. It was reviewed by the department of Pediatrics and Child Health and final approval to conduct the study had been received from the KNH-UoN ERC.
3. The principal investigator examined the children himself. This reduced variability in the description of the skin lesions.

4. The questionnaire tool was adapted from the 2018 International Alliance for the Control of Scabies (IACS) criteria for the diagnosis of scabies.
5. The questionnaires were piloted at a CCI that was not included in the actual study, to ensure clarity of the questionnaires.
6. The Principal Investigator scrutinized data on a daily basis and input data into the system.

#### **4.15 Ethical considerations**

1. Permission was sought from the KNH-UON Ethics Research Committee to carry out this study as part of the thesis dissertation. Copies of this protocol, the informed consent form as well as any modifications that arose were presented to this committee for written approval before commencing the study.
2. Permission was also sought from the national commission for science, technology, and innovation (NACOTSI), from the county health, county commissioner, the county children officer, the National Council of Children Services (NCCS) and the respective institution administration.
3. Consent was also obtained from the CCI managers of the selected CCIs using specially designed consent forms. The study objectives were fully explained to the CCI managers before obtaining consent verified by the signature of the CCI manager to participate in the study. Assent was also sought from children above 9 years of age.
4. All information was handled with uttermost confidentiality throughout the tenure of the study, held in trust by the principal investigator, research assistants, and the study institution. A password-protected computer with access to only the principal investigator and research assistant was used. The research assistant was trained in ethical research conduct and data confidentiality before the research was conducted. The participants were given study identification numbers and no information concerning the study participants was released to an unauthorized third party without the prior written approval of the study institution or the Ethics Research Committee. CCIs were given unique identifiers that were used during data collection in order to protect their identity. The active cases of scabies found were referred to county hospitals. Referral notes with diagnosis and management advice were issued.
5. To minimise stigmatisation and maintain confidentiality the participants were assessed alone.

#### **4.16 Dissemination of Study Findings**

1. The findings from the study will be presented to NCCS, and the children's department officers through a formal meeting where a copy of the same will be provided. Feedback was provided to the CCI managers to help them improve care within their CCIs.
2. To guide national policy on improving scabies prevention the results will be shared with MOH.
3. The study findings will be shared with KNH-UON ERC, University of Nairobi, Department of Pediatrics and Child Health faculty and students as part of the requirement of the MMed course.
4. Manuscripts and abstracts will be submitted for publication in peer review journals and presentations and discussion in local and international scientific conferences.

## CHAPTER 5: RESULTS

### 5.1 Facilities Demographics

Out of the 10 CCIs sampled, 3 were supported by faith based organizations, 3 were under community based organizations and 4 were privately owned. Half of the CCIs had less than 50 children, 3(30%) had between 50-99 children. Although all the CCIs reported that children bathed daily, there was sharing beds due to overcrowding. Only 5(50%) homes were washing clothes daily. In all the CCIs visited only 1(10%) had healthcare workers (4 nurses) working within the institution.(Table 3)

*Table 3: Characteristics of selected CCIs*

Characteristic	Category	Frequency, N=10	Percentage (%)
<b>Sponsor</b>	FBO	3	30
	CBO	3	30
	Private	4	40
<b>Number of children per CCI</b>	< 50	5	50
	50-99	3	30
	100-199	1	10
	200-249	1	10
<b>Living conditions</b>	Sharing of beds	10	100
	washing clothes Daily	5	50
	Use of bleach/warm water	6	60
	Washing clothes together	4	40
	Bathing daily	10	100
<b>Health services</b>	Nurse	1	10

### 5.2: Distribution of Children within Selected CCIs

There were a total of 727 children in the 10 facilities. Only 711 (males-418 and females-293) were aged between 6 months and 18 years. The CCI with the largest number of children had 216 children while the one with least number had 24. We enrolled a total of 280 children into our study using proportionate sampling technique (Table 4).

Table 4: Distribution of children per selected CCIs

CCI ID number	Total no of Children per CCI	Number of children aged 6months-18 years	Males Frequency (%)	Females Frequency (%)	Number & Proportion of the study per CCI n=280
001	24	24	0(0)	24(100)	10(41.7%)
002	28	28	15(53.6)	13(46.4)	11(39.3%)
003	44	44	26(59.1)	18(40.9)	17(38.6%)
004	57	48	33(68.8.9)	15(31.2)	25(52.1%)
005	48	47	22(46.8)	25(53.2)	19(40.4%)
006	216	216	152(70.4)	64(29.6)	85(39.3%)
007	42	36	3(8.3)	33(91.7)	16(44.4%)
008	98	98	52(53.1)	46(46.9)	38(38.8%)
009	120	120	85(70.8)	35(29.2)	40(33.3%)
010	50	50	30(60)	20(40)	19 (38%)
<b>TOTAL</b>	<b>727</b>	<b>711</b>	<b>418</b>	<b>293</b>	<b>280</b>

### 5.3: Demographic and clinical characteristics of children enrolled into the study

The mean age of the enrolled children was 10.2 years (SD 4.6). Under 5 year old participants were 17.6%, 48.2% were aged between 6-12 years and 33.9% were older than 12 years. Majority were males at 51.1%. Ten percent of the participants were HIV positive and 2.6 % had other underlying medical conditions. The children who reported that they slept with another with an itchy skin, shared clothes and shared a bed with another child were 8.6%, 33.3%, 27.1% respectively. (Table 5)

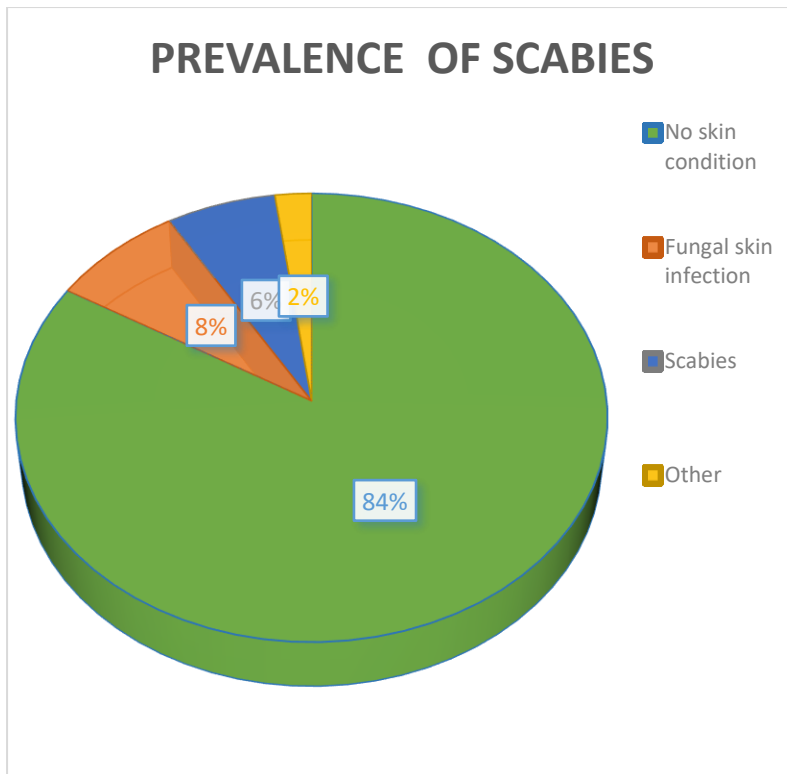


Table 5: Demographic & clinical characteristics of children enrolled into the study

<b>Characteristic</b>	<b>Category</b>	<b>Frequency N=280 Proportion (%)</b>
<b>Age (Years)</b>	≤ 5	50 (17.6)
	6-12	135 (48.2)
	>12	95 (33.9)
<b>Gender</b>	Male	143(51.1)
	Female	137(48.9)
<b>HIV status</b>	Positive	28(10)
	Negative	152(90)
<b>Underlying medical conditions</b>	Asthma	4(1.4)
	Epilepsy	1(0.4)
	Cerebral palsy	1(0.4)
	Malnutrition	1(0.4)
	No chronic illness	273(97.4)
<b>Sleeps with Child with itchy skin</b>	Yes	24(8.6)
	No	256(91.4)
<b>Share clothes</b>	Yes	95(33.9)
	No	185(66.1)
<b>Sleep alone</b>	Yes	204(72.9)
	NO	76(27.1)

#### 5.4: Prevalence of scabies

The prevalence of scabies was 6.4% (95% CI, 4.1-9.9%), 7.9% had fungal skin infections and 2.1% had other skin conditions.

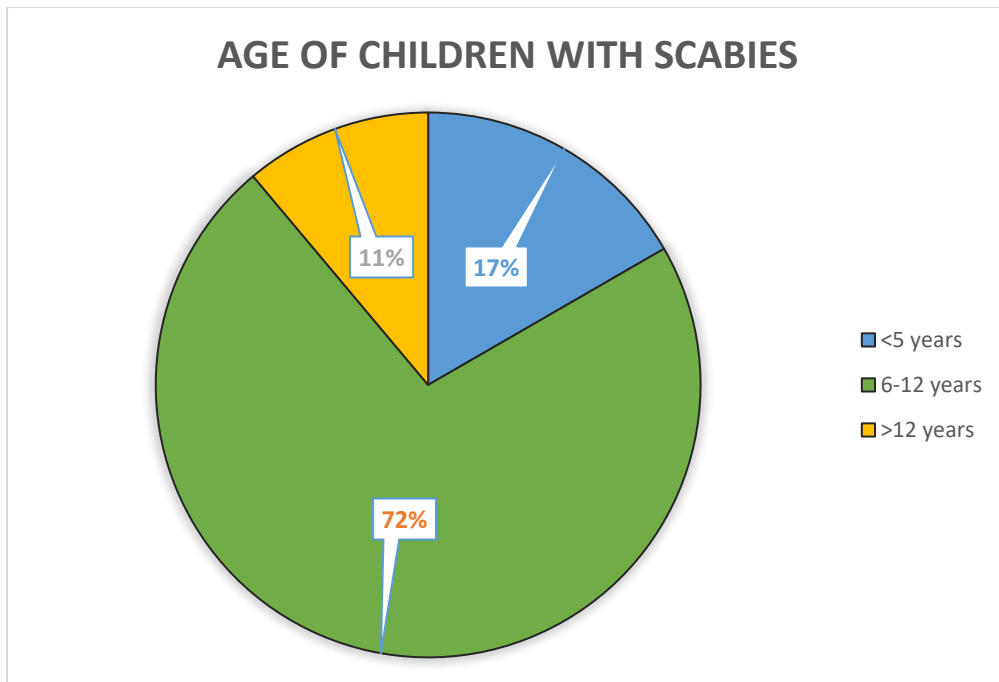


*Figure 3: Prevalence of scabies*

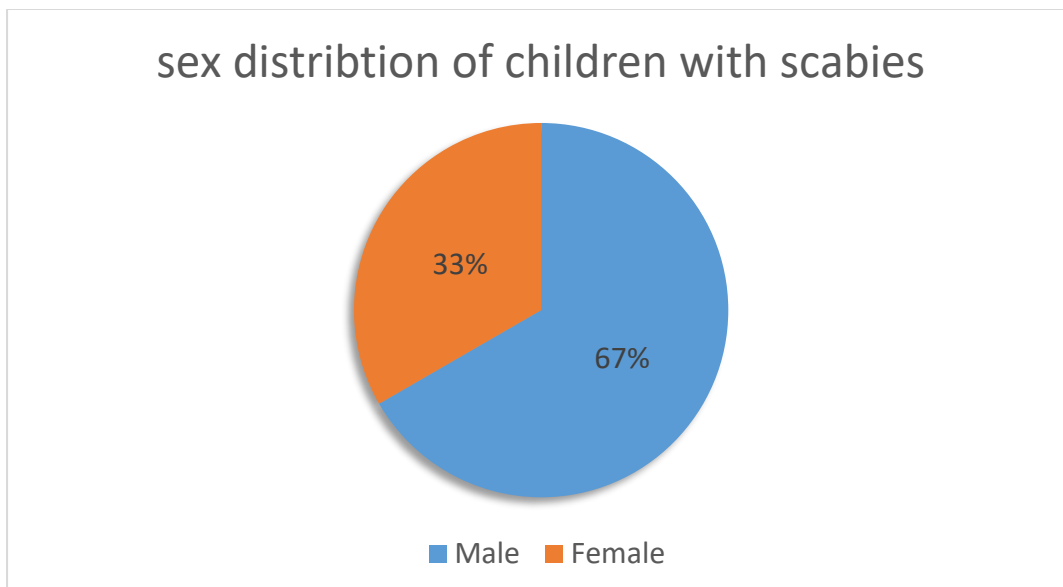
### **5.5: Distribution of scabies by age and sex**

Majority of the of the children with scabies were aged 6-12 years at 72% , while those aged below 5 years and those older than 12 years were 17% and 11% respectively.( Fig 4)

Male participants who had scabies were 67% whereas the females were 33%.( fig 5)



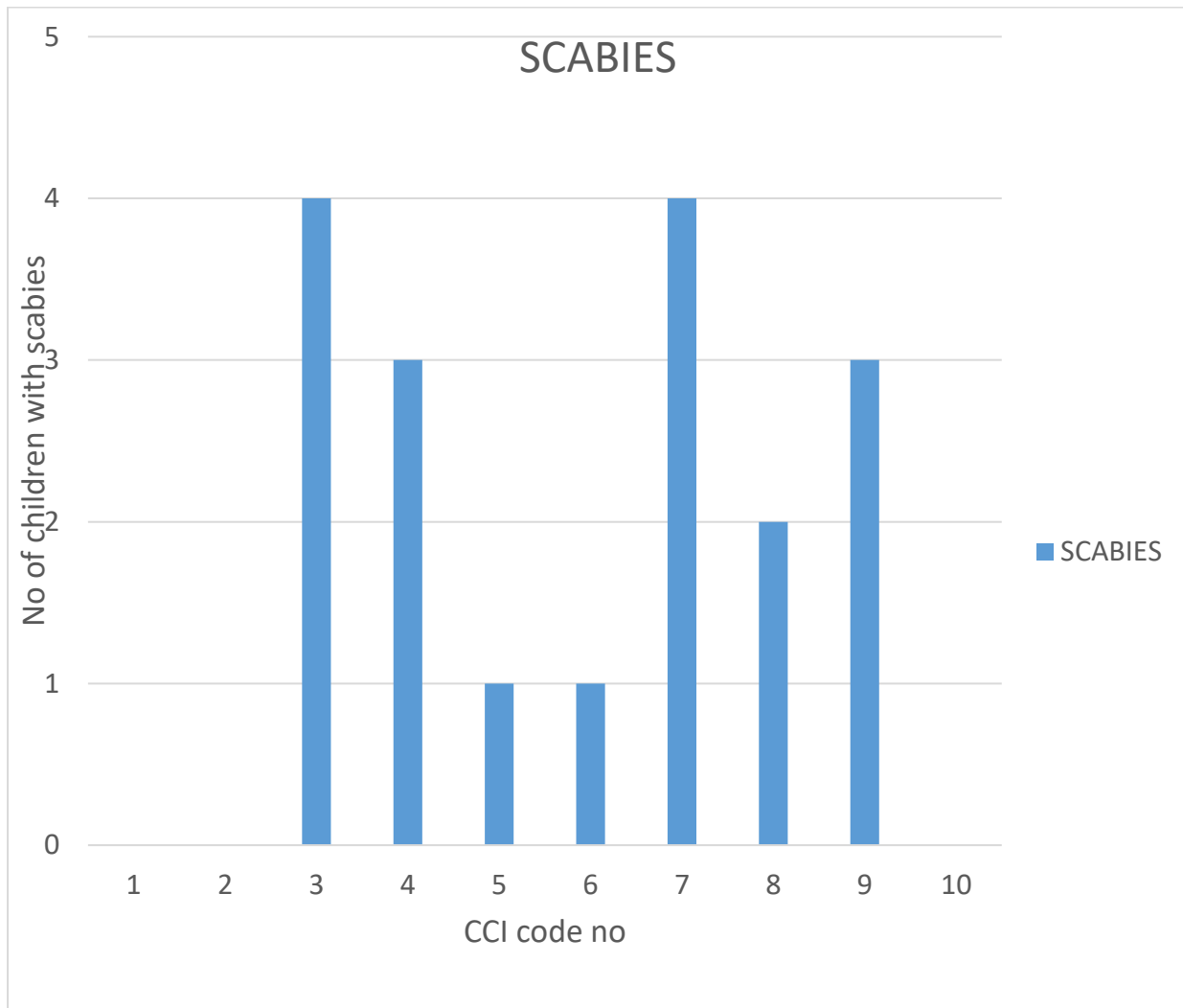
**Figure 4: Age of children with scabies**



**Figure 5: sex distribution of the children with scabies**

## 5.6 Distribution of scabies by CCI

There were 3 CCI where no case of scabies was found. Two CCIs had 4 cases each, other two CCIs had 3 cases each, one had 2 cases and 2 CCI had 1 case each. None of the children with scabies had HIV or other underlying medical condition.



*Figure 6: Distribution of scabies by CCI*

## 5.7 Location and types of scabies lesions

Locations where scabies lesion was frequently noted were elbows, webbed spaces of fingers and, thighs and knees at frequency of 72.2%, 66.7% and 44.4% respectively. Other locations seen less frequently included ankle and feet, scrotum, scalp, axilla, flexor surfaces of the wrist and abdomen. All the children with scabies had scratch marks and/or burrows. Erythematous

papules were seen among 38.8% of the children with scabies while scabies nodules were documented at 22.2%.

*Table 6: Location and types of scabies lesions*

<b>Location of the scabies lesion</b>	
<b>Body part</b>	<b>Frequency n=18</b> <b>Percentage</b>
Scalp	2(11.1)
Axilla	2(11.1)
Elbows	13(72.2)
Flexor surfaces of the wrist	1(5.5)
Webbed spaces of the fingers	12(66.7)
Abdomen	1(5.5)
Scrotum	2(11.1)
Thigh and knees	8(44.4)
Ankle and feet	3(16.7)
<b>Type of scabies lesion</b>	
<b>Lesion</b>	<b>Frequency n=18</b> <b>Percentage</b>
Scratch marks or burrows	18(100)
Erythematous papules	7(38.8)
Scabies nodules	4(22.2)

### **5.8: Factors associated with Scabies**

In univariate analysis of associated factors, children aged 6-12 years were 5 and 3 times more likely to contract scabies compared to those aged above 12 years old (OR 5.0, 95% CI 1.1-22.5,  $p=0.038$ ) and those aged < 5 years (OR 3.0 95% CI 0.5 – 18.4,  $p=0.242$ ). A child who was sharing a bed with another with an itchy skin was 9.2 times more likely to contract scabies compared to one who did not (OR, 9.2 95% CI, 3.2-26.7,  $p=0.001$ ). However, in the multivariate analysis, males were 3.6 times more likely to be affected compared to females, the association was statistically significant (OR, 3.6, 95% CI 1.0 – 13.3,  $p=0.051$ ). Sharing bed with an itchy child was also noted to be significantly associated (AOR 8.1, 95% CI, 2.5-26.5,  $p=0.001$ ). Sharing of beds and clothes were not associated with increased risk for scabies (Table 7 and 8)

Table 7: Factors associated with Scabies: Univariate analysis.

	n	Scabies		OR (95% CI)	p-value
		Yes, n (%)	No, n (%)		
<b>Age in years</b>					
≤5	50	3 (16.7)	47 (17.9)	3.0 (0.5 – 18.4)	0.242
6 – 12	135	13 (72.2)	122 (46.6)	5.0 (1.1 – 22.5)	<b>0.038</b>
>12	95	2 (11.1)	93 (35.5)	Reference	
<b>Gender</b>					
Male	143	12 (66.7)	131 (50.0)	2.0 (0.7 – 5.5)	0.178
Female	137	6 (33.3)	131 (50.0)	Reference	
<b>Sharing of beds</b>					
Yes	204	11 (61.1)	193 (73.7)	0.6 (0.2 – 1.5)	0.252
No	76	7 (38.9)	69 (26.3)	Reference	
<b>Sleep with itchy person</b>					
Yes	24	7 (38.9)	17 (6.5)	9.2 (3.2 – 26.7)	<b>&lt;0.001</b>
No	256	11 (61.1)	245 (93.5)	Reference	
<b>Sharing clothes</b>					
Yes	95	9 (50.0)	86 (32.8)	2.0 (0.8 – 5.3)	0.143
No	185	9 (50.0)	176 (67.2)	Reference	

Table 8: Factors associated with Scabies: Multivariate analysis.

	n	Scabies		AOR (95% CI)	p-value
		Yes, n (%)	No, n (%)		
<b>Age in years</b>					
≤5	50	3 (16.7)	47 (17.9)	1.8 (0.2 – 13.7)	0.562
6 – 12	135	13 (72.2)	122 (46.6)	4.5 (0.9 - 23.7)	0.075
>12	95	2 (11.1)	93 (35.5)	Reference	

Sleep with itchy person					
Yes	24	7 (38.9)	17 (6.5)	8.1 (2.5 – 26.5)	<b>0.001</b>
No	256	11 (61.1)	245 (93.5)	Reference	
Gender					
Male	143	2.0 (0.7-5.5)	0.178	3.6 (1.0-13.3)	<b>0.051</b>
Female	137	Reference		Reference	

### 5.9: Knowledge of CCI managers about scabies

The overall knowledge of CCI managers on identification and management of scabies was good at 90%. The lowest scored 66.7% and the highest scored 100%. In this study, 9(90.0%) of the CCI managers had good knowledge about scabies with a score of >75% while 1(10.0%) had fair knowledge with a score of 66.7%.

*Table 9: Knowledge of CCI managers on scabies*

CCI manager	% score
001	66.7
002	91.7
003	83.3
004	75.0
005	75.0
006	83.3
007	91.7

008	100.0
009	83.3
010	75.0
<b>Average score</b>	<b>82.5</b>
<b>Overall Score on Knowledge of CCI managers</b>	
<b>Overall index Score</b>	<b>Frequency N=10</b>
	<b>Percentage</b>
<b>Poor Knowledge &lt;42%</b>	0 (0)
<b>Fair knowledge =42-74%</b>	1(10)
<b>Good knowledge&gt;75%</b>	9(90)

### 5.10: Scores of CCI managers' knowledge of different aspects on scabies

Six out of ten CCI managers gave the right response to questions on risk factors for infection and on the need for isolation of scabies patients. Only 7 of the 10 respondents correctly answered on modes of transmission of scabies. Eight out of ten CCI managers correctly responded on typical distribution in the body, associated complications, and early identification of scabies. Nine out of ten correctly answered questions on definition of scabies, association of scabies with poor hygiene, use of topical treatment and washing clothes of an afflicted child. And finally, all the managers knew signs and symptoms of scabies and the role of sharing clothes in the spread of the illness.

*Table 10 : Scores of CCI managers different knowledge aspects on scabies*



<b>Knowledge aspect</b>		<b>Correct response</b>
		<b>Frequency (%), N=12</b>
<b>Definition of scabies</b>		9 (90)
<b>Signs and symptoms</b>		10 (100)
<b>Commonly affected areas in the body</b>		8 (80)
<b>Transmission</b>	Who can get the disease	6 (60)
	Modes of transmission	7 (70)
	Sharing of clothes, bedding	10 (100)
<b>Association with poor hygiene</b>		9 (90)
<b>Associated complications</b>		8 (80)
<b>Appropriate treatment</b>	Isolation of affected children	6 (60)
	Use of topical permethrin	9 (90)
<b>Prevention</b>	Washing clothes of affected child	9 (90)
	Identifying scabies early	8 (80)

## **CHAPTER 6: DISCUSSION**

Epidemiological data about scabies infestation in vulnerable children provide valuable information about its prevalence, risk factors and suggest a basis for methods of prevention and therapy.

In this study 18 (6.4%) children within the CCIs had scabies. This percentage is lower compared to what was reported in studies done in a welfare home in Malaysia, and orphanages in Thailand and Bangladesh, where 31%, 87.3%, 62% of children had scabies respectively. The reason for this may be that previous studies were done in one institution during outbreaks(21,22,36). However, our study findings were comparable to those from studies done in school environments in Malaysia, Egypt, Nigeria, Mali, Malawi (prevalence of 8.1%, 4.4%, 10.5%, 4% and 8.7% respectively) (4,24–27). The prevalence in our study was also low compared to another study conducted on children at Jua Kali Slum in Nairobi which had a prevalence of 24.3%. This difference could be explained by poor hygiene conditions in the slums. Limited access to water and infrequent bathing were reported as contributing factors in this slum setting while in the CCIs all the children had a bath daily(37).

Studies have associated several epidemiological factors with the distribution of scabies infestation in populations, including age, gender, sharing beds, sleeping with a person with

itchy skin, overcrowding and poverty(18). Scabies is most commonly observed in the very young (1-8 years), followed by older children and young adults as supported by recent study by Maurice Jau Kali slum in Nairobi. In situations where scabies is endemic, this age factor most likely reflects low immunity as well as increased exposure(18,29). In our study, children aged 6-12 years reported the highest prevalence at 72%, while those aged below 5 years and those older than 12 years had prevalence of 17% and 11% respectively. Children aged 6-12 years were 5 times more likely to contract scabies than the more than 12 years old but it was not statistically significant (OR,95%CI 5.0, 1.1-22.5, p=0.038). In a welfare home in Palau Pinang, Malaysia, Muhammad et al reported that age between 6-12 years, male gender, sharing clothes, intimate close contact and crowded living conditions were highly associated with scabies. (20).

In the present study, although the gender of children who were enrolled into the study was almost of equal proportion ( Males-51.1% and females-48.9%), 67% of the children with scabies were males and the females were 33% .The male predominance was in agreement with the results of other studies in Malaysia orphanage, India and Cameroonian secondary schools(20,27,38). However, Hegab et al and Maurice et al reported similar infection rates across gender(24,29).

In our present study, 3 out of the 10 CCIs selected did not have any case of scabies. All the 3 were located in Langata sub-county, a leafy suburb in the city where the wealthy live. They all had better infrastructure compared to the others. They were all funded from abroad. One had a fully functional clinic with four nurses and a pediatric consultant who reviewed the children every two weeks. The CCI with highest scabies had 4 cases. Distribution of scabies in different CCI was statistically insignificant. None of the children with scabies had HIV or any other underlying medical condition.

In our present study, a univariate analysis of factors that might be associated with scabies showed that a child who slept with another with an itchy skin was 9.2 times more likely to contract scabies than that who didn't (OR, 95%CI,9.2, 3.2-26.7, p=0.001). In the multivariate analysis a child who shared a bed with pruritic one was 8.1 times more likely to contract scabies compared to another child who did not (AOR, 95% CI, 8.1, 2.5-26.5, p=0.001).In another study, Karim et al demonstrated that children who slept on the floor with other children contracted more severe infection and became re-infected in greater proportions. This facilitates skin-to-skin contact hence the higher prevalence(39). Hay et al reported that clothing and blankets are not vital in the transmission of scabies, and that there is no conclusive evidence to suggest that washing of clothing and blankets is necessary for the prevention of scabies spread. Hay et al demonstrated that the mite is an obligate parasite and is highly susceptible to dehydration when off the host(2).Pruritus as an independent factor associated with scabies was also noted in a study in Cameroun Boarding schools(28).

In this study, 9(90.0%) of the CCI managers had good knowledge about scabies while 1(10.0%) had fair knowledge. Although, all the managers knew the signs and symptoms of scabies and the role of sharing clothes in the spread of the illness, only six out of ten CCI managers gave the right response to questions on risk factors for infection and on the need for isolation of scabies patients. The Knowledge of managers in our study was comparable to that reported in studies done in Saudi Arabia and Guinea Bissau, (85.8% and 96% respectively)(32,33). In another study, a lower level of knowledge was noted among college students in the United States (38%). This could be due to the fact that scabies is a rare condition in the developed countries including the US due to higher economic and hygiene

status(31). Ejigu et al in a case-controlled study concluded that poor knowledge about scabies and parental illiteracy predicted the occurrence of scabies infestation. Feldmeier et al also reported that illiteracy, low income, poor housing and sharing clothes and towels with other family members were all significant risk factors for the presence of scabies(40)

## **STRENGTHS**

The study was conducted when schools were closed so all the CCI children were available at the time of study and had an equal opportunity to participate in the study. All CCI managers approached for the study accepted to participate and so did the children. This means that there was minimal likelihood of selection bias. The researcher first obtained consent from the CCI managers before assent by the children. The children were randomly chosen.

In order to reduce variability in the description of the skin lesions, the principal investigator examined all the children while the research assistant asked the questions.

## **LIMITATIONS**

The following limitations of the study have to be taken into consideration. First, data collection through cross-sectional study design may imply biased information, especially regarding hygiene habits (such as sharing clothes with others, and taking birth), with potential over-reporting of favorable behaviors, for which controlling was difficult. Second, diagnosis was carried out only on a clinical basis; owing to the large number of students, the cost involved and the time factor, it was not possible to validate by confirmative burrow scraping and microscopic examination for this study. Third, the study was conducted only during the warm season (January and February) due to the limited time for data collection and this might have influenced the prevalence of scabies since scabies is claimed to show higher incidence during

the cooler months. Finally, the study findings reflect conditions within CCIs in Nairobi and may not be generalizable to other settings.

## **CONCLUSION**

In conclusion, the findings of the study confirm that scabies is still an important health problem affecting children in the CCIs. The prevalence of scabies among children in the selected CCIs within Nairobi County was low. The CCI managers had good knowledge on prevention and management of scabies. The study also revealed significant association between scabies and sleeping with a child with an itchy skin.

## **RECOMMENDATIONS**

Provision of beds to all CCI so that every child should be able to sleep alone. In addition, performing similar CCI-based studies on a larger scale and in different counties in Kenya is recommended to throw light on the actual magnitude of scabies.

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# **ANNEXES**

## **ANNEX 1: INFORMED CONSENT**

**Study Title: Prevalence of scabies among children in Children's Charitable Institutions in Nairobi County.**

This informed consent form has two parts;

1. Information sheet (to share information about the study with you).
2. Certificate of consent (for signature if you choose to participate). You will be given a copy of the full informed consent form.

### **Part I Information Sheet**

**Introduction:** I am Dr. Abdikadir Hussein Mohamed, a postgraduate student at the Department of Pediatrics and Child Health at the University of Nairobi. I am conducting a research to find out the Prevalence of scabies among children in Children's Charitable Institutions in Nairobi County as part of a requirement for a postgraduate degree. My supervisors from the University of Nairobi are Dr. Bashir Admani, Dr. Florence Murilla and Dr. Beatrice Mutai.

What Is Scabies?

Human scabies is skin infection caused by a mite, *Sarcoptes scabiei* var. *hominis*.

Scabies affects about 300 million people worldwide yearly. It remains one of the most frequent skin diseases in resource-poor countries. The disease is transmitted through direct and prolonged contact with infected skin, or rarely by using contaminated personal objects.

## **Purpose of the Study**

The overall purpose of this study is to assess the Prevalence of scabies among children in Children's Charitable Institutions in Nairobi County. These research findings are expected to assist me to meet my requirements for a Masters of Medicine degree in Paediatrics and Child Health at the University of Nairobi.

The information obtained from this study is of high significance for future planning at the national level since it will help guide MOH and Child Welfare society to plan better on creating awareness and preventive measures of scabies.

**The objectives of the study:** To assess the Prevalence of scabies among children in Children's Charitable Institutions in Nairobi County and determine the knowledge level of the CCI managers concerning scabies prevention and management.

**Procedure:** We invite you and children in your CCI, aged between 6 months and 18 years, to participate in this study. Other selected 9 CCIs will be participating. You will be provided with an informed consent form and a Questionnaire; then we shall conduct a clinical examination in a private room.

**Benefits:** The information obtained from the study will be shared with relevant authorities to improve on the quality of care given to these children at a national level.

**Risks:** This study is not invasive and poses no risk for the children, but they may experience some discomfort from removing heavy clothing and shoes. We are asking you to share with us personal and confidential information and you may feel uncomfortable answering some of them. You do not have to answer if you do not wish to do so.

**Confidentiality:** All personal information gathered from you or the children as study participant in this research will be kept confidential and will be used to demonstrate the objectives of the study. Any information about you will have a number on it instead of your

name. Research data will be stored in a personal computer with a computer protected password that is only known to me. Any publication will not be having any identifiers.

**Who to contact:** For any information regarding your rights as a research participant you can contact; The Chairman, Kenyatta National Hospital/University of Nairobi Ethics and research committee which is a committee whose task is to make sure that research participant is protected from harm. Tel. (+254-020)2726300-9 Ext. 44102. Or Dr. Abdikadir Hussein Mohamed, the principal investigator of this research on Mobile - 0722406124.

**Part II: Consent Form**

Name of the CCI .....

Dear CCI manger,

I am Dr. Abdikadir Hussein Mohamed, a registrar of Paediatrics and child health at the University of Nairobi. I am conducting a research to find out about the Prevalence of scabies among children in Children’s Charitable Institutions in Nairobi County. Your CCI has been selected randomly for this study.

**Insert initials inbox**

1. I confirm that I have read and have understood the information sheet for the above study. I have had the opportunity to consider the information, ask questions, and have had these answered satisfactorily.

2. I understand that my participation is voluntary and that I am free to withdraw from the study without giving any reason, without my rights being affected.

3. I understand that, under the Data Protection Act, I can at any time ask for access to the information I provide and can request the destruction of that information if I wish.

4. I agree that the children in the CCI take part in the study.

Participants Name Signature Date

.....

Contact Information for the Principal Investigator.

Dr. Abdikadir Hussein Mohamed, Mobile - 0722406124. Email: [akhussein200@yahoo.com](mailto:akhussein200@yahoo.com)

## **FOMU YA KUPATA KIBALI CHA MKURUGENZI**

### **Idhini hii iko na sehemu mbili**

1. maelezo ya utafiti
2. cheti cha idhini (ambayo unaeza tia sahihi iwapo utaamua kushiriki katika utafiti).

Utapewa nakala ya Fomu kamili ya idhini .

### **Sehemu I : karatasi ya maelezo**

**Utangulizi:** kwa majina naitwa Dr. Abdikadir Hussein Mohamed, mwanafunzi wa shahada ya uzamili katika masomo ya udakatari wa watoto katika chuo kikuu cha Nairobi. Nafanya utafiti kuhusu maambukizi ya scabies kati ya watoto waliomo kwa ccis. utafiti huu ni katika matakwa ya masomo yangu katika chuo kikuu. Wasimamizi wangu kutoka chuo kikuu ni Dr. Bashir Admani, Dr. Florence Murilla and Dr. Beatrice Mutai.

**Ni nini scabies?**



Ni ugonjwa wa ngozi unaosababishwa na kimelea *Sarcoptes scabiei* var. *hominis*. Ugonjwa huu inadhuru karibia watu milioni 300 kila mwaka ulimwenguni. Ni ugonjwa uliosambaa / ulioenea , unadhuru mataifa mbali mbali na ni wa kuambukiza. Ni miongoni ya maradhi ya mara kwa mara katika nchi maskini. Maradhi haya husambazwa kwa njia ya kugusa ngozi moja kwa moja ya mwenye ugonjwa huu na nadra kwa njia ya kutumia vitu vya kibinafsi vilivyo ambukizika. Katika mataifa yalioendelea , kiwango cha maradhi haya ni sawa kati ya umri zote, kiwango cha juu kabisa katika mataifa yanayoendelea ni kati ya watoto ambao bado hawajafika kuanza shule hadi vijana; kiwango cha maradhi haya hupungua vilivyo katikati ya umri wa utu uzima na huongezeka katika uzeeni. Maambukizi ni sawa kati ya waume na wake.

### **Kusudio la utafiti**

Kusudio la jumla ya utafiti huu ni kukadiria maambukizi ya scabies kati ya watoto waliomo katika ‘Nyumba ya kutunza watoto yatima’ katika kaunti ya Nairobi. Matokeo ya utafiti huu yanatarajiwa kunisaidia katika kutekeleza matakwa ya shahada ya uzamilifu katika usomeaji wa udaktari wa watoto katika chuo kikuu cha Nairobi.

Habari zitakazo patikana kwa utafiti huu ni ya umuhimu sana katika upangaji wa mustakabali katika kiwango cha kitaifa kwani itasaidia katika kuongoza wizara ya afya na ‘child welfare society’ katika kupanga vyema katika kueneza ufahamu na hatua za kuzuia scabies.

**Malengo ya utafiti huu:** Kukadiria maambukizi ya ‘scabies’ kati ya watoto waliomo katika ‘Nyumba ya kutunza watoto yatima’ katika kaunti ya Nairobi na kujua kiwango cha elimu ya wakurugenzi wa manyumba hizi kuhusu maambukizi ya ‘scabies’ na matibabu yake

**Utaratibu:** tunawaalika nyinyi na watoto waliomo katika ‘manyumba’ zenu kati ya umri wa miezi 6 na miaka 18, katika kushiriki katika utafiti huu. Nyumba 9 zengine zilichaguliwa

pia zitashiriki. Utapatiwa fomu ya idhini na orodha ya maswali ya utafiti; kisha tutafanya uchunguzi wa kiafya katika chumba cha kibinafsi.

**Hatari/madhara:** utafiti huu si vamizi wala haina hatari kwa watoto lakini wanaeza hisi usumbufu katika kutoa nguo nzito na viatu. Tunawaomba mutueleze habari zenu za kibinafsi na za siri na tunawaeleza kuna uwezekano huenda musihisi huru katika kujibu maswali haya. Sio lazima mujibu musipo taka kujibu.

**Usiri:** habari zote za kibinafsi zitakazopatikana kutoka kwako na kwa watoto kama washiriki katika utafiti huu zitaekwa kwa usiri na zitatumika kuonyesha malengo ya utafiti. Habari yoyote kukuhusu itakuwa nambari badala ya jina lako. Takwimu ya utafiti itawekwa katika tarakilishi ya kibinafsi iliohifadhiwa na ulinzi wa neno siri inayojulikana na mimi pekee. Chapisho yoyote haitokuwa na kitambulisho.

**Nani wa kuwasiliana:**

Kwa maelezo yoyote kuhusu haki yako kama mshiriki katika utafiti unaeza wasiliana na mwenyekiti wa hospitali ya Kenyatta National Hospital/ kamati ya maadili ya utafiti ya chuo kikuu cha Nairobi ambayo ni kamati inayohakikisha ya kwamba mshiriki katika utafiti anahifadhiwa kutokana na madhara ya aina yoyote.

Nambari ya simu Tel. (+254-020)2726300-9 Ext. 44102 ama Dr. Abdikadir Hussein Mohamed, mpelelezi mkuu wa utafiti huu kwa simu ya mkono - 0722406124.

**Sehemu II: Fomu ya idhini**

Jina la nyumba ya watoto yatima.....

## **Kwa Mkurugenzi Mpendwa,**

Naitwa Dr. Abdikadir Hussein Mohamed, mwanafunzi wa shahada ya uzamili katika masomo ya udakatari wa watoto katika chuo kikuu cha Nairobi. Natekeleza utafiti kuhusu maambukizi ya 'scabies' kati ya watoto katika 'nyumba ya watoto yatima' katika kaunti ya Nairobi. Mumechaguliwa kibahati kwa utafiti huu.

## **Jibu Maswali**

1. Nathibitisha kwamba nimesoma na kuelewa karatasi ya maelezo ya utafiti. Nimekuwa na fursa ya kutafakari kuhusu maelezo, kuuliza maswali na nimejibiwa majibu ya kuridhisha.
2. Naelewa ya kuwa ushiriki wangu nikwa hiari na niko na uhuru wa kujiuzulu kutokana na utafiti huu bila ya kutoa sababu yoyote, bila ya haki zangu kudhurika.
3. Naelewa kwamba katika sheria inayohusika na ulinzi wa takwimu, naeza ulizia fursa ya kupata habari nitakazotoa na pia naeza omba kuharibiwa kwa hio habari kama nitataka.
4. Nimekubali watoto washiriki katika utafiti

Nimesoma/ Nimesomewa maelezo haya na nimepewa nafasi ya kuuliza maswali kuhusu hayo maelezo. Nimeidhini kwa hiari kushiriki katika utafiti huu.

Jina lako \_\_\_\_\_ Sahihi ya Mshiriki  
\_\_\_\_\_ Tarehe \_\_\_\_\_

**ANNEX 2: STUDY QUESTIONNAIRE (TITLE: PREVALENCE OF SCABIES AMONG CHILDREN IN CHARITABLE CHILDREN’S INSTITUTIONS IN NAIROBI COUNTY)**

**Part one: Information about the CCI Facility demographics**

1. Facility Name:.....
2. Facility Code:.....
3. Sub County:.....
4. Facility type (mark as appropriate)  
 Government.....private.....religious.....
5. Number of children in the facility .....
6. How many are aged between 6 months-18 years? Boys.....girls.....
7. How often are children’s clothes washed?.....
8. Are clothes washed together or segregated?.....
9. What is used to wash the clothes if a child is suspected of scabies? e.g bleach or warm water.....(specify)
10. Does the facility have the following cadres of care providers:

Cadre	Qualification	No.	Indicate whether permanently employed (P) or on locum (L) basis
Clinical officer			
Nurse			

Nutritionist			
Nurse aid			
Other (kindly specify)			
1.			
2.			
3.			
4.			

**Part two: Information about an individual child**

1. Age (years).....
2. Sex : Male.....Female.....
3. how many children sleep in your room?.....
4. Do you have any chronic medical conditions? No.....  
Yes( please specify).....
5. Do you sleep alone in your bed? No..... Yes.....if yes, How many?.....
6. Did you have itchy skin within the last 2 weeks? No.....Yes.....
7. Which part of your body has an itchy skin rash? Scalp ..... Body.....  
Upper Arms / Axillae Lower Arms / Wrist.....Hands.....  
Buttocks / Genitalia / Groin/ Upper Legs / Knees.....  
Lower Legs / Ankle Feet.....Other.....(kindly specify)

8. Is there a child in your room who had itchy skin within the last 2 weeks?

no.....Yes.....

9. Do you share clothes with another child in your room?

no.....Yes.....

10. How often do you take a bath?

Daily..... Every two days.....

Once a week..... Once a month.....

11. Clinical findings

	Part of the body affected by the skin itch	Type of lesion(burrow, Scabious nodules, Papules, Pustules, Scratch marks)
Scalp		
Upper Arms / Axillae Lower Arms / Wrist		
Hands		
Buttocks / Genitalia / Groin/ Upper Legs / Knees		
Lower Legs / Ankle Feet		

Other skin condition		
----------------------	--	--

**Sehemu ya pili: Habari kuhusu mtoto**

1. Umri (miaka) .....
2. Jinsia: Mwanaume  
.....mwanamke.....
3. Ni watoto wangapi wanalala chumbani kwako? .....
4. Je! Una hali yoyote ya afya? Hapana.....Ndio (tafadhali taja) .....
5. Je! Unalala na wengine kitandani mwako? Hapana ..... Ndio ..... ikiwa ndio, wangapi?
6. Je! Ulikuwa unajikuna wakati wowote wiki mbili zilizopita? Hapana..... ndio.....
7. Je! Ni sehemu gani ya mwili wako iliyo na upele wa ngozi? kichwa .....  
Mwili ..... mikono / Miguu / kwapa..... tako/ sehemu ya uchi/goti  
.....
8. Je! Kuna mtoto katika chumba chako ambaye alikuwa anajikuna mwili ndani ya wiki mbili zilizopita? Hapana..... ndio.....
9. Je! Unashiriki nguo na mtoto mwingine katika chumba chako? Hapana .....ndio.....
10. Je! Wewe huoga mara ngapi?  
Kila siku ..... Kila siku mbili ..... Mara moja kwa wiki  
..... Mara moja kwa mwezi .....

**ANNEX 3: QUESTIONNAIRE ABOUT THE KNOWLEDGE OF CCI MANAGERS  
ON SCABIES(32) (TITLE:PREVALENCE OF SCABIES AMONG CHILDREN IN  
CHARITABLE CHILDREN’S INSTITUTIONS IN NAIROBI COUNTY)**

1. What is scabies?
  - a) A type of a worm
  - b) abdominal infection
  - c) skin infection
  - d) I don't know
  
2. What are the signs and symptoms of scabies infestation?
  - a) Fever
  - b) Vomiting
  - c) Itchiness
  - d) I don't know
  
3. Which parts of the body are mostly affected during scabies infection?
  - a) Genitalia, extremities
  - b) Mouth
  - c) Eyes
  - d) I don't know
  
4. How is scabies transmitted?
  - a) Contact
  - b) Contaminated food
  - c) Contaminated water
  - d) I don't know



5. Who can suffer from scabies?
  - a) Black people only
  - b) The rich
  - c) Only the poor people
  - d) Anybody
  - e) I don't know
6. How does personal hygiene affect the spread of scabies?
  - a) Poor hygiene increases chances of spread
  - b) Hygiene does not affect the spread
  - c) I don't know
7. How would you wash the clothes of an affected child?
  - a) Together with the other children's clothes
  - b) Separate , wash with jik
  - c) The child washes for himself
  - d) I don't know
8. Can sharing clothes, bedding, and other belongings contribute to the spread of scabies?
  - a) Yes
  - b) No
9. What are the health complications of scabies infection?
  - a) Diarrhea
  - b) Poor sleep due to discomfort
  - c) Vomiting
  - d) I don't know
10. Does early identification matter in preventing the disease?
  - a) Yes

b) No

11. What do you do to an affected child?

a) Isolate and treat

b) Don't isolate. It will resolve on its own

c) I don't know

12. Scabies is treated with ?

a) lotion

b) Injection.

## ANNEX 4: BUDGET

ACTIVITY/ITEM	NUMBER	COST PER UNIT	AMOUNT(Ksh)
Data collection tools	300 questionnaires, 4 tape recorder, 10 cassettes and writing materials	300 questionnaires each costing 5ksh, total=1500ksh. 3 tape recorder each costing 300 total=900ksh. 10 cassettes each costing 100=1,000 Writing materials=6000ksh	9,400ksh
Pre-testing collection tool	Principal investigator will be involved	4,000ksh for 3 days	12,000ksh
Data collection and Communication	Airtimes & transportation	500ksh for 14 days	7,000ksh
Personnel assistant hiring training	2 personnel to assist in collection of data for 7 days	12000ksh per person	24,000ksh
Data Management and Analysis	Writing materials Buying software	10,000ksh writing material 31,000ksh Buying software and consultation	41,000ksh
Printing material	Cost in printing Cost in Binding	15,000ksh in Binding 10,000ksh in printing	25,000ksh
Contingency			10,000ksh
<b>TOTAL PROJECT EXPENSES</b>			<b>128,400ksh</b>