ORIGINAL ARTICLE

Scabies Outbreak Among Children in Kabanga Village, Zambia: Prevalence and Contributing Factors

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ABSTRACT

Introduction: Scabies, a contagious skin infestation caused by *Sarcoptes scabiei*, remains a significant public health concern, particularly in resource-limited settings. Despite its widespread occurrence, limited evidence exists on its burden and determinants in Zambia, especially among children in rural areas. This study aimed to determine the prevalence of scabies and identify factors contributing to its outbreak among children in Kabanga Village, Samfya District, Zambia.

Methods: A quantitative cross-sectional descriptive study was conducted among 255 caregivers selected through systematic random sampling (interval = 2). Data were collected using structured questionnaires and analysed using SPSS version 29. Descriptive and inferential statistics were performed, with Chi-square tests used to explore associations between scabies prevalence and potential determinants. Statistical significance was set at $p \leq 0.05$.

Results: Among participating children, 54% were female, and 60.6% were aged between 5 and 9 years. Most caregivers (65.2%) had completed primary education. The overall prevalence of scabies among children was 54.0% (95% CI: 47.1%–60.8%). Factors significantly associated with scabies occurrence included the child's age ($p = 0.037$), caregiver's education level ($p = 0.043$), household size ($p = 0.043$), contact with known scabies cases ($p = 0.001$), and bathing frequency. Common preventive practices included daily skin checks for rashes (89.3%), surface disinfection several times per week (54.5%), and waiting for symptoms to subside before seeking care (47.5%). Despite some preventive behaviours, inconsistent practices contributed to continued transmission.

Conclusion: The high prevalence of scabies among children in Kabanga Village is strongly linked to social, behavioural, and environmental factors. Strengthening community education, promoting improved hygiene behaviours, and enhancing access to healthcare services are critical interventions to reduce scabies transmission and improve child health outcomes in rural Zambia.

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INTRODUCTION

Scabies is a common and highly contagious skin infection caused by the *Sarcoptes scabiei*. The condition is characterised by intense itching, particularly at night, resulting from an allergic reaction to the mites, their eggs, and faecal matter deposited beneath the skin.[1] In the absence of a human host, the mites can survive for approximately 24 to 36 hours before dying. Outbreaks commonly occur in environments where individuals are in close physical contact, such as schools, nursing homes, prisons, refugee camps, and remote rural communities.[2] Globally, scabies poses a major public health burden, particularly in resource-limited settings, and it is estimated that more than 200 million people are infested at any given time, and over 400 million new cases occur annually.[3] Although scabies affects all age groups, children bear a disproportionate burden due to their close contact during play and limited awareness of hygiene practices. Prevalence among children varies widely, ranging from 5% to 50% in heavily affected communities worldwide[4] . According to Karimkhani *et al*.[5] , the greatest burden of scabies is concentrated in East Asia, Southeast Asia, Oceania, tropical Latin America, and South Asia. Across the African continent, the estimated prevalence stands at approximately 33.7%.

In Zambia, scabies outbreaks continue to pose significant public health challenges, though published data on national prevalence remain limited. Recent reports have documented recurrent outbreaks across several provinces, including Northern, Central, and Eastern, particularly in districts such as Lupososhi, Chitambo, and Kasenengwa[6,7]. In Samfya District, health authorities have reported an increase in cases across 27 health facilities, with densely populated areas most affected. Children aged 5–14 years represent the most vulnerable group, experiencing the highest morbidity[8]. However, there is a lack of epidemiological data describing the burden and determinants of scabies outbreaks in Samfya, particularly among children. Therefore, this study aimed to determine the prevalence of scabies and identify the factors contributing to its outbreak among children in Kabanga Village, Samfya District, Zambia.

Methods

Study design

This study was a cross-sectional descriptive study utilising the quantitative method.

Study site

This study was conducted in Kabanga Village, located in Samfya District of Luapula Province, Zambia. Kabanga is situated approximately 22 kilometres from the Samfya District Centre. The village's residents are predominantly subsistence farmers and fishermen, reflecting the typical rural livelihood of the region. Kabanga Village was purposively selected as the study site because it had recorded one of the highest numbers of scabies cases among villages within Samfya District, making it an appropriate setting for investigating the prevalence and determinants of scabies among children.

Study population

The study population comprised all households in Kabanga Village during the study period. Kabanga had an estimated population of 4,517 residents and 704 households[9]. The study specifically included households with adult caregivers aged 18 years and above who had children between 5 and 14 years of age. Eligible participants were those who had been permanent residents of Kabanga Village for at least two years. Households were excluded if caregivers did not provide consent or if the selected child was unable to participate due to health-related conditions.

Sample selection

Systematic random sampling was used to select participants, using a sampling interval of 2. The sampling involved selecting every second household in Kabanga village until the sample size was achieved. This was utilised to limit selection bias and

to ensure that every eligible household has an equal chance of being selected. Where n was the sample size, N was the population size of 704 households, and *e* - was the acceptable margin of error (0.05) at a 95% confidence interval.

Sample size

The sample size was determined using Slovin's formula $[n = \frac{N}{(1+Ne^2)}]$ because the study population was known. About 255 households were selected using systematic random sampling.

Data collection

Data were collected using a researcher-administered structured questionnaire at the household level. The questionnaire comprised closed-ended questions divided into four sections, capturing sociodemographic characteristics, prevalence of scabies, factors associated with scabies occurrence and preventive and control measures in place. Eligible participants (caregivers) were first approached in their homes, and the purpose, risks, discomforts and benefits of the study were explained before obtaining informed consent. They were told about their rights to withdraw from the study at any time without explanation. No personal identifiers were collected, and responses were treated as confidential. All the data was securely stored in a private location and on the computer with a security code only accessible by the researcher.

Data management and analysis

The collected data were cleaned, coded, and entered into a Statistical Package for the Social Sciences (SPSS) version 29 for analysis. Descriptive and inferential statistical methods were employed to summarise and interpret the data. Chi-square tests were used to examine associations between dependent and independent variables, with statistical significance set at a p-value of <0.05. Scabies prevalence was determined based on the caregivers' self-reporting, and efforts such as piloting the study to refine study questions, training of assistant researchers, use of validated data collection tools, and limitation of recall period to improve accuracy were considered to minimise recall bias.

RESULTS

One hundred and ninety-eight participants were successfully recruited and interviewed using a structured questionnaire, resulting in a response rate of 77.6% for the study.

Social demographic characteristics

The study assessed various demographic characteristics, including the child's sex, age, caregiver's level of education, child's current school grade, and caregiver's occupation. The sample comprised 54% females. The age distribution of the children showed that 60.6% were between 5 and 9 years old. Regarding caregivers' educational levels, the majority (65.2%) had completed primary education. The distribution of children's school grades was relatively balanced, with 47.5% of children in grades 1-4. Concerning caregivers' occupations, farming was the most common, with 48.2% engaged in this activity, as indicated in *Table 1* below:

Table 1: Sociodemographic characteristics of participants

Variables	Frequency (n)	Percent (%)
Child's sex		
Female	107	54.1
Male	91	45.9
Childs Age		
5-9 years	120	60.6
10-14 years	78	39.4
Caregiver's level of education		
None	16	8.1
Primary	129	65.2
Secondary	45	22.7
Tertiary	8	4.0
Child's current school grade		
None	22	11.1
1-4	94	47.5
5-8	82	41.4

Variables	Frequency (n)	Percent (%)
Caregiver's occupation		
None	4	2.4
Business	42	21.2
Farmer	96	48.2
Fishing	38	19.2
Teacher	12	5.8
Nurse	6	3.2
Total	**198**	**100**

Scabies prevalence

The study found the prevalence of scabies to be 54.0% among children (95% CI: 47.1% - 60.8%).

Knowledge of scabies

Using a five-point Likert scale, the majority of participants (66.7%) reported a relatively low level of knowledge about scabies (*Refer to Figure 1*).

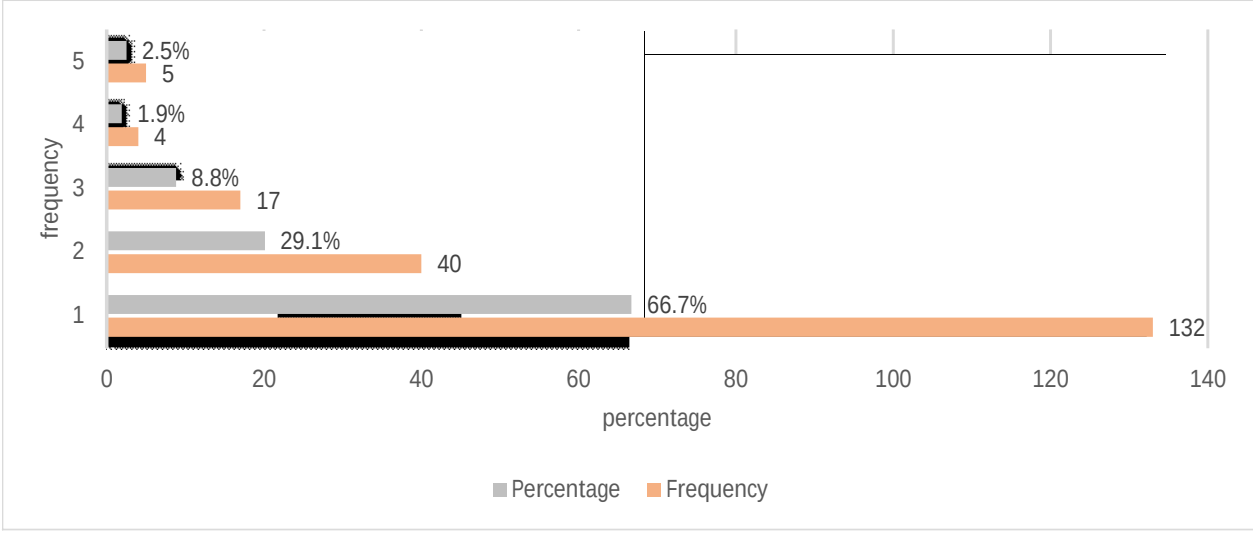

Figure 1: Scabies level of knowledge among participants

Scabies risk behaviour

The percentage distribution of scabies risk behaviour among participants indicated that the majority reported contact with a scabies case (57.1%; 95% CI: 50.1-63.8), had their child bath once a day (56.7%; 95% CI: 49.7-63.5), changed clothes 3-4 times a week (51.5%; 95% CI: 44.6-58.4), and shared beddings/clothing with others (84.8%; 95% CI: 79.2-89.1) (*Refer to Table 2*).

Table 2: Behavioural characteristics

Variables	Frequency (n)	Percent (%)	95 % Cl	
			CI (Lower %)	CI (Upper %)
Source of water				
Piped/Borehole	41	20.7	15.6	26.9
Shallow well	63	31.8	25.7	38.6
River/stream	94	47.5	40.6	54.4
Had contact with a scabies case				
Yes	113	57.1	50.1	63.8
No	85	42.9	36.2	49.9
Child's bathing frequency				
Once a day	112	56.7	49.6	63.3
3-4 times a week	58	29.2	23.4	36.0
Once per week	28	14.1	10.0	19.7
Changing clothes frequency				
Once a day	86	43.4	36.7	50.4
3-4 times a week	102	51.5	44.6	58.4
Once per week	10	5.1	2.8	9.0
Sharing the bed with a household member				
Yes	184	92.9	88.5	95.7
No	14	7.1	4.3	11.5
Share bedding/clothes with others.				
Yes	168	84.8	79.2	89.2
No	30	15.2	10.8	20.8
Total	198	100		

Determinants Associated with Scabies Outbreak

The study found that various determinants such as the child's age (*p = 0.037*), caregiver's highest level of education *(p = 0.043*), number of household members (*p = 0.043*), contact with scabies cases (*p = 0.*001), and child's bathing frequency were statistically associated with scabies outbreak (*See Table 3*).

Table 3: Relationship between demographic and behavioural characteristics with scabies prevalence.

Variables	Scabies prevalence		Crude OR (95% Cl)	*P-value*
	Yes	No		
Child's Age				
5-9	77 (64.2%)	43 (35.8%)	3.38 (1.86-6.15)	*0.037**
10-14	27 (34.6%)	51 (65.4%)	1.00 (ref)	
Child's sex				
Male	47 (51.6 %)	44 (48.4%)	0.94 (0.54-1.64)	*0.070*
Female	57 (53.3%)	50 (46.7%)	1.00 (ref)	
Child's school grade				
None	10 (45.6%)	12 (54.4%)	0.54 (0.21-1.38)	*0.061*
1-4	57 (60.6%)	37 (39.4%)	1.00 (ref)	
5-8	37 (45.1%)	45 (54.9%)	0.53 (0.29-0.97)	
Caregiver's highest level of education				
None	11 (68.8%)	5 (31.2%)	6.60 (0.97-44.93)	
Primary school	68 (52.7%)	61 (47.3%)	3.34 (0.65-17.19)	*0.043**
Secondary school	23 (51.2%)	22 (48.8%)	3.14 (0.57-17.23)	
Tertiary	2 (25%)	6 (75%)	1.00 (ref)	
Number of people in the household				
1-5	4 (13.7%)	25 (86.3%)	1.00 (ref)	*0.036**
5-10	89 (57.4%)	66 (42.6%)	8.43 (2.80-25.38)	
>10	11 (78.6%)	3 (21.4%)	22.92 (4.37-120.10)	
Had contact with scabies cases				
Yes	77 (68.1%)	36 (31.9%)	4.59 (2.51-8.41)	*0.001**
No	27 (31.8%)	58 (68.2%)	1.00 (ref)	
Child's bathing frequency				
Once a day	45 (40.2%)	67 (59.8%)	1.00 (ref)	*0.047**
3-4 times a week	40 (69.0%)	18 (31.0%)	3.31 (1.69-6.48)	
Once per week	19 (67.8%)	9 (32.2%)	3.31 (1.31-7.57)	
Changing clothes frequency				
Once a day	39 (45.3%)	47 (54.7%)	1.00 (ref)	
3-4 times a week	59 (57.8%)	43 (42.2%)	1.65 (0.93-2.95)	*0.057*
Once per week	6 (60.0%)	4 (40.0%)	1.81 (0.48-6.87)	
Share bedding/clothes with others.				
Yes	88 (52.4%)	80 (47.6%)	0.96 (0.44-2.10)	*0.063*
No	16 (53.4%)	14 (46.6%)	1.00 (ref)	
Total	198	100		

***Significant *P* values < 0.05)**

Preventative practices

The study reported that participants employed various prevention practices for scabies outbreaks, such as checking the child's skin for rash once a day (89.3%), disinfection for contact surfaces a few times a week (54.5%), and waiting for the child's itchy skin/rash to offset (47.5%) (*See Table 4*).

Table 4: Preventive practices against scabies

Variables	Frequency (n)	Percent (%)
Frequency of checking the child's skin for rash signs		
Once a day	177	89.3
A few times a week	13	6.7
Once per week	3	1.5
Less than once per week	5	2.5
Disinfection Frequency for Surfaces		
Once a day	65	32.8
A few times a week	108	54.5
Once per week	14	7.1
Less than once per week	11	5.5
Response to Child's Itchy Rash		
Seek medical advice from a healthcare professional	57	28.8
Use over-the-counter creams	23	11.6
Use home remedies or traditional treatments	24	12.1
Wait for it to go away	94	47.5
Education on scabies prevention		
No	31	15.7
Yes	167	84.3
Total	198	100

DISCUSSION

Prevalence of scabies among children

The present study reported a high prevalence of scabies (54.0%) among children in Kabanga village, with over half of caregivers indicating that their child had experienced scabies within the previous two years. This prevalence rate is considerably higher than some other recent studies conducted in Africa. For instance, in Egypt and Kenya, the low prevalence of scabies is 4.4% and 6.4% respectively.[10] However, the findings are particularly comparable to the study conducted by Thornley *et al.*[11] in New Zealand's childcare centres, where the prevalence was reported to be 56.7%, highlighting a similar burden in community settings involving children. It is noteworthy that the prevalence rate observed in this study is markedly higher than the findings of recent studies conducted by Siamondole[7] and Ndlovu and Zimba in the rural setting of Zambia in Eastern Province and Mafinga district of Muchinga Province, which reported 10% and 5.2% prevalence rates of scabies, respectively. This suggests that scabies may be a more significant public health concern in Kabanga village as compared to other regions of Zambia, leading to increased morbidity among children. The high prevalence of scabies among children in Kabanga village has important implications for public health interventions and resource allocation. Scabies can have severe physical, psychological, and social consequences, particularly for children, including sleep disturbances, secondary infections, stigmatisation, and impaired quality of life[5,15]. Hence, targeted interventions like community education, mass drug administration programs, and improved hygiene practices could significantly reduce the prevalence of scabies in this community.

Determinants associated with the Scabies outbreak in children

The study conducted in Kabanga village identified several determinants associated with scabies outbreaks in children, including age, caregiver's education level, household size, contact with scabies cases, and the frequency of bathing. Age was found to be a significant determinant of scabies prevalence, with younger children being more vulnerable to scabies infestations. This result aligns with studies such as Collinson *et al.*[14] in Liberia, where a higher prevalence was observed among younger children, and Emeka[15] in Nigeria, where the highest prevalence was among 10–12-year-olds. The increased susceptibility of younger children may be attributed to their weaker immune systems and greater physical contact with others during play or shared sleeping arrangements, factors that facilitate the transmission of the mites responsible for scabies[5]. However, while Emeka[15] identified school-age children as most at risk, this study highlights the vulnerability of even younger children, pointing to a possible broader age range affected by scabies in Kabanga village. Caregiver's education level also significantly impacted scabies prevalence, with lower educational attainment associated with higher rates of scabies among children. This finding is consistent with studies such as Gowtham *et al.*[16] in India, which also highlighted how lower caregiver education levels led to increased scabies prevalence. Educated caregivers are more likely to adopt better hygiene practices and seek prompt medical intervention, reducing the likelihood of transmission.[17] In contrast, low education levels often correlate with lower socioeconomic status and limited access to healthcare, exacerbating the risk of scabies transmission. Household size was another determinant, with larger households more likely to experience scabies outbreaks. This finding is supported by studies like Sanei-Dehkordi *et al.*[18] in Iran, which identified large family size as a significant risk factor, and Nthibo *et al.*,[19] which highlighted overcrowded conditions as conducive to the spread of scabies through close physical contact and shared items. Interestingly, Siamondole[7] in Zambia found smaller households (fewer than five members) to be protective against scabies, underscoring the role of household

dynamics in the spread of the disease. However, it is essential to note that household size often interacts with other factors like education and access to healthcare, making it difficult to isolate its impact independently. Contact with scabies cases was strongly associated with an increased risk of infection, a finding corroborated by several studies. Misganaw *et al*.[20] in Ethiopia and Tefera *et al*.[1] in Tigray also identified contact history as a significant determinant. The transmission of scabies primarily occurs through prolonged skin-to-skin contact, particularly among children who share sleeping spaces or live in close quarters with infected individuals.[18] The findings in Kabanga village reinforce the importance of limiting direct contact with infected individuals to prevent the spread of scabies. Finally, bathing frequency was identified as a critical factor, with infrequent bathing associated with a higher prevalence of scabies. Regular bathing helps remove mites and their eggs from the skin, breaking the life cycle of the parasite and reducing transmission risks. Studies like Gowtham *et al*.[14] in India and Tefera *et al*.[1] in Ethiopia have similarly linked poor hygiene practices, including infrequent bathing, to higher rates of scabies. In Zambia, Siamondole[7] found that bathing less than three times per week significantly increased the risk of scabies outbreaks. These findings emphasise the importance of good personal hygiene in controlling and preventing scabies infestations.

Preventive measures employed to mitigate scabies

The study discovered that participants employed key practices related to the prevention of scabies, such as daily skin checks, surface disinfection, management of itchy rash, and sharing beds and clothing. The majority of respondents reported checking their child's skin for rash signs once a day, reflecting a proactive approach to scabies symptom monitoring. This regular inspection allows for early identification of the condition, aligning with global recommendations for scabies control. Early detection is crucial for preventing the spread of mites within households and communities, as emphasised by the World Health Organization.[3] The habit of routine checks agrees with international guidelines advocating for early diagnosis and intervention. Additionally, most respondents disinfected surfaces several times a week, which is an important preventive measure against scabies transmission. Disinfecting surfaces that may come into contact with infected individuals, or their belongings, helps eliminate mites or eggs that can survive outside the host for short periods. This is consistent with findings by Charalambous *et al*.[21] in England, were regular cleaning in child asylum seeker facilities significantly reduced scabies prevalence. Thus, regular disinfection appears to be a key factor in minimising the spread of scabies in both domestic and communal settings. However, there were varied responses regarding managing a child's itchy rash, highlighting differences in healthcare awareness and resource access. Nearly half of the respondents opted to wait for the rash to resolve, which is concerning. Delayed treatment can lead to persistent infestations, secondary bacterial infections, and continued transmission. Prompt medical intervention, as emphasised by Karimkhani *et al*.,[5] is essential for controlling outbreaks. Similar results were observed by Misganaw *et al*.[18] in Ethiopia, where delayed treatment contributed to higher transmission rates, suggesting that early healthcare access is critical for scabies management. Finally, the practice of sharing beds, bedding, and clothes among family members was common and significantly increased the risk of scabies transmission due to close contact and the shared use of contaminated items. This finding aligns with studies by Hegab *et al*.[10] in Egypt and Tefera *et al*.[1] in Ethiopia, which both identified shared sleeping arrangements as a major risk factor for scabies. These studies support the notion that reducing such practices could lower scabies transmission rates in households.

LIMITATIONS

Despite yielding significant findings, the study had limitations. The reliance on self-reported data from caregivers introduced potential recall bias,

underreporting, and social desirability bias. Furthermore, the data from the Samfya District Health Office were generalised for skin conditions and did not include specific information on scabies, necessitating supplementary data collection directly from the community.

CONCLUSION

The study revealed a high prevalence of scabies (54.0%) among children in Kabanga village, indicating a significant public health concern. The high prevalence in Kabanga may be attributed to poor hygiene practices and overcrowded living conditions, which are prevalent in the village. Several determinants were identified as contributing to the scabies outbreak, including younger age, larger household size, lower caregiver education levels, and infrequent bathing. For instance, younger children were found to be more susceptible to scabies due to weaker immune systems and closer physical contact with others. The large household sizes in Kabanga village also facilitated scabies transmission, as overcrowded conditions increased physical contact and sharing of personal items. Preventive measures such as daily skin checks and surface disinfection were commonly practised. However, inconsistent healthcare access and delayed treatment of symptoms contributed to the persistence of scabies outbreaks.

Recommendations

The study recommends the following.

1. The Ministry of Health and Non-governmental organisations (NGOs) should implement targeted community education campaigns focused on scabies prevention, hygiene practices and the importance of early detection and treatment of scabies.
2. Mass drug administration (MDA) programs in Kabanga village should be launched to treat and prevent scabies among children and other at-risk populations. This includes the distribution of topical acaricides and oral ivermectin by the Ministry of Health and stakeholders such as the WHO and UNICEF.
3. Community health workers and parents should encourage children in Kabanga village to bathe regularly and observe good personal hygiene practices. Additionally, emphasis should also be made on proper clothing hygiene and reducing overcrowding in households.
4. Healthcare facilities, through community health workers, should aim at enhancing health services, especially for caregivers with lower educational attainment, by establishing mobile clinics and health education sessions that emphasise scabies management and treatment.

DECLARATIONS

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Conflicts of interest

The authors declare that there are no conflicts of interest related to the publication of this paper.

Competing interests

The authors declared that they have no competing interests.

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Ethics approval

Ethical approval for this study was granted by the Lusaka Apex Medical University Bio-medical Research Ethics Committee (*FWA 00029892, IRB:*

00001131, Ref: 00754-24). Additionally, permission was sought from the National Health Research Authority (NHRA) (*Ref No.: NHRA0002/19/04/2024*) and the Samfya District Health Office. Informed consent was obtained in writing from all participants, and strict measures were taken to ensure the confidentiality and privacy of the collected data.

Data availability

The data supporting this research are available from the corresponding author(s) upon reasonable request.

Authors' contributions

LC & CM conceptualised the study. LC was responsible for data cleaning and analysis. CM provided supervision, developed the manuscript, and critically reviewed both the methodology and the interpretation of results. BFM, AC, and CK contributed to the manuscript's development through proofreading and participation in its revision process. The final version of the manuscript was approved by CM.

REFERENCES

1. Tefera S, Teferi M, Ayalew A, Belete T, Hadush H. Prevalence of scabies and associated factors among primary school children in Raya Alamata District, Tigray, Ethiopia, 2017/2018. J Infect Dis Epidemiol. 2020; 6:154. doi: 10.23937/2474-3658/1510154
2. Trasia RF. Scabies in Indonesia: Epidemiology and prevention. *Insights Public Health J*. 2020;1(2):30-8. doi: 10.20884/1.iphj.2020.1.2.3071
3. World Health Organization. Scabies [Internet]. Geneva: WHO; 2023 [cited 2024 Feb 29]. https://www.who.int/news-room/fact-sheets/detail/scabies#:~:text=Scabies%20mites%20burrow%20into%20the,causing%20intense%20itch%20and%20rash
4. El-Moamly AA. Scabies as a part of the World Health Organization roadmap for neglected tropical diseases 2021–2030: what we know and what we need to do for global control. *Trop Med Health*. 2021;49(1):64. doi: 10.1186/s41182-021-00348-6
5. Karimkhani C, Colombara DV, Drucker AM, Norton SA, Hay R, Engelman D, Steer A, Whitfeld M, Naghavi M, Dellavalle RP. The global burden of scabies: a cross-sectional analysis from the Global Burden of Disease Study 2015. *Lancet Infect Dis*. 2017;17(12):1247-54. doi: 10.1016/s1473-3099(17)30483-8
6. Chitalu D. Scabies cases rife in Northern Province [Internet]. Diamond Media; 2023 [cited 2023 Dec 6]. Available from: https://diamondtvzambia.com/scabies-cases-rife-in-northern-province/
7. Siamondole MW. Community Scabies Outbreak Investigation and Risk Factors in Katondo Health Post, Kasenengwa District of Eastern Province: Unmatched Case Control Study. *Inter J Infect Dis Therapy*. 2023;9(4):39-45. doi: 10.11648/j.ijidt.20230801.15
8. Jere J. Samfya hit with scabies breakout. ZNBC [Internet]. 2022 [cited 2023 Dec 6]. Available from: https://www.znbc.co.zm/news/samfya-hit-with-scabies-breaks-out/
9. Samfya District Health Office. Record of household numbers in Kabinga Village, Samfya. 2024.
10. Hegab DS, Kato AM, Kabbash IA, Dabish GM. Scabies among primary schoolchildren in Egypt: sociomedical environmental study in Kafr El-Sheikh administrative area. Clinical, cosmetic and investigational dermatology. 2015: 105-11.doi: 10.2147/ccid.s78287
11. Thornley S, Sundborn G, Engelman D, Roskvist R, Pasay C, Marshall R, Long W, Dugu N, Hopoi N, Moritsuka S, McCarthy J. Children's scabies survey indicates high prevalence and misdiagnosis in Auckland educational institutions. *J. Paediatr Child Health*. 2023 Dec;59(12):1296-303. doi: 10.1111/jpc.16512
12. Ndhlovu MK, Sitali-Zimba L. Prevalence and Associated Risk Factors of Scabies Among Under-Five-Year-Old Children in Mafinga District, Zambia. *medRxiv*. 2025; 2025-05.

13. Romani L, Steer AC, Whitfeld MJ, Kaldor JM. Prevalence of scabies and impetigo worldwide: a systematic review. *Lancet Infect Dis*. 2015;15(8):960-7. doi: 10.1016/S1473-3099(15)00132-2
14. Collinson S, Timothy J, Zayzay SK, Kollie KK, Lebas E, Candy N, Halliday KE, Pullan R, Fallah M, Walker SL, Marks M. The prevalence of scabies in Monrovia, Liberia: A population-based survey. *PLoS Negl Trop Dis*. 2020;14(12):e0008943. doi: 10.1371/journal.pntd.0008943
15. Emeka NK. Prevalence of scabies among secondary school students in Anambra State, Nigeria. *World J Bio Pharm Health Sci*. 2021;8(1):001-7. doi: 10.30574/wjbphs.2021.8.1.0091
16. Gowtham V, Kalyani P, William Felix AJ. Prevalence of scabies among school children living in urban Chidambaram and its associated risk factors: a cross-sectional study. *Int J Community Med Public Health*. 2020;7(12):4879-84. doi: 10.18203/2394-6040.ijcmph20204968
17. Ararsa G, Merdassa E, Shibiru T, Etafa W. Prevalence of scabies and associated factors among children aged 5–14 years in Meta Robi District, Ethiopia. *PLoS One*. 2023;18(1):e0277912. doi: 10.1371/journal.pone.0277912
18. Sanei-Dehkordi A, Soleimani-Ahmadi M, Zare M, Jaberhashemi SA. Risk factors associated with scabies infestation among primary schoolchildren in a low socio-economic area in southeast of Iran. *BMC pediatr*. 2021;21(1):249. doi: 10.1186/s12887-021-02721-0
19. Nthibo LA, Molefi TL, Kololo SO, Leeme TB, Selemogo M, Molefi M. Prevalence and Associated Risk Factors of Scabies and Impetigo: A Cross-Sectional Study in the Nata Catchment Areas of Tutume District, Botswana. *medRxiv*. 2023:2023-07. doi: 10.1101/2023.07.08.23292236
20. Misganaw B, Nigatu SG, Gebrie GN, Kibret AA. Prevalence and determinants of scabies among school-age children in Central Armachiho district, Northwest, Ethiopia. *PLoS One*. 2022;17(6):e0269918. doi: 10.1371/journal.pone.0269918
21. Charalambous A, Bodey C, Lee-kelland R. 1291 Prevalence of scabies in unaccompanied child asylum seekers. *Arch Dis Child*. 2022;**107:**A87. doi: 10.1136/archdischild-2022-rcpch.139