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Original Article

Magnitude and Factors Associated With Scabies Among Primary School Children in Goro Gutu Woreda, East Hararghe Zone, Ethiopia

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Abstract

Introduction: More than 300 million individuals worldwide suffer from scabies, which has a considerable morbidity rate, especially in underdeveloped countries. The Federal Ministry of Health has created rules for handling outbreaks in Ethiopia. Investigations are still being conducted only in a few areas, and health educators are making diagnoses even though they might overlook some cases. The prevalence of scabies among primary school students in Goro Gutu Woreda, east Hararghe zone, Oromia region, Ethiopia, was examined from October 20 to November 20, 2021.

Methods: From October 20 to November 20, 2021, 460 students in Goro Gutu Woreda's primary schools participated in this institutional-based cross-sectional study. A pre-tested, structured questionnaire and a physical exam were used to gather the data. Stata (version 15) was utilized to analyze the data. To find factors linked to scabies, bivariate and multivariate analyses were employed, and a *P* value less than 0.05 was considered statistically significant.

Results: The overall magnitude of scabies was 11.4% [(95% confidence interval [CI]: 8, 14)]. Lower grade levels of (1-4 grade) (adjusted odds ratio [AOR] = 3.09, 95% CI (1.32, 7.25)], families with illiterate fathers (AOR = 2.68, 95% CI (1.32, 5.44)], and the lack of taking bath with water and soap [AOR = 3.22, 95% CI (1.07, 9.66)] were significantly associated with scabies.

Conclusion: According to the 2015 Ethiopian guidelines for controlling scabies outbreaks, schoolchildren in the Goro Gutu district of eastern Ethiopia had high scabies rates. These rates were closely connected with children's grade level, fathers' educational status, and how frequently they took baths with soap and water. It is advised that children in schools and communities behave more hygienically.

Keywords: Primary school children, Magnitude, Scabies, Goro Gutu, Ethiopia

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Background

A mite called Sarcoptes scabiei is the common and contagious skin infection known as scabies. Because of the severe itching brought on when the pregnant female mite burrows into the top layer of skin and lays eggs, it is sometimes referred to as the "human itch" (1). Pruritus is the most typical sign of a scabies infestation. Secondary bacterial infections are encouraged when the skin's protective barrier function is weakened, which can lead to additional, potentially fatal issues. It is a neglected tropical disease that affects people all over the world, regardless of their age, race, gender, or social class (2). Studies show that kids who shared a bed on the floor with other kids were more likely to get serious infections and to get them again, facilitating the spread of scabies mites from infected to healthy children through skin-to-skin contact (3).

Due to outbreaks in medical facilities and vulnerable communities, scabies has a significant financial impact on national health services in developed nations. Scabies infestations and their complications, however, place a significant financial burden on healthcare systems in nations with limited resources (4). Scabies is persistently common in African nations, according to evidence from the literature, and is noticeable in both individuals and some particular groups and communities (5). Scabies is another prevalent condition in Ethiopia, especially during times of natural or man-made disasters such as floods, droughts, civil wars, conflicts, inadequate sanitation, and crowded living conditions (6). According to a study, 22.5% and 5.5% of schoolchildren with scabies were reported in Northern Ethiopia and Southern Ethiopia, respectively (7).

Scabies is spread by close and prolonged contact with people who have the disease, which is why poverty

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and poor hygiene are factors in the spread of scabies. Overcrowding, sharing of beds, poor hygiene, lack of access to health care, insufficient treatment, and malnutrition are some of the other factors that contribute to poverty and poor hygiene (8).

The common predisposing factors for the infestation are overcrowding, poor hygiene, poor nutritional status, immigration, homelessness, and sexual contact (9). These side effects could include heart disease, kidney disease, abscesses, and localized skin infections (10). While there are numerous topical treatments for scabies, it is challenging to eradicate the condition throughout an entire community. Considering that it kills a higher number of parasites than other oral medications, ivermectin is increasingly used in mass therapy (11).

Statement of the Problem

Scabies prevalence can be anywhere between 0.3% and 71% worldwide. Additionally, 0.21% of disability-adjusted life-years due to scabies are due to disability (12). There is a high prevalence of scabies in low- and middle-income countries (13). Its prevalence in sub-Saharan Africa varied up to 33.7% (14). According to various epidemiological studies conducted in some parts of Africa such as in Gambia (15.9%), Cameroon (17.8%), and Nigeria, the prevalence of scabies was about 4.7% up to 65% (15). Scabies affects people of all social classes, but some people are more susceptible to infection than others, including those with compromised immune systems, the elderly, those living in nursing homes, children, and people from low socioeconomic backgrounds (16). Due to close physical contact between classmates and crowded conditions in schools, scabies is a common issue among schoolchildren, and the infestation spreads quickly (16).

A policy has been created in Ethiopia to aid in the prevention and control of scabies outbreaks. health, water, sanitation, and hygiene (WASH) and Communication for Development are among the interventions that are advised in this regard. Given that scabies is a disease that is spread through water, the main intervention is to ensure that people have access to enough clean water for personal hygiene. To kill mites and their eggs, it is important to wash clothing, wash the body with soap, especially the affected areas, wash hands properly when necessary, and sundry any bedding or clothing that was used by an infected person before and during effective treatment (17).

Scabies is one of Ethiopia's top public health concerns when it comes to communicable diseases, especially among disadvantaged populations such as street people, migrant workers, and the poor (18). The magnitude of scabies infestation in Ethiopia was varied, ranging from 2.5 to 78%, and inconsistent (19). In Ethiopia, the severity and spread of disease among the most vulnerable people are made worse by the expansion of the drought and the rise in the number of districts with limited access to WASH services. Overall, 32 districts in the Amhara, Tigray, and Oromia regions were classified as highly affected, with a total of more than 250 000 people affected and a prevalence of more than 15% in some districts. Of these 32 districts, 24, 5, and 2 were in the Amhara, Tigray, and Oromia, respectively (20).

Scabies has grown to be a significant public health issue, particularly in areas with limited resources. Scabies research, particularly in Ethiopia, concentrated on adults; however, children under the age of 15 received little attention. Therefore, there has been little research on the prevalence of scabies and risk factors among primary school students in the study area. Therefore, this study aimed to evaluate the extent and contributing factors of scabies in Goro Gutu Woreda's primary schools

Significance of the Study

The findings of this study would indicate the prevalence of scabies and scabies risk factors among primary school students enrolled in classes during the study period. The Goro Gutu Woreda Health Office and Education Office would need to know the results of this study in order to apply mass drug administration and determine the burden of the disease. To prevent and control scabies and its contributing factors, it serves as a baseline. It is used to lessen the prevalence of scabies and its negative health effects in children in primary schools. In addition, it serves as the starting point for additional studies that will be performed in the area.

Objectives

General Objective

Assessing the magnitude and factors associated with scabies among primary school children in Goro Gutu Woreda from October 20 to November 20, 2021

Specific Objectives

- Determining the magnitude of scabies among primary school children
- Identifying factors associated with scabies among primary school children

Materials and Methods

Study Area and Period

From October 20 to November 20, 2021, the study was performed in Goro Gutu Woreda. Eastern Oromia, Ethiopia, is home to Goro Gutu Woreda. Goro Gutu is bounded to the south by Deder Woreda, to the west by the Hararghe zone, to the north by the Somali region, and to the east by Meta Woreda. The distance between the capital Addis Abeba and the zonal capital Harar is approximately 416 kilometers and 104 kilometers, respectively. There are two urban and 28 rural kebeles. Woreda has 84 primary schools (excluding kindergarten), 28 health

posts, and 6 health centres (Woreda administrative office report, 2014).

Study Design

This was an institutional-based cross-sectional study.

Population

Source Population

The source population included all primary school children with their parents or guardians in Goro Gutu Woreda.

Study Population

The population of the study included all primary school students who were enrolled during the data collection period in Goro Gutu Woreda and were accompanied by their parents or guardians in particular classrooms at particular schools.

Eligibility Criteria

Inclusion Criteria

All primary school children in the selected sections of the intended schools with their parents/guardians were included in the study.

Exclusion Criteria

Primary school children who were absent from school for two consecutive days during data collection were excluded from the study.

Sample Size Determination

For Objective 1: The sample size was calculated by using a single population proportion formula [n = (Z /2)2 p (1 − p)/d2], considering 23.8% from the previous study (21)., with assumptions of a confidence interval (CI) at 95% = 1.96, a margin of error (d) = 5, design effect = 1.5, and adding 10% for non-response rate as $n=\frac{(Z_{\alpha/2})^2\, p(1-P)}{d^2}=\frac{(1.96)^2\, X\, 0.238(1-238)}{(0.05)^2}=279,$ non-response rate = 10% x 279 = 28; thus, n = (279 + 28)*1.5 = 460, where, n = the minimum sample size, zα/2 = The desired level of 95% CI (1.96), P = 23.8% magnitude of scabies, d = Margin of error 5% (0.05).

For Objective 2: The sample size for the second specific objective of this study was determined by considering factors that are significantly associated with the outcome variable: A two-sided CI of 95%, a margin of error of 5%, a power of 80%, and the ratio of exposed to unexposed at 1:1 using EPI-Info software. Considering 10% for the non-response rate, the final sample size for the second objective was determined as follows (Table 1):

The largest sample size was taken from the first objective; more precisely, 460 participants were selected from the study population.

Sampling Procedure/Technique

For the study units, a representative sample of the participating primary schools was chosen using a multi-stage sampling technique. By employing simple random sampling, the first six kebeles were selected from the Goro Gutu District. Second, nine schools were randomly chosen from among the selected kebeles. According to the total number of students enrolled in the chosen school, the final sample size was distributed proportionately. Then, based on the number of students in each section, the sample size in the chosen school was proportionally distributed to each grade. Finally, students were selected from their class rosters using a systematic random sampling method. The sampling width was determined by the proportion formula (The total number of students in the sections divided by the total sample size, which is 2301/460 = five), and then every fifth student on the roster was included in the study (Figure 1).

Data Collection Methods

Data Collection Tools

The data were collected by face-to-face interviews using a pre-tested Afaan Oromo version structured questionnaire from the parents and students. The questionnaire was developed by reviewing different literature pieces (23,25,26). The questionnaire has three sections, namely, socio-demographic, personal hygiene, and living condition factors.

Data Collectors

Ten field workers, nine B.Sc. nurses' data collectors, and one health officer supervisor were assigned to collect the required data.

Data Collection Procedures

Clinical investigation (observation) and structured interviewer-administered questionnaires were used to collect the required data. A dermatologist provided

Table 1. Sample Size Determination for the Objective Factors Associated With Scabies

Factors	Scabies		AOR	Sample Size Considering 1.5 Design Effects and 10% Non-response Rate	References
	% Of Expo Seed	% Of Unexposed			
Frequency of bathing	7.7%	25%	3.51	(164 + 16.4)*1.5 = 271	(22)
Family size	60.9%	39.06%	0.77	(180 + 18)*1.5 = 297	(23)
Sharing clothes	41.4%	58.6%	5.61	(274 + 27.4)*1.5 = 452	(24)

Note. AOR: Adjusted odds ratio.

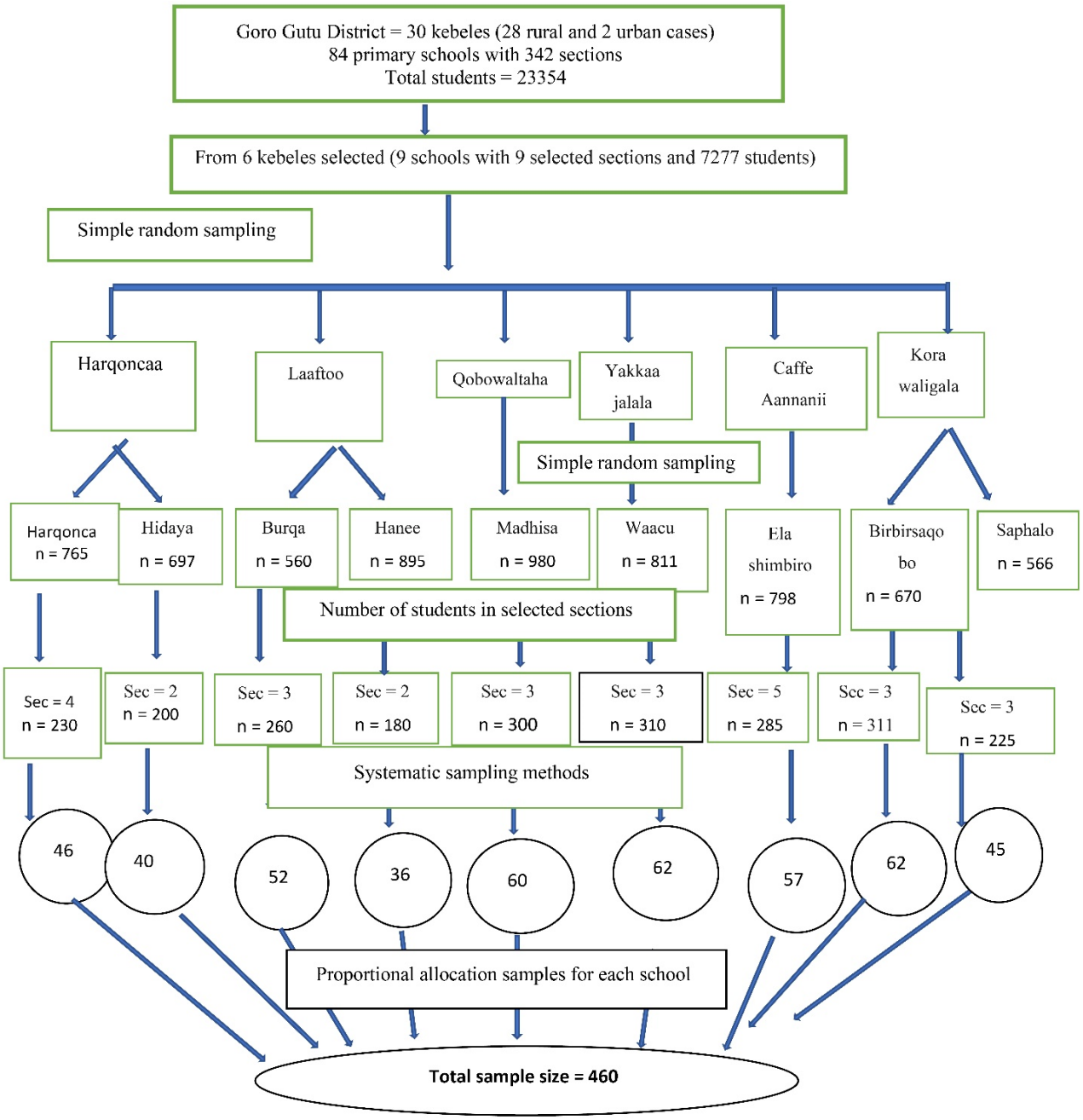

Figure 1. Schematic Diagram of Sampling Frame on the Magnitude and Factors Associated With Scabies Among Primary School Children of Goro Gutu District, Oromia, Ethiopia, 2021

training to data collectors on how to identify scabies, and training was provided on how to get parents' or study participants' informed consent or assent to ensure ethical procedures, including practical sessions.

The data gatherers recognized scabies presentations using the 2020 International Alliance for the Control of Scabies (IACS) Criteria. The parents or legal guardians of the child were questioned about the child's itching experiences and history of contact with scabies carriers. The child was then given a clinical examination to look for burrows, solid lesions (papules), and vesicles. Scabies can be identified by its characteristic skin lesions on the hands, interdigital spaces, wrists, arms, elbows, armpits, legs, or feet, as well as by a history of nighttime itching. A clinical evaluation that takes into account the patient's medical history, as well as a skin examination, is required for the diagnosis of clinical (level B) or suspected (level C) scabies. Ample lighting should be utilized when examining patients. Due to the issues of cultural and personal modesty, we could not inspect sensitive parts such as the breasts and external genitalia.

Therefore, subcategory B2 (male genital lesions) would not be considered in our diagnostic evaluation. With much fewer falling under B1 (burrows) or C2 (atypical features), it could be categorized as subcategory B3 or C1 (typical features). The study's outcome variable was

whether a scabies infection existed or not (27).

Variables

Dependent Variable

- Magnitude of scabies

Independent Variables

- Socio-demographic Factors: Age, gender, family size, and educational status
- Personal Hygiene Factors: Using soap in the bath, trimming fingernails, and washing the body and cloth
- Living Condition Factors: Living with an infected person, sharing a bed, and sharing clothes

Operational Definitions

- Scabies: It is characterized by common skin lesions on the hands, interdigital spaces, wrists, arms, elbows, armpits, legs, or feet, as well as a history of nighttime itching (27).
- Contact with scabies infested person: Participants who live together with the infected person by scabies, share a bed (including romantic partners), attend the same school, or spend a lot of time together (23,25,26).

Data Quality Assurance

To ensure consistency, first, the questionnaire was prepared in English, then translated into the regional tongue (Afaan Oromo), and finally back-translated into English. Additionally, data were gathered by trained nurses observing or physically inspecting students. To check for clarity and completeness of the data collection tool, a pre-test at 5% of the sample size was performed in the Haramaya district two weeks prior to the actual data collection period. Corrections were made as a result. A dermatologist trained data collectors and supervisors on how to diagnose scabies, obtain informed consent from guardians or parents, assent from participants, approach subjects, and follow ethical procedures for three days, including practical training at Chelenko Primary Hospital. Each day that data were being collected, the supervisors and principal researcher closely oversaw the data collectors' work in order to support and observe it. To provide adequate support for the data collection process, principal investigators and supervisors were evaluated for daily activity, consistency, and completeness of the questionnaires. Each questionnaire was reviewed for completion after data collection to start the daily data entry process (27).

Data Analysis

After data collection, the data were coded, cleaned, and entered into Epi Data (version 3.1) and analyzed using Stata (version 15). Descriptive statistics were performed to compute summary statistics, and the results were presented in tables and text as frequencies, percentages, and standard deviations. A bivariable analysis was performed to select candidate variables with $P < 0.25$. Accordingly, candidate variables were included in the final model of multivariable analysis to control all possible confounders. Variables that were also significant in previous studies and from the context point of view of the study area were included in the final model of multivariable analysis even if the above criteria were not met. The model's goodness of fit was tested by the Hosmer and Lemeshow statistic test; the model was considered a good fit since it was found to be non-significant for Hosmer and Lemeshow (Pearson Chi = 1.80, P value = 0.6152). Multicollinearity was checked by using the variance inflation factor (VIF) to detect the correlation between independent variables, and the result represented no variables with VIF > 10. Finally, variables with a P value less than 0.05 in the multivariable analysis were considered, as there is a significant association with scabies.

Ethical Considerations

Ethical clearance was obtained from the Institutional Health Research Ethics Review Committee of the College of Health and Medical Sciences, Haramaya University. In addition, an official letter of support was written from the School of Medical Laboratory Sciences to the Zonal Health Department and the Goro Gutu Waida Education Office. The purpose and significance of the study were explained to the head of the selected school and the parents or guardians of the child, and they were assured that they had the right to withdraw from the study at any stage. Informed, voluntary, written, and signed consent forms from parents and children and assent from the children were obtained before the data collection. Then, parents and their respective children were invited by the teachers to come to the school where their child was learning. Detailed information about the child was obtained from his or her parents. Identified scabies cases were linked to health extension workers and the District Health Office for treatment purposes. Further, students were sensitized to adhere to proper sanitation and hygiene practices daily. Similarly, school directors and teachers were informed to monitor their students' hygiene. The confidentiality of the study participants was maintained throughout the study.

Information Dissemination

The results will be submitted to Haramaya University, the School of Public Health, the Zonal Health Department, and the Goro Gutu District Health Office, which will present them at different workshops. Moreover, efforts will be made to publish the findings of the study in a peer-reviewed journal.

Results

Socio-demographic Characteristics

In this study, 447 study participants were included, with a response rate of 97%. However, 13 students were excluded from the study since their parents or guardians were not willing to respond to the questions. The median age of the children participating in this study was 12 (interquartile range: 9–-15). One hundred sixty-four (36.7%) participants were in the age group of 6-10 years. More than half of the study participants were male children (57.5%), had 1-5, family members (78.5%), were Muslims (92.6%), had literate mothers (59.3%) and fathers (64.7%), and were farmers (90.6%), the details of which are presented in Table 2.

Personal Hygiene and Contact Information for Students About Scabies

The majority of the study participants took a bath last week (79.4%), washed their clothes with soap and water (73.1%), shortened their nails last week (64%), and had no contact with someone having scabies (87.2%), the related data are provided in Table 3.

Magnitude of Scabies

History

A positive contact history was reported in 58 (13% of study participants). Sharing a bed with others was reported by 52 (11.6) individuals. Having a friend or classmate with a rash and itch were reported in 49 (10.96) and 46 (10.29%) of the study participants, respectively, and typical lesions were observed in 51 (11.41%) of them.

The International Alliance for the Control of Scabies *Criteria*

The overall magnitude of scabies among primary school children was 11.4% (51/447; 95% CI: 8, 14). Of the total scabies cases, 49 (10.96%) were observed in those with positive contact histories, and 46 (10.29%) were detected in individuals who had an itch. Finally, 46 (10.29%) cases were classified as clinical scabies (level B with typical lesions in a typical distribution and two history features), and 5 (1.12%) were classified as suspected scabies (level C1 with typical lesions in a typical distribution and one history feature) according to the IACS criteria.

Magnitude of Scabies in Relation to School Names

The overall magnitude of scabies among primary school children was 11.4 % (51/447; 95% CI: 8, 14). From the total scabies cases (Figure 2), the highest percentage was found in Ela Shimbiro primary school (17.6 %), while the lowest one belonged to Hidaya primary school (3.9%).

Factors Associated With Scabies

Bivariate and multivariate logistic regression analyses were used to find factors linked to scabies. Bivariable analysis was a candidate due to the high frequency of scabies in relation to socio-demographic traits, personal hygiene, contact information, and high-risk groups.

Bivariate analysis demonstrated that students were in the age range of 6-10 years and were from families with 5 members, grades 1-4, and illiterate mothers and fathers. Further, they did not take a bath last week or a bath with

Table 2. Sociodemographic Characteristics of Study Participants (Students and Their Parents) at Goro Gutu Primary Schools, Eastern Ethiopia, 2021 (n = 447)

Variables	Categories	Frequency	Percent
Age of children (y)	6-10	164	36.7
	11-14	151	33.8
	15+	132	29.5
Gender of the child	Male	257	57.5
	Female	190	42.5
Children's grade level	1-4	281	62.9
	5-8	166	37.1
Family size	1-5	351	78.5
	>5	96	21.5
Mother's educational status	Not read and write	182	40.7
	literate	265	59.3
Father's educational status	Not read and write	158	35.3
	Literate	289	64.7
Occupational status of the head housewife	Farmer	405	90.6
	Government employee	6	1.3
	Housewife	11	2.5
	Merchant	25	5.6

Table 3. Personal Hygiene and Contact Information for Students and Parents About Scabies at Goro Gutu Primary Schools, Eastern Ethiopia, 2021

Variables	Categories	Frequency	Percent
The child took a bath last week.	Yes	355	79.4
	No	92	20.6
The child took a bath with water and soap.	Yes	324	72.5
	No	123	27.5
The child took a bath with water only.	Yes	137	30.6
	No	310	69.4
The child washed clothes last week.	Yes	342	76.5
	No	105	23.5
The child wash clothes with water and soap.	Yes	327	73.2
	No	120	26.8
The child wash clothes with water only.	Yes	125	28.0
	No	322	72.0
The child trimmed their nails last week.	Yes	286	64.0
	No	161	36.0
The child had contact with an individual diagnosed with scabies.	Yes	58	13.0
	No	389	87.0
The child shared a bed with another individual.	Yes	52	11.6
	No	395	88.4

water and soap, and did not wash clothes with water and soap. In addition, students who did not cut their nails last week were more likely to be infested by scabies, and they were significantly associated with scabies, as confirmed by the odds ratio of *PV* < 0.25% with a 95% CI (Table 4).

Based on multivariable analysis, students from the grade level of 1-4 were 3.09 times more likely to be infested by scabies than students from the grade level of 5-8 (AOR = 3.09, 95% CI: 1.32, 7.25). Similarly, students from the family of an illiterate father were 2.68 times more likely to be infested by scabies than the students from the family of a literate father (AOR = 2.68, 95% CI: 1.32, 5.44). In addition, students who had not washed their bodies with water and soap were 3.22 times more likely to develop scabies than their counterparts (AOR = 3.22, 95% CI: 1.07, 9.66). Therefore, scabies was significantly associated with children's grade level, father's educational status, and the lack of taking a body bath with water and soap at *P*<0.05 (Table 5).

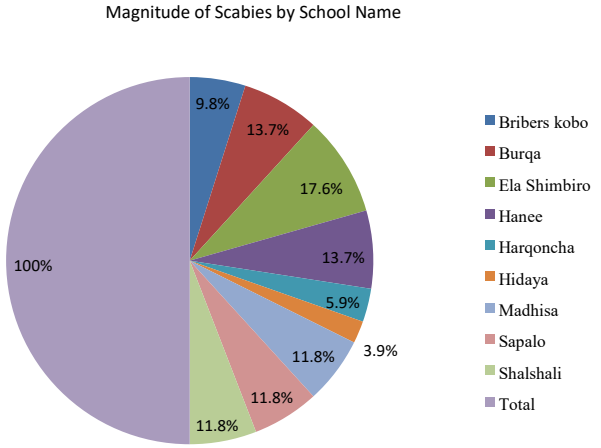

Figure 2. Prevalence of Scabies by School Name in Goro Gutu Woreda, Eastern Ethiopia, 2021

Discussion

This study sought to evaluate the prevalence of scabies and its risk factors among primary school students. Scabies could affect children's lives, causing them to miss school more because of their severe itching, for example. Secondary bacterial issues were also a concern for scabies patients. The absence of taking body baths with water and soap, the father's educational status, and the children's grade level were factors that were strongly associated with scabies. The prevalence of scabies among elementary school students was 11.4% (95% CI: 8, 14). These results are in line with those of studies performed in Ethiopia, Amhara region, Bahir Dar (14.5% 95% CI: 1.5, 27.6%) (28), Central Armachiho district, Northwest Ethiopia (10.82% 95% CI: 8.7-12.9) (25), Dabat, northern Ethiopia (9.3% 95% CI: 5.66%, 12.94%) (22), and out

Table 4. Results of Bivariable Analysis for Factors Associated With Scabies Among Primary Schools in Goro Gutu Woreda, 2021

Variables	Scabies			COR (95% CI)	*P* value
	Category	Yes	No		
Age of children (y)	6-10	31 (18.8%)	133 (81.1%)	4.89 (1.97, 12.12)	0.001
	11-15	18 (9.2%)	178 (90.8%)	2.14 (0.80, 5.75)	0.129
	15+	2 (2.3%)	85 (97.7%)	1	
Family size	1-5	30 (8.5%)	321 (91.5 %)	1	
	>5	21 (21.9%)	75 (78.1%)	2.99 (1.62, 5.52)	0.0001
Child grade level	1-4	43 (15.3%)	238 (84.7%)	3.56 (1.63, 7.79)	0.001
	5-8	8 (4.8%)	158 (95.2%)	1	
Mother's educational status	Unable to read and write	33 (18.1%)	149 (81.9%)	3.04 (1.65, 5.58)	0.0001
	Literate	18 (6.8%)	247 (93.2%)	1	
Father's educational status	Unable to read and write	32 (20.3%)	126 (79.7%)	3.60 (1.96, 6.61)	0.0001
	Literate	19 (6.6%)	270 (93.4%)	1	
Taking a bath last week	Yes	31 (8.7%)	324 (91.3%)	1	
	No	20 (21.7%)	72 (78.3%)	2.90 (1.56, 5.38)	0.001
Taking a bath with water and soap	Yes	23 (7.1%)	301 (92.9 %)	1	
	No	28 (22.7%)	95 (77.2%)	3.04 (1.67, 5.52)	0.001
Wash clothes last weak	Yes	33 (9.65%)	309 (90.4%)	1	
	No	18 (17.1%)	87 (82.9%)	1.93 (1.040, 3.60)	0.037
Wash clothes with water and soap	Yes	26 (8%)	301 (92.0%)	1	
	No	25 (20.8%)	95 (79.2%)	3.04 (1.67, 5.52)	0.0001
I cut my nails last week	Yes	23 (8.0%)	263 (92%)	1	
	No	28 (17.4%)	133 (82.6%)	2.40 (1.33, 4.34)	0.003

Note. COR: Crude odds ratio; CI: Confidence interval.

Table 5. Results of Multivariable Analysis for Factors Associated With Scabies Among Primary Schools in Goro Gutu Woreda, 2021

Variables	Categories	Scabies		COR (95% CI)	AOR (95% CI)
		Yes (%)	No (%)		
Age of children (years)	6-10	31 (18.8%)	133 (81.1%)	4.89 (1.97,12.12)	1.71 (0.35,8.38)
	11-15	18 (9.2%)	178 (90.8%)	2.14 (0.80,5.75)	1.49 (0.35,6.21)
	15+	2 (2.3%)	85 (97.7%)	1	1
Family size	1-5	18 (9.2%)	178 (90.8%)	1	1
	>5	2 (2.3%)	85 (97.7%)	2.14 (0.80,5.75)	2.13 (1.01,4.49)*
Children's grade level	1-4	43 (18.1%)	238 (84.7%)	3.56 (1.63,7.79)	3.09 (1.32,7.25)**
	5-8	8 (4.8%)	158 (95.2%)	1	1
Father's education status	Unable to read and write	32 (20.2%)	126 (79.7%)	3.60 (1.96,6.61)	2.68 (1.32,5.44)**
	Literate	19 (6.6%)	270 (93.4%)	1	1
Mother's educational status	Unable to read and write	33 (18.1%)	149 (81.9%)	3.0 (1.65,5.58)	0.74 (0.21,2.55)
	Literate	18 (6.8%)	247 (93.2%)	1	1
Taking a bath with water and soap	Yes	23 (7.1%)	301 (92.9 %)	1	1
	No	28 (22.7%)	95 (77.2%)	3.85 (2.12,7.01)	3.22 (1.07,9.66)*
Taking a bath last week	Yes	31 (8.7%)	324 (91.3%)	1	1
	No	20 (21.7%)	72 (78.3%)	2.90 (1.56,5.38)	0.50 (0.16,1.60)
wash clothes last weak	Yes	33 (9.65%)	309 (90.4%)	1	1
	No	18 (17.1%)	87 (82.9%)	1.93 (1.04, 3.60)	0.18 (0.05,0.64)
Wash cloths with water and soap	Yes	26 (8%)	301 (92.0%)	1	1
	No	25 (20.8%)	95 (79.2%)	3.0 (1.679,5.52)	2.73 (0.85,8.77)
Trimming nails last week	Yes	23 (8.0%)	263 (92%)	1	1
	No	28 (17.4%)	133 (82.6%)	2.40 (1.33,4.34)	1.26 (0.54,2.91)

Note: COR: Crude odds ratio; AOR: Adjusted odds ratio; CI: Confidence interval.
* Significant at $P<0.05$, ** Significant at $P<0.001$.

of Ethiopia, Liberia (9.3% 95% CI: 6.5-13.2%) (29), and Nigeria (13.3% 95% CI: 11.8-16.8) (30). However, it was lower than studies conducted in Cameron (17.8%, 95% CI: 14.7-22.9) (31), Tigray Region, Northern Ethiopia (12.93% 95% CI: 17.5-21.0) (23), Solomon Island (19.2% 95% CI: 17.5-21.0) (32), and Fiji (18.5%, 95% CI: 14.7-22.9) (33). On the other hand, the current magnitude is higher than a study conducted in Egypt (4.4% 95% CI: 1.4-1.8%) (34). This difference in magnitude might be due to variations in the sociodemographic characteristics of the study population, level of awareness, and health-seeking behavior across these populations.

According to this study, pupils who did not wash their bodies with soap and water were more likely to have scabies than their peers. This result conforms to the findings of the research performed in Nigeria (35). Good personal hygiene practices can help control and prevent scabies. Scabies mites are eliminated by soap washing because soap has a chemical characteristic that removes the mites from the body and lessens the chance of transmission. People around the country may be in danger of developing infectious diseases if there is inadequate access to water. Additionally, the importance of keeping proper personal hygiene, which may be a risk factor for the development of scabies mites, may not have been understood by the respondents.

According to this study, scabies impacted lower-grade pupils more than students in higher grades, which is consistent with the results of a Cameroonian investigation (31). This may be due to the fact that children in first-cycle primary schools have less control over their personal hygiene and environmental cleanliness or it may be because these pupils are better aware of transmission and prevention. Considering that they spend a lot of time playing with their pals, they also have a larger probability of coming into contact (22). Poor personal hygiene has been connected to the transmission of human scabies. Because they have less education than their older peers, younger students may be less aware of personal hygiene guidelines to follow, especially when living with others, and thus more susceptible to having an infestation.

The father's educational background was another influence found in the current investigation. Students who did not learn to read and write had a higher chance of contracting scabies. Other Iranian investigations have revealed findings that are comparable to this one (36), Hegab in Egypt (37) and Yaseen in Indian (38) suggested that parents with higher levels of education are more capable of applying healthcare and prevention measures for their children. The possible reason might be that parental education seems to have a major role in the prevention of contagious diseases (37,39). There was

one report from Egypt demonstrating that parents with higher levels of education are more capable of applying healthcare and prevention measures for their children.

Strength and Limitation

Strength

The diagnosis was made based on a simplified, modified version of the 2020 IACS criteria. Skilled primary healthcare personnel perform a brief skin examination of exposed parts of the limbs for the presence of typical scabies lesions. It is used to offer more accurate regional estimates of prevalence, to argue for enough funding for control, and to track prevalence over time, including evaluating the effectiveness of control programs.

Limitations

The temporal relation between the insufficient knowledge about scabies, the variable demographic factors, and the high prevalence of scabies among the targeted population could not be determined considering the cross-sectional nature of this study. The other limitation of our study included the absence of dermoscopy and/or skin scrapings or microscopy, although they are operator-dependent techniques and have relatively low sensitivities.

Conclusion and Recommendations

The elementary school in Goro Gutu Woreda has a high frequency of scabies according to the 2015 Ethiopian standards for scabies outbreak control. The prevalence was evaluated in terms of sociodemographic characteristics, hygiene, and contact information. The grade level of the children, the level of education of the fathers, and the lack of washing one's body with soap and water were all found to be significantly associated with scabies.

Based on the study's findings, the following suggestions are put forth:

- *For Woreda Health and Administration Offices:* Students' sanitary behaviour will be improved by raising their understanding of scabies' mode of transmission and prevention techniques.
- *For school teachers:* They can increase public understanding about scabies' manner of transmission and available preventative measures.
- *To researchers:* Prevalence surveys are recommended to provide more detailed regional estimates of prevalence, advocate for appropriate resources for control, and monitor prevalence over time, including assessing the impact of control interventions.

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Competing Interests

There is no conflict of interests in the study area.

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