



BIIROO FAYYAA
OROMIYAA

OROMIA HEALTH BUREAU FIRST ANNUAL RESEARCH CONFERENCE

*Building a resilient health
system to ensure the quality of health
care during a public health emergency
July 2022*



Scabies outbreak investigation at Islamic religious schools, Sinana district, Bale zone, Oromia, southeast Ethiopia. case control study



Outline

- Introduction
- Objective
- Method and Materials
- Results and discussions
- Limitations
- Conclusion
- Recommendations
- Acknowledgement
- Reference



Introduction...

- Scabies is a contagious skin disease caused by the mite *Sarcoptes scabiei* var. *hominis* [Jennifer M. et al, 2005, Los angles, Public health, 2018, FMOH, 2015].
- It is a human-specific mite that is highly prevalent in some areas of the developing world.
- Frequently occurring at prisons and schools in developing countries, where it is associated with overcrowding [Hay R. et al, 2006].
- The worldwide prevalence has been estimated to about 300 million cases yearly [Amal k. et al, 2017].
- With a particularly high prevalence in poor tropical regions [David J. et al, 2018].



Introduction...

- The prevalence of scabies in Africa is different in the various regions.
- The most common skin disease in Ethiopia and Nigeria.
[Ulrich R. et al. 2006].
- The scabies outbreak reported from madrasahs of Sinana district, Bale Zone.
- Therefore, this study was aimed at investigating the scabies suspected outbreak and its risk factors in Sinana District *madrasahs* (Islamic religious school), Southeast Ethiopia.



Objective

General objective

- To determine magnitude of scabies outbreak and identify the risk factors of the outbreak in order to provide appropriate control and prevention measures of the disease in Madrasahs of Sinana district, Bale zone, Oromia, Ethiopia, May, 2019.

Specific objectives

- To determine the magnitude of scabies outbreak in Madrasahs of Sinana district, Bale zone, Oromia, Ethiopia, May, 2019.
- To describe scabies outbreak by time, place and person in Madrasahs of Sinana district, Bale zone, Oromia, Ethiopia, May, 2019.
- To identify associated risk factors of scabies outbreak in Madrasahs of Sinana district, Bale zone, Oromia, Ethiopia, May, 2019.
- To guide appropriate prevention and control measures to stop further spread of the disease in Madrasahs of Sinana district, Bale zone, Oromia, Ethiopia, May, 2019.



Methods and Materials

Study area and period

- Sinana district is located around Bale Robe town at 430km from Addis Ababa.
- There are five Islamic religious schools (madrasahs) in the Woreda with 5,689 students.
- All schools use river water except one school which has pipe water.
- The Woreda has 24 health posts and six health centers
- The study was conducted March 15 to April 30, 2019



Methods and Materials...

Study design

- Unmatched case-control study design and line list descriptive analysis was performed.

Population

- Study population are all students attend madrasahs in Sinana district.
- Source population are students attend the madrasah during study period.
- **Cases:** Any students of the madrasahs of Sinana district, with sign and symptoms of scabies.
- **Controls.** Any students of the madrasahs of Sinana district without any signs and symptom of scabies (typical rash and symptoms of unrelenting and worsening itch, particularly at night).



Methods and Materials...

Inclusion criteria

- Case: Any students attend the madrasah of sinana district with sign and symptoms of scabies was selected for investigation during investigation period.
- Control: Any students attend the madrasahs of sinana district without any signs and symptom of scabies

Exclusion criteria

- Case: Students who did not fulfill the signs and symptoms of scabies and critically ill were excluded.
- Control: Any students attend the madrasahs of sinana district without any signs and symptom of scabies critically ill were excluded.



Methods and Materials...

Sample size calculation

- Sample size was calculated by Epi Info 7 stat calc
- Two-sided confidence level $(1-\alpha) = 95\%$, 80% power, Ratio of controls to case= 1: 2.
- After reviewed we took variables with high sample size (share cloth) (**Zeynaba J. et al, 2017**).
- Accordingly, we had calculated sample size 167 (56 cases and 111 controls).



Methods and Materials...

Sampling technique and procedure

- The scabies cases were reported from all five madrasahs in Sinana district.
- Numbers of study participants were assigned to each madrasah proportionally.

$$n = (N * S) / T;$$

where n= sample size for each school; N= number of student in each school; S= total sample size; T=total number of student in entire school.

- To select the final study units and get the required sample, we reviewed scabies line list then selected the case randomly and two controls for each case from the same school were interviewed.



Methods and Materials...

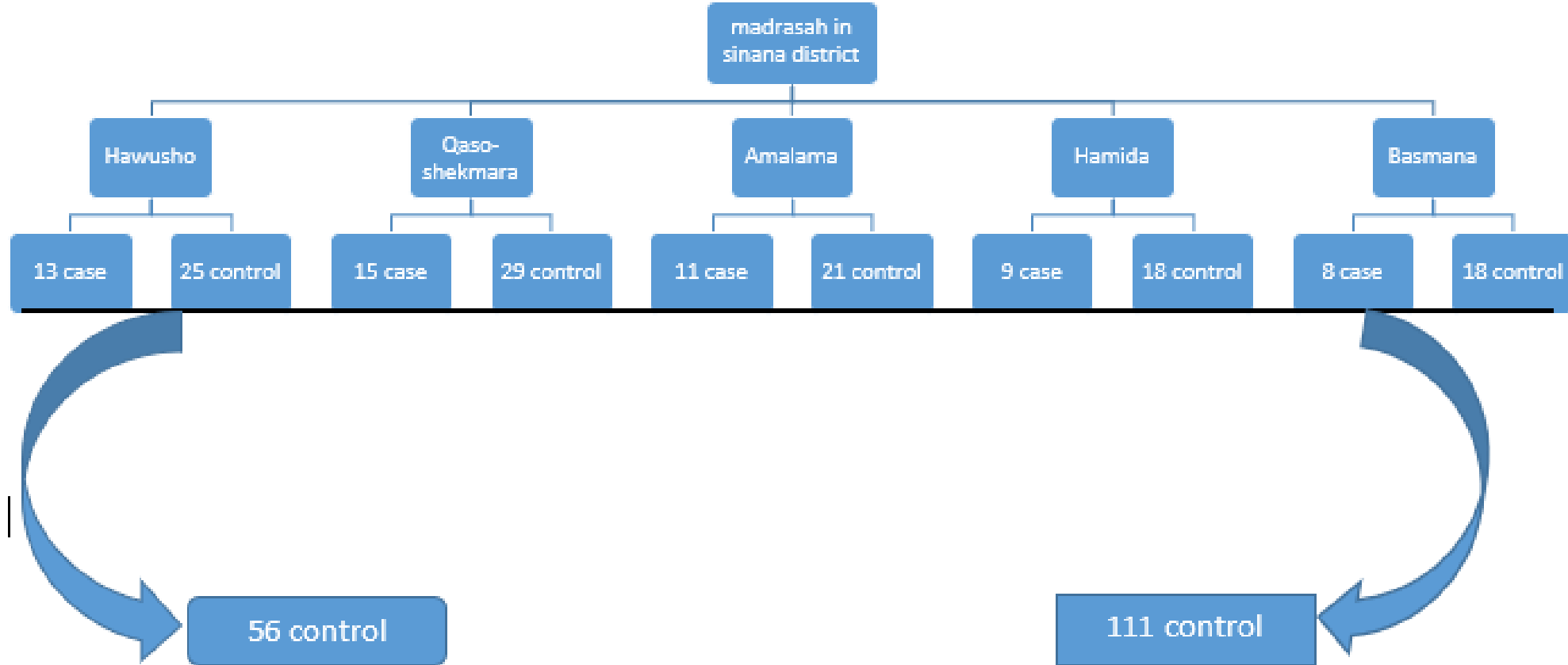


Figure 1: Schematic presentation of sampling procedure for the scabies outbreak investigation in madarasahs of Sinana district, Bale Zone, Oromia, Ethiopia, 2019.



Methods and Materials...

Study variables

- **Dependent variable:** Scabies infestation
- **Independent variables:** Sociodemographic (age, sex, occupation, marital status, and family size), travel history, contact history, personal hygiene, and overcrowding condition were independent variables



Methods and Materials...

Data collection procedures

- We used a semi-structured questionnaire
- The data were collected by one nurse and one health officer through face-to face interview with cases and controls.
- Orientation was given for data collectors on the questionnaire.
- The collected data was checked for completeness and consistence before data entry.
- Line list of the cases was collected from district health office for further analysis.



Methods and Materials...

Data processing and analysis

- All line listed and completed questionnaires were checked for completeness before entry, coded, cleaned, and then analysis made.
- Data was entered into Epi data version 4.4.1 and exported to SPSS 23 statistical software for analysis and line list also entered into Microsoft Office excel 2016.
- Descriptive statistics such as mean, median, frequency and percentage will be done and data was presented using charts, tables and text.
- Bivariate analysis was done and all candidate variables which have association with the outcome variable with p value less than 0.25 was included in multivariate analysis.
- Then multivariate analysis using Back ward stepwise selection method will be employed to determine independent predictors among explanatory variables.
- Model fitness will be assessed by using Hosmer and Lemeshow goodness of fit test.
- Explanatory variable that are significant at P value < 0.05 will be considered as a risk factors for scabies outbreak.
- Adjusted odds ratio with its 95% confidence interval was considered to see the association.



Methods and Materials...

Standard case definition

- **Suspected case:** Student with signs and symptoms consistent with scabies. (Scabies characterized by rash or lesions and intense itching especially at night. Lesions prominent around finger webs, wrists, elbows, axillaries, beltlines, thighs, external genitalia, nipples, abdomen, lower portion of buttocks, head, neck, palm and soles of infants may be involved[**FMOH, 2015. Engelman, 2018**].)
- **Confirmed case:** Student who has a skin scraping in which mites, mite eggs or mite feces have been identified by a trained health care professional.
- **Contact:** A person without signs and symptoms consistent with scabies who has had direct contact (particularly prolonged, direct, skin-to-skin contact) with a suspected or confirmed case in the two months preceding the onset of scabies signs and symptoms in the case[**FMOH, 2015**].



Methods and Materials...

Ethical Consideration

- Letter of permission was obtained from Bale Zone Health Office, Sinana district health office and oral permission was obtained from madrasahs administration.
- Informed written consent was also obtained from all the study participants or parent or guardian for the participants of less than 16 years old.
- For the sake of confidentiality, the names of participants were not recorded on the questionnaire. Regarding photo/Figures, informed consent was also obtained again from participants orally and their names were not written on the figures.



Results and Discussions

- Total of 815 scabies cases identified from five madrasahs of sinana district.
- The overall attack rate (AR) of scabies in five madrasahs was 143 per 1000 population with no case fatality rate related to scabies.
- This finding is higher than the finding of the study conducted in the east badewacho (**Jarso S, et al. 2018**) and Dembiya district (**Girma B, 2017**).
- This may be due to our study was at school (overcrowded) but both studies were conducted at community-based.
- Our finding is lower than the finding of the study conducted in the Northern Ethiopia “yekolo temari” [**J.Yasin et al. 2015**].
- This likely due to our study include more schools but study conducted in Northern Ethiopia “Yekolo temari” include single school



Results and Discussions...

- All scabies cases were their sex, religion and ethnicity were male, Muslim and Oromo respectively.
- The mean age of cases was 14.5 ± 3 years with the minimum age 8 years and maximum 28 years.

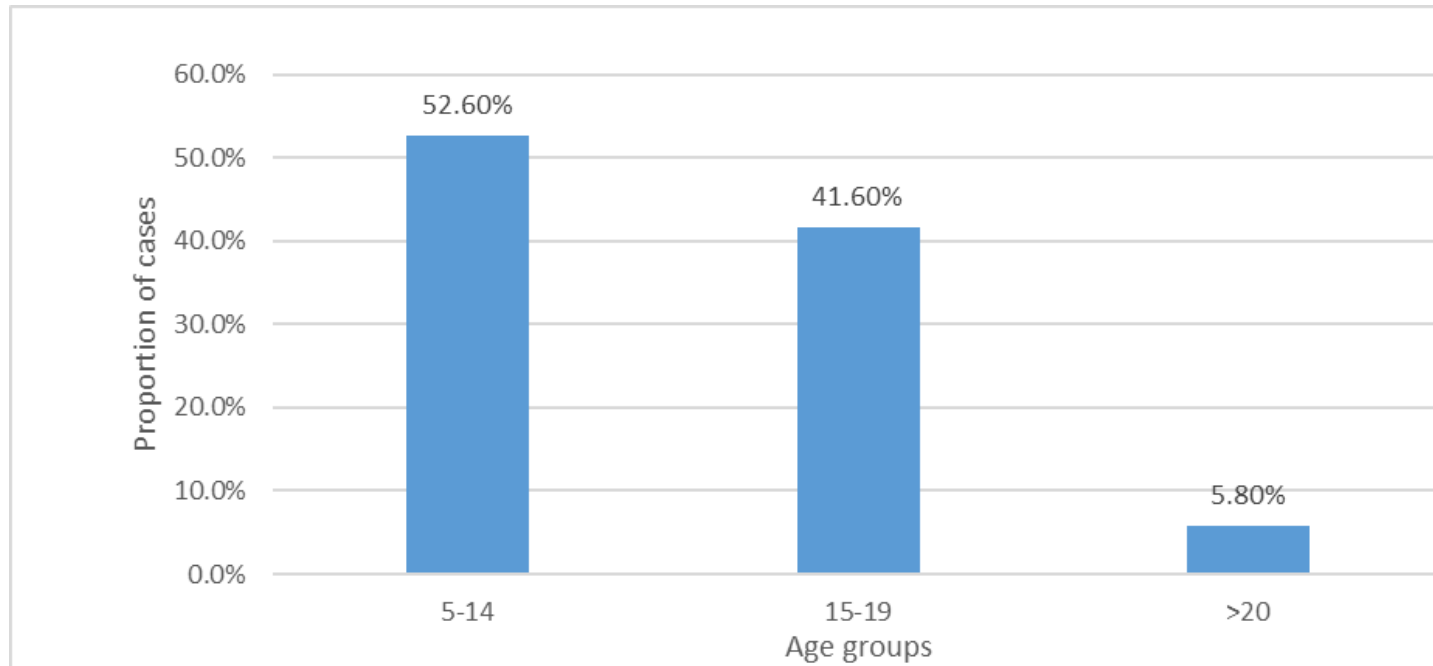


Figure 2: Distribution of scabies cases by age groups in madrasahs of Sinana district, bale Zone, Oromia, Ethiopia, 2019.



Results and Discussions...

- The prevalence of scabies in five madrasahs of sinana district is 4.3%, 28.2%, 17.4%, 13.1% and 2.5% in Hawusho, Qaso-shekmara, Amalama, Hamida and Basmana madrasah respectively.

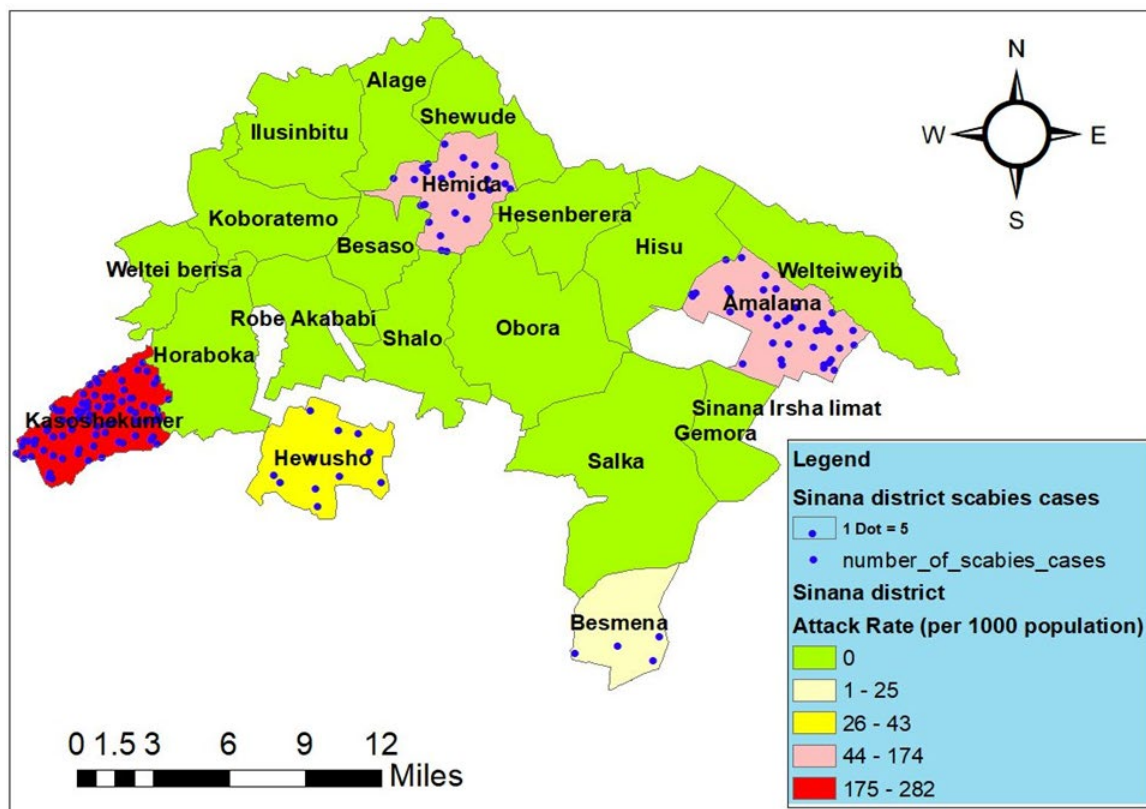


Figure 3: Prevalence of scabies cases by madrasahs in Sinana district, bale Zone, Oromia, Ethiopia, 2019.



Results and Discussions...

- The index cases were two students whose come from West Arsi zone where scabies outbreak is there.

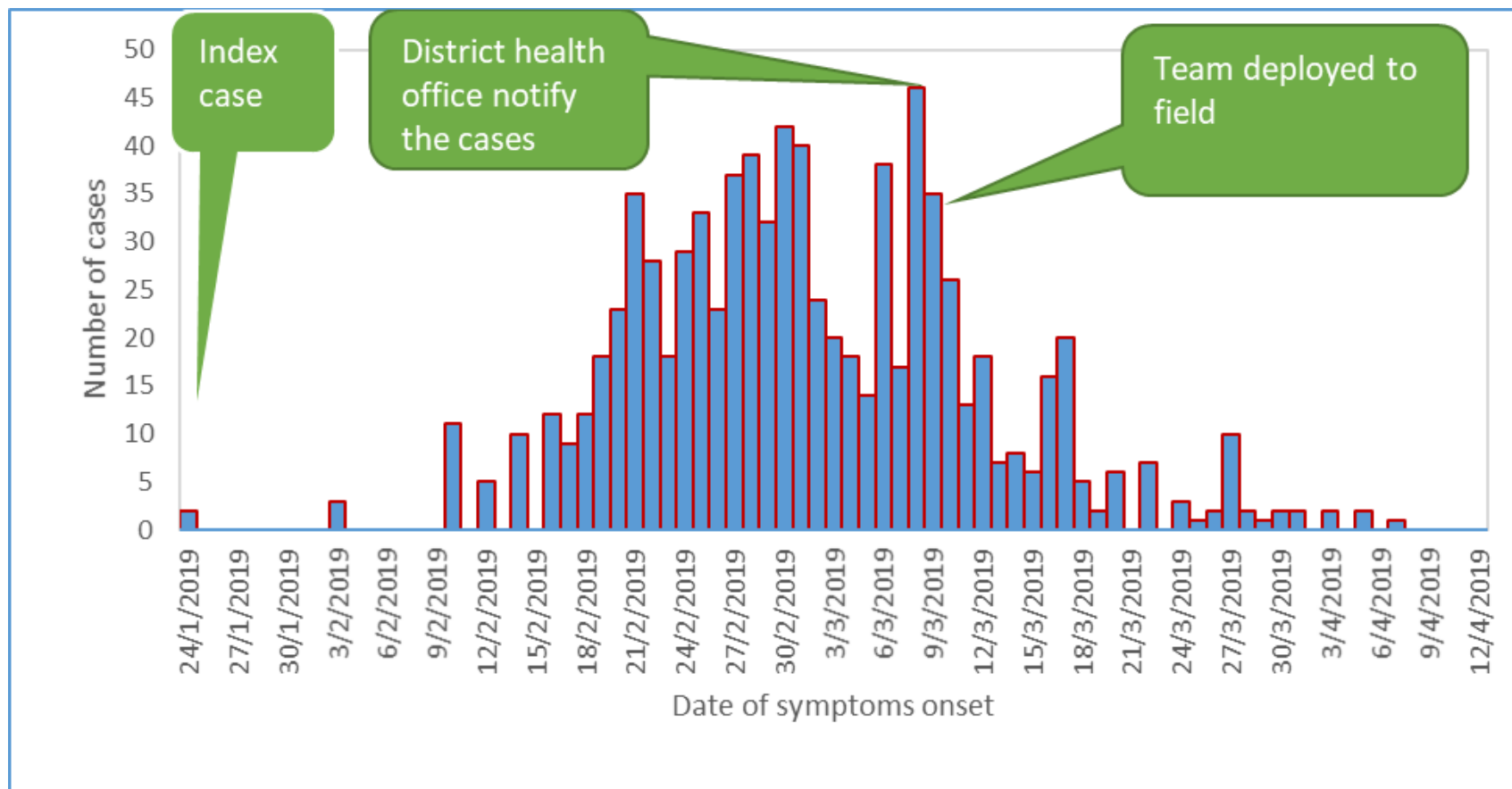


Figure 4: Epi-curve of scabies cases by date of disease onset in madrasahs of sinana district, Bale Zone, Oromia, Ethiopia, 2019



Results and Discussions...

- Almost all case has rash on the side and webs of the fingers (92.9%),
- This consistent with the finding of study conducted in the health facilities of Cameron [**Emmanuel A et al. 2015**].
- This is due to these areas where favorable for typical distribution of mites [**FMOH, 2015**].



Results and Discussions...

Table1: Multivariate logistic regression of selected variables of scabies outbreak, madrasahs of Sinana district, Bale Zone, Oromia, Ethiopia, 2019.

Variables		Case(n=56)	Control(n=111)	COR(95%CI)	AOR	P value
Sharing bed with scabies case	Yes	27 (48.2)	15 (13.5)	5.96(2.8-12.7)	3.9(1.47-10.33)	0.006*
	No	29 (51.8)	96 (86.5)	Ref	1	
Travel history	Yes	10 (17.9)	6 (5.4)	3.8(1.3-11.1)	3.87(1.2-12.6)	0.024*
	No	46 (82.1)	105 (94.6)	Ref	1	
Shower frequency	≤ 1 times	49 (87.5)	75 (67.6)	3.4(1.4-8.2)	2.74(1.04-7.21)	0.041*
	≥2 times	7 (12.5)	36 (32.4)	Ref	1	



Results and Discussions...

Table 1: Multivariate logistic regression of selected variables of scabies outbreak, madrasahs of Sinana district, Bale Zone, Oromia, Ethiopia, 2019.

Variables		Case(n=56)	Control(n=111)	COR(95%CI)	AOR	P value
Sharing bed with case	Yes	27 (48.2)	15 (13.5)	5.96(2.8-12.7)	3.9(1.47-10.33)	0.006*
	No				1	
Travel history	Yes				3.87(1.2-12.6)	0.024*
	No				1	
Shower frequency	≥2 times	7 (12.5)	36 (32.4)	Ref	2.74(1.04-7.21)	0.041*
	<2 times				1	

This due to mite of scabies transmitted from infected person through body to body contact, as well as through infected bedding and cloths[Jennifer M. et al, 2005, FMOH, 2015]



Results and Discussions...

Table 1: Multivariate logistic regression of selected variables of scabies outbreak, madrasahs of Sinana district, Bale Zone, Oromia, Ethiopia, 2019.

Variables		Case(n=56)	Control(n=111)	COR(95%CI)	AOR	P value
Sharing bed with scabies case	Yes				3.9(1.47-10.33)	0.006*
	No				1	
Travel history	Yes				3.87(1.2-12.6)	0.024*
	No	46 (82.1)	105 (94.6)	Ref	1	
Shower frequency	≤ 1 times	49 (87.5)	75 (67.6)	3.4(1.4-8.2)	2.74(1.04-7.21)	0.041*
	≥2 times	7 (12.5)	36 (32.4)	Ref	1	

This finding is consistent with the [unclear] angles public health, 2018].

- The result may due to those students travel to the scabies area was contact with the cases of scabies.



Results and Discussions...

Table 1: Multivariate logistic regression of selected variables of scabies outbreak, madrasahs of Sinana district, Bale Zone, Oromia, Ethiopia, 2019.

Variables		Case(n=56)	Control(n=111)	COR(95%CI)	AOR	P value
Showering with case	≤ 1 times	49 (87.5)	75 (67.6)	5.25(2.8-12.7)	3.9(1.47-10.33)	0.006*
	≥ 2 times	7 (12.5)	36 (32.4)	Ref	1	
Travel	≤ 1 times	49 (87.5)	75 (67.6)	11.3-11.1)	3.87(1.2-12.6)	0.024*
	≥ 2 times	7 (12.5)	36 (32.4)	Ref	1	
Shower frequency	≤ 1 times	49 (87.5)	75 (67.6)	3.4(1.4-8.2)	2.74(1.04-7.21)	0.041*
	≥ 2 times	7 (12.5)	36 (32.4)	Ref	1	

■ This is due to unhygienic living condition or poor personal hygiene is a favorable for scabies[Amal k. et al, 2017].
 ■ Rigorous personal hygiene is preventive method [Emmanuel A. et al, 2015].



Limitation

- For the ascertainment of cases and control, our study was based on clinical signs and symptoms, while lacking laboratory confirmation.
- As we conducted case control study the problem of recall bias may take place



Conclusion

- The scabies outbreak occurred in Sinana district, Bale zone, Ethiopia.
- A risk factor significantly associated with scabies infestation
 - Sharing bed with scabies case,
 - Travel history to scabies area
 - Take shower more than a week interval was



Recommendations

- The district health office and cluster health center and health post workers have to increase their active surveillance, since scabies diseases affect more students because of late detection and response to outbreak.
- Providing health education for students on modes of transmission of scabies to circumvent or reduce contact with cases for prevention and control scabies infestation.
- The district health office and respective health facilities have to promote personnel hygiene of the students.



Acknowledgments

- First and foremost, my heartily felt thanks go to the Almighty God.
- I would like to express my sincere gratitude to
 - My academic mentor Mr. Henok Assefa and RA Mr Naod Berhanu.
 - Bale Zone Health Office for their permission letter for outbreak investigation.
 - Sinana district health office, PHEM staff for their helping throughout the data collection process
 - Oromia Health Bureau and Jimma University for the coordination of this Conference



Reference

- J. M. G. et Al., “Scabies Prevention and Control Manual. Michigan Department of Community Health,” 2005.
- L. angles C. H. Agency, “SCABIES PREVENTION AND CONTROL GUIDELINES,” 2018.
- “FOR MULTI-SECTORIAL SCABIES OUTBREAK EMERGENCY RESPONSE,” Addis Ababa, 2015.
- R. Hay *et al.*, *Chapter 37 Skin Diseases*. 2006.
- A. K. Mitra and A. R. Mawson, “Neglected Tropical Diseases : Epidemiology and Global Burden,” *Trop. Med. Infect. Dis.*, no. January 2012, 2017.
- “MANAGEMENT OF SCABIES IN LONG- TERM CARE FACILITIES , SCHOOLS AND,” *New Jersery Dep. Heal.*, no. July, 2014.
- D. J. Chandler and C. Fuller, “A Review of Scabies : An Infestation More than Skin Deep,” pp. 79–90, 2019.
- D. Engelman, L. C. Fuller, and A. C. Steer, “Consensus criteria for the diagnosis of scabies : A Delphi study of international experts,” *PLoS Negl. Trop. Dis.*, pp. 1–9, 2018.
- U. R. Hengge, B. J. Currie, G. Jäger, O. Lupi, and R. A. Schwartz, “Scabies : a ubiquitous neglected skin disease,” *Lancet Infect. Dis.*, 2006.
- L. V Stamm and L. C. Strowd, “Perspective Piece Ignoring the ‘ Itch ’ : The Global Health Problem of Scabies,” *Am. Soc. Trop. Med. Hyg.*, vol. 97, no. 6, pp. 1647–1649, 2017.
- “The Global Burden of Disease: Generating evidence, Guiding policy,” *Inst. Heal. Metr. Eval. Univ. Washingt.*, 2013.



The End

Thank You!



BIIROO FAYYAA
OROMIYAA