International Journal of Infectious Diseases and Therapy
2025, Vol. 10, No. 1, pp. 1-10
https://doi.org/10.11648/j.ijidt.20251001.11

Research Article

Prevalence and Risk Factors of Active Trachoma Among 1–9-Year-Old Children in Gulele Sub City, Addis Ababa, Ethiopia, 2023

Abdurehman Seid Mohammed[1, *], Emebet Tesfaye[1], Mustofa Hassen Yesuf[2], Zewdu Minda[3], Ali Hassen Yesuf[4], Getachew Mekete Diress[5]

[1]Department of Public Health, Saint Peter Specialized Hospital, Addis Ababa, Ethiopia

[2]Department of Internal Medicine, Saint Peter Specialized Hospital, Addis Ababa, Ethiopia

[3]Department of Anaesthesia Saint Peter Specialized Hospital, Addis Ababa, Ethiopia

[4]Department of Urologic-Surgery, School of Medicine, Wollo University, Dessie, Ethiopia

[5]Department of Anesthesia, College of Health Sciences, School of Medicine, Debre Tabor University, Debre Tabor, Ethiopia

Abstract

Background: The most common cause of blindness and one of the most neglected tropical diseases is trachoma. It is a significant public health issue in underdeveloped nations. Hands, fomites, and eye-seeking flies can spread it through direct contact with contaminated nasal and ocular secretions. The main objective of this study is to assess the prevalence and risk factors of active trachoma among 1–9-year-old children in Gulele Sub City in Addis Ababa, Ethiopia. *Methods:* A community-based cross-sectional study was conducted in the Gulele sub-city from May 1 to July 30. A systematic random sampling technique was implemented to select study participants. To assure and control the quality of the data, a validated tool, and a cross-checked system were implemented. Bivariable and multi-variable binary logistic regression were used to identify factors associated with active trachoma. 95% confidence intervals and P-values were used to measure the strength of the association, and a P-value <0.05 was considered statistically significant. *Result:* The result shows that the overall prevalence of active trachoma among preschool-aged children was 23.3% [95% CI: (19–25.1)]. Age of a child (AOR=1.63, 95% CI: 1.33, 2.03), frequently washing faces (AOR=1.46, 95% CI: 1.26, 2.42), a child with Unclean faces (AOR=2.83, 95% CI: 1.43, 3.64), improper solid waste disposal (AOR=4.24, 95% CI: 3.25, 5.25), were factors associated with active trachoma. *Conclusion:* The prevalence of active trachoma among preschool-aged children was high. The age of a child, frequently washing faces, the unclean face of the child, and proper solid waste disposal are important factors associated with active trachoma. This study indicated that trachoma is a public health problem *Recommendation:* to address the high prevalence of active trachoma among preschool-aged children, the following recommendations are essential: Enhance Hygiene Practices: Implement community education programs promoting regular face washing to reduce infection rates. Improve Sanitation: Ensure proper solid waste disposal and enhance access to clean water and sanitation facilities in endemic areas. Regular Health Surveillance: Conduct periodic trachoma prevalence surveys to monitor infection rates and identify at-risk populations. Integrate SAFE Strategy: Adopt the WHO's SAFE strategy, which includes surgery for advanced cases, mass antibiotic distribution, facial cleanliness promotion, and environmental improvements.

*Corresponding author: Abduseid0824@gmail.com (Abdurehman Seid Mohammed)

Received: 4 December 2024; **Accepted:** 19 December 2024; **Published:** 7 January 2025

Copyright: © The Author(s), 2025. Published by Science Publishing Group. This is an **Open Access** article, distributed under the terms of the Creative Commons Attribution 4.0 License (http://creativecommons.org/licenses/by/4.0/), which permits unrestricted use, distribution and reproduction in any medium, provided the original work is properly cited.

Keywords

Active Trachoma, Associated Factor, Ethiopia, Prevalence, Addis Ababa, Ethiopia

1. Introduction

Chlamydia trachomatis causes the eye disease trachoma, which can lead to blindness following recurrent infections [1]. The discharge from an infected person's eyes can spread the disease to uninfected people's eyes by clothing, fingers, or flies that seek out infected eyes. Trachoma primarily affects the underprivileged and marginalized communities and is common in places with inadequate personal and communal hygiene [2, 3].

Trachoma was first mentioned in China in the 27th century BC. It was thought that troops returning from the Napoleonic battles in Egypt were the source of trachoma, which became a serious public health issue in Europe at the start of the 19th century [4]. The condition was so prevalent at the time that several of the prominent 19th-century ophthalmic institutions, such as Massachusetts Eye and Ear Infirmary and Moor Fields Eye Hospital, were built specifically to treat trachoma [4, 5].

In 51 countries in Africa, Asia, Central and South America, Australia, and the Middle East, trachoma is hyper-endemic in many of the most impoverished and rural areas. Prevalence rates among preschool-aged children range from 60 to 90% [6, 7].

It is the primary cause of infectious blindness that can be prevented worldwide [8]. WHO developed a strategy that served as the foundation for international efforts to eradicate trachoma as a blinding disease. A set of treatments referred to as "SAFE," which stands for surgery for trichiasis (interned eyelashes), antibiotics, facial cleanliness, and environmental improvement, The WHO Program for the Prevention of Blindness and Deafness called a meeting at WHO headquarters in Geneva from November 25–26, 1996, to make these decisions [1, 8].

African studies revealed that children who had nasal and ocular discharge had a higher risk of developing trachoma [8, 10]. Clean faces with eye-seeking flies or dirty faces, time spent fetching water, trash in the compound, overcrowding, children ages 3 to 5, less regular face washing, having animals in the home, open defecation, and a high fly density in the home are all risk factors for trachoma. These are a few of the variables linked in the research to active trachoma [10, 11].

2. Methods

2.1. Study Setting

The Gulele sub-city of Addis Ababa was the site of the study. Ethiopia's capital, Addis Ababa, is situated in the center of the nation. The city was divided into 116 woredas and 10 sub-cities. The metropolis covered 54,000 hectares in total. The 2013 population estimate places Addis Ababa's overall population at around 6 million. There were 382 private clinics, 40 health centers, 122 health stations, 37 health posts, and 13 governmental hospitals in Addis Ababa at the time of this study [12]. The sub-city of Gulele is where the study was carried out. One of Addis Ababa's sub-cities, Gulele Sub City is around 30.18 square kilometers in size and has a population of 284,865 (137,690 men and 147,175). It has 10 Weredas and a population density of 9,438.9 people per square meter. The sub-city has two old-age schools.

2.2. Study Design and Period

A community-based cross-sectional study was conducted to assess the prevalence and risk factors of active trachoma among 1–9-year-olds at Gulele in Addis Ababa, Ethiopia.

2.3. Source Population

The source population for these studies was all children from 1–9 years old, which are found in the Gulele sub-city, Addis Ababa, Ethiopia.

2.4. Study Population

The study populations were all children from 1–9 years old in the Gulele sub-city who were selected at the time of data collection and who fulfilled the inclusion criteria.

2.5. Eligibility Criteria: Inclusion Criteria and Exclusion Criteria

All the selected Children aged 1–9 years were included in the study, and all children aged 1–9 years who were unable to undergo physical examinations due to serious medical illnesses were excluded from the study.

2.6. Study Variables

2.6.1. Dependent Variable

Active trachoma in children among 1-9 years old**.**

2.6.2. Independent Variables

Socio-demographic characteristics of: Age, Educational level, occupation, income& Residence

Housing condition

Cooking rooms, Windows, and Latrine

Environmental condition

Cleanness and Distance of water

Sanitation and hygiene

Facial cleanliness

2.7. Operational Definition

WHO simplified trachoma grading [13].

1) Trachomatous inflammation- >0.5mm in follicular: TF the presence of five or more follicles (each Diameter) in the upper tarsal conjunctiva
2) Trachomatous inflammation-Intense: TI Pronounced inflammatory thickening g of the tarsal conjunctiva that obscures more than half of the deep normal vessels.
3) Trachomatous scarring: TS the presence of scaring in tarsal conjunctiva
4) Trachomatous Trichiasis: TT at least one lash rub in the eyeball
5) Corneal opacity: CO Easily Visible corneal opacity over the pupil

The diagnosis of active trachoma is a clinical diagnosis based on the WHO (World Health Organization) simplified grading system. Trachomatous inflammation – follicular (TF) and Trachomatous inflammation- Intense (TI) are indications of active trachoma and are usually found in children, but may occasionally occur in older persons [3, 14]. Each sign is individually graded as being absent or present. One or more signs can, and often do, occur together.

Clean face- a child who does not have an eye discharge or nasal discharge at the time of the survey. Free from active trachoma: children that do not have signs and symptoms of active trachoma.

Active trachoma: TF has been suggested by the WHO as the key indicator for assessing the public health importance of active trachoma. Hence, it was defined as the presence of at least five or more follicles in the upper tarsal conjunctiva, each at least 0.5 mm in size.

2.8. Sample Size Determination and Sampling Procedure

The required sample size can be determined by using a single population formula active trachoma 37.9% were taken from a previous study for the post-caesarian section [15].

Level of significance =0.05

Marginal Error (d) = 5%

n =sample size

Z (α/2)= Z-score at 95% confidence interval=1.96

Q=1-p

Non-response rate =10%

The formula for calculating (n) is

$$n = \frac{Z(\alpha/2)^2 P\times(1-P)}{d^2} = \frac{(1.96)^2\ 0.45\times(1-0.45)}{0.05^2}$$

So calculated is n= 380

Epi Info Version 7.2.1.0 was used to calculate the sample size for the second specific objective/independent variables using the double population proportion formula with the following assumptions: power of the study=80%, 95% confidence level, and the ratio of unexposed: exposed is 1:1 (Table 1).

Table 1. *Sample size determination for factors associated with active trachoma among 1 – 9-year-old children in Gulele sub city, in Addis Ababa, 2023.*

S.No	Proportion/factor		AOR	Calculated sample size	References
1	The cooking room has a window	% exposed=3.5% % unexposed=33.5%	0.28	78.1	[16]
2.	Face wash using soap	% exposed=1.2% % unexposed=30.6%	5.28	108	[16]

Since all the sample sizes are too small and the largest sample size selected for this study, the total sample size was be Taking a design effect of 1.5 and considering a 10% non-response rate, (380×1.5)+ 10% the calculated sample size was 627.

2.9. Sampling Technique

A simple random sampling technique was used to get the study participants.

2.10. Data Collection Procedure

An interviewer-administered questionnaire in Amharic, which was translated from English and back again, was used to gather the data. The questionnaire was taken from the reviwed literature. The eyes were examined using a penlight flashlight and binocular lens. An interviewer-administered questionnaire, which was a face-to-face interview, eye examination, and facial observation, was used to gather the data.

2.10.1. Data Quality Assurance

For 63 patients (10% of the sample size) from other hospitals who were excluded from the main trial, a pretest was conducted to guarantee the quality of the data. The required adjustments were then made in accordance with the main study questionnaire. The supervisor and data collector received three days of training on the purpose and goal of the study, supervision, and data collection procedures. The accuracy, completeness, and clarity of the gathered data were examined. Data that was incomplete was rejected and considered non-responsive. Throughout the data collecting period, the principal investigator and supervisor provided daily oversight and input.

2.10.2. Data Analysis and Interpretation

Epi-Data version 3.1 was used to code, enter, and clear the acquired data, while SPSS version 26 was used for analysis. To identify the factors associated to active trachoma in children aged 1 to 9, descriptive statistics were performed and presented in text, tables, and figures. Bivariable and multivariable logistic regression analyses were utilized as well. A multivariable logistic regression analysis was fitted to variables that had a p-value of less than <0.2 in the bivariable logistic analysis. To demonstrate the strength of the association, the adjusted odds ratio (AOR) in multivariable logistic regression and the crude odds ratio (COR) in bivariable logistic regression were computed along with the corresponding 95% confidence interval. Variables in multivariable logistic regression analysis were deemed statistically significant if their p-value was less than 0.05.

3. Results

3.1. Socio-demographic Characteristics of Study Participants

This survey had a sample of 610 people, with a 98.26% response rate. Within three days, seven (7) patients were discharged from the hospital in three days. In this study, women made up the majority of participants (218, or 55.2%). Participants in the study are between the ages of 18 and 72; their mean age is 38.88 years, with a standard deviation of 16.9 years (Table 2).

Table 2. *Socio-Demographic characteristics of the study children in Gulele sub city, Addis Ababa Ethiopia from jun01 to July 16, 2021, n=610.*

Variables	Variables categories	Frequency (N=610)	Percentage (%)
Sex of the child	Male	254	41.7
	female	356	58.3
The age group of a child	1 to 4 years old	342	56.1
	5 to 9 years old	268	43.9
Education status of child	Preschool	402	65.9
	Student	144	23.6
	not attending school	64	10.5
Number of children under 9 years in the household	Only one	319	52.3
	Two and above	219	47.7

Of the total respondents, 302 (55.4%) of the study participants were married. The participant's age was between 19 and 65 years, with a mean age of 29 + 8.4 SD years. The majority of the respondents, 278 (45.6%), were between the ages of 35 and 49, and some of them, 126 (20.7%), were over 49 years old. Regarding the marital status of participants, 302 (49.5%) were married, 126 (20.7%) were single, 115 (18.9%) were divorced, and 67 (11.1%) were widowed (Table 3).

Table 3. Socio Demographic Characteristics of the Study Participants in the Gulele sub-city, Addis Ababa Ethiopia from May 01 to July 16, 2021. N=610.

Variables	Variables categories	Frequency (N=610)	Percentage (%)
Marital status of the mother or caregiver	Single	126	20.7
	Married	302	49.5
	Divorced	115	18.9
	widowed	67	11.0
Age of the mother or caregiver	19–24 years	39	6.4
	25-34 years	167	27.4
	35–49 years	278	45.6
	≥49 years	126	20.7
Educational status of the mother or caregiver	Not educated	183	30
	Primary education	152	24.9
	Secondary education	227	37.2
	Diploma and above	48	7.9
Occupational status of the head of the household	Employed	283	46.4
	Unemployed	127	20.8
	housewife	200	32.8
The economic status of Hhds	Poor	199	32.6
	Medium	314	51.5
	high	97	15.9
Residency	Urban	506	83
	rural	104	17

3.2. Health and Environmental-Related Characteristics

Distribution of active trachoma among 1–9-year-old children by environmental factors in most of the households used Protected primary water source of 480 (78.7%) and 385 (63.12%) of the household <15 minutes is taken to obtain water on a walk (Table 4). Almost more than half (429, or 69.9%) of the households have utilized adequate water for bathing in their living compound, and 39 (6.4%) of the households dispose of solid waste improperly. A total of 531 (87%) of the households had a clean house compound among the children who participated in the study. Of them, 679 (52.8%) had unclean faces. 292 (47.9%) of the children cleansed their faces just once in a 24-hour period, according to the moms' reports about their kids (Table 5).

Table 4. Environmental, hygiene, and sanitation characteristics of study participants in Gulele sub city, Addis Ababa, Ethiopia, 2021: (n=610).

Variables	Variables categories	Frequency (N=610)	Percentage (%)
Protected primary water Source of	Yes	480	78.7
	no	130	21.3
Time is taken to obtain water on a walk	<15 minute	385	63.1
	>15 minute	225	36.9

Variables	Variables categories	Frequency (N=610)	Percentage (%)
Access to sustainable water supply	Regional	447	73.3
	General	163	26.7
Utilization of adequate water for bathing	Yes	424	69.5
	No	186	30.5
Frequency of washing children's face	Ones per day	292	47.9
	Two or more	318	52.1
Children facial cleanness	Clean	288	47.2
	Not clean	322	52.8
Ocular discharge	Yes	103	16.9
	No	507	83.1
Nasal discharge	Yes	130	21.3
	No	480	78.7
Cattle ownership	Yes	181	29.7
	No	429	70.3
A place where cattle pass night (n=181)	In the cattle house	43	23.6
	Living house but separately	119	65.9
	Same room with the family	19	10.5
Having separated human and animal dowelling	Yes	260	42.6
	No	350	57.4
Separated cooking room	Yes	320	52.5
	No	290	47.5
Sharing towels	Yes	118	19.3
	No	492	80.7
improper solid waste disposal	Yes	234	38.3
	No	376	61.6
proper liquid waste disposal	Yes	571	93.6
	No	39	6.4
Having a clean house compound	Yes	531	87
	No	79	13

Table 5. *Shows the Observed factors of study participants in the Gulele sub-city, Addis Ababa, Ethiopia, 2021. (n=610).*

Variables	Variables categories	Frequency (N=610)	Percentage (%)
Observed factors: animal faces around the house	Yes	57	9.3
	No	553	90.7
Observed factors: flies around the house	Yes	164	26.9
	No	446	73.1
Self-reported hygiene and behavior	Yes	429	70.3

Variables	Variables categories	Frequency (N=610)	Percentage (%)
change: Wash children's face	No	181	29.7
	Yes	423	69.3
Self-reported hygiene and behavior change: wipe faces with shawls /towel	No	187	30.7

The prevalence of active trachoma among 1-9-year-old children was found to be 23.3% 95% CI: (19–25.1) (Figure 1).

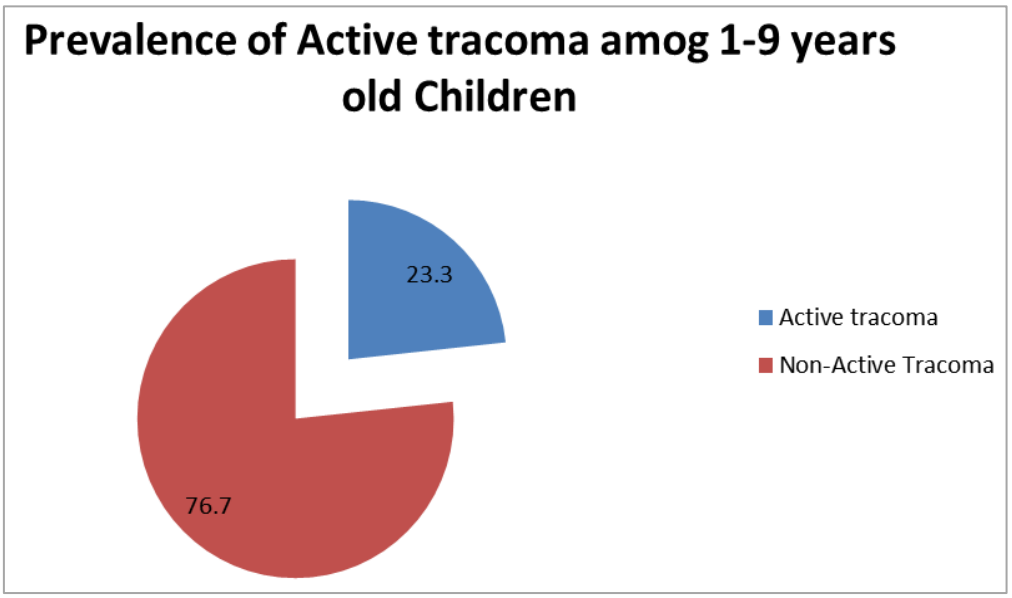

Figure 1. *Shows the prevalence of Active trachoma in Gulele sub city, Addis Ababa, Ethiopia, 2021.*

3.3. Multivariable Analysis of Factors Affecting Active Trachoma

In the multivariable logistic regression model, the age of a child, frequently washing faces, Unclean faces, and improper disposal of solid waste were significantly associated with active trachoma (< 0.05). The result of the multivariable analysis revealed that the odds of developing trachoma among school-children from household respondents who were 1-4 years old were 1.63 times more likely to develop active trachoma than other groups of age [AOR=1.63(1.33-2.03)]. The odds of frequently washing faces were 1.46 times more likely to prevent active trachoma than in the other group [1.46 (1.26-2.42)]. The odds of developing active trachoma among preschool children from households of Unclean faces are 2.82 times more likely to be exposed to active trachoma as compared to those who have clean face households [2.82 (1.43-3.64)]. The odds of developing active trachoma among preschool children from households with mothers who did not dispose of solid waste properly were 4.24 times higher as compared to those who did dispose of waste properly [AOR = 4.24 (3.25–5.25)]. (Table 6).

Table 6. *Shows a multi-variable analysis of factors affecting Active trachoma children in Gulele sub city, Addis Ababa Ethiopia from jun01 to July 16, 2021. n=610.*

Variables	Active Trachoma	NO Active Trachoma	Crude OR (95%CI)	Adjusted OR (95%CI)	P-Value
Age					
Being1-4 years	81	207	2.001(0.001-3)	1.63(1.33-2.03)**	0.001
Being5-9 years	61	261	1	1	

Variables	Active Trachoma	NO Active Trachoma	Crude OR (95%CI)	Adjusted OR (95%CI)	P-Value
frequently washing faces					
yes	65	207	3.00(1.23-4.02)	1.46(1.26-2.42)**	0.000
no	77	261	1	1	
Unclean faces					
Yes	117	371	2.60(2.05-8.05)	2.83(1.43-3.64) **	0.001
no	25	97	1	1	
Improper solid waste disposal					
Yes	134	100	5.16(2.17-10.29	4.24(3.25-5.25) **	0.002
no	76	300	1	1	

Note: ** means P-value <0.25 OR; means odds ratio. **means p-value<0.05 CI; means confidence interval

4. Discussion

This study has investigated and identified the prevalence and associated factors of active trachoma among preschool-aged children in Addis Ababa were high. In many parts of Africa, particularly Ethiopia, trachoma is still a leading preventable cause of blindness in preschool-aged children. A total of 610 respondents responded for active trachoma, resulting in a non-respondent rate of 3.4%. The prevalence of active trachoma in our study area is 23.3% (95% CI: 19–25.1). The lack of a safe water supply in many parts of the town may be the cause of the problem.

This study was consistent with findings from a systematic review and meta-analysis in Ethiopia, it found that the total prevalence of active trachoma in Ethiopian children was 26.9% (95% CI: 22.7, 31.0) based on the findings of 30 relevant studies. The occurrence of active trachoma in the communities may be the reason for it.

This study result is also greater or higher than the prevalence of other studies that are conducted by the WHO and Nigeria Zamfara State. According to WHO, trachoma must be eradicated as a public health issue when the prevalence of active cases falls below 5% [17]. According to a study conducted in Zamfara State, Nigeria, trachoma sal inflammation follicular prevalence in children aged 1–9 years was 0.04–18%, while trachoma sal trichiasis (TT) prevalence in persons aged ≥ 15 years was 0-1.4% across the LGAs [18]. The study setting, the period of intervention, and baseline variation in the communities' prevalence of active trachoma are the causes of the difference.

Additionally, this study is lower than other studies. For example, a study in a rural Ethiopian community found that the overall mean prevalence of active trachoma was 35.6% [19]. the variation is due to different setups in which there is not enough infrastructure, or clean water supply, they will go a distance to fetch water and have no access to treatment in rural areas.

Active trachoma cases are more common among children age group 9 years [20] children's propensity for close contact with others makes them susceptible to C. trachomatis infections [21]. This study is also in line with the odds of developing trachoma among school children from households respondents who were Being1-4 years old had 1.63 times more likely to develop active trachoma than another group of age [AOR=1.63(1.33-2.03)]. this study is in line with a study conducted in Deguatemben, Tigray [22]. Their similarities might be due same socioeconomic status. This study is also not similar to a study conducted in Zamfara state Nigeria [18] and Dakar, Senegal [9]. The disparity may result from variations in study methodologies and social mobilization efforts across various sites.

By eliminating a possible source of infection, improving facial cleanliness—the lack of ocular and nasal discharge—aims to lower auto-transmission and transmission to others. This control strategy is supported by improved water supply and health education, but there is little evidence to support it [23]. The finding is also consistent with these principles. The odds of developing active trachoma among preschool children from households of Unclean faces are 2.82 times more likely to be exposed to active trachoma as compared to those who have clean face households [2.82 (1.43-3.64)]. This study is also similar to a study done in Leku town, southern Ethiopia. According to the study, children's facial cleanliness observation revealed that 26 (15%) children had unclean faces during the observation period [16].

This study is also low as compared to other studies, like a study conducted in Deguatemben, Tigray unclean face [AOR (95% CI) = 18.22(4.93–69.32)] [22]. Due to different setups in which there is not enough infrastructure, or clean water supply, they will go a distance to fetch water and have no access to treatment in rural areas.

Several factors have been associated to active trachoma, including the presence of cattle in the home, open defecation, time spent fetching water, garbage in the compound, overcrowding, children aged 3 to 5, clean faces with eye-seeking flies, or dirty faces [10].

Since trachoma is spread through clothing and direct contact, the "F" in the SAFE method stands for facial cleanliness. Because it tends to appear in clusters, it frequently infects entire families and communities. Women, who traditionally take care of the home, are particularly susceptible to infection, as are children, who are more prone to touch their eyes and have dirty cheeks that draw flies. In order to interrupt the cycle of trachoma transmission, it is crucial to promote appropriate hygiene behaviors including hand washing and washing children's faces with water at least once a day [1]. The odds of frequently washing faces had a Major role in prevention 1.46 times more likely to prevent active trachoma than the other group [1.46(1.26-2.42)].

The SAFE strategy's "E" stands for environmental change. Fly populations and breeding sites are reduced by improvements in family and community cleanliness, such as the installation of household latrines. More water availability promotes proper hygiene habits and is essential to achieving the disease's sustainable eradication. Important environmental measures include keeping animal quarters and human living areas apart and managing food and drinking water safely, that impacted communities might implement as part of a program to reduce trachoma [1]. The odds of proper solid waste disposal mothers who did waste disposal properly were 4.24 times more likely to prevent active trachoma as compared to those who did not dispose waste properly [AOR = 4.24(3.25-5.25)]. Therefore, the government especially MOH and AA Health Bureau needs to intervene in this particular issue.

5. Conclusion and Recommendation

The study revealed that the prevalence of clinically active trachoma among preschool-aged children was high in Gulele, Addis Ababa. This study indicated that trachoma is a public health problem. Addis Ababa's age as a child, frequently washing faces, the unclean face of the child, and improper solid waste disposal were significant factors associated with active trachoma.\ to address the high prevalence of active trachoma among preschool-aged children, the following recommendations are essential: Enhance Hygiene Practices: Implement community education programs promoting regular face washing to reduce infection rates. Improve Sanitation: Ensure proper solid waste disposal and enhance access to clean water and sanitation facilities in endemic areas. Regular Health Surveillance: Conduct periodic trachoma prevalence surveys to monitor infection rates and identify at-risk populations. Integrate SAFE Strategy: Adopt the WHO's SAFE strategy, which includes surgery for advanced cases, mass antibiotic distribution, facial cleanliness promotion, and environmental improvements.

Abbreviations

CDC	Center for Disease Control and Prevention
CI	Confidence Interval
CO	Corneal Opacity
GET	Global Elimination of Trachoma
ITI	International Trachoma Initiative
MOH	Ministry of Health
TF	Trachoma Follicular
TS	Trachomatous Scaring
RRR	Relative Risk Ratio
WHO	World Health Organization

Acknowledgments

The authors would like to thank Rift Valley University School of Public Health for providing ethical clearance and the study participants for their participation. We also thank the health center of Addis Ababa, Ethiopia administrators, for accepting to conduct the study, as well as special thanks to the participants for accepting and obtaining consent to conduct this study.

Declarations

Ethics Approval and Consent

The Institutional Review Board (IRB) of Rift Valley University granted authorization to perform this study, and the ethical reviewing committee granted ethical clearance. In accordance with the guidelines of the Helsinki Declaration, written informed consent was presented to and acquired from the parent of each research participant. The principles and recommendations of the Declaration of Helsinki were taken into consideration.

Consent for Publication

Not relevant.

Availability of Data and Materials

The corresponding author can provide the datasets used and analyzed in this study upon reasonable request.

Author Contributions

Abdurehman Seid Mohammed and Emebet Tesfaye: was the principal investigator who contributed to the preparation of the proposal, development of the questionnaire, study design, conceptualization, supervision, data collection, data

entry, data analysis, and data interpretation.

Mustofa Hassen Yesuf, Getachew Mekete Diress and Zewdu Minda: supervised the data collection, data analysis, and final output writing.

Ali Hassen Yesuf: has helped with the supervision of data analysis and output writing.

Abdurehman Seid Mohammed; prepared this manuscript for submission to this journal.

Funding

No financial support for the research authorship and/or publication of this article.

Conflicts of Interest

The authors declare no conflicts of interest.

References

[1] Solomon, A. W., et al., How much trachomatous trichiasis is there? A guide to calculating district-level estimates. Community eye health, 2019. 31(104): p. S5.

[2] Habtamu, E., et al., Trachoma and relative poverty: a case-control study. PLoS neglected tropical diseases, 2015. 9(11): p. e0004228.

[3] Karimurio, J., et al., Prevalence of trachoma in six districts of Kenya. East African medical journal, 2006. 83(4): p. 63-68.

[4] Al-Rifai, K. M., Trachoma through history. International ophthalmology, 1988. 12(1): p. 9-14.

[5] Southisombath, K., et al., National trachoma assessment in the Lao People's Democratic Republic in 2013–2014. Ophthalmic epidemiology, 2016. 23(sup1): p. 8-14.

[6] Dawson, C., et al., A comparison of oral azithromycin with topical oxytetracycline/polymyxin for the treatment of trachoma in children. Clinical Infectious Diseases, 1997. 24(3): p. 363-368.

[7] NYAMWARO, C. M., BARRIERS TO EFFECTIVE TRACHOMA CONTROL AMONG CHILDREN AGED 1-9 YEARS OLD IN MAGADI DIVISION, KAJIADO COUNTY, KENYA. 2014, KENYATTA UNIVERSITY.

[8] Last, A. R., et al., Risk factors for active trachoma and ocular Chlamydia trachomatis infection in treatment-naïve trachoma-hyperendemic communities of the Bijagós Archipelago, Guinea Bissau. PLoS Negl Trop Dis, 2014. 8(6): p. e2900.

[9] Bourne, R. R., et al., Magnitude, temporal trends, and projections of the global prevalence of blindness and distance and near vision impairment: a systematic review and meta-analysis. The Lancet Global Health, 2017. 5(9): p. e888-e897.

[10] Admassu, F., S. Bayu, A. Bejiga, and B. Amare, Active trachoma two years after three rounds of azithromycin mass treatment in Cheha district Gurage zone, Southern Ethiopia. BMC pediatrics, 2013. 13(1): p. 1-5.

[11] Hu, V. H., et al., Epidemiology and control of trachoma: systematic review. Tropical Medicine & International Health, 2010. 15(6): p. 673-691.

[12] Demissie Gizaw, G., Z. Aderaw Alemu, and K. T. Kibret, Assessment of knowledge and practice of health workers towards tuberculosis infection control and associated factors in public health facilities of Addis Ababa, Ethiopia: A cross-sectional study. Archives of public health, 2015. 73: p. 1-9.

[13] Kassaw, M. W., et al., Prevalence and associations of active trachoma among rural preschool children in Wadla district, northern Ethiopia. BMC ophthalmology, 2020. 20(1): p. 1-10.

[14] Quigley, H. A., Number of people with glaucoma worldwide. British journal of ophthalmology, 1996. 80(5): p. 389-393.

[15] Mesfin, M. M., et al., A community-based trachoma survey: prevalence and risk factors in the Tigray region of northern Ethiopia. Ophthalmic epidemiology, 2006. 13(3): p. 173-181.

[16] Abebo, T. A. and D. J. Tesfaye, Prevalence and distribution of active trachoma among children 1-9 years old at Leku town, southern Ethiopia. Curr Pediatr Res, 2017.

[17] Burton, M. J. and D. C. Mabey, The global burden of trachoma: a review. PLoS Negl Trop Dis, 2009. 3(10): p. e460.

[18] Muhammad, N., M. Damina, M. M. Umar, and S. Isiyaku, Trachoma prevalence and risk factors in eight local government areas of Zamfara State. Nigerian Journal of Ophthalmology, 2015. 23(2): p. 48-53.

[19] Gebrie, A., et al., Prevalence and associated factors of active trachoma among children in Ethiopia: a systematic review and meta-analysis. BMC infectious diseases, 2019. 19(1): p. 1-12.

[20] mondiale de la Santé, O. and W. H. Organization, WHO Alliance for the Global Elimination of Trachoma by 2020: progress report, 2019 360 COVID-19 update–Alliance de l'OMS pour l'élimination mondiale du trachome d'ici 2020: Rapport de situation, 2019 360 Le point sur la maladie à coronavirus 2019 (COVID-19). Weekly Epidemiological Record= Relevé épidémiologique hebdomadaire, 2020. 95(30): p. 349-360.

[21] Bailey, R., et al., The duration of human ocular Chlamydia trachomatis infection is age dependent. Epidemiology & Infection, 1999. 123(3): p. 479-486.

[22] Reda, G., D. Yemane, and A. Gebreyesus, Prevalence and associated factors of active trachoma among 1–9 years old children in Deguatemben, Tigray, Ethiopia, 2018: community cross-sectional study. BMC ophthalmology, 2020. 20: p. 1-9.

[23] Frick, K. D., E. V. Basilion, C. L. Hanson, and M. A. Colchero, Estimating the burden and economic impact of trachomatous visual loss. Ophthalmic epidemiology, 2003. 10(2): p. 121-132.