

(RESEARCH ARTICLE)



Trachoma prevention practice among mothers with child age of under-9 years and factors associated in rural district of Oromia Region, Ethiopia: Community based cross-sectional study

Tadesse Abera ¹, Wendimagegn Tilahun ² and Imiru Waqjira ^{3,*}

¹ *Splash International- Ethiopian Country Programme, Addis Ababa, Ethiopia*

² *Fred Hallows Foundation, Ethiopian Country Programme, Ethiopia*

³ *Private Consultant, Addis Ababa, Ethiopia.*

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Abstract

Background: Worldwide, 2.2 million people are visually impaired, and nearly 1.2 million people are irreversibly blind because of Trachoma. Women and girls are particularly vulnerable to infection, as they are often the primary caregivers of children, and children are the greatest source of infection with Trachoma. As prevention option to Trachoma, World Health Organization recommends Facial cleanliness (F), Environmental Improvement (E), Antibiotics (A) and Surgery (S), which abbreviated as “SAFE”. Though research findings show that Trachoma found in communities with poor hygiene and unimproved environmental condition of a community, there is a research gap talking about the root cause for poor hygiene and unimproved environment related to Trachoma occurrence. Therefore, the objective of this study is to assess Trachoma preventive practice among mothers and factors associated in the study area.

Method and Materials: Community based cross-sectional study design with interview questions was used from Dec 06-26/2017. The study was done on 845 mothers sampled using two stages stratified sampling technique followed by systematic random sampling from 10 Kebeles. To identify association between independent and dependent variables, multiple logistic regressions was applied using SPSS version 20 data analysis software. AOR with 95% CI at a p-of 0.05 was used to ascertain the association between dependent and independent variables.

Results: Based on the study result, households with overall good Trachoma preventive practice were found to be 412 (51.5%). Residence (AOR= 1.8; p-0.01), household wealth (AOR= 1.8; p-0.01), mother trachoma preventive knowledge (AOR= 1.6; p-0.02) water getting frequency (AOR, = 0.6; p-0.01) and time taken to water point (AOR= 0.3; p-0.01) were factors significantly and independently associated to good preventive practice at p-0.05 in the study District.

Conclusion: The overall Trachoma preventive practice of the study district was 51.5%. Improving HH wealth status, mother’s capacity building, special attention to urban sanitation and improving water supply status are recommended factors to improve the overall level of Trachoma preventive practice of study population to protect children of age under 9 years.

Keywords: Trachoma; Preventive practice; Facial cleanliness; Environmental Improvement; Cross-sectional; Ethiopia

* Corresponding author: Tadesse Abera
Ops Department, Splash International- Ethiopian Country Programme.

1. Introduction

Trachoma is an ancient Neglected Tropical Disease (NTD) which to date is the leading infectious cause of blindness in the world and is caused by the bacterium *Chlamydia Trachomatis* (1). Worldwide, 2.2 million people are visually impaired, and nearly 1.2 million people are irreversibly blind because of Trachoma (2).

Blinding Trachoma is caused by recurring bacterial infection of the eyes, which result in scarring of the eyelids (3). It causes immense pain, and results in long-term health, economic, and social impacts for the blind individuals, their families, and communities. It has been estimated that the annual lost productivity costs of Trachoma are as much as US \$2.9 billion (4).

Women and girls are particularly vulnerable to infection, as they are often the primary caregivers of children, and children are the greatest source of infection with Trachoma (5). Rural residents and females are the primarily victim of the problem. It found in communities with poor hygiene and disappears spontaneously with improving socio-economic status of a community (3). In Ethiopia, approximately 75.6 million people live in areas where Trachoma is a known risk. About 1.3 million have the advanced stage of disease that leads to visual impairment and permanent blindness (6).

As prevention option to Trachoma, World Health Organization (WHO) recommends Facial cleanliness (F) and Environmental Improvement (E), WASH intervention, and Antibiotics (A) including Surgery (S) as treatment option which abbreviated as SAFE. Prevalence of TT in adults is used as the indicator for the S component of SAFE and prevalence of TF in children aged 1–9 years the indicator FE components of SAFE (7).

Karsa-mallina, our study District, is one of the most endemic Districts to trachoma in Ethiopia. Seventy-five point six million people in Ethiopia live in areas where Trachoma is a known risk.

Women and girls are particularly vulnerable to infection, as they are often the primary caregivers of children, and children are the greatest source of infection with Trachoma. Rural residents and females are the primarily victim of the problem.

Although Trachoma is directly linked to Environmental sanitation (E) and hygiene (F), there was a shortage of evidence that shows about the root cause of Trachoma preventive practices of victim groups.

Conducting of the research in one of the most trachoma endemic District was to generate some evidence about preventive practices status of victim groups and factors associated those hidden behind victim groups.

Thus, the research found-out factors those attached to community side in Trachoma prevention which will play a part in evidence-based policy dialogue to help in advocacy for formulating Trachoma prevention strategies for the sector and related organization which will contribute in Trachoma prevention among children age of 1-9years.

2. Methods

2.1. Study area and period

This study was conducted in Kersa-malima rural district, Southeast Shewa Zone, Oromia Region, Ethiopia from Nov 06-26, 2017. Kersa-malima is one of the Districts found in Southeast Shewa Zone, Oromia Region. It is found at 60 km away from AA. The District altitude is 20% highland, 50% semi-lowland and 30% lowland. In Kersa-malima there were 5 government Health centers, 28 H/posts, which located in rural kebele, and 11 privet clinics. The District has 28 Rural and 3 urban KAs with 22,848 total households. Based on the Kersa-malima basic profile of 2008 EC, the total population of the district were 109,669.

2.2. Study design

Community based cross-sectional study design was used. The source population of the study were mothers with under-9 child who had been living in study area and the study population were Mothers with under-9 child who had been living in study area. Inclusion criteria for the study were mothers who had at least one child age of < 9yrs and those lived in the Kebele for at least for six months.

2.3. Sample size and sampling technique:

2.3.1. Sample size determination

Sample size (n) was determined using single population proportion formula.

$$n = \frac{(z_{(\alpha/2)})^2 p(1-p)}{d^2} = n = \frac{(1.96)^2 0.5 (1-0.5)}{[0.05]^2} = 384 \text{ with design effect: } 2$$

Hence, the total sample size required was 761. For non-response rate, 10% was estimated. The final sample size required for the study was 845.

2.3.2. Sampling technique

Two stages sampling technique was used to select 10 kebeles from which 845 number of study samples were selected. The District has 3 urban and 28 rural kebeles. Firstly, the district was grouped in to two clusters, urban and rural cluster to insure representativeness with the assumption of residents' homogeneity in terms of Trachoma preventive practice within their group. Then, 10 kebeles were randomly selected by lottery method from the 2 groups/strata; 1 Kebele from urban and 9 kebeles from rural to ensure representativeness of the sample from each stratum based on number of HHs in each cluster. Then, 845 mothers were selected from different HHs by systematic random sampling technique from selected 10 kebeles. The number of HHs from each Kebele was determined based on proportion to number of HHs found in the Kebele.

To conduct systematic random sampling, sampling frame were collected from each Kebele. The total number of study population was 3,070 from source population. Based on number of study population and sample size required from each Kebele, the interval between the HHs was calculated and found to be 4. Then, the first mother was selected by lottery from 1 to 4 serial number of sampling from. Then, after getting the 1st sample separately for each Kebele, the rest mothers were selected at each 4th interval to get total of 845 study participants. Only one and mother of youngest child was selected as study sample from each HH. For mother who was not fulfilling inclusion criteria, the next household was taken.

2.3.3. Proportion allocation

To calculate samples for each stratum and KA, we used proportion calculation formula below to allocate sample size to each stratum and KA.

$$\text{Proportionate allocation: } n_i = \frac{n}{N} \times N_i$$

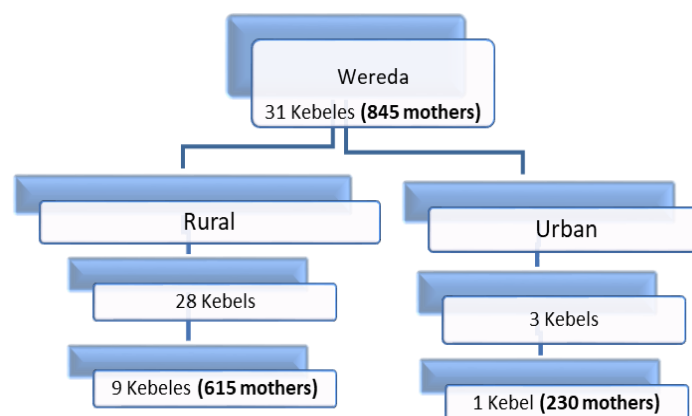


Figure 1 Size size of each stratum and KA.

2.3.4. Variables

Independent variables: socio-demographic factors, mother knowledge related to Trachoma prevention and water related variables. The dependent variable was mothers Trachoma preventive practice.

2.4. Operational definition

2.4.1. Trachoma preventive practices assessment

The assessment was by asking 8 questions. The scale classified for mother's practice was "Good Practice" with score ≥ 4 and "Poor practice" for < 4 out of 8 provided questions (15).

2.4.2. Trachoma preventive knowledge assessment

Out of 5 questions, a cut off score level of ≥ 3 ($\geq 60\%$) was considered as "knowledgeable" whereas < 3 ($< 60\%$) was considered as "Poor knowledge" to prevent Trachoma.

2.4.3. Water accessibility

Water source within 1km of the home and collection time does not exceed 30 minutes (22)

2.4.4. Water affordability

The costs for water and sanitation services do not exceed 5% of a household's wealth index (22)

2.4.5. Crowdedness

The percentage of dwellings that house more than 4 people per room, where the minimum size for a habitable room is four square meters. (14)

2.4.6. IEC materials availability

Mother gets health/Trachoma information from any kind of IEC materials (Radio/TV, poster) if she can read (especially urban women)

2.4.7. Home Visit by HEWs

HEW contact at least once with mother at home level for health care service which help mothers to get information if she can't read (especially rural women)

2.4.8. Urban

Urban is a residence of 2,000 or more in habitats (23).

2.4.9. Rural

Rural residence other than urban.

2.4.10. Wealth index

The wealth index used in this study was a measure that has been used by DHSE, 2016 to indicate inequalities in household characteristics in the Trachoma preventive practice of mothers. It serves as an indicator of level of wealth that is consistent with expenditure and income measures. The index was constructed using household asset data.

The meaningful principal components were retained/extracted with standard deviation (SD) of ≥ 3 using SPSS Statistic factor analysis. Sample adequacy for principal component analysis was tested by KMO and Bartlett's Test (Kaiser-Meyer-Olkin; 0.67). Based on this; Bed/table, horse/mule/donkey, cattle, sheep/goats, crop land, livening house, radio, television, Telephone/cell phone and electricity were supposed to determine household financial sustainability (principal components for household income analysis)

Then, households were given scores based on the number and kinds of goods they own. Ranking each sample household by their score and then dividing the distribution into five categories, each comprising about 20% of the study sample.

2.5. Data collection procedures

2.5.1. Data collection tool

Quantitative data was collected through face-to-face interview (supported by observation when it is important) by using structured interviewer administered questionnaire which was adopted from different literatures and modified to the

context. The questionnaire was translated to local language which is Oromiffa before going for an interview. Quality of the questionnaire was checked for completeness and consistency by pre-testing on 5% of sample in study population.

2.5.2. Measurement

Trachoma preventive practices assessment: Is the assessment of mothers practice towards the two out of four components of WHO SAFE strategy for Trachoma elimination by 2020, which are Environmental Improvement (E) and Facial cleanliness (F). The assessment was through asking eight questions. The first questions were about Environmental improvement (E) by asking about HH Latrine availability, Latrine Utilization practice, Waste disposal pit availability, Waste disposal pit utilization, Proper child faces disposal practice and preparation of separate room for livestock. The second questions for Facial cleanliness (F) assessment were by asking about child facial cleanliness status, Child face washing practice and Child face washing frequency.

Methods of practice assessment adopted and modified from literature review (24). The dependent (outcome) variable which is Trachoma prevention practice was measured by the sum of values of mother response to 8 preventive practice related variables listed above. For each response, score of 1 was given to good practice while 0 was given to poor practice.

Trachoma preventive knowledge assessment: Is the assessment of mothers Knowledge towards Trachoma prevention. The knowledge of the mothers was assessed by 5 questions focusing on Trachoma transmission and ways of prevention: knowledge of Information about Trachoma, Body organ affected by Trachoma, Source of Trachoma infection, Preventability of Trachoma and How to prevent it. The scoring ranges of the questions were 0 (minimum) to 5 (maximum).

Knowledge scores for individuals' questions were calculated based on above definition for choice and summed up to give the total knowledge score out of 5 points. Finally, for each question a score of 1 was given to knowledgeable while 0 was given to poor knowledge with a score range of a minimum of 0 to maximum of 5. Out of 5 questions, a cut off score level of ≥ 3 ($\geq 60\%$) was considered as "knowledgeable" whereas < 3 ($< 60\%$) was considered as "Poor knowledge" to prevent Trachoma.

2.5.3. Data collectors training

Nine HEWs and 4 experts, 2 from water office and the other two from health office (BSc) who have background on health and WASH program participated in data collection and supervision. Based on recommendation by supervisor, HEWs were selected from different Kebeles of the study District. After training, HEWs randomly assigned for data collection to different kebeles.

Training was given for data collectors on the types of data, data collection methods, guide to data collection, informed consents, types of questions, qualities of interviewer/data collectors, interviewing technique, responsibility, and communication ways. Data collectors were made to fully understand each question one by one before they go for field practice. Additional orientation was given for supervisors separately on how to supervise the overall data collection process and reporting

2.5.4. Data collection field work

Planning and preparation were conducted before field work. Interview conducted face to face by using structured questionnaire at home level. First appropriate area for interview was selected to create good communication environment. Mother asked her consent for participation after a brief explanation of purpose of the study. After she agreed, interview was conducted within 20-30 minutes. Finally, data collectors appreciate mothers and go for the other mother in the next HH. Supervisors followed data collectors, gave support when needed, and report the status daily to the investigator. The investigator was also following closely data collection process and giving support when it was needed.

2.5.5. Data quality control

Before the start of data collection, quality of the questionnaire was checked for completeness and consistency by pre-testing on 5% of sample in study population. This was done after having list of Kebeles from which study samples was taken (to avoid information contamination among study samples). The pretesting result was used to improve the quality of the household questionnaire and to provide re orientation to the data collection team in administering data collection activity. Data was collected by trained data collectors after reaching on the same understanding of the questionnaire.

During data collection, strict supervision was done by supervisors and me, research investigator. There was daily communication with data collectors to solve any problems they counter.

After the end of data collection, the supervisor's transferred data to me, research investigator. Then data was edited, verified for consistency, checked for outlier of responses, and reviewed for any coding error.

2.5.6. Data processing & Analysis

Data entry

All the quantitative data was entered using akvo-flow software, which is simpler and more convenient, and exported to SPSS version 20 for analysis.

Data cleaning

The data has cleaned by visualizing, calculating frequencies and sorting. Then the frequency of each variable determined to check for consistency and cleaned for analysis.

Data analysis

Both dependent and independent variables were classified as categorical variables. To describe Trachoma preventive practice, demographic characteristics, knowledge towards Trachoma and water supply status of the mothers using descriptive statistics.

To identify association between dependent and independent variables, multiple logistic regression modeling was used. Candidate variables for multivariate analysis were selected at $p < 0.25$ using vicariate analysis.

3. Results

3.1. Socio-demographic Characteristics of the Study Participants

Table 1 Socio-demographic characteristics assessment result, Kersa-malima district, Nov 2017 (n=800).

	Category	Frequency	%
Residence	Rural	593	74
	Urban	207	26
	Total	800	100
Mother age group (in years)	15-24 yrs.	97	12.1
	25-34 yrs.	495	61.9
	35yrs and above	208	26
	Total	800	100
Mother religion	Orthodox	694	86.8
	Protestant	95	11.9
	Muslim	8	1
	Wakefata	3	0.4
	Total	800	100
Mother level of education	Cannot read and write	428	53.5
	Read/write	160	20
	1-8 grade	175	21.9
	10 complete	16	2
	Above grade 10	21	2.6
	Total	800	100

Eight hundred subjects were included in the study with the overall response rate of 94.7%. The rest were not interested to give their time for interview. Face-to-face interviews were conducted at HHs level in 10 kebel. Almost 2/3 of interviewed mother's age category was 25-34years, 495 (61.9%). More than half of the mothers cannot read and write, 428 (53.5%). Most participants were Orthodox Christian followers, 694 (86.8%). About half of HHs have family size of less than five, 434 (54%). Majority of mothers in the study population were married, 717 (89.6%).

3.2. Trachoma Preventive Practice assessment

Based on Trachoma preventive practice assessment method discussed in operation definition part of the paper, over all “Good Trachoma Preventive Practice” of the district was found to be 412 (51.5%).

Household latrine coverage was found to be 367 (45.9%) with utilization practice of 328 (41%) from 800 samples. Households who have separate waste disposal pit were 263 (32.9%) with utilization practice of 164 (20.5%) from 800 samples. Result of infant’s feces disposal to latrine showed that only 274 (34.3%) of the mothers dispose safely to HH pit. Households prepared separate room for their cattle were found to be 340 (42.5%).

Mothers practicing child face washing were found to be 790 (98.8%). Almost all mothers, 790 (98.8%), were washing their child at least once a day.

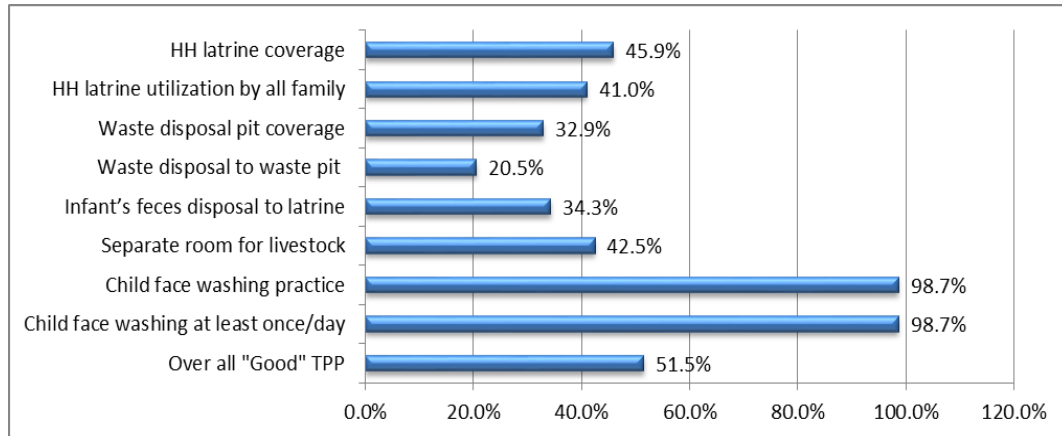


Figure 2 Result of Trachoma preventive practice assessment, Kersa-malima rural district, Nov 2017 (n=800)

3.3. Factors Associated with Trachoma Preventive Practice

3.3.1. Bivariate Analysis

Nineteen variables were assessed: 11 socio-demographic, 5 water supply related and 3 knowledge related variables.

From 11 socio-demographic factors, seven variables were selected as a candidate in bivariate analysis; mother age (p-v; 0.03), family size (p-v; 0.01), household residence (p-v; 0.01), weather condition (p-v; 0.01), mother education level (p-v; 0.01), husband education level (p-v; 0.01), wealth level (p-v; 0.01).

Table 2 “Trachoma Preventive Practice” and “Bivariate Analysis” of socio-demographic factors associated in Kersa-malima rural district, Nov 2017 (n=800)

		Trachoma preventive practice (TPP)		COR (C.I)	Sig.
		Good practice	Poor practice		
Mother age group (in years)	15-24yrs	40 (9.7%)	57 (14.7%)	1	0.03
	25-34yrs	253 (61.4 %)	242 (62.4%)	1.5 (0.9, 2.3)	0.07
	35yrs and above	119 (28.9 %)	89(23%)	1.9 (1.2, 3)	0.01
Marital status	Married	384 (95.5%)	333 (87.4%)	1	0.28
	Single	6 (1.5%)	14 (3.7%)	3.5 (0.7, 17)	0.13
	Divorced	10 (2.5%)	28 (7.3%)	1.3 (0.2, 8)	0.79
	Widowed	2 (0.5%)	6 (1.6%)	1.1 (0.2, 6)	0.94
	NR	10 (2.4%)	7 (1.8%)	1	

Household's size	6 and more	199 (48.3 %)	125 (34.1 %)	1	0.01
	5 and less	192 (46.6%)	242 (65.9%)	1	0.01
	NR	21(5.1%)	21 (5.45)	1	
Size of habitable room	< 4square meters.	1 (.2%)	1 (.3%)	0.9 (0.06, 15)	0.97
	> 4square meters.	411 (99.8%)	387 (99.7%)	1	
Children age of under 9yrs	above 2yrs	34 (8.4%)	54 (14.1%)	1 (.9, 1.1)	0.34
	under 2yrs	369 (91.6%)	329 (85.9%)	1	
	NR	9 (2.1%)	5 (1.2%)	1	
Religion	Protestant	48 (11.7%)	47 (12.1%)	1	0.32
	Orthodox	356 (86.4%)	338 (87.1%)	2 (0.2, 23)	0.56
	Muslim	7 (1.7%)	1 (.3%)	2 (0.2, 23)	0.54
	Wakefata	1 (.2%)	2 (.5%)	14 (.6, 33)	0.11
Residence	Rural	354 (85.9%)	238 (61.3%)	4 (3, 5)	0.01
	Urban	58 (14.1%)	150 (38.7%)	1	
Climate condition	Highland	126 (30.6%)	73 (18.8%)	1	0.01
	Semi-lowland	200 (48.5%)	134 (34.5%)	0.8 (0.6, 1.2)	0.43
	Lowland	86 (20.9%)	181 (46.6%)	0.3 (0.2, 0.4)	0.01
Mother education	Cannot read and write	214 (51.9%)	215 (55.4%)	1	0.01
	Read/write	81 (19.7%)	79 (20.4%)	1.1 (0.7, 1.5)	0.87
	1-8 grade	107 (26%)	68 (17.5%)	1.6 (1.1, 2.3)	0.01
	10 complete	3 (.7%)	13 (3.4%)	0.2 (.06, 0.8)	0.02
	Above grade 10	7 (1.7%)	13 (3.4%)	0.5 (0.2, 1.4)	0.19
Husband education	Cannot read and write	114 (27.7%)	165 (42.5%)	1	0.01
	Read/write	72 (17.5%)	76 (19.6%)	1.4 (0.9, 2)	0.1
	1-8 grade	189 (45.9%)	94 (24.2%)	3 (2, 4)	0.01
	10 complete	15 (3.6%)	18 (4.6%)	1.2 (0.6, 2.5)	0.61
	Above grade 10	22 (5.3%)	35 (9.0%)	0.9 (.5, 1.6)	0.75
Wealth status	Lowest	45 (10.9%)	15 4(39.7%)	1	0.01
	Second	52 (12.6%)	93 (24%)	1.9 (1.2, 3)	0.01
	Middle	84 (20.4%)	63 (16.2%)	4.5 (3, 7)	0.01
	Fourth	101 (24.5%)	49 (12.6%)	7 (4, 11)	0.01
	Highest	130 (31.6%)	29 (7.5%)	15 (9,25)	0.01

All 5-water supply related variables were selected as a candidate; water getting frequent (p-v; 0.01), time taken to water point (p-v; 0.01), main source of house hold water (p-v; 0.09), cost for water (p-v; 0.07) and average water expense per month (p-v; 0.19)

Table 3 “Trachoma Preventive Practice” and “Bivariate Analysis” of water related factors associated in Kersa-malima rural district, Nov 2017 (n=800)

		Trachoma preventive practice (TPP)		COR (C.I)	Sig.
		Good practice	Poor practice		
Main source of HH water	Stream / River	134 (32.5%)	91 (23.5%)	1	0.03
	Spring water	31 (7.5%)	33 (8.5%)	0.6 (.4, 1.1)	0.11
	Public Tape	241 (58.5%)	253 (65.2%)	0.7 (.5, .9)	0.01
	Other	6 (1.5%)	11 (2.8%)	0.4 (.1, 1.1)	0.06
Costing for water	Yes	253 (61.4%)	262 (67.5%)	0.8 (0.6, 1.1)	0.07
	No	159 (38.6%)	126 (32.5%)	1	
Average expense /month	> 25 ETB/month	165 (40%)	173 (44.6%)	0.8 (0.6, 1.1)	0.19
	<25 EBT/month	247 (60%)	215 (55.4%)	1	
Frequent of getting the water	All the time	342 (83.3%)	229 (59%)	1	0.01
	Either day or nigh	67 (16%)	75(19.3%)	0.6 (.4, .9)	0.01
	In more than a day	3 (.7%)	84(21.7%)	0.02 (.01, .08)	0.01
Time taken to water point	Less than an hour	385 (93.4%)	309 (79.7%)	1	
	More than an hour	27 (6.6%)	79 (20.3%)	0.3 (.2, .4)	0.01

Similarly, all 3 knowledge related variables were selected as a candidate for multivariate analysis at given p-value; basic knowledge on Trachoma prevention (p-v; 0.01), access to IEC materials (p-v; 0.01) and HEW visit (p-v; 0.01)

Table 4 “Trachoma Preventive Practice” and “Bivariate Analysis” of Knowledge related factors associated in Kersa-malima rural district, Nov 2017 (n=800)

		Trachoma preventive practice (TPP)		COR (C.I)	Sig.
		Good practice	Poor practice		
Basic Trachoma knowledge	Poor knowledge	85 (20.6%)	151 (38.9%)	2.5 (1.8, 3)	0.01
	Knowledgeable	327 (79.4%)	237 (61%)	1	
Access to IEC materials	No	113 (27.6%)	171 (45.2%)	2.2 (1.6, 2.9)	0.01
	Yes	297 (72.4%)	207 (54.8%)		
HEWS Visited	Visited	367 (81.8%)	224 (57.7%)	1	
	Not visited	75 (18.2%)	164 (42.3%)	0.3 (0.2,0.4)	0.01

3.4. Factors independently associated with “Trachoma Preventive Practice.”

The aim of multivariate regression analysis was to identify independent variables associated to outcome variable at p-of 0.05 and 95% confidence interval of AOR. Five variables were found to be associated to Trachoma Preventive practice at a given p-value.

From socio-demographic factors, HH wealth level (p-v; 0.01) and household residence (p-v; 0.01); from knowledge related variables, mother preventive knowledge and from water supply related variables, water getting frequent (p-v; 0.01) and time taken to water point (p-v; 0.01) were variables those found to be associated to the outcome variable.

Table 5 “Trachoma Preventive Practice” and “Multivariate Analysis” of factors independently associated in Kersamalima rural district, Nov 2017 (n=800)

		Trachoma preventive practice (TPP)		COR (C.I)	Sig.
		Good practice	Poor practice		
Residence	Rural	354 (85.9%)	238 (61.3%)	4 (3, 5)	0.01
	Urban	58 (14.1%)	150 (38.7%)	1	
Wealth status	Lowest	45 (10.9%)	154 (39.7%)	1	0.01
	Second	52 (12.6%)	93 (24%)	1.9 (1.2, 3)	0.01
	Middle	84 (20.4%)	63 (16.2%)	4.5 (3, 7)	0.01
	Fourth	101 (24.5%)	49 (12.6%)	7 (4, 11)	0.01
	Highest	130 (31.6%)	29 (7.5%)	15 (9, 25)	0.01
Basic Trachoma knowledge	poor knowledge	85 (20.6%)	151 (38.9%)	2.5 (1.8, 3)	0.01
	Knowledgeable	327 (79.4%)	237 (61%)	1	
Frequent of getting the water	All the time	342 (83.3%)	229 (59%)	1	0.01
	Either day or night	67 (16%)	75 (19.3%)	0.6 (.4, .9)	0.01
	In more than a day	3 (.7%)	84 (21.7%)	0.02 (.01, .08)	0.01
Time taken to water point	Less than an hour	385 (93.4%)	309 (79.7%)	1	
	More than an hour	27 (6.6%)	79 (20.3%)	0.3 (.2, .4)	0.01

Variables adjusted were households' size (p=.06), IEC access (p=0.06), HH size (p=0.06), HEWs visit, cost for water (p=0.4), average water expense /month (p=0.36), husband education (p=0.47), mother education (p=0.6), weather condition (p=0.5), households size (p=0.13) and mother age (p=0.19).

Before describing the association, model assessment for the overall significance of the independent variables in the model was performed using Hosmer and Lemeshow Test and it was found to be significant: (Chi-square= 3; df=8; p-value=0.93).

Household wealth level categorized as “second” had about 1.8 times more likely good preventive practice than that of lowest category with at least as 1.02 times or much as 3.1 time more (AOR= 1.8; 95% CI=1.02-3.1; p<0.04). The “middle” category had about 4.1 times more likely good preventive practice than that of lowest with at least as 2.3 times or much as 7.4 time more (AOR= 4.1; 95% CI=2.3-7.4; p<0.01). The “fourth” category had about 4.2 times more likely good preventive practice than that of lowest with at least as 2.2 times or much as 7.6 time more (AOR= 4.2; 95% CI=2.2-7.6; p<0.01). The “highest” category was 7.9 times more likely practice than the lowest with at least as 4.2 times or much as 15 time more than lowest category (AOR= 7.9; 95% CI=4.2-15; p<0.01).

Mothers in the study community had about 1.8 times more likely good preventive practice than that of urban. The preventive practice could be at least as 1.2 times or much as 2.8 time more than urban (AOR= 1.8; 95% CI= 1.2-2.8; p<0.01).

Mother knowledgeable about Trachoma prevention through environmental improvement and child face washing practice in the study population had about 1.6 times more likely good preventive practice than that of with poorly knowledge. The preventive practice could be at least as 1.1 times or much as 2.4 time more than poor knowledge mothers (AOR= 1.6; 95% CI: 1.1-2.4; p<0.02).

Mother who takes time more than an hour to water point in the study population had about 30% times less likely good preventive practice than mother takes less than an hour. The preventive practice could be at least as 20% times or much as 50% time less than mother who takes less than 1hr (AOR= 0.3; 95% CI= 0.2- 0.5; p<0.01).

Regarding water getting frequency, mother who get water only “either day or night” time in the study population had about 60% times less likely has good preventive practice than mother who get water “all the time”. The preventive practice could be at least as 40% times or much as 90% (AOR= 0.6; 95% CI= 0.4- 0.9; p<0.05). Mother who gets water in “more than a day” in the study population have about 2% times less likely has preventive practice than mother who get water “all the time”. The preventive practice could be at least as 0.6% times or much as 1% (AOR= 0.02; 95% CI= 0.006- 0.1; p<0.01).

4. Discussion

In this study population, HH latrine coverage was 367(45.9%). The coverage difference may be because of the difference in the study period.

To discuss about factors significantly associated to Trachoma Preventive Practice; wealth level status of the household was found to be significant factor for taking good Trachoma preventive practice measures ($p < 0.01$). Study in Benin (Cross sectional, 2015), India (Cross sectional, 2016) and Ethiopia (community based cross sectional, 2013) (25, 26,7) found that significant association was found between sanitation practices and socio-economic status ($p = < 0.05$). Study done in Kenya also stated that there was significant linkage between trachoma and low socioeconomic status ($P = 0.01$) (27). This may be due to expense for inputs for sanitation facilities (latrine, waste disposal pit, separate cattle room) and water related cost.

Mother lives in the rural part of study population found to have more preventive practice than that live in urban part ($p < 0.01$). Study done in other part of Ethiopia (Community based cross sectional, 2013) show that “Frequent of supportive supervision by health professionals, distance from the local health facility, and income level were the factors that affected latrine coverage” (27). The reason behind the finding might be due to the difference in HEP functionality and HEWs HH visit in the kebeles. Looking at this study area, no HEWs assigned for urban Kebeles unlike rural which has 2 HEWs for each Kebele.

Knowledgeable mothers in this study population had better preventive practice than that of having poor knowledge (AOR= 1.6; $p < 0.02$). Study conducted in India (cross-sectional, 2017) supported the finding by stating that improved knowledge of caregivers was associated with higher odds of better child hygienic practices (26). The result of study done in Kenya (cross-sectional, 2015) also found that; significantly low levels of knowledge ($P = 0.04$) about trachoma were important factors in the transmission and sustaining of Trachoma infection in the community (23).

Mother takes more time to water point in the study population were less likely has preventive practice than mother takes less time ($p < 0.01$). Study done in Kenya (Cross sectional, 2011) also stated that there were significant links between trachoma and long distance to water source ($p = 0.004$) (23). The study in Ethiopia (Cross sectional, 2014) also support this finding stating that childhood eye diseases is higher in household those fetch water from out-side compound than that of get water source from inside of the compound ($p < 0.05$) (22). This may be linked to time loses and water shortage because of time taken to water source which affect mother’s hygiene practice.

Mother who gets water day or nighttime only, less likely has preventive practice than mother who get all the time ($p < 0.01$). Study done in Tanzania (2006) support this finding stating that active trachoma increases with increase water collection time gap (OR= 2.2; CI=1.13-4.5) (7). This may be related to frequency of water collection to have enough quantity of water used for hygiene practice.

Since data collection was in the month of November, HH latrine and waste disposal pit may be collapsed in summer (rainy season). As a result, the actual coverage may be varied throughout the year. The other limitation of this study was shortage of literature review. It was because, I couldn’t find study done specifically on this the research title.

5. Conclusion and recommendation

From the total 800 interviewed mothers, only half, 412 (51.5%) were categorized under “Good Trachoma Preventive Practice” whereas the rest were under category of “Poorly Practicing Mothers”. The result of the study indicated that the overall Trachoma preventive practice of the study District was not much different from preventive practice in other developing regions. Good Trachoma preventive practice was linked to HHs with better wealth level, HHs who were living in rural area, knowledgeable mothers, HHs got water all the time and HHs who took less time to water point.

Recommendation

Based on the major findings of the study:

- The low coverage in “Trachoma Preventive Practice” will affect WHO launched global alliance for the illumination of blinding Trachoma. Therefore, it is recommended to give attention to Facial cleanliness (F) and Environmental Improvement (E) component of SAFE strategy by improving coverage of HH latrine and waste disposal pit; infant feces disposal to HH latrine, preparation of separate room for cattle and child face washing.

- Mother's capacity building, special attention to urban sanitation and improving water supply status are recommended to improve the overall level of Trachoma preventive.
- Development of strategic planning based on research findings is recommended to Prevent Trachoma which should focus on the root cause for Trachoma occurrence. These will be improving HH wealth level, more attention to urban sanitation, community capacity building on Trachoma prevention and attention to provision of better water supply.
- Based on this research findings, concerned body should use the evidence for policy dialogue and to formulate Trachoma prevention strategies for the sector and related organization
- Additional study is recommended to improve the overall Trachoma preventive practice.

Abbreviation

AOR	Adjusted Odds Ratio
CBM	Childbearing Mother
DFIDU	United Kingdom Department for International Development
GTMP	Global Trachoma Mapping Project
FGD	Focus Group Discussions
HEW	Health Extension Workers
HP	Health Post
HC	Health Center
HDA	Health Development Armies
HH	Household
ICTC	International Coalition for Trachoma Control
IEC	Information, Education and Communication
ITI	International Trachoma Initiative
KA	Keble Administration
KAP	Knowledge, Attitudes and Practices
MDA	Mass Drug Administration
NTD	Neglected Tropical Diseases
SAFE	Surgery, Antibiotics, Facial cleanliness and Environmental
SNNPR	South Nation and Nationality of People Region
SPSS	Statistical Package for Social Science
STAG	Strategic and Technical Advisory Group
TF	Follicular Trachomatous Inflammation
TI	Trachomatous Inflammation
TS	Trachomatous Scarring
TT	Trachomatous Trichiasis
TV	Television
WASH	Water, Sanitation and Hygiene
WHO	World Health Organization

Compliance with ethical standards

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Disclosure of conflict of interest

I wish to disclose any competing interests that may be perceived to influence the results and discussion reported in this paper.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

Authors' contributions

1. Developed the theoretical formalism, performed the analytic calculations, and performed the numerical simulations. Both 2 and 3 authors contributed to the final version of the manuscript. 2 supervised the project as well.

References

- [1] Pascolini D, Mariotti S. Global Estimates of Visual impairment. 2012.
- [2] World Health Organization, SAFE strategy for trachoma control. 2011.
- [3] Melbourne, Centre for Eye Research Australia, Trachoma Control and Elimination. 2008.
- [4] Kenya Ministry of Health, International Coalition for Trachoma Control. 2011.
- [5] Poet O, Bik P. Achieving Gender Equity in the Implementation of Trachoma. 2009.
- [6] Helen H, Yael V, Water Aid. Community Eye Health. April 2013.
- [7] Werku A, Simegn M. latrine coverage and associated factors. 2013.
- [8] Stephanie O, Children Without Worms, The International Trachoma Initiative, CARE USA, A MANUAL FOR Wash IMPLEMENTERS ETHIOPIA. 2013.
- [9] Central Statistical Agency(CSA), DHSE. 2016.
- [10] The Addis Ababa Declaration for the Control and Elimination of NTDs in Ethiopia, National NTD Symposium. 2013.
- [11] Yeman B, Amir B. Prevalence of Trachoma in ethiopia, Ethiopian Journal of Health Development. 2008.
- [12] WHO report, MDG drinking water and sanitation. 2006.
- [13] WHO Safe Strategy , Community Eye Health. 2014.
- [14] WHO report, the 17th meeting. 2013.
- [15] Blessing D, James J, New O. Factors Influencing Behaviour. 2012; 3: e7.
- [16] Ng'etic H, Claudio O, Ahmad J. Environmental factors and Trachoma disease. 2015.
- [17] Christine M, Kajilad O. Prevalence and risk factors for trachoma infection. 2014.
- [18] Noman U, Mohamed A, Asru A. Assessment of Knowledge, Attitude and Practice towards Hepatitis B. 2012; 1471-2458.
- [19] Chemin L, Dunan T. Water Supply and Sanitation. 28 July 2010.
- [20] Demography Report, definition of urban, Yearbook, table 6. 2005.
- [21] Roch Christian, Gratien B, Ghislain E. Assessment of water, sanitation, and hygiene practices and associated factors. 2015.
- [22] Reddy B, Yadlapalli S, Kusuma L, Chandrakant S. Water and Sanitation Hygiene Practices for Under-Five Children, Community Med Health Educ. 2017.
- [23] Munguti P, Ng'ang'a Z, Muttunga J. Knowledge, practices and perception on trachoma and its influence on health seeking behaviour of the pastoralist patients, Kenya East and Central Africa Medical Journal. 2015; 2: 89-96.
- [24] Christine M, Nyamwaro N. Prevalence and risk factors for trachoma infection. 2011.
- [25] Elsevier Ltd, Topical medicine and hygiene, the relation between active trachoma and water. 2006.
- [26] Asressie M, Dr. P. Surender R. KAP & associated factors of parents. 2014.