Prevalence Of Trachoma And Associated Factors Of Children Aged 1-9 Years In Community Led Total Sanitation And Hygiene Triggered Village And None Triggered In Girar Jarso Woreda, North Shoa, Oromia, Ethiopia.

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Abstract
Background: Trachoma is the leading cause of infectious blindness worldwide. Problem with trachoma can be prevented through Sanitation and Hygiene improvement. This study assesses the relation between triggering villages through CLTSH and significant result on blinding trachoma.


Methods: A comparative cross-sectional study was done in CLTSH triggered village and non-triggered village of Girar Jarso Woreda, North Shoa, Oromia Region, Ethiopia. The sample size determined using the formula of sample size determination for two population proportion. Based on stat calc of EPI info 3.5.1.0.for cross sectional study designs, the actual sample size calculated to be 644(322 from each group) children aged 1-9 years. A multi-stage sampling technique was employed. A Structured questionnaire and WHO guideline for Trachoma Assessment also used. Data was managed and analyzed by SPSS version 20.

Result: From the total children assessed, active trachoma was found to be 179(27.8%). It was also observed from this study that 22 (3.4%) had trichiasis and 15 (2.3%) were observed to have corneal opacity. The prevalence of trachoma in the two comparison group had no significant difference and children in the community led total sanitation and hygiene triggered village had no lower risk of trachoma. Variables such as open defecation free, any piles of animal dung or rubbish lying in open place, frequency of washing hands and faces, type of detergent they use, main source of water were associated with trachoma reduction (P-values <0.05) in multivariate analysis.

Conclusion: The prevalence of trachoma in the two comparison group had no significant difference, rather encouraging reduction of trachoma in Open defecation free villages.

Keywords: Community led Total sanitation and Hygiene (CLTSH), Open defecation free, Triggering (CLTSH), Trachoma

Background
Blindness due to trachoma is irreversible once it has occurred, but it can be prevented. The SAFE strategy (Surgery for trichiasis, Antibiotics to treat Chlamydia trachomatis infection, and Facial cleanliness and Environmental improvement to reduce transmission of Chlamydia trachomatis from one person to another) is recommended for the control of trachoma. With the SAFE strategy, the World Health Organization (WHO) and its partners are targeting the Global Elimination of Trachoma as a cause of blindness by the year 2020 (GET2020). GET2020 is one element of a broader strategy known as ‘VISION 2020: The Right to Sight’, which has as its goal the elimination of all avoidable blindness by the same year (1).

Trachoma is an eye disease caused by poor sanitation and hygiene. Flies spread the disease in areas where people openly defecate. People can easily prevent trachoma by washing their hands and faces regularly. Latrine construction and use can also prevent trachoma. Eliminating trachoma and other diseases caused by lack of clean water, sanitation and hygiene would improve people’s well being, reduce the costs of curative health care and help strengthen local economies (2).

Hygiene and sanitation promotion has been gaining momentum in Ethiopia, where the number of people with access to a latrine has been improving (access reached 60 percent in 2011). However, the use and management of available latrines remains poor. Many international agencies and non-governmental organizations have been working to improve the hygiene and sanitation situation by constructing latrines using various kinds of subsidies. But even after such efforts, it remains...
difficult to find a single village in the country that is completely sanitized and free from open defecation. Success has generally been measured on the basis of the number of latrines constructed within a given period of time instead of on the extent to which people continue to practice open defecation even when latrines are available (3).

There is only one species of fly, which is currently proposed as the main vector for trachoma, the Bazaar fly, Musca Sorbens. The larval medium for Musca sorbens faeces and it shows a marked preference for human faeces over any other type (4). It only uses human excreta available in the environment: larval stages have not been found in latrines and adults have not been caught emerging from them (4, 5).

The effective use of latrines therefore provides a break in the chain of fly breeding and its larval stages. Hence if latrine use is community wide and accepted and used by the men, women and children concerned, and then it can provide effective barrier to the spread of trachoma through the vector of the fly (6).

Programmes improving community water supplies can contribute to the overall Prevention of trachoma. Sanitation can be promoted by the health sector through a stand-alone programme such as sanitation marketing or CLTSH (Community Led Total Sanitation and Hygiene) (7).

The CLTSH approach originates from Kamal Kar’s evaluation of Water Aid Bangladesh and their local partner organization – VERC’s (Village Education Resource Centre is a local NGO) traditional water and sanitation programme and his subsequent work in Bangladesh in late 1999 and into 2000. CLTSH in Ethiopia have not been popular until now. Moreover, the pace of change has been too slow to achieve universal access within the stated time frame (8).

Methods and materials

Study design and setting

A comparative cross-sectional study was conducted from September 25, 2014 to March 21, 2015 in Girar Jarso woreda, North Shoa, and Oromia Region, Ethiopia. North Shoa Zone is divided into fourteen administrative woreda. Girar Jarso woreda is 110km from capital city of Ethiopia to North 9°47.823 and to East 38°43.938. According to 2014 CSA population projection the woreda’s total population is 83,070. Which are 42,536 are male and 40,534 are female. In addition, despite the same average family size of six, it is less densely populated (350/sq.km). The infrastructure situation is also better: There are 46 Primary schools, 17 health post and 3 health center. In the woreda there are seventeen rural kebeles and 439 villages. (2007 CSA and May, 2009 baseline survey executive summary report of Girar Jarso woreda on WASH status by UNICEF)

Sample size determination and sampling procedures

To assess where a significant different between two groups, the sample size was determined using the formula of sample size determination for two population proportion. Based on EPI info version 3.5.1 for cross sectional study designs, the actual sample size was 644 (322 from each group).

To calculate the sample size the following assumptions were used ; level of significance 95% , power 80% , ratio of exposed to unexposed 1, expected frequency of disease among unexposed group 47.9%(37) AND OR (2).

The calculated sample size was 292. With adjustment for non response (10%) and design effect of 2, the final sample size was 644.

A multi-stage sampling technique employed in order to select the study units. The study unit was children’s that are found in two group (CLTSH triggered and non CLTSH triggered) zone of Girar Jarso woreda. The study area is selected so as to represent the woreda in terms of both CLTSH triggered and non CLTSH triggered.

Data collection procedures and quality assurance

The data was collected using a pre-tested and structured questionnaire prepared to address all the important variables. The questionnaire was first prepared in English version, and then translated to Oromiffa. The variables in the questionnaire were adapted from previous studies and by consulting of advisors and individuals. The 6 data collector and 1 supervisor was trained and standardized particularly in the proper filling of questionnaire.

Trachoma assessment was done for each child by trained 3 ophthalmic nurses. The ophthalmic nurses were received refresher training on trachoma grading in the form of lecture using standard slides showing various grades of trachoma. Standardization of eye examinations for trachoma then have done in Girar Jarso woreda among in CLTSH triggered village and non-triggered village community settings. Each ophthalmic nurse
standardized against highly experienced ophthalmologist in trachoma diagnosis (gold standard). Trachoma grading has done using the WHO grading system.

To improve the quality of the data, the data collectors have been closely supervised, each completed questionnaire was checked to ascertain all questions were properly filled and corrected by principal investigator. The information was rechecked in a randomly selected sub sample (5%).

Data processing and analysis

Data was cleaned manually and then entered into the computer using Epi-Info Version 3.5.1.0 and statistical analysis made using SPSS version 20.0.

First, descriptive analyses were carried out to explore the socio-demographic characteristics of the respondents. Bivariate analyses were carried out to examine the relationship between the Outcome variables and selected determinant factors. P value and 95% Confidence Interval be also used as appropriate. Factors for which significant association observed have been retained for subsequent multivariate analyses using logistic regression to control the possible confounding effect and assess the separate effects of the variables.

Ethical considerations

Ethical clearance obtained from Debramarkos University and GAMBY College of Medical Sciences. A written consent was sought from local authorities and concerned government bodies. Informed verbal consent has been received from each families of study subject. Anyone who did not take part in the study has been given the right to withdraw from the study at any time.

Information on the studies has been given to the participants, including purpose and procedures, potential risk and benefits so encourage provision of accurate and honest responses. Potential participants have been told that participation was voluntary and that confidential and private information has been protected.

All study subjects who had trachoma during data collection were linked to health center and managed after the agreement was reached with families of study subjects about the benefit of linkage. The management was so simple because there were health professionals trained from each health center.

Results

Socio-demographic characteristics of study participants

A total of 644 children aged 1 to 9 years participated with response rate of 100% as well as examined their eye’s for trachoma assessment in the study. Three hundred twenty two (50%) children from CLTSH triggered and 322(50%) from CLTSH not triggered included in the study. Of total study subjects 354(55%) were males and 290(45%) were females. The mean age of study population was 5.49 ±2.57(SD). Six hundred forty four (100%) children were followers of Orthodox Christianity. About 329(51.1%) of the children were from large (>5) family members. As to educational background of children’s mother, the illiterate were 576(89.4%), primary (1-8 grades) were 52(8.1%), secondary and above (9-12+ grades) were 16(2.5%). Six hundred three (93.6%) children’s family occupation was farmer. About 188(29.2%) of the children were from families whose monthly incomes less than 1455birr. (Table 1)

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<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Children aged 1-9 years in triggered CLTSH</th>
<th>Children aged 1-9 years in None triggered CLTSH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number (%)</td>
<td>Number (%)</td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-4</td>
<td>109 (34)</td>
<td>118 (37)</td>
</tr>
<tr>
<td>5-9</td>
<td>213 (66)</td>
<td>204 (63)</td>
</tr>
</tbody>
</table>

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Table 1: Socio-demographic characteristics of among children aged 1-9 years in CLTSH and non CLTSH villages, Girar Jarso Woreda, North Shoa, Oromia Region, Ethiopia in 2015.
<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Number</th>
<th>% (percent)</th>
<th>Number</th>
<th>% (percent)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main source of water</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Protected spring</td>
<td>32</td>
<td>10</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Protected well</td>
<td>260</td>
<td>81</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Unprotected spring</td>
<td>30</td>
<td>9</td>
<td>40</td>
<td>12.42</td>
</tr>
</tbody>
</table>

Water access and Hygiene practice
Eighty one percent of triggered village got water from protected hand pump well while 74.53% of none triggered village fetched from pond or “kure”. Hand and face wash using soap and other substitute ranged 57% for triggered CLTSH. (Table 2)

Table 2: water access and Hygiene practice of children aged 1-9 years in CLTSH and non CLTSH villages, Girar Jarso Woreda, North Shoa, Oromia Region, Ethiopia, 2015.
<table>
<thead>
<tr>
<th>Item</th>
<th>Triggered CLTSH</th>
<th>None Triggered CLTSH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Any piles of animal dung/ Rubbish lying in open place</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>187</td>
<td>0</td>
</tr>
<tr>
<td>Yes</td>
<td>135</td>
<td>322</td>
</tr>
<tr>
<td>Availability of standardize latrine</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>47</td>
<td>322</td>
</tr>
</tbody>
</table>

**Sanitation status**

Eighty four percent of children from triggered village had access to traditional latrine while 100% of children from none triggered village had no access to any type of latrine. About 152 (47%) from triggered CLTSH were Open defecation free. (Table 3)

Table 3: Sanitation status of children aged 1-9 years in CLTSH and non CLTSH villages, Girar Jarso Woreda, North Shoa, Oromia Region, Ethiopia, 2015.
<table>
<thead>
<tr>
<th>Yes</th>
<th>275</th>
<th>85.40</th>
<th>0</th>
<th>0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type (options) of latrines</td>
<td>47</td>
<td>15</td>
<td>322</td>
<td>100</td>
</tr>
<tr>
<td>No type to use</td>
<td>272</td>
<td>84.47</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Traditional pit Latrine</td>
<td>3</td>
<td>0.93</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Improved pit Latrine</td>
<td>No</td>
<td>54</td>
<td>17</td>
<td>322</td>
</tr>
<tr>
<td>Utilize of latrine</td>
<td>Yes</td>
<td>268</td>
<td>83.23</td>
<td>0</td>
</tr>
<tr>
<td>Do Children</td>
<td>No</td>
<td>170</td>
<td>53</td>
<td>322</td>
</tr>
<tr>
<td>ODF</td>
<td>Yes</td>
<td>152</td>
<td>47</td>
<td>0</td>
</tr>
</tbody>
</table>

Children from triggered CLTSH had higher water sanitation and hygiene facility than Children from none triggered CLTSH.

Fig. 1 The disparity of children by triggered and not triggered CLTSH with selected characters tics, Girar Jarso Woreda, 2015.
Prevalence of trachoma
From the total children assessed, 216(33.5%) had all grade of trachoma (TF, TI, TT and CO) of which 118(54.6%) were males and 98(45.4%) were females. The number of children with active trachoma (TF and TI) was found to be 179(27.8%). It was also observed from this study that 22 (3.4%) of the cases require lid surgery for trichiasis and 15(2.3%) were observed to have had corneal opacity. There were no children (0%) who developed signs of Trachomatous Scarring (TS). The prevalence of trachoma in CLTSH triggered village was 102(15.84%) and it was 114(17.7%) for CLTSH non triggered village. (Table 4)

Table 4: Distribution of Children (examination results) by grades of trachoma Girar Jarso Woreda, North Shoa Zone, Oromia, Ethiopia, 2015.

<table>
<thead>
<tr>
<th>Grades of trachoma</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>428</td>
<td>66.5</td>
</tr>
<tr>
<td>TF/TI</td>
<td>179</td>
<td>27.8</td>
</tr>
<tr>
<td>TS</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>TT</td>
<td>22</td>
<td>3.4</td>
</tr>
<tr>
<td>CO</td>
<td>15</td>
<td>2.3</td>
</tr>
<tr>
<td>All Grade(2+4+5)</td>
<td>216</td>
<td>33.54</td>
</tr>
<tr>
<td>Total</td>
<td>644</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Factors Associated with trachoma
There was no significant association between the prevalence rates of the CLTSH triggered areas and not triggered areas with p value=0.99 means result from logistic regression showed that there was no significant difference between means of two groups.

Contribution of other variables to occurrence of trachoma was also assessed by using bivariate analysis. Thus variables like, presence of flies, children ODF, utilize of latrine, type (options) of latrines, availability of standardize latrine, any piles of animal dung/ rubbish lying in open place, children home exposed to eye irritants, children who had eyes/nasal discharge and discharge wiping material, frequency of washing hands and faces, type of detergent they use, amount of water per day, average annual family income and main source of water were found to be significantly associated with trachoma (p-values were <0.05 for each factor).

In multivariate level of analysis; children from family low monthly income (<1455bir/month/family) were 3 times more likely to have trachoma than middle average income (1455 to 6380bir/month/family) of their counter parts, (AOR=3.00, 95%CI=1.76-5.14, p-value <0.001). (Table 5)

Table 5: Prevalence of trachoma in relationship to Socio-demographic variables, Girar Jarso Woreda, North Shoa Zone, Oromia, Ethiopia, 2015.

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Presence of Trachoma</th>
<th>Odds Ratio (crude)</th>
<th>Adjusted Odds Ratio (AOR)</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-4</td>
<td>68</td>
<td>159</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>5-9</td>
<td>148</td>
<td>269</td>
<td>1.286(0.91,1.82)</td>
<td>2.00(0.84,4.99)</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Male

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Presence of Trachoma</th>
<th>Odds Ratio (crude)</th>
<th>Adjusted Odds Ratio (AOR)</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>118</td>
<td>236</td>
<td>1.00</td>
<td>1.00</td>
<td>0.262</td>
</tr>
<tr>
<td>Female</td>
<td>98</td>
<td>192</td>
<td>1.021(0.74,1.42)</td>
<td>1.28(0.83,1.99)</td>
</tr>
</tbody>
</table>

**Climate Condition**

<table>
<thead>
<tr>
<th>Climate Condition</th>
<th>Presence of Trachoma</th>
<th>Odds Ratio (crude)</th>
<th>Adjusted Odds Ratio (AOR)</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dega (2500m-3500m)</td>
<td>102</td>
<td>220</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>Kola (500m-1500m)</td>
<td>114</td>
<td>208</td>
<td>1.182(0.85,1.64)</td>
<td>1.92(0.75,5.99)</td>
</tr>
</tbody>
</table>

**Maternal Educational Status**

<table>
<thead>
<tr>
<th>Educational Status</th>
<th>Presence of Trachoma</th>
<th>Odds Ratio (crude)</th>
<th>Adjusted Odds Ratio (AOR)</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>No education / 0%</td>
<td>196</td>
<td>380</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>Primary / 1-8 grade</td>
<td>13</td>
<td>39</td>
<td>0.646(0.34,1.24)</td>
<td>2.114(0.65,6.81)</td>
</tr>
<tr>
<td>Secondary and above / 9-12 grade</td>
<td>7</td>
<td>9</td>
<td>1.508(0.55,4.11)</td>
<td>1.892(0.33,11.0)</td>
</tr>
</tbody>
</table>

**Family size**

<table>
<thead>
<tr>
<th>Family size</th>
<th>Presence of Trachoma</th>
<th>Odds Ratio (crude)</th>
<th>Adjusted Odds Ratio (AOR)</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>≤ 5</td>
<td>99</td>
<td>216</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>&gt; 5</td>
<td>117</td>
<td>212</td>
<td>1.204(0.87,1.67)</td>
<td>2.54(0.69,3.83)</td>
</tr>
</tbody>
</table>

**Average Annual family income**

<table>
<thead>
<tr>
<th>Income Level</th>
<th>Presence of Trachoma</th>
<th>Odds Ratio (crude)</th>
<th>Adjusted Odds Ratio (AOR)</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low &lt;1455 birr/month</td>
<td>83</td>
<td>105</td>
<td>1.907(1.34,2.71)**</td>
<td>3.01(1.76,5.14)**</td>
</tr>
<tr>
<td>Middle/1455birr to 6380bir/month</td>
<td>131</td>
<td>316</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>High /&gt;6380birr/month</td>
<td>2</td>
<td>7</td>
<td>0.689(0.14,3.36)</td>
<td>0.85(0.09,7.96)</td>
</tr>
</tbody>
</table>

Children from shortage access water supply (<20 litre/day/person) were 2.38 times more likely to have trachoma than sufficient water supply (>20 litre/day/person). (AOR=2.38, 95% CI=1.39-4.08, p-value=0.002).

The result from washing face and hands with soap or other substitute had the reduction of trachoma, (AOR=0.39, 95% CI=0.17-0.91, p-value=0.03).

Of children who had washed their face and hands twice a day had the fall of trachoma (AOR=0.39, 95% CI=0.17-0.91, p-value=0.03).

Once a day  

159  

231  

1.00  

1.00  

Twice a day  

54  

189  

0.423(0.29,0.61)**  

0.39(0.17,0.91)**  

More than twice  

3  

8  

0.555(0.15,2.13)  

0.78(0.07,7.98)  

Children triggered CLTSH  

No  

114  

208  

1.00  

1.00  

Yes  

102  

220  

0.846(0.61,1.17)  

0.96(0.52,2.45)  

Availability of standardize latrine  

No  

147  

222  

1.00  

1.00  

Yes  

69  

206  

0.506(0.39,0.71)**  

2.75(0.01,4.75)  

Type (options) of latrines  

No type to use  

147  

222  

1.00  

1.00  

Traditional pit Latrine  

69  

206  

0.513(0.36,0.72)**  

0.76(0.12,2.65)  

Utilize of latrine  

No  

152  

224  

1.00  

1.00  

Yes  

64  

204  

0.462(0.33,0.66)**  

0.25(0.14,5.14)  

Do Children ODF  

No  

199  

293  

1.00  

1.00  

Yes  

17  

135  

0.185(0.11,0.32)**  

0.41(0.17,0.97)**

Discussion

The prevalence rates of all grade of trachoma found to be 33.4% and active trachoma 27.8%, among children of age of 1-9 years in the study areas. It was higher when these figure compared to the results of other studies, in SNNP (33.2% active trachoma), Tigray (26.5% active trachoma), Somali (22.6% active trachoma) and Gambella (19.1% active trachoma). Also higher than Dembia and Dabat woreda 29% and 22.4 % and Cheha woreda Gurage zone (active trachoma 22.4%). Here trachoma is considered a public health problem because the active trachoma (TF+TI) prevalence in children is above 5% (27.8%) and the prevalence of Trichiasis was greater than 0.1% (3.4%).( (15,28, 29, 34)

Finding from this study showed 391(60.7%) reported to have shortage daily consumption of water. Hand and face wash using soap and other substitute ranged 57% for triggered CLTSH. About 152(47%) were open defecation free in triggered CLTSH villages. This result showed triggering CLTSH could increase the percentage of the water, sanitation and hygiene facilities. (8)

Community led total sanitation and hygiene triggering by itself did not have association (p-value=0.99) with reduction of trachoma (i.e. there is no significance difference between two group of population The prevalence of trachoma in the two comparison group had no significant difference and children in the community led total sanitation and hygiene triggered village had no lower risk of trachoma.

Children home exposed to eye irritants, presence of flies, children who had eyes/nasal discharge and discharge wiping material, frequency of washing hands and faces, type of detergent they use, amount of water per day, average annual family income and main source of water were found to be significantly associated with trachoma (p-values were <0.05 for each factor).Trachoma passed from the eyes of one person to those of another by flies, fingers or shared cloths or towels also children could easily prevented trachoma by washing their hands and faces regularly with soap or substitute. Latrine construction and use could also prevent trachoma. Other many studies well suited with these findings (2, 6, 9, 14, 15, 30, 32, 33, 34, 36, 38).
Children from low family average monthly income (<1455bir/month/family) were 3 times more likely to have trachoma than middle income (1455 to 6380bir/month/family), (AOR=3.00, 95% CI=1.76-5.14, p-value<0.001). This showed that the burden of trachoma has fallen disproportionately on poor rural communities (38).

Children from shortage access water supply (<20litre/day/person) were 2.38 times more likely to have trachoma than sufficient water supply (>20litre/day/person), (AOR=2.38, 95%CI=1.39-4.08, p-value =0.002). Baggaley et al. in Tanzania found a strong association greater volume of available water for general use and thus lower their risk of active trachoma. Households who allocate more water for hygiene practices show lower prevalence of trachoma. A study completed in Gambia found that, families with trachoma used less water than those without. According to study performed in Dembia and Dabat woreda the shortage of adequate and safe water could have aggravated the problem of trachoma prevalence in the rural settings (14, 28, 36).

Washing face and hands with soap or other substitute had the reduction of trachoma, (AOR=0.39, 95%CI=0.16-0.94, p-value =0.036). Study conducted in Ankober showed children with dirty faces were over 7 times more likely to have active trachoma than children with clean faces (36).

Of children who had washed their face and hands twice a day had the fall of trachoma (AOR=0.39, 95%CI=0.17-0.91, p-value=0.03). Study carried out in Dembia and Dabat woreda and Ankober woreda depicted that the habit of washing faces more frequently were observed to be at a lower risk of acquiring the trachoma than those who did not have such practices (28, 36).

The house of children which with any piles of animal dung/ rubbish lying in open place were 3.37 times more likely to have trachoma than the house free from animal dung lying in open place.( AOR=3.37,95%CI=1.59,7.19,p-value=0.002).Finding from south Sudan showed garbage disposal had trachoma risk reduction of 74.4% also many studies had same association with this one (2, 14, 15, 28, 32, 33, 36).

Children who were achieved openly defecate free found to be less likely to have trachoma than who were openly defecating, (AOR=0.41, 95%CI=0.17-0.97, p-value =0.042).Most studies did not consider openly defecation free but they gave attention on latrine, also in this study area Success of CLTSH generally had been measured on the basis of triggering or the number of latrines constructed but number of latrines available did not show association with prevalence trachoma in multivariate analysis rather Openly defecation free was had great and effective reduction on trachoma (6, 30, 34).

Conclusion and recommendations

Based on the finding of this study it could be concluded that there was a higher risk of Active trachoma but it showed the reduction of trachoma prevalence by 14.4% in the woreda when it was compared with last year survey.

The prevalence of trachoma in the two comparison group had no significant difference, children in the community led total sanitation and hygiene triggered village had no lower risk of trachoma rather encouraging reduction of trachoma in **openly defecation free** which was interesting finding and extraordinary.

This study has indicated a need to give special attention on quality and full model CLTSH process (pre triggering, triggering and post triggering) to achieve openly defecation free and improved hygiene (facial, hand and environmental cleanliness) rather than counting number of latrine constructed, number of pit dug for solid wastes and number of water facility established.

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Competing Interests

The authors declare that they have no competing interests.

Authors’ contribution

The authors’ responsibilities were as follows: TA designed and supervised the study, carried out analysis and interpretation of data, BG assisted in the design, analysis and interpretation of the data.Both authors read and approved the final manuscript.
References

2. UNDP. Capacity development for water and sanitation. Capacity organization.2009; 36.


