Factors influencing the prevalence of active trachoma in children aged one to nine years in Buyengo sub county Jinja district Uganda. A cross-sectional Study.

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Abstract

Background:

Trachoma Continues to be hyper-endemic in many rural area of Uganda, Buyengo sub county is one such area. It is an ancient Neglected Tropical Disease (NTD) which up to date is among the leading causes of avoidable blindness in the world. The disease is caused by the bacterium Chlamydia trachomatis. It is usually found in communities with poor hygiene and disappears spontaneously with improving socio-economic status of a community. Lifestyle and culture are known to influence occurrence of trachoma and other eye diseases.

Methodology:

A descriptive cross sectional study using both qualitative and quantitative method was conducted in March 2016. Data was collected through face to face interviews, Observations and examination of children s eye using structured questionnaires as guides. Descriptive and logistic regression analysis were performed.

Results:

Out of the 472 Children 6(1.3%) were positive for active trachoma of these 1.3% had trachomatous follicular **(TF)** while 0% had trachomatous inflammation (TI) The children found to wash their face without soap were 23.4 times more likely to get active trachoma as compared to those who used soap to wash their face (P<0.05) unclean faces were also 9.1 times more likely to lead children to acquiring active trachoma (P<0.05).

None availability of pit latrine led to more chances of getting trachoma infection (10 time) as compared to places where a latrine was available (P<0.05).Many flies in a child's face predisposed

Conclusion:

The prevalence of active trachoma is low (1.3%) in Buyengo sub county with the following associated factors Unclean face of the child, Not washing face with soap, not having latrine and availability of flies in the child's face.

Recommendation:

There is need for health workers to continue giving health education on prevention of trachoma during village health talks, in outpatient departments, in consultation room and on radio talks shows.

Keywords: Trachoma, prevalence, children, Buyengo sub county, Jinja district Uganda, Submitted: 19th/10/2022 Accepted: 20th/11/2022

1. Background:

Trachoma is the leading infectious cause of blindness affecting populations in most developing countries with a great amount of economic and social implications (World Health Organization WHO 2009). Trachoma, also called granular conjunctivitis, Egyptian ophthalmia, and blinding trachoma, is an infectious disease caused by the bacterium Chlamydia trachomatis. The infection causes a roughening of the inner surface of the eyelids. This roughening can lead to pain in the eyes, breakdown of the outer surface or cornea of the eyes, and possibly blindness.

The bacteria that cause the disease can be spread by both direct and indirect contact with an affected person's eyes or nose discharges. Indirect contact includes through clothing or flies that have come into contact with an affected person's eyes or nose. Many infections are usually needed over a period of years before scarring of the eyelid becomes so great that the eyelashes begin to rub against the eye. Children spread the disease more often than adults. Poor sanitation, crowded living conditions, and not enough clean water and toilets also increase spread (Alemayehu et al., 2015).

Trachoma is the leading cause of preventable blindness globally and is responsible for 1.3 Million cases of blindness, which is 3.6% of global blindness. At a recent World Health Organization (WHO) meeting it was estimated that trachoma is endemic in 56 countries. These are mainly in Africa, Asia, Middle East, Latin America and Australia. It is also estimated that 84 million people have active trachoma while 7.6 million have Trichiasis requiring corrective surgery (Trachoma survey report, 2008a)

In Uganda Trachoma is endemic in 36 districts and nearly 250,000 people have blinding trachoma. Ten thousand people are already blind and an estimated 700,000 children under the age of 10 years are affected with Trachoma and 10.8 million people are at risk of being infected by Trachoma (Ministry of Health [MOH], 2006). The

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few studies that have been carried out in Uganda still show that trachoma is still a public health concern. In Karamoja sub region studies done in Jie County in Kotido district (Siegelaar et al., 1996) showed a prevalence of 29.6% of active trachoma (TF) among children 1-8yrs.

In Jinja a survey that was conducted in 2008 revealed the following: Prevalence of TF was found to be 10.1%. This finding is above the WHO threshold of a TF prevalence of 10% and above which posses a public health concern.

The few studies that have been carried out in Busoga region, there is little information about the prevalence of trachoma in Buyengo Sub county. Therefore this study intends to identify the factors influencing the prevalence of trachoma in Buyengo and I hope it may assist the policy makers and implementers when handling trachoma problem Buyengo. The results may also help the community to identify their loopholes in knowledge; attitude and practiced behavior that will be utilized locally to enable them improve their eye health in particular as well as their health in general.

The disease occurs mainly in children, particularly those between the ages of 3 and 6. Older children and adults are much less likely to have the disorder because of increased immunity and better personal hygiene.

Trachoma is contagious in its early stages and may be transmitted by eye-hand contact, by flies, or by sharing contaminated articles, such as towels, handkerchiefs, and eye makeup.

1.1. *Symptoms*

Trachoma usually affects both eyes. The conjunctivae (the membranes that line the eyelid and cover the white of the eye) become inflamed, red, and irritated, and the eyes water excessively. The eyelids swell. Sensitivity to bright light occurs.

In the later stages, blood vessels may gradually grow across the cornea (neovascularization), obstructing vision. In some people, the eyelid is scarred in such a way that the eyelashes turn inward (trichiasis). As the person blinks, the eyelashes rub against the cornea, causing infection and often permanent damage. Impaired vision or

blindness occurs in about 5% of people with trachoma.

1.2. **Diagnosis**

The clinician, suspect trachoma based on the appearance of the eyes and on the duration of symptoms. The diagnosis can be confirmed by sending a sample from the eye to a laboratory, where the infecting organism is identified.

1.3. *Identifying Trachoma*

There are five distinct stages of trachoma, which have been categorized in a grading scale by the

World Health Organization Only the last stages, trachomatous trichiasis (TT) and corneal opacity (CO), are clearly visible without examining the lining of the eye (conjunctiva) by everting the upper eyelid.

The other stages, trachomatous inflammation follicular (TF), trachomatous inflammation intense

(TI), and trachomatous scarring (TS), can be identified only by everting the upper lid and examining the conjunctiva. It is not possible to identify these stages of trachoma by simply looking at the eye.

1.4. **Treatment**

Treatment consists of an antibiotic (such as azithromycin, doxycycline, or tetracycline) taken by mouth. Alternatively, tetracycline or erythromycin can be applied as an ointment. Doctors often give antibiotics to entire neighborhoods where there are many people with trachoma. If the condition damages the eyelid, conjunctiva, or cornea, surgery may be needed.

1.5. **Prevention**

Because the disease is contagious, re infection commonly occurs. Access to water that is suitable for drinking can reduce infection.. Regular hand and face washing helps prevent spread. Face Sharing towels, washcloths, bedding, and eye makeup should be avoided. Because flies can transfer the disease among people, places where flies can breed should be.

2. **Methodology:**

2.1. *Research Design*

A descriptive cross-sectional study using both qualitative and quantitative methods was used. This enabled easy and fast collection of data within reasonable period.

2.2. *Study period*

The study was conducted during the months of January to March 2016.

2.3. *Study Area*

The study area was Buyengo Sub County, Jinja District, Uganda. Buyengo is about 110 kilometer from Kampala 36 kilometers from Jinja town to Buyengo Sub County located in the North eastern part of Jinja District.

The Sub county has four parishes namely: Iziru, Bulugo, Buwawuzi and Butamira, with a population of 27573 people, where the male totals to: 13409 and female to-14164 and 5104 house hold.

The sub county has one Health centre (III) and 3 Health (II). Their main economic activity is subsistence farming of which banana, maize cassava and potatoes are the main food crops grown and sugar cane growing being their main source of income.

2.4. *Population of study*

The target populations were children 1 - 9 years and adults who were the respondents.

2.5. *Inclusion Criteria*

Households with children aged $1 - 9$ years and where an adult is present as the respondent.

2.6. *Exclusion Criteria*

Children outside the study bracket, too sick, mentally disturbed, uncooperative and those without an adult respondent.

2.7. Sample Size Estimation calculation

The computed sample size was 779 children. But due to limitations in time and other resources, a sample size of 472 was used.

Considering population size of Buyengo of 27573 people at 95% confidence interval and 5% level of error margin. Using a design effect of 2.

Using previous prevalence of 37% in the study of active trachoma in Uganda and considering 12 clusters villages of Buyengo Sub county (6 villages per parish).

Using STAT CALC OF EPI INFO.

The sample size calculation gave a total of sample of 708 children and a cluster size of 59 children was obtained. Considering 10% non response rate. The final sample was 778.9 =779 Children.

2.8. Sampling Techniques

A Two stage cluster random sampling method was used. The first stage was random selection of villages in each parish then the second stage was at village level of selection of Households and 4 children were chosen in each household.

2.9. Variables of the Study

The Dependent variable was presence of active trachoma. Independent variables were socio demographic characteristics (sex, age of the family head, educational status of father and mother, occupation,), child characteristics (sex and age of child, (Hygiene) frequency of washing face, using soap for washing, discharge on the eye, facial cleanness, number of fly in child face,), and environmental factors (water source, latrine, waste disposal sites, cow pens.).

2.10. Quality Control

The quality of data was assured through proper designing and pretesting of the questionnaires in one of the sub county other than the selected sub county with similar socio demographic characteristics. Training of research assistants prior to the study was done by the principal investigator. At the end of every day, questionnaires were reviewed and checked for completeness by the PI.

2.11. Data collection tools

Data was collected through face to face interviews and observation using a structured questionnaire. The tool could be translated to lusoga for the respondents to understand well.

2.12. Data Collection Methods

The questionnaire was administered privately to each respondent. The steps were explained to the respondents and reasonable time was given according.

2.13. Data coding

This involved careful reading of transcribed data and dividing it into meaningful segments which were assigned codes end up of symbols, descriptive words or category names to help to ease the work during data entry.

2.14. Data entry

Data was double entered using Epidata 2.1 manager software to minimize on errors during entry.

2.15. Data cleaning

Primarily analysis was done checking for outliers and any unusual data.

2.16. Data analysis

Data analysis was done using social scientific soft ware package (SPSS) version 16 for analysis. Date frequencies, percentages and chi square values were generated and resulted presented in tables.

2.17. Ethical consideration

Ethical clearance was obtained from Institutional Review Board of Health Tutors College. Permissions letter was also got from Health Tutors College introducing the Researcher to relevant bodies in research areas.

The researcher sought permission from the office of District Health Officer (DHO) Jinja District, Sub county chief Buyengo , In charge of Kakaire Health centre III and LC I,s where the research data collection took place. Child assent and informed verbal consent was obtained from

the sampled children and their guardian. The respondents were informed that they have full right to withdraw or refuse at any time from the process. Confidentiality of information given by each respondent was ensured through use of study numbers.

2.18. Study limitation

Limited funds to run the data collection activities hampered the collection of full data as initially planned.

3. DATA PRESENTATION, ANALYSIS AND INTERPRETATION OF FINDINGS

3.1. Baseline characteristics of Children

A total of 472 children in Buyengo sub county out of the planned 799 children for the sub county were enumerated, giving an overall response rate of 59.1%. Among these participants 50.4% (238) were males and 49.6% (234) were females.

The proportion of children of aged 1-5 years 252(53.3%) was higher than the proportion of aged 5-9 years 220(46.7%). The mean age of children was 4.6 years with a standard deviation of 2.68. The median age was 4 years with the most frequent age of 3 year.

Regarding educational level of the participants most of household members 55 (46.6%) were from primary level and the rest 54 (45.8%) were from secondary level and 7(5.9%) were post secondary. Table 1: Showing Baseline characteristics of Children N= (472

3.2. Prevalence of active trachoma

Enumerated children aged 1–9 years were examined for signs of trachoma. The signs of active trachoma, TF and TI, were observed in children 1–9 years of age regardless of gender. Overall prevalence of active trachoma among children aged 1–9 years in rural communities of Buyengo sub county in Jinja district was found to be 1.3 % (Trachomatous follicles—TF, in (1.3 %) Trachomatous inflammation—TI (0.%). Of the total 252 children aged between 1 and 5 years, 4 (0.8 %) had active trachoma while the figure of

age group between 6 and 9 years was 220 children, of which 2 (0.4 %) had active trachoma. By gender the female had the highest prevalence of 4 out 472 (0.8%) and males had 2 out 472 (0.4%)

4. Factors Associated with Prevalence of Active Trachoma

From tables above, not washing face with soap was 23.4 times likely to cause trachoma as compared to washing with soap and p =0.001. Similarly, unclean face was 9.1 times more likely than clean face to cause trachoma and was significant at p=0.025; Not having a Latrine showed that the chances of Trachoma infection was 10 times as compared to those who uses Latrine at p=0.019 likewise the availability of many flies in the child's face predisposes the child to trachoma infections 8.9 times with p=0.027 as compared to the children who had no flies. Other factors in the above including possession of radio (p=0.412); history of trachoma (p=0.554);Age of respondents P=0.357. Gender of respondents P=0.648. History of trachoma treatment P=0.554. Latrine users P=0.453. Age of the child P=0.319. Gender of the child P= 0.641.Ocular discharge on the child P= 0.265.Nasal Discharges P=0.309. Liquid wastes P= 0.352.Human feaces p=493. and Cow pen present P= 0.554 were found not be significant in.

4.1. Background Information of Study Respondents

Study results show that 118 respondents were involved in the study. The majority 57 (48.3%) of the respondents were in the age group of 30 – 39 years, followed by 38 (32.2%) in the age group of 20 – 29 years. The least respondents were in the age groups of 70 – 79 years and 10 – 19 years by 2 (1.7%) and 5 (4.2%) respectively. The mean age of respondents was 33.96 with a median of 32 years (SD. 1.087). Most 76 (64.4%) of the respondents were females and majority 103 (87.3%) of households were headed by men (men predominance). Only 1 (0.8%) household was being headed by a sibling during the study time. Table 1 results also show that a small number 7

Table 1: Showing Baseline characteristics of Children N= (472)

Characteristic	Frequency/ N	Percentage/%
Age of Child		
Below 5 years	252	53.3
5 – 9 years	220	46.7
Gender		
Male	238	50.4
Female	234	49.6

Source: Primary Data

Table 2: Factors Associated with prevalence of active trachoma N=472

Characteristic	Total	Trachoma Present	Absent	Odds ratio	P - value
Age of respondent					
Less than 25 years	24	0	74	0.	0.357
25 and above years	94	6	392		
Gender of Respondent					
Male	42	2	163	0.929	0.648
Female	76	4	303		
Radio Presence					
Yes	72	3	290	0.607	0.412
No	46	3	76		
History of Trachoma Treatment					
Yes	29	1	113	0.625	0.554
No	89	5	353		
Face Washing					
Necessary	107	6	432	0	0.637
Not Necessary	11	0	34		
Water Source					
Public hand pump	68	4	257	1.626	0.447
Spring	52	2	209		
Water Source Last					
Yes	86	6	321	0	0.140
No	32	0	126		

Source: Primary Data   * - Statistically Significant, P≤0.05

(5.9%) respondents had attained post-secondary education, with almost equal numbers 55 (46.6%) primary and 54 (45.8%) secondary education attainment prior to the study time.

4.2. Source of Information

Here, respondents listed their sources of health information (trachoma).

The findings show that majority 68 (57.6%) respondents obtained health facts about the disease from other health care providers during routine visits, then 34 (28.8%) radio and only 16 (13.6%) from specialized eye care professionals.

Face Washing					
Yes	92	1	35	2.55	0.682
No	26	5	437		
face washing with soap					
No	15	5	82	23.4	0.001*
Yes	103	1	384		
Latrine User					
adults only	23	0	19	0	0.453
adults and children	85	6	83		
Children Age of Child					
less than 5 years	248	5	295	2.712	0.319
5 and above years	224	1	160		
Gender of Child					
male	239	3	237	0.966	0.641
female	233	3	229		
Condition of Child's Face					
Unclean	171	5	166	9.1	0.025*
Clean	301	1	300		
Ocular Discharge					
yes	81	2	77	2.526	0.265
no	391	4	389		

Source: Primary Data   * - Statistically Significant, P≤0.05

5. Discussion :

The study prevalence of active trachoma was found to be 1.3% of which 1.27% TF and 0% TI. It varied from 0.8% in children aged between 1-5 years to 0.2 % in 6-9 years. This finding was lower than previous studies by Metadel Alemayehu et al (2015) which showed the prevalence of active trachoma of children aged 1-9 years in countries: Sudan (83%) Ethiopia(64%)Guinea(50%) and Tanzania (32%)It was also lower than when compared with studies in other regions of Uganda.

Trachoma survey report of Iganga Kamuli and Kotido July (2006) which had TF of 20% of all the District.It also varied from trachoma survey report of September (2008) wich was conducted in Jinja District,which had aprevalence of TF 10% The difference could be attributed to massive Azithromycine chemophylaxis,provision of clean water togather with awereness of face washing.

According to WHO recommendation the results of the current study indicates that active trachoma is still present though low in rural communities of Buyengo Sub County in Jinja District

Children aged 1-5 years are the main infectious pool (reservoir) of the disease.

The risk factors for trachoma of unclean face clearly showed significant finding with 9.1(p=0.025) times of causing active trachoma was in line with Congdon et al (1991) ''facial cleanliness and risk of trachoma in families' which showed that if the childs face is unclean it contributes more chance of contracting trachoma.

The some results were similar with a research done in Ethiopia by (Tewodros T and Alemu Y) southern Rural Ethopia 'the impact of water supply on trachoma prevalence" The prevalence of active trachoma was higher in children who washed their face once a day than those who washed two

Table 4: **Factors Associated with Prevalence of Active Trachoma**

Nasal Discharge					
yes	159	3	152	2.066	0.309
no	313	3	314		
Fly on Child's Face					
yes	167	4	163	3.718	0.120
no	305	2	310		
Number of Flies					
5 flies and above		5	168	8.9	0.027*
Less than 5 flies		1	298		
Solid Waste Disposal					
yes	137	1	131	0.511	0.464
no	335	5	335		
Liquid Waste					
Yes	75	0	75	0	0.352
no	397	6	391		
Availability of Latrine					
No		5	155	10.0	0.019*
Yes		1	311		
Latrine Clean					
Yes	201	1	192	0.285	0.218
no	271	5	274		
Human Faces					
Yes	131	1	125	0.546	0.493
no	341	6	341		
Cow Pen Present					
yes	119	1	113	0.625	0.554
no	353	5	466		

Source: Primary Data   * - Statistically Significant, P≤0.05

or more times.

The study showed that children who washed their face with soap had 23.4 time (p=0.001) protection of not getting affected with trachoma,this findings agreed with the study done by Ttje Vander veen et al (1999) among the children in Uganda in Kotido District which showed with poor face washing habit and high prevalence of active trachoma were observed in children with poor face washing habit in semi nomadic areas.

The high number of flies on the childrens face was much significantly associated with active trachoma.the presence of flies in the child's face predisposes the child to trachoma infection 8.9 times compared to those who had no flies. A study done in Tanzania by Taylor et al(1986) reveal that there is close relationship of high fly density on children's face and active Trachoma.

Latrine availability shows a close relation with the spread of trachoma families that dint have latrines were 10 times more likely to be affected by active trachoma than those which had latrines

The study was in line the one done in Egypt by Courtright et al (1991) found out lower prevalence of trachoma in homes with pit latrine than those without.

6. Acknowledgement

Table 5: Showing background information of study Respondents N=(118)

Characteristic	Frequency/ N	Percentage/%
Age		
10 -19	5	4.2
20 − 29	38	32.2
30 − 39	57	48.3
40 − 49	7	6
50 − 59	5	4.2
60 − 69	4	3.4
70 − 79	2	1.7
Gender		
Male	42	35.6
Female	76	64.4
Household Head		
Father	103	87.3
Mother	14	11.9
Sibling	1	0.8
Education Status		
Primary	55	46.6
Secondary	54	45.8
Post-Secondary	7	5.9
Other	2	1.7

Source: Primary Data

Table 6: Showing source of information about trachoma

Source	Frequency/ N	Percentage/ %
Eye worker	16	13.6
Other health worker	68	57.6
Radio	34	28.8

Source: Primary Data

7. List of Abbreviations.

- **CO** Corneal opacity;
- **MDA** Mass drug administration;
- **NTD** Neglected tropical disease;
- **SAFE** Surgery, Antibiotic, Facial leanliness & Environmental sanitation;
- **TF** Trachomatous inflammation, follicles;
- **TS** Trachomatous inflammation, intense;
- **TT** Trachomatous Trachiasis;
- **WHO** World health organization

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9. Conflict of interest

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