PREVALENCE AND FACTORS ASSOCIATED WITH TRACHOMA AMONG CHILDREN 1-9 YEARS OF AGE IN ZALLA DISTRICT, GAMO GOFA ZONE, SOUTHERN ETHIOPIA

BY

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JIMMA, ETHIOPIA

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Abstract

Back ground: *Trachoma is the leading cause of preventable blindness worldwide. It is common in areas where the people are socio-economically deprived. Globally 1.2 billion people live in trachoma endemic areas, in which, 40.6 million individuals have active trachoma and 8.2 million have Trichiasis. According to the world health organization (2007) report, globally close to 1.3 million people are blind due to trachoma, while about 84 million suffer from active trachoma. The national survey (2007) of Ethiopia showed a prevalence of 40.1% active trachoma among children aged 1–9 years. Trachoma is still endemic in most parts of Ethiopia.*

Objective: *To assess prevalence of trachoma and factors associated with it among children 1-9 years of age in Zala District, Gamogofa Zone, South Nations Nationalities and Peoples Region.*

Methods: *Community-based cross-sectional study was conducted in Zala District from February 28 to March 26 2014. A total of 611 children were examined for trachoma based on simplified world health organization 1983 classification. Multistage stratified sampling technique with a systematic random sampling was used to select study participants. Data were collected by using semi-structured pre-tested questionnaire, and clinical eye examination. The data were entered using Epi data program version 3.1 and analyzed using SPSS version 16. Multivariable logistic regression analysis was used to identify independently associated factors.*

Results: *The overall prevalence of active trachoma was 224 (36.7%) consisting of 207 (92.4%) Trachomatous follicle, 8 (3.6%) Trachomatous intense and 9 (4.0%) combination of Trachomatous follicle/ Trachomatous intense. Inadequate knowledge of family (AOR =2.8(95%CI: 1.9, 4.2); less than or equal to 10 meters latrine distance (AOR = 1.6(95%CI :1.09, 2.4); presence of above 2 pre-school children (AOR =2.2(95%CI :1.3, 3.7), fly on the face (AOR =6.3(95%CI: 2.7, 14.7) and unclean face (AOR =2.4(95%CI: 1.5, 3.9) were found to be independently associated with trachoma.[1]*

Conclusions: *Trachoma among children in Zalla district was disease of public health importance. Factors like inadequate knowledge of family head about trachoma, less than or equal to 10 meter latrine distance, presence of above 2 pre-school children, fly on the face, unclean face were independently risk of trachoma among children. So strengthening of Antibiotic, face washing and environmental improvement strategy implementation is mandatory*

Acknowledgment

Table of Contents

List of table

List of Figure

Acronyms and Abbreviations

AT   Active Trachoma

CO   Corneal opacity

DALYS   Disability Adjusted Life Years

ETB   Ethiopian Birr

GBDS   Global Burden of Disease

GET   Global Elimination of Trachoma

HHs   House holds

IDs   Infectious Disease

IEWs   Integrated Eye care workers

ITI   International Trachoma Initiative

NGOS   Non Governmental Organizations

PAS   Proportional Allocation to size

PHC   Primary Health Care

SAFE   Surgery Antibiotics Face washing Environmental

SNNPR   Southern Nations, Nationalities and People's Region

TF   Trachomatous inflammation Follicular

TI   Trachomatous inflammation intense

TS   Trachomatous scarring

TT   Trachomatous Trichiasis

TTC   Tetracycline eye ointment

VIF   Variance inflation factors

WHO   World Health Organization

1. INTRODUCTION

1.1. Background

Infectious diseases (IDs) have been the most important contributor to human morbidity and mortality until relatively recent times and still account for a large proportion of death and disability worldwide and in certain regions remain the most important cause of ill health and were responsible for 22% of all deaths and 27% of disability-adjusted life years (DALYs) worldwide (1).They imposed a burden on the young, notably on children under five. Global Burden of Disease (GBDS) estimates for 2002 were that infectious diseases were responsible for 52% and 50% respectively of all deaths and DALYs in sub-Saharan Africa (2).

Eye problems are recognized among the major public health challenges in many developing countries. An international initiative called VISION 2020: The Right to Sight has been launched by the World Health Organization (WHO) and collaborating institutions in 1999 to eliminate the major causes of avoidable blindness by the year 2020(3). Ethiopia launched the imitative in September 2002(4,5).

 Blindness is one of the major health problems of the world. In 2002 WHO estimated that there were 37 million blind and an additional 124 million people with low vision globally. The burden of blindness in the Sub-Saharan Africa is the worst of all the other regions of the world. Seventy five percent of all blindness in the developing countries can be prevented or cured. The current (2006) National Survey Results have shown that the prevalence of blindness and low vision in Ethiopia is among the highest in the Sub-Saharan Africa (1.6% and 3.7% respectively(6). In Ethiopia, the prevalence of blindness is 1.6% and corneal blindness accounts over 19% of the total blindness (6).

Trachoma is the leading causes of blindness worldwide, especially in many developing countries (7). Trachoma is a chronic conjunctivitis caused by Chlamydia trachomitis (8). The World Health Organization (WHO) has endorsed the Surgery Antibiotic Face Washing and Environmental Sanitation (SAFE) strategy to combat trachoma which consists of surgery to correct trichiasis, antibiotics to reduce the pool of active disease, and methods to improve face washing and environmental hygiene practices in trachoma endemic communities (9).

1.2. Statement of the problem

Most of the world's blind people live in developing countries with blindness rates 10-20 times higher than that in developed countries. Blindness rates in developing countries are often in the range of 1-3% or higher, while figures for the developed countries are in the order of 0.1-2% (10). According to a WHO survey in Ethiopia in 1981, trachoma accounted for 42% of the blindness (11).

The loss of sight engenders a corresponding loss of ability to engage in productive work, conduct basic household tasks and care for oneself and family; Trachoma related morbidity includes direct consequences (12). This translates into significant economic losses that can cripple communities where the disease is endemic and inhibit development. Many of the poorest countries in the world continue to suffer from trachoma (13). Trachoma is endemic in the poorest and most remote areas of 56 countries, most of which are located in Sub-Saharan Africa and Southeast Asia (14). Factors such as poverty, poor water supply and availability and poor sanitation have been described as the risk factors for transmission of trachoma (15). Similarly, the presence of flies ,amount of water used for washing children, absence of latrine at a household and disposing of animal dung close to the households were identified as additional risk factors for trachoma transmission (16-18).

In hyper-endemic areas, active disease is most common in pre-school children with prevalence rates as high as 60-90 % (18). Active infection is mostly seen in young children with a peak incidence of around four to six years, while subsequent scarring and blindness is seen in adults (19).

More than 90% of the global burden of blindness is found in the developing countries and the vast majority of the problem is seen in the rural areas of these countries (20). Trachoma is a disease of developing countries where the standard of living is low (10).

The major causes of blindness in Ethiopia are cataract (49.9%), trachomatous corneal opacity (11.5%), refractive error (7.8%), other corneal opacity (7.7%), glaucoma (5.2%) and macular degeneration (4.6%) (21).

It is estimated that over 138,000 people in Ethiopia are already blinded by Trachoma (4).The prevalence of active trachoma in children age 1-9 is 40.14% and over 9 million children aged 1-9 years have active infection (22).

The Southern Nation Nationalities and Peoples Region, is with prevalence of trachomatous trichiasis (TT) of 2%, which is one of the highest in the country (4). The prevalence of active trachoma in this region, is 33.2 % (22).

Due to the consequence and other factors of Trachoma International actions to prevent avoidable blindness have been gaining attention over the recent decades. Vision 2020: "The Right to sight (23). Ethiopia has launched the Vision 2020: The Right to Sight Initiative in September 2002. This is a global initiative launched in 1999 by the World Health Organization (WHO) and the International Agency for the Prevention of Blindness (IAPB) in collaboration with international Non-Governmental organizations with the aim of eliminating the major causes of avoidable blindness by the year 2020(3).

The annual economic cost of trachoma in terms of lost productivity is estimated to be between US$ 2.9 billion and US$ 5.3 billion, increasing to US$ 8 billion when trichiasis is included(24).

According to the WHO (2007) report, globally close to 1.3 million people are blind due to trachoma, while about 84 million people suffer from active trachoma, Trachomatous inflammation, follicular (TF) and/or intense (TI) (25).

There are limited district level researches on prevalence and risk factors of trachoma among children in many developing countries including Ethiopia. This study will help program planners and policy makers with basic information about prevalence and risk factors of trachoma to strengthen the trachoma intervention program and to develop prevention strategy in the study area and also to the rest of similar findings of area.

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2. LITERATURE REVIEW

2.1 Overview

Trachoma is the leading cause of preventable blindness worldwide. It is common in areas where the people are socio-economically deprived. Active trachoma is a major public health problem among 1–9 years children (26).

A number of risk factors are significantly associated with prevalence of trachoma. These include socio -demographic and economic factors, household- environmental factors and child factors. such as settings, heads of households status on education, income, knowledge on trachoma ,distance of water source from home, average water consumption, frequency of usage of latrine, waste disposal and soap usage and cleanliness of child face, frequency of child face are among others(26).

2.2 prevalence of trachoma among children aged 1-9years

Globally, 1.2 billion people live in trachomatous endemic areas, in which, 40.6 million individuals have active trachoma and 8.2 million have trichiasis (27).

Africa has the highest prevalence of active trachoma and trichiasis worldwide (28) and the prevalence of active trachoma in the region ranges from 0.6% and 0.9% in Djibouti and Somalia to 35.5% in Egypt and Ethiopia and to 41% in Niger (29).

The national survey (2007) of Ethiopia showed a prevalence of 40.1% active trachoma among children aged 1–9 years Southern region had the highest prevalence of active trachoma among children aged 1 –9 years (33.2 %) and Trichiasis in 15 years and above adults (2%) (22).

2.3 Factors associated with trachoma

2.3.1. Socio -demographic and economic factors

Active trachoma is prevalent in rural than urban area(30). The prevalence of active trachoma is four-fold in the rural population as compared to the urban (42.5% Vs 10.7%)(22).

A study somewhere showed that as the mother's education level rises, the risk of trachoma to her children declines (31).A study conducted in Basoliben district showed that Children from illiterate heads of households, 170 (35.8%), were 5 times (AOR = 5.19; 95% CI 2.93-9.18 more likely to have active trachoma than those from educated ones 21 (6.6%) (26). Similar study in Kenya reported that head of house hold education significantly associated with trachoma P. value =0.02(32),and another study conducted in Mali showed active trachoma among children of mothers without any education was 36.7% compared to 27.9% of the literate mothers (33) .

A study in Basoliben district, Ethiopia reported that the prevalence of active trachoma among children from households with less awareness about trachoma were about four times more likely to develop trachoma compared to those from knowledgeable families (AOR = 3.92; 95 % CI 2.41-6.38)(26).This finding was in line with investigations in Ethiopia which also reported overall reduction of trachoma ranges from 4% to 12% after provision of health education for community (34). Similar result was documented by the study conducted in Tanzania(35).

Education was not significantly associated with active trachoma in Zambia study(10)Similarly at Sambura District more cases of active trachoma among children under the care of educated than uneducated ones(36).A study from Kenya reported neither parental level education (p=0.36) nor wealth index score (p=0.92) had association with active trachoma in children aged 1-9 years(32).

In the study done at Sambura district employment status of the children's caretakers was not significantly associated with active trachoma ($\chi 2$ (3) = 4.527, P = 0.210) (36). Another study stated that active trachoma is more frequent among children under the care of unemployed caretakers (37).

Low socioeconomic status was associated with active trachoma in study conducted in Ethiopia, (38). Similarly in Basoliben district children from households getting less monthly income were more likely to have trachoma than those from households getting more income (26). A similar finding was reported in Ethiopia(38).The study conducted in basoliben showed that the prevalence of trachoma infection decreased from 148 (18.7 %) to 0 (0%) as average monthly income of their family increased from less than or equal to 600 to greater than 2000 ETB (AOR = 2.98; 95% CI 1.86-7.86) (26).

To the contrary Studies in Egypt have found an inverse relationship between an increase income status and the risk of trachoma(39).

2.3.2. Household- environmental factors

Study in Mojolume district showed that source of water had statistically significant association with trachoma stages TI, TS, and CO with P-value of 0.04, 0.02 and <0.001 respectively. Study conducted in 20 villages of Tanzania reported that source of water had significantly associated with trachoma(40). A Similar finding was reported from Ankober, Ethiopia (P.value=001)(41).In Amhara Regional State Ethiopia a study showed that the more unsafe the water source the higher odds of active trachoma (OR = 1.4; 95% CI 1.1—1.8)(42).

A Study conducted at Basoliben district reported that families who walk more than 30 minutes distance from water source were two times more likely to have trachoma than those on less than 30 minutes walk from water bodies (26) which is also consistent with other studies(41).More children from households having water access in more than 30 minutes distance 111 (35.7%) were found with active trachoma than those who could access water within 30 minutes or less walking distance 80 (16.6%) (AOR = 2.008; 95% CI 1.28-3.16)(26). Similarly at Kongwa Tanzania children in household more than 2 hours away from a water source were more likely to have severe inflammatory trachoma (OR 2.15, 95 percent CI: 1.01, 4.58) . The same finding in Hai district Tanzania reported that walking more than 20 minutes to get water is nearly 6-fold at risk of active trachoma(43).The same finding was also reported from Mali(33).

In contrast, a study conducted in Jimma Zone, Ethiopia found that villages further away from a water source had lower prevalence of trachoma than those within 15 minutes' walk to a water source(5). Study in Kenya reported that the amount of time it takes to fetch water (≤ 2 hours or >2 hours) for a household had no significant effect on presence of active trachoma (p-value = 0.235)(32). Similar finding was reported from Amahara region, Ethiopia(42).

A Study conducted in Basoliben district documented that active trachoma was high in children from parents with average daily water consumption of 2 – 4 liters/ capita , 313 (39.5 %) than those having more than 8 liters/ capita, 59 (7.4%) (AOR = 5.45; 95% CI 1.8 5-16.02)(26). Finding of Study conducted in Hai district showed that in households collecting ≥ 60 liters of water on daily basis were less likely to have trachoma (OR= 0.02, 95% CI, 0.01 – 0.08, P=

(0.001)(43).Similar findings were reported from Mojolume (44)Tanzania(45) and Amahara region, Ethiopia (42).

The Study in Basoliben district showed that children who used latrine always had less chance of developing infection compared to those using latrine occasionally and the difference was statistically significant (26). Similar result was reported in Ankober, Ethiopia (41). Another study in South-Western Jimma Ethiopia, reported that the prevalence of active trachoma, was significantly higher among communities not having a latrine (5).

Study conducted in Gambia reported that presence of latrines was significantly associated with trachoma with (OR=0.49 [95% CI: 0.26–0.93])(46). Study conducted in rural Tanzania showed that children's use of latrines was associated with a significant decrease in risk of trachoma OR=0.62 [95% CI: 0.41–.96](47). Similarly findings were reported from studies done in Mojolume district of Ethiopia (44) .A Study in Southern Sudan documented that absence of pit latrine was statistically significantly associated with trachoma (OR (2.3; 95% CI 1.6–3.3) (48).

No significant association was found between latrine ownership and active trachoma in studies conducted in Mali (17)Senegal (49)Gambia,(46) and Amahara region of Ethiopia (42).Similar finding was reported from rural Kenya(p=0.52)(32). A Study conducted in Sambura district reported that owning a pit latrine was not a significant predictor of active Trachoma P > 0.05 (36). These findings agreed with findings of Mali study (33). Similarly, study conducted in Kersa district of Jimma showed that absence of functional latrines was associated with increased risk (1.4 times) of having active trachoma (p=0.505) (50). Study in Hawzien district, Tigray reported that Latrines located within the households compound were 3.5 times more likely to be used than those located outside (AOR: 3.5, 95%CI: 2.14−5.98),(51) study in Egypt showed that the presence of a functional latrine near the house had been associated with lower trachoma prevalence in several (17,52)

A Study conducted in Sambura district showed that there was a significant association between disposing garbage anywhere in the home compound and the disease (P < 0.047) (36).

A study conducted in Zambia districts revealed that households that had a refuse pit Compared to households without refuse pit were more likely to be a member of the household with active trachoma with AOR=1.42, 95%CI [1.13, 1.78] (53).Similarly a study in Kano state Nigeria,

7

revealed that presence of animal dung within the compound of residence (OR 3.46, 95% CI 1.62–7.41) increased risk of active trachoma (54).Another study in North China showed that children had a 2.5 times higher risk of active trachoma if they lived in households that animal defecates close to the house (55).

A study conducted in Mali showed that Crowded living condition increased the risk of trachoma (17). The same study showed that prevalence of active disease was 36.5% in households with less than 5 people sleeping in a single room, compared to 5 or more people per room and prevalence of trachoma 45.8% (17). Similar finding was reported from the same study conducted in southern sudan (P trend < 0.001) (48).

A study conducted in unity state of South Sudan revealed that children with age 1-9years from households with flies in and around the living areas or on the faces of children significantly increased the risk of active trachoma with(OR 1.91 (1.15–3.17) p < 0.014)(56).Similar finding was also reported from Sudan that increasing house-hold fly density (P trend 0.002) predicts increased odds (48). A study conducted in Sambura district reported that Presence of flies within household compounds was not a predictor of active trachoma, P- > 0.05 (36).And this was consistent with finding from Dodoma region of Tanzania (35).

A study in India showed that women cooking in poorly ventilated rooms or sleeping in a room with a cooking fire was at higher risk for the disease, since eye irritants may aggravate the conjunctiva, causing it to be more susceptible to infection (57). Similar study in North western, Ethiopia revealed that cooking place in living room, was found to be significantly associated with trachoma (x^2 -test, p-values were < 0.001 (58).

A Study conducted in Kongwa, Tanzania reported that families without cattle were associated with significant protection against active trachoma compared to those families who own cattle (12).This finding was in agreement with what is reported from Mali (17).

A Study conducted in rural Kenya showed that children from household which possess livestock were 3.21 times as likely to have trachoma compared to households which do not possess cattle (p < 0.05) (32). Similar findings were reported from studies conducted in southern Sudan (OR 1.8) (48), Kano state Nigeria (p < 0.01) (54),Mojolume district (44) and Senegal (49).

2.3.3. Child Associated Factors

Different studies showed that there is no significant difference between female children and male children in the occurrence of Trachoma (26) (53) (59) . Studies conducted in North western Ethiopia district ,however, showed that higher prevalence rate of trachoma was observed in females (65.9%) than in males (52.3%) and the difference was found to be highly statistically significant (p<0.0001) for age >15yrs but for age below 15 years it showed a non significant difference(p > 0.5) (58). Similar finding was reported from a study conducted in Ankober (41).

A study conducted in unity state Southern Sudan reported that the odds of Trachoma decreased as age increase, more TF was seen in children aged 3–5 years with(OR 1.58 (1.23–2.03) p < 0.001, compared to those aged 1–2 years (56) .Similar findings were reported from studies in southern Sudan (48) Basoliben district (26) , South-West Jimma (38) and Ankober district of Ethiopia (41) .

Flies on the faces of children were found to be significantly associated with increased risk of developing active trachoma. Studies from Mali(17) , South Sudan (48) , Kaolack region in Senegal(49) , Nigeria (54) and Niger (60) consistently reported that flies on faces of children are statistically significantly associated with active trachoma. Study in Maksegnit town, Gondar Zuria District, Northwest Ethiopia showed that children with flies on their face were over two times more likely to have active trachoma than those children without flies on their face (AOR) =2.310; CI =1.32-4.05, *P* < 0.05)(61) .A study in Sambura district however reported that there was no significant association between flies on eyes P > 0.05 (36).

A study conducted in Nigeria showed that dirty face of child risk for active trachoma with (OR 2.45, 95% CI 1.85–3.25 (54).Similar study in Kaolack district revealed that having a dirty face was significant predictor of active trachoma(OR = 3.80, 95% CI 2.83—5.09) (49).Study conducted in Dangla administrative town, Ethiopia reported that Children with unclean face were seven times more likely to develop active trachoma than those children with clean face (AOR = 7.07, 95% CI: 3.36 - 14.96) (62). Study in Maksegnit town, Gondar Zuria District, Northwest Ethiopia showed that children with unclean faces were four times more likely to have active trachoma than children with clean faces (AOR =4.12; CI =1.92-8.81, *P* < 0.0001) (61).The same finding was reported from Southern Sudan (48), and Mail (17).

Study in Loitokitok District of Kenya revealed that children who did not share a towel or cloth to wipe their faces were 51% less likely to have trachoma symptoms compared to households where children share towels (p=0.03) (63).The same finding was reported in Kaolack region Senegal (OR = 1.66, 95% CI 1.27-2.17) (49).

A study conducted in Niger reported that children age 1-5 years with nasal discharges were highly at risk for active trachoma (P=0.03) (60). This finding is similar to studies that identified the presence of ocular and nasal discharge as risk factors for the presence of fly on eyes and active trachoma in Ethiopia and Tanzania (60-61). Similar finding was reported from studies in unity state Southern Sudan (56)and Amahara region of Ethiopia (42).

A study conducted in Hai Tanzania reported that increased frequency of face washing among children significantly and negatively associated with active trachoma (OR= 0.15; 95% CI: 0.05-0.42, P<0.001) (43). Similarly a study conducted in Basoliben showed that children who did not frequently wash their face, 7 (31.8 %), were 5 times at risk of Active trachoma than those who washed their face more than once per day 22 (11.1 %) (AOR = 5.84; 95% CI 1.98-1 7.19) (26).

A study conducted in Hai Tanzania revealed that bathing of children was associated with reduced risk of active trachoma (OR= 0.05; 95% CI : 0 .01-0. 41, P= 0 .001) (43).Studies conducted elsewhere reported that facial cleanliness and personal hygiene are significantly and negatively associated with occurrence of active trachoma (30,40).A similar finding was also documented in north western Ethiopia (p< 0.000) (58). The same study in Hai district Tanzania reported that the presence of pre-school children in the household was also associated with active trachoma (OR= 2 .54, 95% C I: 1.24 - 6 .12) (43).

Conceptual frame work of the study
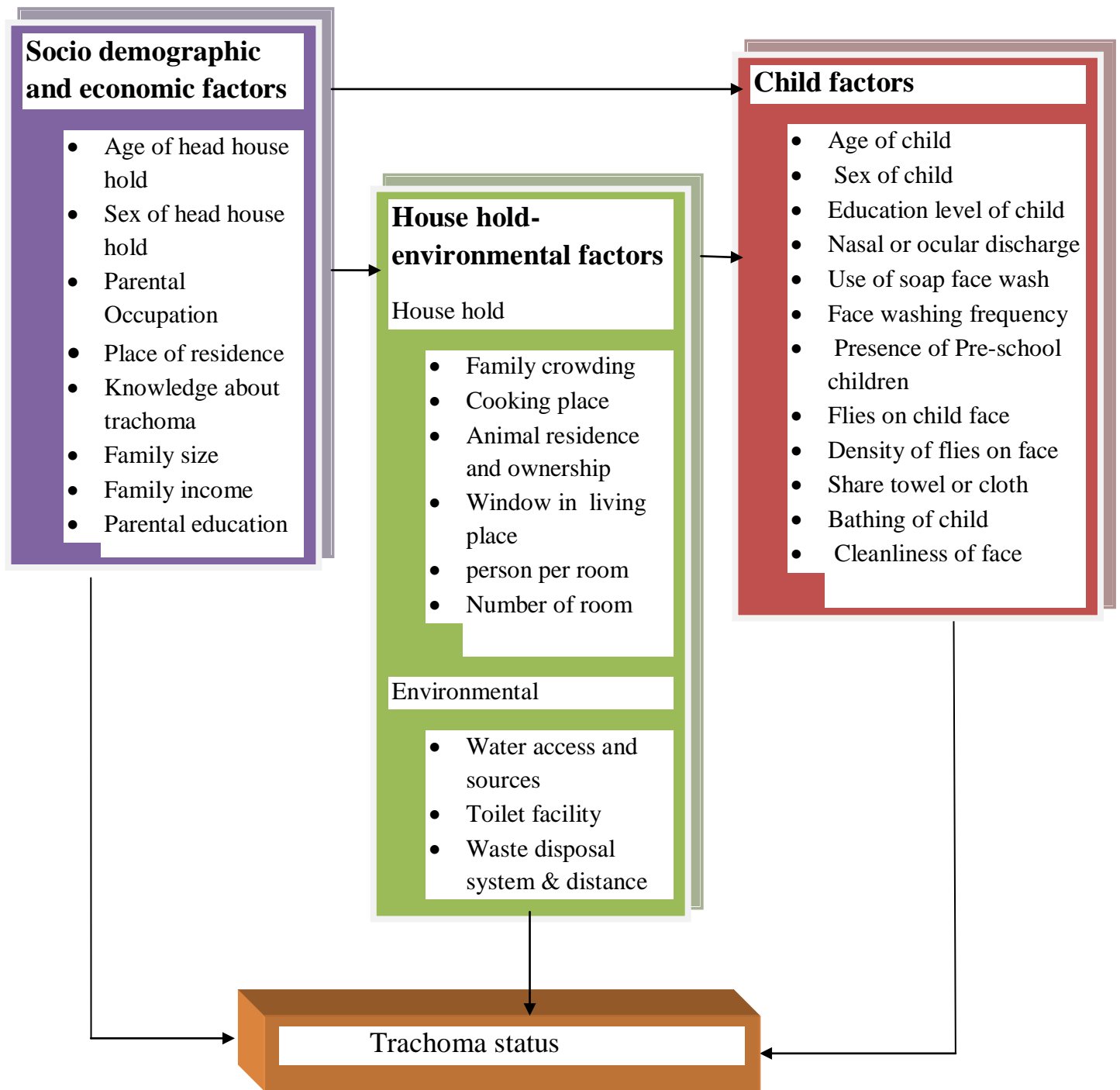
Figure1 Conceptual frame work of factors affecting trachoma was developed by literatures review among children Zalla district, February -March, 2014.

Significance of the Study

Trachoma was eliminated from developed countries through improvements of hygiene and sanitation but is still problem of developing countries. It is endemic in more than 50 countries (26). Despite the secular decline in global burden of trachoma(24) blinding trachoma remains a serious public health problem in Ethiopia with little district level data. Trachoma is among one of the neglected tropical diseases and which was not given full attention like other infectious disease but which is serious cause of blindness and low vision in future life of children.

Knowledge about major risk factors associated with Trachoma is an important precondition for developing trachoma intervention strategies. Despite some study conducted in the area and different parts of the country there is no previous study conducted to address the prevalence and associated factors of trachoma among children age 1-9 years in the study area.

The aim of this study is to identify the prevalence and associated factors of trachoma among children age 1-9 years in Zala district for formulation of relevant policy, improvement of implementation and intervention strategy to reduce children blindness and low vision from blinding trachoma and will have paramount importance for the improvement of programs aimed at trachoma prevention and control in the area. The result of this study, together with those of similar studies will help in designing various intervention strategies in elimination of blinding trachoma.

The findings of this study will contribute for Policy makers and health departments at different level to develop evidence based strategies to prevent transmission of trachoma and elimination of blinding trachoma. It will also serve as in put for further study.

3. OBJECTIVES

3.1) General Objective:-

To assess prevalence of trachoma and factors associated with it among children age 1-9 years in Zala district Gammo Goffa Zone, SNNPR, 2014

3.2) Specific objectives:-

1. To determine magnitude of trachoma among children age 1-9 years in Zalla district.
2. To identify factors associated with trachoma among children age 1-9years in Zalla district

4. METHODS AND MATERIALS

4.1. Study area

The study was conducted in Zala Woreda, located 515 Km South of Addis Ababa & 285 Km south of regional city Hawassa. It was one of the 15 woredas and 2 town administrations in Gammo Goffa Zone. The Woreda was administratively divided in to 35 Kebeles (34 rural and 1urban) with total population of 90,700(51% female & 49% male).

About 97% of the population lives in rural with low infrastructure in the woreda & 83% of population belongs to Goffa by ethnic group with different socio-culture and climatic condition of Kola 91.5% and Woina dega 8.5%.The Woreda had five health centers (1urban and 4 rural health centers). There were 34 health posts, one urban health post and 4 private clinics with potential health service coverage of 95%. The Woreda was provided with 3 round mass Zithromax distribution for trachoma elimination(66)

4.2 Study period

The study was conducted from February 28 to March 26, 2014.

4.3. Study design

Community- based cross- sectional study was employed.

4.4. Populations

4.4.1. Source population
All children living in Zala district age 1–9 years

4.4.2. Study population

 Children age 1-9 years old residing in selected households during study period who met the inclusion criteria from the target villages.

4.5. Inclusion and exclusion criteria

4.5.1. Inclusion criteria
Children age 1-9 years found in Zala woreda during the study period.

4.5.2. Exclusion criteria
Children 1-9 years who live in Zala woreda and had eye injury and/or seriously sick

4.6 Sample size and sampling techniques.

4.6.1 Sample size determination
The sample size was calculated by using single population proportion formula by:- considering 24.1% of proportion, 10% of non response rate, 95 % confidence level, with 5% margin of error and design effect of 2.

$$n = \frac{(Za/2)^2 \times pq}{d^2}$$

Where:

- Z α/2 = Standard normal score at 0.05 level of significance
- n= sample size
- p= percentage of Proportion of children with trachoma (24.1%), taken from study done in Basoliben Woreda in East-Gojam zone (27).
- d = Margin of error 0.05
- q=1-p

$$n = \frac{(1.96)^2 \times 0.241(1 - 0.241)}{(0.05)^2} = 281$$

Since the sampling technique was multi-stage stratified, design effect of 2 was used and by adding 10% of non-response rate (27), (282x2+56) the total sample size was **618**.

4.6.2. Sampling techniques:

Multi stage sampling techniques was used to select study subjects. After stratifying the woreda in to urban and rural Kebeles one urban (only in the Woreda) and 9 rural Kebeles out of 34 Kebeles were randomly selected using lottery method. The total sample was allocated proportionally to the selected 10 Kebeles according to their population size. A total of 6,337 households were present in the selected 10 kebeles and 618 households were visited and one child per house was included in to the study. Systematic random sampling method was used to select study units.

A central point in each Kebele, a place in the Kebele where approximately equal number of households was found in all of the 4 directions, was identified and the procedure was involved identifying the center of a Kebele selecting a direction by spinning a pencil on a clip board. A direction was selected, and then the first household out of the first ten households was selected as starting point. Every tenth household was identified for inclusion into the study on an approximately straight line pattern in each Kebele. Ten households on the selected direction were listed and a random start household number was identified by simple random sampling method. Then every 10th household was selected and included into the study. This procedure was continued in all the selected kebeles until the required sample allocated for each of the kebeles was gained. Since household was taken as the sampling unit, those households without children age 1-9 years were skipped and the nearest next household with children age 1-9 years was interviewed. If more than one child in a household, one of them was selected by lottery method.

A total of 611 households were included, heads of households were interviewed about socio-demographic and economic information, housing and environmental condition, knowledge and practice to ward prevention of trachoma and child factors. A total of six hundred eleven children were examined for the trachoma status from the ten selected Kebeles accordingly.
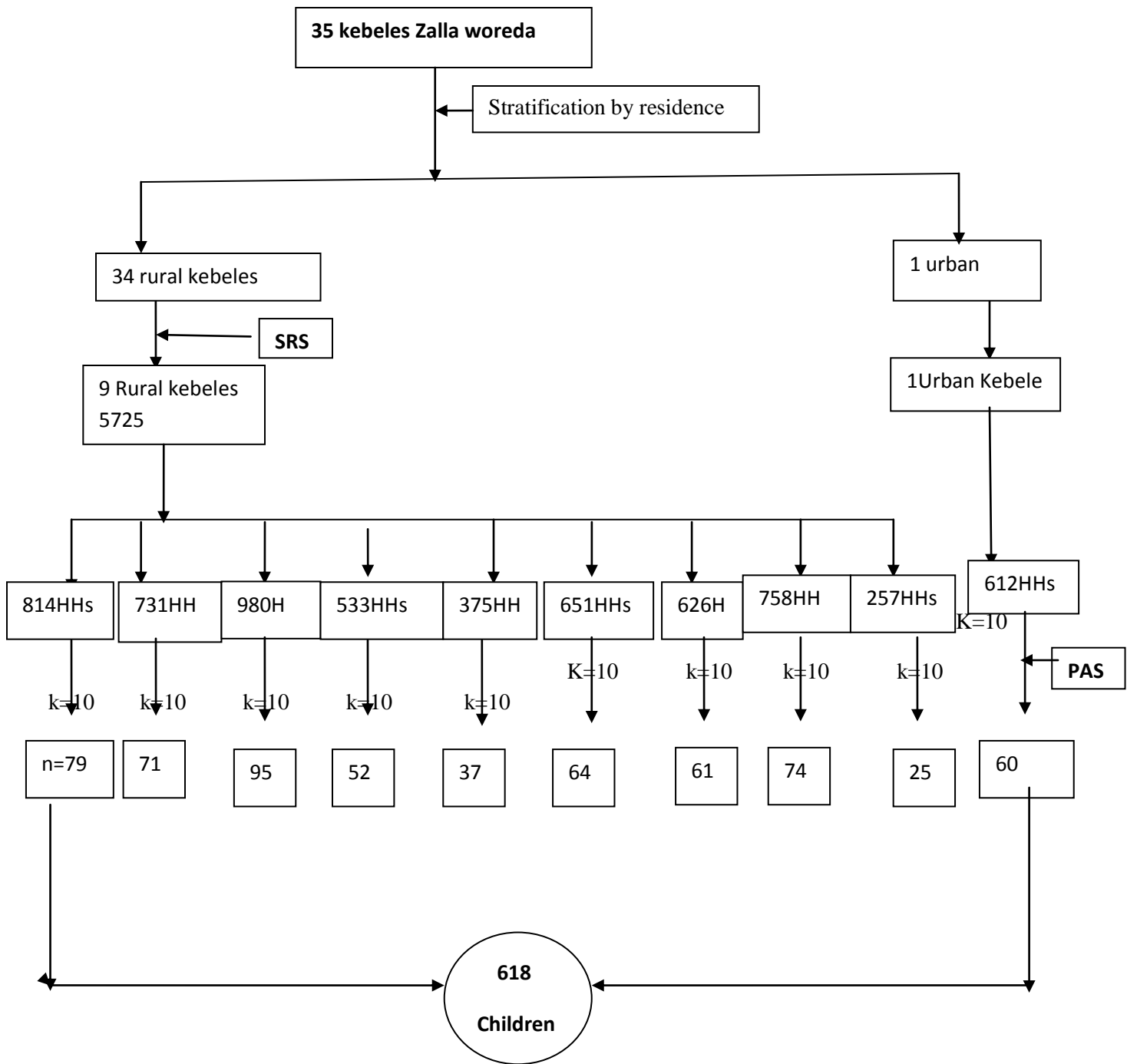
Figure 2 Schematic presentation of sampling procedure Zala district February 28 to March 26 2014.

4.7 Study variables

4.7.1. Dependent variable

Trachoma status

4.7.2 .Independent variables

1. **Socio-demographic and economic related factors**

   - Place of residence
   - Average monthly family income
   - Knowledge about trachoma
   - Parental educational level
   - Parental occupation
   - Family size

2. **Household -environmental related factor:**

   - Household crowding,
   - cooking place within house
   - Cattle place (animals),
   - House hold flies density
   - windows in living room,
   - Child per room,
   - Source of drinking water and access
   - Toilet facilities
   - Method of garbage disposal system

3. **Child related factors**

   - Age of the child
   - Sex of child
   - Cleanliness of child face
   - Nasal/ocular discharge
   - Educational level of child
   - Face /hand washing soap usage
   - Frequency of face washing
   - Number of fly on face of child
   - Number of pre-school children
   - Share towel/cloth
   - Bathing of child

4.8 Data Collection procedure

Face to face interview, observational with check list and clinical eye examination method of data collection was used. Data were collected by using Pre- tested interviewer administered semi-structured questionnaire by trained Integrated eye care workers (nurses) as recorder and ophthalmic nurses who were licensed and participated in Global Mapping trachoma grading for eye examination and grading of trachoma. The questionnaire was adapted into local settings by reviewing literature

The clinical eye examination of each study subject was done by ophthalmic nurse trachoma graders. Careful inspection of eye lashes, cornea, limbus, eversion of the upper lid and inspection of the tarsal conjunctiva by the help of magnifying binocular lenses (x 2.5) and penlight torches were carried out. The guide used for diagnosis and reporting of eye examination results was the simplified trachoma grading scheme which was developed by WHO for field work (67). The inter-rater variability of eye examination was solved by certified trachoma graders who participated in the national programme.

The questionnaires were pre-tested before the actual data collection. Five integrated eye care workers were recruited and trained to interview head of the households and observe the children after getting verbal consent from the heads of household. Then two ophthalmic nurse trachoma graders took part in eye examination.

4.10 Data processing & analysis

Data were entered using Epi data program version 3.1, then it was edited and cleaned for inconsistencies, missing value, outliers and then exported for analysis using SPSS 16.0 statistical software. Chi-square was used to see presence of association between dependent and independent variables. Bivariate logistic regression analysis was done to determine presence of statistical association between independent variables and the outcome variable and its strength with direction. Variables with p-value less than 0.25 in bivariate analysis were considered as candidate to be entered in multivariable logistic regression model. The final model was fitted using stepwise selection methods (backward LR). P-value $\leq$ 0.05 in multivariable logistic regressions was considered as statistically significant. Goodness of fitness of the model was

checked by Hosmer and Lemeshow test. Findings were presented by using tables, graph and charts. Knowledge questions were computed. Those head of households who answered knowledge questions equal or above the mean were labeled as have adequate knowledge while those who scored below the mean were labeled as people with inadequate knowledge. Multicolinarity of variables was checked by VIF and also variable interaction was checked.

4.11 Data quality assurance

Five IECWs interviewers, 2 ophthalmic nurses who had previous experience in trachoma surveys and certified trachoma graders also supervisors was trained for one day on the objective of the study, method of data collection, interview technique, on context of data collection tool and on WHO clinical eye examination grading.

Data were checked for completeness, accuracy and consistency by supervisors & principal investigator on daily base. Double entry of data for checking errors was performed to assure quality of data before analysis. The questionnaire was prepared first in English and translated into Amharic and retranslated back to English to check for consistency. The questionnaires were pre- tested on 30(5%) of sample outside the study in area Betto woreda before the actual data collection time allocation, unclear idea was corrected. The principal investigator closely supervised the entire data collection processes. The filled out questionnaires and eye examination results were collected after checking for consistency and completeness on daily bases.

4.12 Ethical Consideration

Ethical approval and clearance was obtained from the Jimma University Ethical review committee. Letter of cooperation was obtained from Zala Woreda health office and Zala Woreda administration office to respective health centers, health posts and Kebele administration. Verbal informed consent to participate in interviews and trachoma screening was obtained from the heads of the house-hold by informing the purpose of the study prior to data collection, each individual and the parents of children age 1-9 years in accordance with the tenets of the declaration of Helsinki. Children with trachoma were provided with 2 tubes of 1% TTC eye ointments immediately after examination and link to primary eye care unit.

4.13 Dissemination plan

The findings of this study will be presented to JU, distributed to Gamogofa zone health department (ZHD), Zala Woreda (WHO), and to other organizations like ORBIS international Ethiopia, who are working on elimination of blinding trachoma in the zone. The findings may also be presented in different seminars, meetings and workshops. The thesis will be prepared and an attempt will be made for publication in a peer reviewed scientific journal.

4.14. Operational definitions and definition of terms

- **Fly-eye**: defined as contact with the eyelid margin or tissue internal to the lid margin during the time taken to prepare for examination and examine the child.

- **Average family monthly Income**: It is periodical monthly receipts from one's business, ands work, investment. Monthly Income of the family was estimated by converting what they have and got in a year to cash form and dividing to 12.

- **Clean face**: a child who did not have an eye discharge or nasal discharge, fly on face at the time of visit.

- **Knowledge on trachoma**: Knowledge questions will be calculated after a number of questions will be presented. Correct answers will be given score 1 and incorrect answers 0. The sum will be computed and those who will score the mean and above will be labeled as " adequate knowledge" and those who will score below the mean will be labeled as "inadequate knowledge"(27)

- **Trachoma negative/No trachoma:** children that did not have signs of trachoma.

- **Trachomatous inflammation, follicles**: Five or more follicles of >0.5 mm on the upper tarsal conjunctiva.(67)

- **Trachomatous intense (TI)-**pronounced inflammatory thickening of the tarsal conjunctiva that obscures more than half of the normal deep tarsal vessels(67)

- **Active trachoma**: Trachomatous inflammation, follicles (TF) and/ or Trachomatous inflammation intense (TI).

- **Household-fly density:** was determined by examining the presence of flies on children's faces and around the doorways for about half a minute. Fly density was graded as, none (1-3 flies), few (4-7flies), or many (>7flies).

- **Household crowding**: An index was derived on basis of the total number of individuals residing in the household: 1–5 members; 6 –10 members; and > 10 members.

- **Pre-school children**: Those children age less than 6 years and too young to go to school.

- **Personal hygiene of child kept**: clean face with clean cloth and hair, skin.

- **Head of household**: The mother or father, who take care of children most of time.

- **Public health importance of Trachoma**: If prevalence of active trachoma ≥20% (42)

- **Household** individuals living together and taking meals from a common cooking facility

5. RESULTS

5.1 Socio -demographic and economic characteristics

A total of 611 children aged l-9 years out of 618 children were visited for eye examination and made response rate of 98.87%. The rest were not included due to refusal and incomplete data in in the analysis.

Majority of households heads, 473(77.4%) were females with the mean age of 31 ± 7 years. Most household heads, 402 (65.8%), were protestant in religion, Goffa 508(83.1%), by ethnic group, illiterate, 326(53.4%), married, 565(92.5%), farmer 372(60.9%), and rural, 551(90.2%), by residents with the average family size of 6 (**Table 1**).

Table 1 Socio-demographic characteristics of heads of household in Zalla District from February 28 to March 26, 2014

Variable	Frequency(n= 611)	Percent (%)
Sex		
Male	138	22.6
Female	473	77.4
Religion		
Orthodox	158	25.9
Protestant	402	65.8
Catholic	12	2.0
Muslim	29	4.7
Others	10	1.6
Ethnicity		
Goffa	508	83.1
Gammo	56	9.2
Wolaita	30	4.9
Others	17	2.8
Educational status		
Illiterate	326	53.4
Read And Write	9	1.5
Firstcycle1-4grades	103	16.9
Second cycle 5-8grades	109	17.8
Grade 9 and above	64	10.5
Marital status		
Married	565	92.5
Divorced	19	3.1
Widowed	27	4.4
Occupational status		
Governmental worker	41	6.7
Farmer	372	60.9
Merchant	26	4.3
Housewife	165	27.0
Others	7	1.1
Place of residence		
Urban	60	9.8
Rural	551	90.2
Family size		
2-5	254	41.6
6-10	348	57.0
>10	9	1.5
Average monthly income		
1st Quartile	144	23.6
2nd Quartile	155	25.4
3rd Quartile	134	21.9
4th Quartile	178	29.1
Age of head of household		
17-30	54.0	54.0
31-45	43.0	43.0
46-65	2.9	2.9

5.2 Prevalence of trachoma among children of 1–9 years old

Among all children examined for trachoma status, 224 (36.7%) children had clinical trachoma. Among these, 207(92.4%), 8(3.57%), and 9(4.0%), were TF, TI and combination of TF/ TI respectively. Generally over all prevalence of trachoma in the district was 36.7%. There were no TS, TT and CO stages observed during the study (**figure 3**).
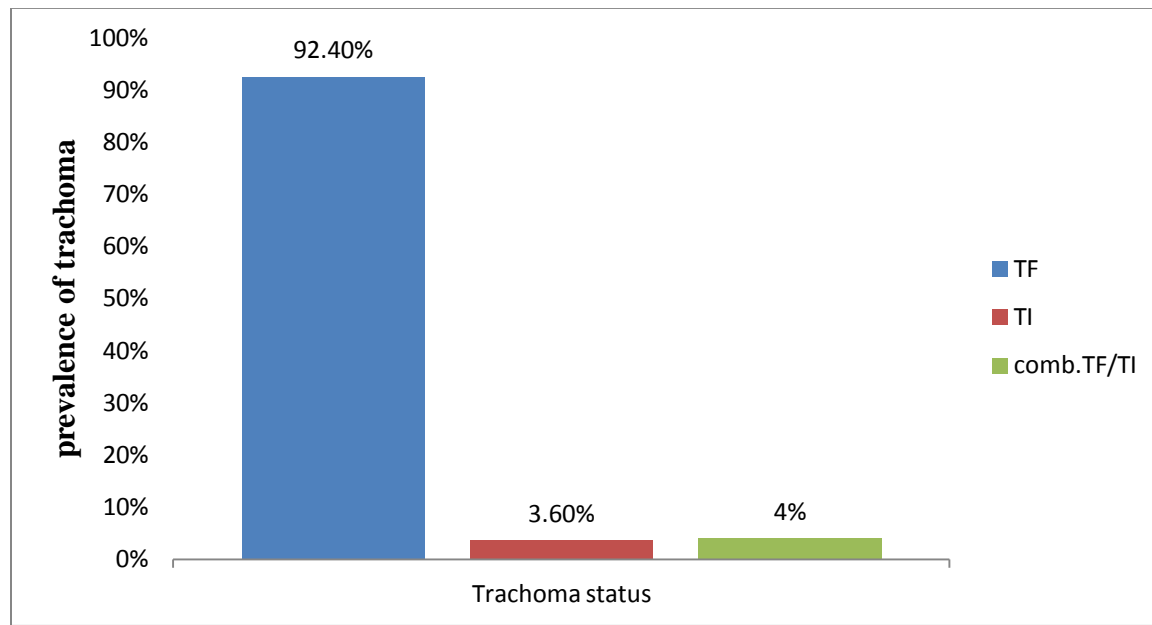
Figure 3 Prevalence of Trachoma in Children 1–9 Years in Zalla District, Gammo Gofa zone south Ethiopia February 28 to March 26, 2014

5.3 knowledge about trachoma characteristic of heads of household

The majority of the heads of households, 592 (92.6%), heard about trachoma; of which 366 (59.9%), heads of household had adequate knowledge about trachoma (**figure 4**)
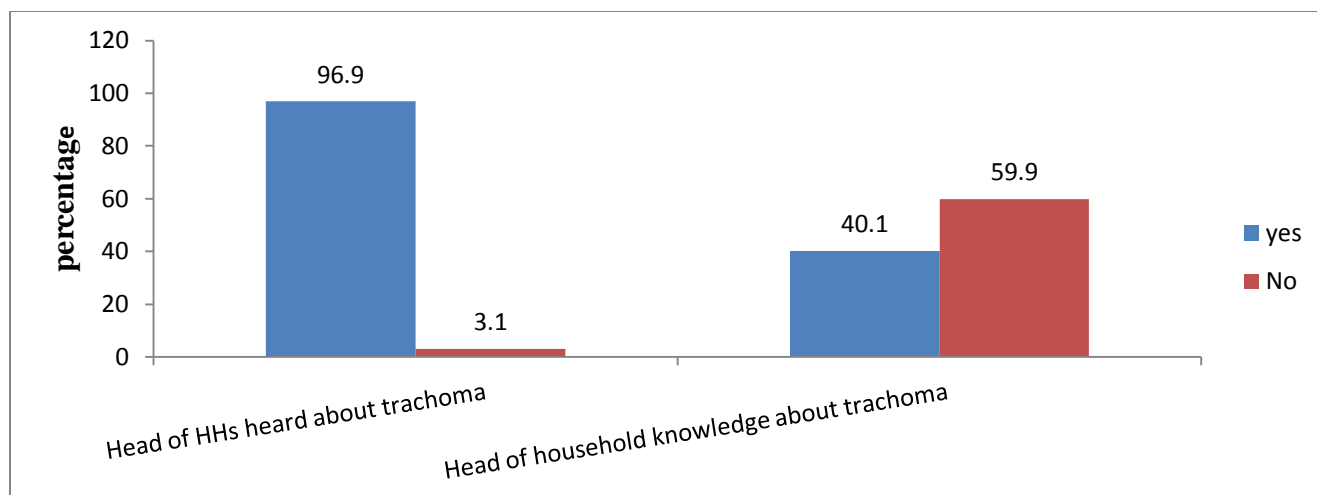
Figure 4 Knowledge about trachoma of heads of household in Zalla District from February 28 to March 26, 2014

5.4 Household-environmental factors

Most households, 388 (63.5%), used pipeline water. Most households, 364 (59.6%), travel less than 30 minutes to fetch water and, 239(39.1%), collected 20-40 liter per day with the average consumption of 6 liter/capita /day.

Majority of households, 585(95.5%), had latrine. About, 582(99.5%), were functional among them, 134(33.2%), were covered with traditional pit latrine. Five hundred ninety one (96.7%), house hold used latrine always and most of the latrines were located at the distance of less than or equal to 10 meters.

Majority of the households, 551 (90.2%), had waste disposal among these, 418 (76%), used farmland disposal system, 422 (69.1%) households, disposed at a distance of above 10 meters from their houses.

In most of the households, 354 (57.9%), flies were observed in the house and majority of them, 315 (60.7%), were breed in animal dung. Most households, 362 (59.2%), used separate place for cooking and almost all of them, 592 (96.9%) were without windows. (**Table 2**)

Table 2 Household-environmental factors of trachoma among children in Zalla District from February 28 to March 26, 2014

Variable	Frequency(n=611)	Percent (%)
Main source of water		
Pipe line water	388	63.5
Protected well or spring	77	12.6
Unprotected well or spring	146	23.9
Time to fetch water		
$\leq$ 30minutes	364	59.6
Above 30minutes	247	40.4
Amount of water collected by family		
Below 20	11	1.8
20-40	239	39.1
40-60	161	26.4
60-80	105	17.2
Above 80	95	15.5
Lt water/capita/head		
Below 4 liter	217	35.5
4-8liters	243	39.8
Above 8 liters	151	24.7
Latrine avail		
Yes	585	95.7
No	26	4.3
Functional latrine		
Yes	582	99.5
No	3	0.5
Type of latrine		
Covered traditional pit latrine	194	33.2
Uncovered traditional pit latrine	391	66.8
Latrine to HHs distance		
$\leq$ 10	330	54.0
Above10meter	281	46.0
Frequency of latrine		
Always	591	96.7
Sometimes or occasionally	20	3.3
Latrine usage		
Only adult	100	16.4
Both adult and children	511	83.6

Household-environmental factors of trachoma among children in Zalla District from con't……

Presence of waste disposal		
Yes	60	9.8
No	551	90.2
Type of waste disposal		
Uncovered pit	37	60.7
Covered pit	15	24.6
Burn on pit	9	14.8
Distance of waste disposal		
$\leq$ 10mt	189	30.9
Above10	422	69.1
Flies observed		
Yes	307	50.2
No	304	49.8
Flies breed		
Yes	354	57.9
No	257	42.1
fly breeding Site		
Animal dung	215	60.7
Open pit latrine	49	13.8
Decayed and rotted foods	90	25.4
Cooking place		
In living room	180	29.5
On the field	69	11.3
Outside living room its own place	362	59.2
Availability of Windows in cooking room		
Yes	19	3.1
No	592	96.9
presence of Animals		
Yes	562	92.0
No	49	8.0
Animals live		
Same room where the family lives	133	23.7
Living house separate room	23	4.1
kept in the separate house	406	72.2
Animal dung		
Yes	331	58.9
No	231	41.1
Animal live distance		
$\leq$ 10 meters	476	84.7
above10 meters	86	15.3

5.5 Child factors

Most of children,325 (53.2%), were females with the mean age of 3 ± 1 years and also average number of 2 pre-schoolchildren per household.

Majority of children, 557(91.2%), were-pre-school children followed by 27(4.4%), were attending school and the rest, 27(4.40%), not attending even if eligible for primary education.

Majority of children, 523 (85.6%), washed their face more than once a day also, 509 (83.3), and, 502(82.2), had no ocular and nasal discharge respectively.

Majority of children, 582 (92%), wash their face with soap and 602 (98.5%) bathed 374 (61%) bathed sometimes, 439 (71%) without sharing towel. Only 10.3% of children were observed with flies on their face, 460 (75.60%), had clean face (**Table 3**).

Table 3. Child Factor of trachoma among children in Zalla District from February 28 to March 26, 2014

Variable	Frequency(n=611)	Percent (%)
sex		
Male	286	46.8
Female	325	53.2
Age		
1-3	296	48.4
4-6	267	43.7
7-9	48	7.9
Number preschool		
≤ 2	506	82.8
Above 2	105	17.2
Frequency face washing		
More than once a day	523	85.6
Once a day	43	7.0
Occasionally	45	7.4
Ocular discharge		
Yes	102	16.7
No	509	83.3
Nasal discharge		
Yes	109	17.8
No	502	82.2
Child education		
Pre-schoolchild	557	91.2
Not attending school	27	4.4
Grade 1 -3 attending school	27	4.4
Soap usage for face		
Yes	582	95.3
No	29	4.7
Bath of child		
Yes	602	98.5
No	9	1.5
Frequency of bathing		
Sometimes	374	61.2
Always	237	38.8
Share towel		
Yes	172	28.2
No	439	71.8
Flies present		
Yes	63	10.3
No	548	89.7
Number of flies		
1-3	29	46.0
4-7	23	36.5
Above 7	11	17.5
Child Facial cleanliness		
Clean	460	75.3
Unclean	151	24.7

5.6 Associated Factors with trachoma in bivariate analysis

5.6.1 Socio-demographic and economic factors

Among Socio-demographic and economic factors, educational status of the head of household illiterate [OR 2.7(95%CI= 1.4,5.1)] p-value $\leq$ 0.003, read and write [OR 4.9(95%CI= 1.1,20.8)] p-value p $\leq$ 0.031, second cycle5-8 grades [OR2.6(95%CI= 1.2,5.2)] p-value$\leq$ 0.011)], marital status widowed [OR2.2(95%CI= 1.02,4.8] p-value < 0.044, occupation [farmer [OR4.1(95%CI= 1.5,10.8) p-value $\leq$ 0.004, Merchant [OR5.3(95%CI= 1.5,17.80)] p-value $\leq$ 0.007, housewife [OR5.3 (95%CI= 1.9,14.2)]p-value $\leq$ 0.001], place of residence rural [OR2.8(95%CI= 1.4,5.5)] p-value $\leq$ 0.003], average monthly income [1st quarter [OR2.2(95%CI= 1.4,3.5)] p-value $\leq$ 0.001] and knowledge about trachoma inadequate knowledge[OR2.9(95%CI= 2.06,4.07)] p-value <0.001] have statistical association with trachoma in bivariate analysis at p-value $\leq$ 0.05 (**Table 4**).

Table 4 Factors associated with trachoma in children1-9 years in bivariate analysis Zalla District from February 28 to March 26, 2014

Variable	Trachoma status		COR(95%CI)	P.value
	Yes No (%)	No No (%)		
Educational status				
Illiterate	132(58.9%)	194(50.1%)	2.7(1.4,5.1)*	0.003
Read and write	5(2.2%)	4(1.0%)	4.9(1.1,20.8)*	0.031
1st cycle 1-4 grades	31(13.8%)	72(18.6%)	1.7(0.8,3.5)	0.165
Second cycle5-8grades	43(19.2%)	66(17.1%)	2.6(1.2,5.2)*	0.011
Grade 9 and above	13(5.8%)	51(13.2%)	1	
Marital				
Married	203(90.6%)	362(93.5%)	1	
Divorced	6(2.7%)	13(3.4%)	0.8(0.3,2.1)	.698
Widowed	15(6.7%)	12(3.1%)	2.2(1.02,4.8)*	.044
Occupation status				
Governmental worker	5(2.2%)	36(9.3%)	1	
Farmer	136(60.7%)	236(61.0%)	4.1(1.5,10.8)*	0.004
Merchant	11(4.9%)	15(3.9%)	5.3(1.5,17.8)*	0.007
Housewife	70(31.2%)	95(24.5%)	5.3(1.9,14.2)*	0.001
Others	2(.9%)	5(1.3%)	2.9(0.4,19.02)	0.272
Residence				
Urban	11(4.9%)	49(12.7%)	1	
Rural	213(95.1%)	338(87.3%)	2.8(1.4,5.5)*	0.003
Ave. month income				
1st quartile	70(31.2%)	74(19.1%)	2.2(1.4,3.5)*	.001
2nd quartile	54(24.1%)	101(26.1%)	1.3(0.8,1.9)	.324
3rd quartile	47(21.0%)	87(22.5%)	1.2(0.7,2.06)	.321
4th quartile	53(23.7%)	125(32.3%)	1	
Knowledge about trachoma				
Inadequate knowledge	126(56.2%)	119(30.7%)	2.9(2.06,4.07)*	0.001
Adequate Knowledge	98(43.8%)	268(69.3%)	1	

*Significant at p-value ≤ 0.05

5.6.2 Household and environmental factors

Among households and environmental factors time to fetch water above 30 minutes [OR1.6(95%CI=1.1,2.2)]   P-value $\leq$ 0.008, latrine distance from the house $\leq$ 10mts [OR1.4(95%CI= 1.04,2.02)] P-value $\leq$ 0.029, distance of garbage [OR1.5(95%CI= 1.03,2.08)] P-value $\leq$ 0.034, number of people per room above 2 people /room[OR1.4(95%CI= 1.01,1.9)] p-value $\leq$ 0.039, fly breed site presence of fly breed site[OR1.5(95%CI= 1.08,1.5)] P-value $\leq$ 0.016, family cooking place in living room [OR1.7(95%CI= 1.2,2.4)] P-value $\leq$ 0.006,on field [OR 2.02(95%CI= 1.2,3.4)]P-value $\leq$ 0.008 and animal dung availability [OR1.4(95%CI= 1.01,2.05)] P-value $\leq$ 0.042 have statistical association with Trachoma in bivariate analysis at p-value $\leq$ 0.05 (**Table 5**).

Table 5.Association of trachoma and risk factors among house hold-environmental factors in bivariate analysis children 1–9 years in Zalla District from February 28 to March 26, 2014

Variable	Trachoma status		COR(95%CI)	P-value
	Yes No (%)	No No (%)		
Time to fetch water				
$\leq$30minutes	118(52.7%)	246(63.6%)	1	
above30minutes	106(47.3%)	141(36.4%)	1.6(1.1,2.2)*	0.008
Latrine distance				
$\leq$10	134(59.8%)	196(50.6%)	1.4(1.04,2.02)*	0.029
above10meter	90(40.2%)	191(49.4%)	1	
Distance of garbage				
$\leq$ 10mt	81(36.2%)	108(27.9%)	1.5(1.03,2.08)*	0.034
above10	143(63.8%)	279(72.1%)	1	
People per room				
$\leq$2	94(42.0%)	196(50.6%)	1	
above2	130(58.0%)	191(49.4%)	1.4(1.01,1.9)*	0.039
Fly breeding				
Yes	144(64.3%)	210(54.3%)	1.5(1.08,2.1)*	0.016
No	80(35.7%)	177(45.7%)	1	
Family cooking place				
In living room	78(34.8%)	102(26.4%)	1.7(1.2,2.4)*	0.006
On filed	33(14.7%)	36(9.3%)	2.02(1.2,3.4)*	0.008
In separate room	113(50.4%)	249(64.3%)	1	
Animal dung avail				
Yes	134(64.4%)	197(55.6%)	1.4(1.01,2.05)*	0.042
No	74(35.6%)	157(44.4%)	1	

*significant at p-value $\leq$ 0.05

5.6.3 Child factors

Among the child factors number of pre-school child above 2 children [OR 2.5(95%CI= 1.7,3.9)] P-value $\leq$ 0.000, frequency of face washing once a day [OR 1.9(95% CI=1.01,3.5)] P-value $\leq$ 0.044, presence of ocular discharge [OR5.04(95%CI= 3.2,7.9)] p-value $\leq$ 0.000, presence of nasal discharge [OR 3.04(95%CI=1.9,4.7)] P-value $\leq$ 0.000, fly on face of child [OR 11.7(95%CI= 5.8,23.5)] P-value $\leq$ 0.000 and [unclean face [OR 4.2(95%CI= 2.8,6.2)] P-value $\leq$ 0.000 have statistical association with Trachoma in bivariate analysis at p-value $\leq$ 0.05 (**Table 6**)

Table 6 Association of trachoma and risk factors in bivariate analysis among child factors children 1–9 years in Zalla District from February 28 to March 26, 2014

	Trachoma status			
Variable	Yes	No	**COR(95%CI)**	**P-value**
	No (%)	No (%)		
Sex child				
Male	101(45.1%)	185(47.8%)	1	
Female	123(54.9%)	202(52.2%)	1.1(0.8,1.6)	0.517
Age of child				
1-3	126(56.2%)	170(43.9%)	1.4(0.7,2.6)	0.352
4-6	81(36.2%)	186(48.1%)	0.8(0.4,1.5)	0.485
7-9	17(7.6%)	31(8.0%)	1	
Number of preschool				
≤2	166(74.1%)	340(87.9%)	1	
above2	58(25.9%)	47(12.1%)	2.5(1.7, 3.9)*	0.000
Frequency face wash child				
More than once a day	186(83.0%)	337(87.1%)	1	
Once day	22(9.8%)	21(5.4%)	1.9(1.01,3.5)*	0.044
Occasionally	16(7.1%)	29(7.5%)	1.0(0.5,1.9)	0.999
Ocular discharge				
Yes	70(31.2%)	32(8.3%)	5.04(3.2,7.9)*	0.000
No	154(68.8%)	355(91.7%)	1	
Nasal discharge				
Yes	64(28.6%)	45(11.6%)	3.04(1.9,4.7)*	0.000
No	160(71.4%)	342(88.4%)	1	
Soap usage				
Yes	210(93.8%)	372(96.1%)	1	
No	14(6.2%)	15(3.9%)	1.7(0.8,3.5)	0.188
Frequency of body bath				
Sometimes	137(61.2%)	237(61.2%)	0.9(0.7,1.4)	0.984
Always	87(38.8%)	150(38.8%)	1	
Share towel				
Yes	64(28.6%)	108(27.9%)	1.03(0.7,1.5)	0.860
No	160(71.4%)	279(72.1%)	1	
Fly on face				
Yes	53(23.7%)	10(2.6%)	11.7(5.8,23.5)*	0.000
No	171(76.3%)	377(97.4%)	1	
Facial cleanliness				
Clean	130(58.0%)	330(85.3%)	1	
Unclean	94(42.0%)	57(14.7%)	4.2(2.8,6.2)*	0.000

* Significant at p-value ≤ 0.05.

5.7 Independently associated factors of Trachoma status

The model fitness was checked by Hosmer and Lemeshow test and was found to be fitted [p=0.817]. Multicolinarity of variables were checked using VIF and absence of multicolinarity was confirmed and also variable interaction was checked, there was no interaction.

Knowledge about trachoma, latrine distance from household, number of preschool children, flies on the face of child and facial cleanliness of the child were independently associated factors with trachoma among children.

Knowledge about trachoma was significantly associated with trachoma. Those children from household head having inadequate knowledge were 2.8 times more likely to develop trachoma than those children from households headed by person with adequate knowledge [AOR= 2.8(95% CI= 1.9, 4.2].

The association between latrine distance to household and trachoma was maintained after adjustment of possible confounding. The odds of developing trachoma were 1.6 times more common among children's of households whose latrine distance was less than or equal to 10 meters compared with the households latrine distance above 10 meters [AOR= 1.6(95% CI =1.08, 2.4].

 The number of pre-school children was associated with trachoma status. Those children from households having more than two preschool children were 2.2 times more likely to develop trachoma than those households having two or less preschool children [AOR=2.2(95% CI= 1.3,3.7].

Presence of fly on face of children was significantly associated with trachoma status. The odds of trachoma were 6.2 times higher among children with fly observed on the face compared to their counterparts [AOR= 6.3(95% CI =2.7, 14.7].

Facial cleanliness of the child was significantly associated with trachoma. Those children with unclean face were 2.4 times more likely to develop trachoma than those children with clean face AOR= 2.4(95% CI =1.5, 3.9) (**table 7**).

Table 7 Independently Associated factors of trachoma among children 1–9 years in Zalla District from February 28 to 26 March, 2014

variables	Trachoma statue		COR(95%CI)	AOR(95%CI)
	Yes No (%)	**No** No (%)		
Knowledge trachoma				
Inadequate knowledge	126(56.2)	119(30.7)	2.9(2.06,4.07)*	2.8(1.9,4.2)*
Adequate knowledgeable	98(43.8)	268(69.3)	1	1
Latrine distance				
≤ 10meter	134(59.8)	196(50.6)	1.5(1.04,2.02)*	1.6(1.09,2.4)*
above10 meter	90(40.2)	191(49.4)	1	1
Number of preschool				
≤ 2	166(74.1)	340(87.9)	1	1
Above 2	58(25.9)	47(12.1)	2.5(1.7,3.9)*	2.2(1.3,3.7)*
Fly on face				
Yes	53(23.7)	10(2.6)	11.7(5.8,23.5)*	6.3(2.7,14.7)*
No	171(76.3)	377(97.4)	1	1
Facial cleanliness				
Clean	130(58.0)	330(85.3)	1	1
Unclean	94(42.0)	57(14.7)	4.2(2.8,6.2)*	2.4(1.5,3.9)*

* Significant at p-value ≤ 0.05.

6. DISCUSSIONS

The overall prevalence of trachoma among children age 1-9 years in this study was (224)36.7%, which includes trachomatous follicle (TF) (207)92.4%, TI 8(3.5%) and combination of TF/TI 9(4%). This result was almost comparable with studies conducted in Ethiopian national trachoma with a prevalence of 40.1% and SNNPR, (33.2%) (22). It was also consistent with studies in Kenya Sambru district (36), Hai Tanzania (43), and in Mali (33) accounting 35%, 34.9% and 34% respectively. The prevalence was lower than reports from Southern Sudan (48) and Unity state in Southern Sudan (56) accounting 64% and 71% respectively. This lower prevalence might be increment of mass antibiotic distribution coverage with better integration of health promotion on primary eye care, health information on personal and environmental hygiene of the District. The prevalence was higher than the study in Kanon state Nigeria (54), Mojolume Ethiopia (44) and Basoliben district in Ethiopia (26) that reported 17.5%, 22.51% and 24.1% respectively. This might be due to differences in endemicity, period of study, geographical and cultural factors of the district with low infrastructure. The prevalence was also beyond WHO bench mark definition of public health importance (AT $\geq$20%) (20, 23, 42).The finding of the study confirmed that trachoma is still a disease of public health importance in the Zalla district.

In this study those children from household heads having inadequate knowledge were 2.8 times more likely to develop trachoma compared to children from households whose heads had adequate knowledge. This is consistent with community based studies conducted in Basoliben district in Gojam (26), in rural Ethiopia (34) and in Tanzania (35). This is might be less access to information, education and communication about trachoma in the district.

In this study the odds of developing trachoma were 1.6 times more common among children of households whose latrine distance was less than or equal to 10 meters compared to those whose latrine distance was above 10 meters. This is in line with study conducted in Gambia (46), Hawzien district, Tigray (51). In contrary Study in Egypt the presence of a functional latrine near the house had been associated with lower trachoma prevalence. (52).The possible explanation could be decrease in latrine distance from the household had a chance for fly to be in the house and frequent exposure to human unless the hygienic condition of the latrine environment kept clean.

Those children from households having more than two preschool children were 2.2 times more likely to develop trachoma than those households having two or less preschool children. This is consistent with a study conducted in Hai district Tanzania (43). This could be increase in number of pre-school children resulted in decrease in care given to the children by the household members/care givers, depletion of family resource and increase risk of exposure to poor hygiene and consequently to chylamdia infection .

Presence of fly on the face of children was significantly associated with trachoma status .The odds of trachoma 6.2 times higher among children observed with flies on the face compared to their counterparts. This is in line with studies from Mali(17,33), Maksegnit town, Northwest Ethiopia that showed children with flies on their face were over two times more likely to have active trachoma than those children without flies on their face (61), South Sudan (48) , Kaolack region in Senegal(49), Kano state Nigeria (54) and Niger (60). However, it disagrees with a study conducted in Sambura district (36). The difference could be due to the endemicity of the area and low hygienic practice in which flies attracted by unclean face.

Facial cleanliness of the child was significantly associated with trachoma. Those children with unclean face were 2 times more likely to develop trachoma than those children with clean face. This is comparable with studies conducted in Kano state Nigeria (54), in Kaolack district Senegal(49),Southern Sudan (48), Mail (17), Dangla ,Ethiopia (62), Maksegnit town, Gondar (61), Ankober, Ethiopia (41) and Kersa district (50). This is the fact that children with unclean faces could be more likely to spread ocular secretions infected with *C trachomatis* between one another, particularly if their face is cleaned by the same cloth, unclean face attracts eye discharge seeking flies which is the main transmission mechanism.

Limitation of the Study

The study depends on the information provided by head of household subject to information bias.

A Dacron swab for chylamdia RNA PCR test was not done to confirm ocular chylamdia infection.

7. Conclusions and Recommendations

7.1 Conclusions

The prevalence of trachoma among children1-9 years old found in Zalla district was high.

Among a number of risk factors head of household knowledge about trachoma, distance from latrine to household, number of pre-schoolchildren in the household, presence of flies on the face of the child and cleanliness of the child face, were independently associated with trachoma.

. 7.2 Recommendations

1. SNNPR RHB, Gamogofa ZHD, and woreda health office should promote early detection and treatment of cases. Strengthen mass drug antibiotic administration and FE component of SAFE strategy to the community in collaboration with partners.

2. Trained health care providers and woreda health office in collaboration with ORBIS international Ethiopia should provide and Strengthen access to information, education and communication about trachoma for the community.

3. Health care providers and the woreda health office should promote facial cleanliness and environmental sanitation on hygiene practice through behavior change communication, social mobilization and clean face campaigns to household members..

4. Gamogofa zone health department, woreda health office partners should Strengthening health information, education and communication on construction of appropriate location of latrine and promotes Proper excreta disposal and hygienic condition of the latrine.

5. Health care providers and woreda health office should Strengthening education to the head of household on child spacing and care of pre-school children on hygienic practice. Policy makers should strengthen strategies that increase child spacing

6. Researchers should conduct studies among adults for detection of complications of trachoma and its associated factors in the woreda for further intervention.

References

1.   WHO. Global Burden of Disease : 2002;5(50):2–10.

2.   WHO/UNICEF. Global Water Supply and Sanitation Assessment 2000 Report. 2001;6(12):50–60.

3.   S . Pizzarello L. Abiose A. Ffytche T. Duerksen R. Thulasiraj R. Taylor H. Faal H. Rao G. Kocur I. Resnikoff. VISION 2020: The Right to Sight A Global Initiative to Eliminate Avoidable Blindness. Arch Ophthalmo. 2004;122(4):615–20.

4.   Melese M, Alemayehu W, Bayu S, Girma T, Hailesellasie T, Khandekar R, et al. Low vision and blindness in adults in Gurage Zone, central Ethiopia. Br. J. Ophthalmol. [Internet]. 2003 Jun;87(6):677–80. Available from: http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=1771701&tool=pmcentrez&rendertype=abstract

5.   Zerihun N BD. Blindness and Low vision in Jimma Zone, Ethiopia: results of a population-based survey. 1997;4(6):19–26.

6.   Berhane Y, Worku A, Bejiga A, Adamu L, Alemayehu W, Bedri A, et al. Prevalence and causes of blindness and Low Vision in Ethiopia. Ethiop. J. Heal. Dev. 2008 Apr 15;21(3):204–10.

7.   . Muñoz B WS. Trachoma: the forgotten cause of blindness. 1997;19(3):205–17.

8.   Thylefors B. Trachoma-new opportunities to tackle an old problem. Brit. J. Ophthalmol. 1996;80(12):1033–4.

9.   Negrel, A.D. and Mariotti S. Trachoma rapid assessment.Community Eye Health. 1999;12(5):51–3.

10.   AR P. . Causes of blindness and visual impairment in the Central African Republic. Br J Opthalmol. 1991;75(5):326–8.

11.   FH B. in Ethiopia. A report Geneva, WHO, STC. 1981;102:35–46.

12.   Hsieh YH, Bobo LD, Quinn TC, West SK. Risk factors for trachoma: 6-year follow-up of children aged 1 and 2 years. Am. J. Epidemiol. [Internet]. 2000 Aug 1;152(3):204–11. Available from: http://www.ncbi.nlm.nih.gov/pubmed/10933266

13.   Allen S SR. . The trachoma "Menace" in the United States, 1897-1960 . Survey of Ophthalmology,. 47(12):: 500–509.

14.   WHO G. Prevention of Blindness and Visual Impairment Website. Visited. 3(2):78–90.

15.   Mabey DCW, Solomon AW, Foster A. Trachoma lancet. 2003;362(5):223–9.

16.   Bailey R, Downes B, Downes R MD. Trachoma and water use; a case control study in a Gambian village. Trans R Soc Trop Med Hyg. 1991. p. 824– 828.

17.   Schémann J, Sacko D, Malvy D, Momo G, Traore L, Bore O, et al. Risk factors for trachoma in Mali. 2002;12(5):194–201.

18.   WHO. Prevention of Blindness and Visual Impairment, Priority eye diseases, Trachoma. p. 25–30.

19.   Turner VM, West SK, Muñoz B, Katala SJ, Taylor HR, Halsey N MB. Risk factors for trichiasis in women in Kongwa, Tanzania: a case – control study. Int J Epidemol. 1993;22(9):341–7.

20.   WHO B of W. Global initiation for elimination of avoidable blindness: WHO/Pb1/97.6/ Rev.1, Geneva,. 1997;8(2):1–3.

21.   Berhane Y, Worku A, Bejiga A, Adamu L, Alemayehu W, Bedri A. National Survey on Blindness , Low Vision and Trachoma in Ethiopia : Methods and Study Clusters Profile. 2005;4(2):25–30.

22. Berhane Y, Worku A, Bejiga A, Adamu L, Alemayehu W, Bedri A, et al. Prevalence of Trachoma in Ethiopia. Ethiop. J. Heal. Dev. [Internet]. 2008 Apr 15;21(3):20–30. Available from: http://www.ajol.info/index.php/ejhd/article/view/10051

23. WHO G. Planning meeting for the Global Elimination of Trachoma: Geneva,. BMC Public Health. Jan;10(2):30–40.

24. Courtright P, SheppardJ, SchachterJ, SaidME DC. Trachoma and blindness in the Nile Delta: current Patterns and projections for the future in the rural Egyptian population.BrJ Ophthalmol. 1989;73(53):536–40.

25. Burton MJ, Mabey DCW. The Global Burden of Trachoma : A Review. 2009;3(10).

26. Ketema K, Tiruneh M, Woldeyohannes D, Muluye D. Active trachoma and associated risk factors among children in Baso Liben District of East Gojjam, Ethiopia. BMC Public Health [Internet]. 2012 Jan;12(4):1105. Available from: http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=3543160&tool=pmcentrez&rendertype=abstract

27. Mariotti SP, Pascolini D R-NJ. Trachoma: global magnitude of a preventable cause of blindness.Br J Ophthalmo. 93(20):563–568.

28. Polack S, Brooker S, Kuper H, Mariotti S, Mabey D FA. Mapping the global distribution of trachoma. Bull World Health Organ. p. 83:913–19.

29. Organization WHO. Global Health Atlas: Trachoma. Geneva, Switzerland: World Health Organization; 8(5):45–78. Available from: Available at:http://apps.who.int/globalatlas/dataQuery/ default.asp). (Accessed on 20 October 2010).

30. Munoz SW and B. Epidemiology of trachoma. Epidemiology of Eye Diseases. 1998;6(3):119–135.

31. Thylefors B, Negrel AD PR. Epidemiologic aspects of global blindness prevention. World Health Organization. 8(2):824–834.

32. Schwab L, Whitfield R, Ross-Degnan D, Steinkuller P SJ. The epidemiology of trachoma in rural Kenya.Variation in prevalence with lifestyle and environment. Study survey group.Ophthalmology. 1995;102(9):475– 482.

33. Hagi M, Schemann J-F, Mauny F, Momo G, Sacko D et al.) Active Trachoma among Children in Mali: Clustering and Environmental Risk Factors. PLoS Negl Trop. 2010;4(2):6–10.

34. Cumberland P, Edwards T, Hailu G, Harding-Esch E, Andreasen A, Mabey D, et al. The impact of community level treatment and preventative interventions on trachoma prevalence in rural Ethiopia. Int. J. Epidemiol. [Internet]. 2008 Jun [cited 2014 Jan 14];37(3):549–58. Available from: http://www.ncbi.nlm.nih.gov/pubmed/18356196

35. West S, Muñoz B, Lynch M, Kayongoya A, Chilangwa Z, Mmbaga BBO TH. Impact of face-washing on trachoma in Kongwa Tanzania. Lancet. 1995. p. 155–158.

36. Dominic Mu, Zipporah Ng , Charles Mb LM. Evaluation of the risk factors associated with active trachoma among 1-9 year-old children Samburu District. Prime Journal of Social Science. 2(11):497–501.

37. Mesfin MM, de la Camera J, Tareke IG, Amanual G, Araya T KA. A community-based trachoma survey: prevalence and risk factors in the Tigray region of northern Ethiopia. Ophthalmic Epidemiol. 2006;13(4):173– 181.

38. N. . Zerihun. Impact of trachoma among rural Ethiopian women. Ethiop. J. Health sciences. 1998;8(1):53–9.

39. LMillar MI LS. Ethno-Ophthalmology in the Egyptian Delta: a historical systems approach to ethnomedicine in the Middle East. Soc. Sci. Med. 26(6):: 651–657..

40.   Et.al SW. Water availability and trachoma. Bulletin of the world health organization. 2013;67(1):71–75.

41.   Golovaty I, Jones L, Gelaye B, Tilahun M, Belete H, Kumie A, et al. Access to water source, latrine facilities and other risk factors of active trachoma in Ankober, Ethiopia. PLoS One [Internet]. 2009 Jan [cited 2014 Jan 14];4(8):e6702. Available from: http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=2724741&tool=pmcentrez&rendertype=abstract

42.   Bailey R LT. The SAFE strategy for the elimination of trachoma by 2020: will it work? Bull World Health Organ. 2003;79(3)::233– 236.

43.   Mahande MJ, Mazigo HD, Kweka EJ. Association between water related factors and active trachoma in Hai district , Northern Tanzania. 2012;1(10):1–7.

44.   Yalew KN, Mekonnen MG, Jemaneh AA. Trachoma and its determinants in Mojo and Lume districts of Ethiopia. Pan African Med. Journal. 2012;13(Supp 1):1–5.

45.   Rog M, Swenor B, Cajas-monson LC, Mchiwe W, Kiboko S, Mkocha H, et al. A cross-sectional survey of water and clean faces in trachoma endemic communities in Tanzania. BMC Public Health [Internet]. BioMed Central Ltd; 2011;11(1):495. Available from: http://www.biomedcentral.com/1471-2458/11/495

46.   Harding-Esch EM, Edwards T, Sillah A, Sarr-Sissoho I, Aryee EA, Snell P et al. . Risk factors for active trachoma in The Gambia. Trans R Soc Trop Med Hyg. 102(1):1255–62.

47.   Montgomery MA, Desai MM, Elimelech M. Author ' s personal copy Transactions of the Royal Society of Tropical Medicine and Hygiene Assessment of latrine use and quality and association with risk of trachoma in rural Tanzania Author ' s personal copy. 2010;104(6):283–9.

48.   Ngondi J, Matthews F, Reacher M, Onsarigo A, Matende I, Baba S et al. Prevalence of Risk Factors and Severity of Active Trachoma in Southern Sudan : An Ordinal Analysis. Jul;77(1)::126–32.

49. Faye M, Kuper H, Dineen B, Bailey R. Rapid assessment for prioritisation of trachoma control at community level in one district of the Kaolack Region , Senegal. R. Soc. Trop. Med. Hyg. 2006;100(9):149–57.

50. Ejigu M, 1, 2, 2, 3. ORIGINAL ARTICLE RAPID TRACHOMA ASSESSMENT IN KERSA DISTRICT , SOUTHWEST ETHIOPIA. Ethiop J Heal. Sci. 2013;23, N 1(7):2–9.

51. Sharma HR, Alemu K. International Journal of Environmental Latrine use among rural households in northern Ethiopia : a case study in Hawzien district , Tigray. 2013;70(4):37–41.

52. Courtright P, Sheppard J, Lane S, Sadek A, Schachter J. Latrine ownership as a protective factor in inflammatory trachoma in Egypt. 1991;9(5):322–5.

53. Sukwa TY, Ngalande TC, Mwandu DH, Siziya S MM. Prevalence and Distribution of Trachoma in Luapula Valley, Zambia. East African Medical Journal. 1992;69(7):34–6.

54. Mpyet C, Lass BD, Yahaya HB, Solomon AW. Prevalence of and Risk Factors for Trachoma in Kano State , Nigeria. 2012;7(7):3–8.

55. Yumei Z, Xuguang S, Zhiqun W, Ran L, Zhe R. Coming National Program of Epidemiological Survey for Trachoma in China : Prevalence of Trachoma in Northern China. 2013;4(4):23–35.

56. Edwards T, Smith J, Sturrock HJW, Kur LW, Sabasio A, Finn TP, et al. Prevalence of Trachoma in Unity State , South Sudan : Results from a Large-Scale Population-Based Survey and Potential Implications for Further Surveys. 2012;6(4):1–12.

57. Rauf A, Ong PS, Pearson RV et al: A pilot study into the prevalence of ophthalmic disease in the Indian population of Southall. Journal of the Royal Society of Medicine. 87(2):: 78–9.

58.	Alene GD ABEBE GDA and S. PREVALENCE OF RISK FACTORS FOR TRACHOMA IN A RURAL LOCALITY OF NORTH- WESTERN ETHIOPIA African, East Journal, Medical. 2000;77(6):308–12.

59.	Mabey, D.C., Bailey, R.L., Ward, M.E., Whittle H. A longitudinal study of trachoma in a Gambian village: implications concerning the pathogenesis of chlamydial infection. Epidemiol. Infect. 1992;108(4):, 343–351.

60.	Francisco S. NTD News for Africa. 2012;8(2):1–3.

61.	Shiferaw D, Moges HG. Risk factors for active trachoma among children aged 1-9 years in Maksegnit town , Gondar Zuria District , Northwest Ethiopia. 2013;2(3):1–5.

62.	Molla Gedefaw, Ali Shiferaw Zelalem Alamrew Amsalu Feleke Tsegaw Fentie3 KA. Current state of active trachoma among elementary school students in the context of ambitious national growth plan: The case of Ethiopia. 5(11):45–60.

63.	Kidd JD, Maas ME, Mccoy ME, Ngata SW, Winfrey OK, Young RA. Evaluation of the Burden of Active Trachoma Among Children Aged 1-9 in Loitokitok District , Kenya. 2010;8(3):1–35.

64.	Harding-esch EM, Edwards T, Mkocha H, Munoz B, Holland MJ, Burr SE, et al. Trachoma Prevalence and Associated Risk Factors in The Gambia and Tanzania : Baseline Results of a Cluster Randomised Controlled Trial. 2010;4(11):861.

65.	Edwards T, Harding-Esch EM, Hailu G, Andreason A, Mabey DC, Todd J, et al. Risk factors for active trachoma and Chlamydia trachomatis infection in rural Ethiopia after mass treatment with azithromycin. Trop. Med. Int. Health. 2008 Apr;13(4):556–65.

66.	Woreda Z. Zalla woreda base plan,2013. woreda Health profile. 2013;2(1):20–30 unpublished.

67.	Organization WHO. Primary health care level management of trachoma. Geneva: WHO; [WHO/PBL/93.33]. 1993;4(2):461–6.

Annex 1. Consent form, English and Amharic questionnaires

My name is_____ I am working as data collector in this study to assess prevalence and factors associated with trachoma among children age 1-9 years. Your child's name will not be written on this form and will never be used with any information you may tell me. You don't have to answer any questions that you don't want to answer and you may end this interview at any time you want. However, your honest answer to these questions is very important for the purpose of the study. We would very much appreciate your participation in this study by genuinely responding to the interviews. Would you be willing to participate?

It would take _____ minutes to complete the questionnaire

Signature of the interviewer certifying that informed consent has been given verbally by

respondent_____

English Version Questionnaires

Part I Questions to be answered at the household level by head of household (Socio-demographic and economic factors)

No	Questions	Coding Categories	Code
101	Sex of the head of the household	1. Male 2. Female	
102	Age of the head of household	----------years	
103	Religion	1. Muslim 2. Orthodox 3. Protestant 4. Catholic 5. Other specify	
104	Ethnicity	1. Goffa 2. Gammo 3. Amahara 4. wolaita 5. other specify	
105	Educational status	1. Illiterate 2. Read & write only 3.1stcycle (1-4) grades 4.2^{nd} cycle (5-8) 5.Secondary (9-10)	

		6.Preparatory (11-12) grades 7. 12+college/university		
106	Marital status	1. Single 2. Separated 3. Married 4. Divorced 5. Widowed		
107	Occupational status	1.Governmental worker 2.Farmer 3.Merchant 4.House wife 5.other specify		
108	Place of Residence?	1.Urban 2.Rural		
109	Total number of household members?	1.Male –------- 2.Female ---- 3.Total-------		
110	Average Monthly Income of the family in ETB	----------- ETB		
111	**Household Wealth index** *Now I will ask you about some fixed assets that your family have.*			
	Does the household have any of the following properties? **(Circle)**	**Yes**	**No**	
1	Radio/Tape recorder	1	0	
2	Functioning Television	1	0	
3	Electricity in the house	1	0	
4	Generator used during electric power interruption	1	0	
5	Functioning dish	1	0	
6	Functioning refrigerator	1	0	
7	Farm land	1	0	
8	Bicycle	1	0	
9	Domestic animals(ship goats, sheep or chicken)	1	0	
10	Bathe Room	1	0	

11	Animal drawn cart/donkey Garre	1	0
12	mobile telephone (mother and father)	1	0
13	Sofa	1	0
14	Spring mattress	1	0
15	Sponge/Foam mattress	1	0
16	Cotton mattress	1	0
17	Traditional pit latrine	1	0
18	Ventilated improved toilet	1	0
19	Chair//table	1	0
20	Is the house for your family?	1	0
21	Pipe Water	1	0
22	Farm Animal(Cattle, oxen, bulls, horses, donkeys)	1	0
23	Corrugated sheet of roof	1	0
24	Floor cemented	1	0
25	Within a year more than two quintal of teff/maize produced	1	0

Part.2. Questions to be answered by head of HHs: knowledge about trachoma

Serial no	Questions	Coding categories	code
201	Have you heard about Trachoma?	0.N0 1.Yes	
202	Do you know trachoma treated by eye ointment/antibiotic?	0.No 1.Yes	
203	Do you know that trachoma treated by surgery for TT	0.No 1.Yes	
204	Do you know that trachoma prevented by face washing with soap	0.No 1.Yes	
205	Use of latrine can prevent trachoma	0.No 1.Yes	
206	Keeping flies away will prevent trachoma	0.No 1.Yes	
207	Sharing towels with others will not prevent trachoma	0.No 1.Yes	
208	Living with live stock in the same house will not prevent trachoma	0.No 1.Yes	
209	Using Kitchens outside the house with windows prevents trachoma.	0.N0 1.Yes	
210	Do you know trachoma transmitted through flies	0.No 1.Yes	
211	Trachoma transmitted by contaminated fingers and towels/cloth	0.No 1.Yes	
212	Do you know painful eye is symptom of trachoma?	0.No 1.Yes	
213	Itching or burning eye is symptom of trachoma	0.No 1.Yes	
214	Do you know low vision, TT (Trichiasis) and blindness is complications of trachoma?	0.No 1.Yes	
215	Photophobia is one of complication of trachoma	0.No 1.Yes	

Part3. Household- Environmental factors

NO	Questions	Coding categories	code
301	What is the main water source used by your household?	1. Pipe line water 2. Protected well/spring 3. Unprotected well/spring 4.Surface water(River) 5. Pond	
302	For how long do you travel to get water from water source?(Round trip)	--------minutes -----------hr	
303	How many liters of water house hold collects and uses in daily consumption?	----------------------------Liters	
304	What is the Daily average Water consumption per head/capita in liters	----------------------------Liters	
305	Do you have latrine (if yes verify by observation)?	1. Yes 2. No	If no skip to308
306	Is the latrine functional? (observe)	1.yes 2.No	
307	If yes, for 305what type of latrine?	1.covered traditional pit latrine 2. uncovered traditional pit latrine 3. covered VIP latrine 4. Un covered VIP latrine	
308	If no, for Q305 where to use?	1.Open field 2.Communal latrine	
309	What is the distance from living house to the latrine?	-------------meter	
310	Frequency of larine usage by household	1.Always 2.Sometimes/occasionally	
311	Who in the household regularly use latrine?	1. Only adult 2. Only children 3.Both adult and children	
312	Does the household have a garbage disposal system?	1.Yes 2. No	If 2 skip to 314
313	If yes Q 312, where do you dispose garbage from your household? (verify by observation)	1. Uncovered pit 2. Covered pit 3. Burn on pit	
314	If no Q312, where do you dispose?	1.Open field 2.Farm land 3.other specify	
315	Distance of garbage disposal site from living home?	---------------------meters	
316	Number of rooms in the house	---------------------rooms	
317	How many people sleep per room?		

318	Flies observed around the household compound (flies in and around)? Observe	1.Yes 2.No	
319	Is there fly breeding site?	1. Yes 2.No	If 2 skip to321
320	If yes for Q319, where is the breeding site?	1. Animal dung, 2. Open pit latrine, 3.Decayed and rotted foods 4. other specify	
321	Where do the family members cook?	1.In living room 2.outside living room its own place kitchen 3.on the field	
322	Has the cooking room window?	1.yes 2.No	
323	Are there animals in the house?	1. Yes 2. No	If 2 skip to Q401
324	If your answer to Q 323 is yes, where do the Cattle live?	1Same room where the family lives. 2.Same living house but in a separate room 3.Kept in the separate house 4.specify if other	
325	Animal dung available within the compound?	1.Yes 2.No	
326	Distance of animal living place and dung presence from house is?	----------------------------meter	

Part 4 **Questions about the Child factor**

Ser.No	Questions	Coding categories	code
401	Sex of the child?	1.Male 2.Female	
402	Age of the child?	----------years	
403	Number of pre-school children in the house hold/(presence of pre-school children)?	--------------	
404	What is the frequency of children's face washing?	1.Morethan once a day 2.Once a day 3.Occassionaly 4. Once a week	
405	Facial observation of the child had: 1. Ocular discharge? 2. Nasal discharge?	1.Yes 2.No 1.Yes 2.No	
406	Educational status of the selected child:	1.Pre-schoolchild 2.Not attending school 3.-----------grade	
407	Does the selected child use soap when washing his/her face or hand?	1.Yes 2.No	
408	Do you Bath body of children?	1.Yes 2.No	
409	If yes for Q 408 Frequency of body washing?	1.Sometimes 2.Always	
410	Did you share towel or cloth to wipe face of child?	1.Yes 2.No	
411	Result of the Eye examination for trachoma grading stage classified as?	1.TF 2.TI 3.TS 4.TT 5.CO 6.combination of TF/TI 7.No trachoma	If 7 skip to 413
412	Based on above Q411 classification, trachoma classified?	1.ACTIVE TRACHOMA 2.INACTIVETRACHOMA	
413	Flies present on child's face on data collection time (observation)?	1.Yes 2.No	If no skip to Q415
414	If yes for Q413, number of fly on face of child?	--------------------	
415	Personal hygiene and Cleanliness of the child face is? (observe)	1.clean 2.Unclean	

This is the end of our questionnaire. Thank you very much for taking time to answer these questions. We appreciate your help.

N.B please re-checks that you have filled all the questions.

Name of data collector--------------------

Interviewer signature _____

 Date---------------------------

Screening format   **Kebele** _____ household code----------------

S. N o	Villag e/ Gote	Hou se code	Name of particip ant	Sex of chil d	Ag e of chil d	Tracho ma		Eye examination findings								
													Eye discharge		Nasal discharg e	
						Ye s	N o	TF	TI	TS	TT	CO	yes	No	yes	no
1																
2																
3																
4																
5																
6																
7																
8																
9																

Name of examiner--------------------date---------------

Supervisor------------------ date---------

Amaharic questionnaire

የአማርኛ መጠይቅ

ቢጋም ጎፋ ዞን በዛሳ ወረዳ ዕድሜያቸው ከ 1-9 ዓመት በሆናቸው ሕፃናት ላይ በዐይንንማዝ(ትራኮማ) በሽታ ላይ ለሚካሔደው ጥናት የተዘጋጀ መጠይቅ:-

<u>የስምምነት ቅጽ</u>

ስሜ _____ ይባላል፡፡ በጅማ የንቨርስቲ የህብረተሰብ ጤናና ህክምና ሳይንስ ኮሌጅ የድህረ ምረቃ ተማሪ ከ 1-9 ዓመት ያሉ ህፃናትን ለዓይን ማዝ(ትራኮማ) በሽታ የሚያጋልጡ ምክንያቶችን ለመለየት በሚደርገው ጥናት መረጃ ሰብሳቢ ነኝ፡፡ ሰምዎ ወይም የልጅ ስም አይፃፍም የሚሰጡት መረጃ በምስጢር ተይዞ ለጥናቱ ብቻ የሚውል ሲሆን ያልፈለጉትን ጥያቄ ያለመመለስና በመካከል ማቋረጥ ይችላሉ፡፡ ነገር ግን በታማኝነትና በግልጸኝነት የሚሰጡት መረጃ ለጥናቱ አላማ በጣም ጠቃሚ በመሆኑ ለሁሉም ጥያቄዎች ትክክለኛውን መልስ በመስጠት የበኩሎን ድርሻ እንዲወጡ እናበረታታለን፡፡

መረጃውን ለመስጠት ፈቃደኛ ኖት? አዎ _____ ፈቃደኛ አይደለሁም _____

ፈቃደኛ ከሆኑ መጠይቁን ለመጨረስ _____ ደቂቃ ይፈጃል፡፡

መረጃውን ሰጭዋ ተነበላቸው ካዳመጡ በኋላ መስማማታቸውን ያረጋገጡኩ መሆኑን በራርማዬ አረጋግጣለሁ፡፡----------------------

1.ቀን---------------------------------ወር----------------- ዓ/ም

2.የቀበሌ ኮድ ቁጥር--

3.የመኖሪያ ቤት መለያ ቁጥር----------------------------------

<u>ክፍል አንድ : ማህበራዊና ኢኮኖሚያዊ ነክ ጥያቄዎች በቤተሰብ ደረጃ በቤተሰብ ሓላፊ የሚመለሱ ጥያቄዎች ከተራ ቁጥር 101-111</u>

ተ.ቁጥር	ጥያቄዎች	የመልስ ምርጫዎች	ኮድ
101	የቤተሰቡ ሓላፊ ፆታ	1.ወንድ 2.ሴት	
102	የቤተሰቡ ሓላፊ ዕድሜ	--------------------ዓመት	
103	የቤተሰቡ ሓላፊ ሀይማኖት	1. ሙስሊም 2. ኦርቶዶክስ 3. ፕሮቴስታንት 4. ካቶሊክ 5. ሌላ ካለ ይጥቀሱ	
104	ብሔር	1. ጎፋ 2. ጋሞ 3. አማራ 4. ወላይታ 5. ሌላ ካለ ይጥቀሱ	

105	የትምህርት ደረጃ	1. ምንም ያልተማረ 2. መፃፍና ማንበብ ብቻ 3. 1ኛ ሳይክል(1-4) 4. 2ኛ ሳይክል(5-8) 5. 2ኛ ደረጃ(9-10) 6. መሰናዶ(11-12) 7. 12+ ኮሌጅ/ዩኒቨርስት	
106	የትዳር ሁኔታ	1. ያላገባ/ች 2. የተለያዩ በቦታ 3. ያገባ/ች 4. የተፋታ/ች 5. ባሏን በሞት ያጣች	
107	የቤተሰብ ሓላፊ የመተዳደሪያ ስራ	1. የመንግስት ሰራተኛ 2. ገበሬ 3. ነጋዴ 4. የቤት እመቤት 5. ሌላ ካለ ይጠቀስ	
108	የመኖሪያ አከባቢ	1. ከተማ 2. ገጠር	
109	አጠቃላይ የቤተሰብ ብዛት	1. ወንድ------------ 2. ሴት---------------- 3. ድምር----------------	
110	አማካይ ወርሃዊ የቤተሰብ ገቢ በኢት.ብር	--------------ብር	

111	የቤቱ ቁሚና አላቂ ሓብት			
	በመቀጠል ቤተሰቡ ያለዉን ቁሚ ና አላቂ የሆኑ ንብረት ጥቂቶች ሚጠየቁ ይሆናሉ			
	ቤተሰቡ የሚከተለት ንብረቶች አሉት?(ይክበቡት)	አለ	የለም	
1	ሬደዮ/ቴፕ ሪከረድር	1	0	
2	የሚስራ ተለቪዢን	1	0	
3	በቤቱ የኤሌክትሪክ መብራት	1	0	
4	ጀነሬተር መብራት ሲቋረጥ መጠቀሚያ	1	0	
5	ሚስራ የተለቪዥን ዲሽ	1	0	
6	ሚስራ ፍሪጅ	1	0	
8	ብስክሌት	1	0	
9	የቤት እንስሳት (በሬ, ፍየል, ብግ ወይም ዶሮ)	1	0	
10	የመታጠቢያ ክፍል	1	0	
11	የእንስሳት ጋሪ	1	0	

12	ተንቀሳቃሽ ስልክ (አባትና እናት)	1	0
13	የሶፋ መቀመጫ	1	0
14	የሽቦ ስፖንጅ ፍራሽ	1	0
15	የስፖንጅ ፍራሽ	1	0
16	የጥጥ ፍራሽ	1	0
17	የባህላዊ የተቆፈረ ሽንት ቤት	1	0
18	ሽ ታ አልባ ሽንት ቤት	1	0
19	በርጩማ/ጠረጴዛ/ወንበር	1	0
20	መኖሪያው ቤቱ የቤተሰቡ ነው	1	0
21	የመጠጥ ውሃ ከቧንቧ	1	0
22	የእርሻ እንስሳት(ዶይፈን፣አህያ፣ ፈረስ)	1	0
23	የጣሪያው ኪዳን ቆርቆሮ ነውን	1	0
24	የወለሉ ምንጣፍ ሰሚንቶ	1	0
25	በዓመት ከ 2 ኩንታል በላይ ጤፍ/በቆሎ ይመረታል	1	0

ክፍል-2 የቤተሰብ ሓላፊ በዐይን ማዘ (ትራኮማ) በሽ ታ ላይ ያላቸውን ዕዉቀት የሚመለከት መጠይቅ

ተ.ቁ	ጥያቄዎች	የምርጫ መልሶች	ኮድ
201	ስለ ዐይን ማዘ(ትራኮማ) በሽ ታ ምን እንደሆነ ሰምተዉ ያውቃሉን?	0.አላውቅም 1.አዎን	
202	ዐይን ማዘ/ትራኮማ በሽ ታ በዐይን ጠብ ታ ወይም በዘር-ተዋስያን መዳን እንደሚቸል ያዉቃሉ?	0.አላውቅም 1.አዎን	
203	ዐይን ማዘ/ትራኮማ በሽ ታ በዐይን ቆብ ቀዶ ጥገና እንደሚደን ያውቃሉ?	0.አላውቅም 1.አዎን	
204	ዐይን ማዘ/ትራኮማ በሽ ታን ፊትን በሳሙና በመታጠብ መከላከል እንደሚቻል ያውቃሉ?	0.አላውቅም 1.አዎን	
205	ሽንት ቤትን በአግባ በመጠቀም ዐይን ማዘ/ትራኮማ በሽ ታን መከላከል እንደሚቻል ያውቃሉ?	0.አላውቅም 1.አዎን	
206	ዝንቦችን በማስወገድ ዐይን ማዘ/ትራኮማ በሽ ታን መከላከል እንደሚቻል ያውቃሉ?	0.አላውቅም 1.አዎን	
207	ፊትና ገላን ከታጠቡ ፎጣዎችን በጋራ ባለመጠቀም ዐይን ማዘ/ትራኮማ በሽ ታን መከላከል እንደሚቻል ያውቃሉ?	0.አላውቅም 1.አዎን	

208	ከብቶችን በጋራ ቤት አለማሳደር ዐይን ማዝ/ትራኮማ በሽታን መከላከል እንደሚቻል ያውቃሉ?	0.አላውቅም 1.አዎን	
209	ምግብ ማብሰያን ከመኖሪያ ቤት በመለየት መስኮት ባላቸው ቦታ በመጠቀም ዐይን ማዝ/ትራኮማ በሽታን መከላከል እንዲሚቻል ያውቃሉ?	0.አላውቅም 1.አዎን	
210	ዐይን ማዝ/ትራኮማ በሽታ በዝንቦች አማካኝነትእንደሚተላለፍ ያውቃሉ?	0.አላውቅም 1.አዎን	
211	ዐይን ማዝ/ትራኮማ በሽታከበሽታው ጋር ንክኪ ባላቸው ጣቶች ንክኪ ካላቸው ፎጣና ጨርቆች አማካኝነትእንደሚተላለፍ ያውቃሉ?	0.አላውቅም 1.አዎን	
212	ከፍተኛ የዐይን ህመም የዐይን ማዝ/ትራኮማ በሽታ ምልክት እንደሆነ ያውቃሉ?	0.አላውቅም 1.አዎን	
213	የዐይን መቆጥቆጥ ወይም ማቃጠል ዐይን ማዝ/ትራኮማ በሽታ ምልክት እንደሆነ ያውቃሉ?	0.አላውቅም 1.አዎን	
214	የዐይን ዕይታ ችግር የዐይን ሽፉሽፍት ወደ ዉስጥ መታጠፍና ዐይን ስውርነት ትራኮማን ካልታከሙ የሚያመጣው ችግር መሆኑን ያውቃሉ?	0.አላውቅም 1.አዎን	
215	የፀሀይ ብርሃን ላለማየት ህመም ዐይን ማዝ/ትራኮማ በሽታን ካልታከሙ የሚያመጣው ችግር መሆኑን ያውቃሉ?	0.አላውቅም 1.አዎን	

ክፍል-3 ቤተሰብንና አከባቢያው ሁኔታዎችን የሚመለከት መጠይቅ

ተ.ቁ	ጥያቄዎች	የመልስ ምርጫዎች	ኮድ
301	የቤተሰቡ ዋነኛ የዉሃ ምንጭ ምንድነዉ?	1. ቧንቧ ዉሃ 2. ንፅህናዉ ከተጠበቀ ጉድጋድ/ምንጭ 3. ንፅህናዉ ካልተጠበቀ ጉድጋድ/ምንጭ 4. ወራጅ ወንዝ 5. ኩሬ	
302	ዉሃ ለቤተሰብ ፍጆታ ካለበት ለማምጣት ምን ያህል ሰዐት ይፈጃል(ደረሶ መለስ)?	-------------------ደቂቃ -------------------ሰዐት	
303	ለቤተሰብ ፍጆታ በአጠቃላይ በቀን ምን ያህል ሌተር ዉሃ ትጠቀማላችሁ	-------------------ሌትር	
304	በቀን ምን ያህል ዉሃ ፍጆታ በንፈስ ወከፍ በአማካይ በሌተር ትጠቀማላችሁ	--------------------ሌትር	
305	ቤተሰቡ መፀዳጃ ቤት አለዉ.?(በመመልከት ያረጋግጡ)	1.አዎን 2.አይደለም	መልስ የለዉም ከሆነ ወደ ጥያቄ 308
306	መፀዳጃ ቤቱ አገልግሎት ሚሰጥ ነዉ.?(በምልከታ ያረጋግጡ)• • •	1.አዎን 2.አይደለም	
307	ለ305 ጥያቄ አዎን ከሆነ መልስ ምን አይነት መፀዳጃ ቤት?(በምልከታ ያረጋግጡ)	1. የተከደነና የተቆፈረ ባህላዊ ሽንት ቤት 2. ያልተከደነና የተቆፈረ ባህላዊ ሽንት ቤት 3. የተከደነናሽታ አለባ መፀዳጃ ቤት 4. ያልተከደነና ሽታ አለባ መፀዳጃ ቤት	
308	ለጥያቄ 305 የለንም ከሆነ የት ትጠቀማላችሁ?	1. በሜዳ ላይ 2. በጋራ መፀዳጃ	
309	መፀዳጃ ቤቱ ከመኖሪ ቤቱ ያለዉ ርቀት	------------ሜትር	
310	የቤተሰቡ አባላት የሽንት ቤት አጠቃቀም ሁኔታ?	1. ሁል ጊዜ ነዉ 2. አልፎ አልፎ/አንዳንዴ ነዉ	

311	በመፀዳጃ ቤቱ ሁሌ እየተጠቀም ያለዉ ማን ነዉ?	1. አዋቂ ብቻ 2. ህፃናት ብቻ 3. ሁለቱም ይጠቀማሉ	
312	መኖሪያ ቤቱ የቆሻሻ ማስዋገጃ ቦታ አለዉ?	1.አለዉ 2.የለዉም	መልሱ የለዉም ከሆነ ወደ ጥያቄ 314 ይለፉ
313	ማስወገጃ ካለዉ የት ነዉ ሚወገደዉ?	1. ባልተከደነ/ባልተከለለ ጉድጓድ 2. በተከለለ/በተከደነ ጉድጓድ 3. በጉድጓድ ማቃጠል	
314	ቆሻሻ ማስዋገጃ ከሌለዉ የት ነዉ ሚወገደዉ?	1. በሜዳ ላይ መጣል 2. በማሳ ላይ መጣል 3. ይጥቀሱ ሌላ	
315	የቆሻሻ ማስወገጃ ከቤቱ በምን ያህል ርቀት ይገኛል?	-------------------------ሜተር	
316	በመኖሪያ ቤት ዉስጥ የክፍሎቹ በዛት ስንት ናቸዉ?	-------------------------ክፍሎች	
317	በአንድ ክፍል ምን ያህል ሰዉ ይተኛል?	--------------------------	
318	ዝንቦች በመኖሪያ ቤት ዙሪያ ይገኛሉ (በቤት ዉስጥና በዉጭ)(በምልከታ ያረጋግጡ)?	1.አዎን 2.አይደለም	
319	የዝንቦች መራቢያ በአካባቢዉ አለ?(ምልከታ)	1.አለ 2.የለም	2ወደ321
320	የዝንቦች መራቢያ ካለ የት ነዉ?	1. በከብቶች ኩበት ላይ 2. ኪዳን በሌለዉ ሽንት ቤት 3. በበሰበሰና በሽተቱ ምግቦች 4. ሌላ ካለ ይጥቀሱ	
321	ቤተሰቡ የሚመገበዉ ምግብ የሚበስለዉ የት ነዉ?	1. ለመኖሪያነት በሚያገለግለዉ ክፍል ዉስጥ 2. ከመኖሪያ ቤት ተነጥሎ ለምግብ ማብሰያነት በተስራበት ክፍል 3. ከቤት ዉጭ ሜዳ ላይ	
322	የምግብ ማብሰያ ክፍል መስኮት አለዉ?	1.አለዉ 2.የለዉም	
323	ቤተሰቡ እንስሳት አለዉ?	1.አለዉ 2.የለዉም	2ወደ401
324	ለጥየቄ 323 አዎን ከሆነ መልሱ የት ነዉ እንሰሳት ሚኖሩት?	1. ቤተሰብ በሚኖርበት ቤት አብረዉ 2. በቤተሰብ ቤት ዉስጥ ነገር ግን ለብቻ በተሰራላቸዉ ቤት 3. ለእንሰሳት ብቻ በተሰራላቸዉ ቦታ 4. ሌላ ካለ ይጥቀሱ	
325	የእንስሳት ኩበት በግቢዉ አለን?	1.አለ 2.የለም	
326	እንሰሳት የሚኖሩበት ከመኖሪ ቤቱ ምን ያህል ይርቃል?	--------------------ሜትር	

60

ክፍል-4   ሕፃኑን የሚመለከት መጠይቆች

ተ.ቁ	ጥያቄዎች	የምርጫ መልሶች	ኮድ
401	የሕፃኑ ጾታ	1.ወንድ 2.ሴት	
402	የሕፃኑ ዕድሜ	-----------ዓመት	
403	በቤት ዉስጥ ቅድመ-ትምህረት ቤት የሆኑ ሕፃናት ብዛት?	-------------------	
404	ሕፃኑ ፊቱን በምን ያህል ጊዜ ይታጠባል;	1. በቀን ከአንድ ጊዜ በላይ 2. በቀን አንድ ጊዜ 3. አልፎ አልፎ 4. በሳምንት አንድ ጊዜ	
405	የሕፃኑን ፊት ምልከታ; 1. የዐይን አር/ፈሳሽ 2. የአፍንጫ ፈሳሽ(ንፍጥ)	1.አለዉ 2.የለዉም 2.አለዉ 2.የለዉም	
406	የሕፃኑ/ኗ የትምህረት ደረጃ;	1. ቅድመ-ትምህረትቤት 2. አይማርም 3. ------------ክፍል	
407	ሕፃኑ ፊቱን/እጁን በሳሙና ይታጠባል;	1.አዎን 2.አይደለም	
408	ሕፃኑ ገላዉን ይታጠባል /ያጥቡታል?	1.አዎን 2.አይደለም	
409	ለጥያቄ 408 መልስ አዎን ከሆነ የሕፃኑ ሰዉነት መች መች ይታጠባል;	1.እንዳንዴ 2.ሁልጊዜ	
410	ሕፃኑ ፊቱን ከታጠበ ለመጥረግ ፎጣዉን/ልበሱን ከሌሎች ጋር ይጋራል;	1.አዎን 2.አይደለም	
411	በዐይን ምርመራዉ የሕፃኑ ትራኮማ ከ6ቱ ክፍሎች የቱ ነዉ;	1.ቲኤፍ(TF) 2.ቲአይ(TI) 3.ቲኤስ(TS) 4.ቲቲ(TT) 5.ሲአ(CO) 6.ሁለቱም(TF/TI) 7. ትራኮማ የሌለዉ	
412	በዐይን ምርመራዉ የሕፃን ትራኮማ ከ2ቱ ክፍሎች የቱ ነዉ;	1.አፍላኛ ትራኮማ(AT) 2.ኢንአክቲቨ ትራኮማ(INAT)	
413	በህፃኑ ምልከታ ዝንቦች በፊቱ ላይ;	1.አሉ 2.የሉም	2ወደ415
414	ለ413 መልሱ አሉ ከሆነ ስንት ናቸዉ;	-------------------	
415	የሕፃን ፊት ንፅሕና ሁኔታ ሲታይ(ምልከታ);	1.ንፁህ ነዉ 2.ንፁህ አይደለም	

እባከዎ ሁሉም ጥያቄ መልስ መሞላቱን ያረጋግጡ::

ጥያቄዉን ጨርሰናል ጊዜዎን ሰዉተዉ ስለመለሱልን ምስጋናችን ላቅ ያለ ነዉና እናመሰግናለን::

መረጃ ሰብሳቢዉ ስም:-------------------------

ፊርማ-- ቀን-----------------------------------

61