NAME OF STUDENT: ELLEN ANYELEY CLEGG

NAME OF DISTRICT: BUILSA

NAME OF SCHOOL: SCHOOL OF PUBLIC HEALTH
UNIVERSITY OF GHANA

TOPIC: PREVALENCE OF TRACHOMA AND FACTORS THAT INFLUENCE TRANSMISSION IN CHILDREN IN THE BUILSA DISTRICT

A DISSERTATION SUBMITTED TO THE SCHOOL OF PUBLIC HEALTH IN PARTIAL FULFILMENT FOR THE AWARD OF MASTERS IN PUBLIC HEALTH OF THE UNIVERSITY OF GHANA.

AUGUST, 99

DECLARATION

I declare that this dissertation has been the result of my own field research, except where references have been made; and that it has not been submitted towards any degree nor is it being submitted concurrently in candidature for any other degree

CANDIDATE

ELLEN ANYELEY CLEGG

....

ACADEMIC SUPERVISORS

PROF. E. LAING.

E. Laing

....

MR ALFRED OBUOBI

....

Table of contents

Acknowledgements

I would like to express my sincere gratitude to all those who contributed to this study.

My special thanks goes to the Ministry of Health (MOH) through whose sponsorship I was able to attend this Master in Public Health course.

My special thanks go to the School of Public Health for co – operation and support that made my academic work enjoyable. Specifically I wish to thank Prof. S. Ofosu –Amaah who was my tutor and Prof. E. Laing and Mr.A.A.D. Obuobi my academic supervisors.

I also wish to thank Dr Jonathan Adda who was my field supervisor for his support through out my stay on the field.

To Messrs. Raymond Atiiga and Joshua Abanga I say A very big thank you for your technical support.

I also wish to thank Mr. Dela, the biostatistician of the Ministry of Health, Upper East Region for helping me with my statistical analysis.

Executive Summary

Trachoma, an infectious, preventable disease in early childhood has serious consequences of blindness in adulthood. The disease is more prevalent in developing countries and studies are going on in many African Countries to help eliminate it by the year 2020.

Past studies in Africa indicates that the disease is prevalent in areas where the climate is much drier, hot and dusty. Further studies have proved that lack of water and an increase in the number of flies due to poor sanitary conditions help in the spread of the trachoma.

The DHMT of Builsa district analysed data from the whole district and found that an acute eye infection was climbing a steady ladder among the top ten diseases. The DHMT has attached importance to eye infections especially among children and would like to know the extent to the problem in the district. This will enable them plan and implement measurable interventions.

The study was designed as a descriptive cross-sectional survey. WHO, Rapid Knowledge, Practice and Coverage (RKPC)/20 cluster sampling technique was used.

A sample size of 300 was chosen. Questionnaire administrations to mothers with children aged 3-12 years and eyelid examination of their children was used to collect data.

The study results were as follows. 6.6% of the children had follicles whiles 1.7% showed signs of intense inflammation. Overall, 8.3% of the study population had signs of the disease.

There was no significant difference between mothers' age and trachoma.

Household water use patterns and attitudes towards face washing plays an important role in the elimination of trachoma as a blinding disease. A significant

number of the children whose primary water source is more than thirty minutes walk suffered trachoma.

A proportion of the children who shared towels with other siblings showed significant eyelid changes.

Based on the results of the findings the following conclusions were drawn. The causes of trachoma among children are poor hygienic conditions, indiscriminate defecation, and lack of water and sharing of the same towel.

The following recommendations among others are provided to the DHMT.

- The DHMT should train at least one Ophthalmic nurse for the district.
- The DHMT should liase with the Ghana Education Service to entreat teachers to ensure that school children wash their face at least once before they close from school.
- The DHMT in collaboration with the District Assembly should train the VAP members to ensure that children in the rural areas wash their face at least three times a day with clean water.

CHAPTER ONE

1. INTRODUCTION

1.1 Background Information

Trachoma is one of the oldest infectious diseases known to mankind. This disease was first documented as early as the Pharaonic era. It still remains the major worldwide cause of preventable blindness and a major public health problem, particularly in developing countries. Trachoma was one of the first diseases tackled by the World Health Organization soon after its inception in 1948. The WHO has been successful in eliminating trachoma as a blinding disease from several previously hyperendemic countries. A variety of activities undertaken to eliminate trachoma as a blinding disease include improvements in the socio – economic status and specific control efforts.

The disease is always associated with unhygienic living conditions and the highest incidence is in the dry, hot, dusty climatic zone, mainly in poor rural areas.

In communities where trachoma is common, the infection starts in early childhood but the serious complications of inturned lashes and corneal scarring do not usually appear before adult age. Thus blindness due to trachoma is most common in adults.

1.2 Study Area

Builsa district is situated in the Upper East Region of Ghana, with a projected population of 103,733 people. It has a land surface area of 2,205 sq. km. It is made up of thirteen towns with one hundred and twenty communities and a population density of 47 inhabitants per sq. km. It shares boundaries with Kasena – Nankana district to the north and east, Sissalla district of the Upper West region to the west and West Mamprusi district of the northern region to the south (Builsa District

Annual Report 1998). The vegetation is predominantly a parkland savanna, which contains economic trees such as shea, baobab, and dawadawa.

The district has been divided into six sub–districts namely; Sandema, Siniensi, Chuchuliga, Wiaga, Fumbisi and Gbedema/Kanjarga.

There is a hospital, four health centers and one community clinic. All these facilities provide both clinical and preventive health services. The Presbyterian Church also runs a mobile health service in the district.

The inhabitants are mainly traders and farmers who produce crops such as millet, rice, maize, groundnuts and guinea corn. Other economic activities include pito brewing and extraction of shea butter.

1.3 Statement of the Problem

Builsa district has experienced, over a three-year period an increase in the number of eye infections reported at the health facilities. The district is the only one without an eye specialist and although the DHMT attaches much attention to eye problems, the Presbyterian Church eye care unit from Bolgatanga carries out the care of eye patients. This team visits the district once a month and patients with eye conditions who cannot wait for this monthly visit seek medical attention from the nearby eye clinic (Navrongo Hospital in the Kasena Nankana district which is about 25 kilometers away from the Buisa Disrict). This leads to under reporting by the district.

Recently WHO has initiated research into Trachoma in Ghana and work is going on to start the survey and the district being part of the country the DHMT has decided to carry out a prevalence survey among school children in the district. The research is expected to provide information on the prevalence of trachoma in children in the district.

CHAPTER TWO

2. LITERATURE REVIEW

2.1. Definition

The WHO defines trachoma as an infectious eye disease, which causes inflammation and scarring of the conjunctiva, the inner lining of the eyelid, thus leading to blindness

2.2 History

Trachoma first attracted interest in Europe in the Napoleonic wars when the British and the French armies returned from Egypt. Many of the soldiers contracted the disease and it was spread in the community. However, it was about hundred (100) years before the characteristic inclusion organisms were demonstrated in 1907, and another 50 years before the organism was first isolated in 1957. This important discovery has helped tremendously in the control of the disease (Sandford –Smith, 1992).
Redmond Smith (1991) also in an editorial, stated that trachoma was recorded first among other things from China in the 27th, Sumeria in Mesopotamia in the 20th,and Ancient Egypt in the 19th centuries BC. According to him, a Cilician physician, Pedanius Discorides, used the name trachoma in the first century AD. The English translation of the word from Greek means "rough".

2.3 Description

David Mabey, professor of communicable diseases at the London School of Hygiene and Tropical Medicine (1996), describes trachoma, which is spreading in Africa, as "the forgotten disease of the poorest people in the world."

West et al, describes trachoma as the leading infectious cause of blindness worldwide, whilst Güraksin and Güllülü (1997) describe it as a chronic infection of the mucous membrane of the eyelid and eyeball and a major cause of curable blindness.

According to Smith (1992) trachoma can vary from mild to severe disease in different situations. Mild form of trachoma also known as inclusion conjunctivitis or paratrachoma heals spontaneously only with slight subconjunctival scarring with no significant damage to the eye after a few weeks of coming into contact with the infection. This type is found in a newborn child infected at birth with trachoma organisms from the mothers' genital tract.

Hyper endemic trachoma is the severe form that is seen in some rural village communities where almost everyone has either active trachoma or scars from an earlier infection. In these communities, many people may develop trichiasis or entropion and corneal scars.

2.4 Causative Organism

According to WHO (1996) the culprit is chlamydia trachomatis, a micro –organism resembling both bacteria and viruses. This became known when Beem and Saxon (1977) first outlined the clinical picture of neonatal chlamydial preumonitis and stated that it is the same agent that causes trachoma. This is in agreement with the study of Wang & Graystone (1970) stating that the organism is the essential infective agent. Chlamydia trachomatis is directly transmitted by sexual or perinatal contact, and indirectly by flies or fomites (Datta et al 1994). West et al in1991 also found the same causative organism in their study.

Thylefors et al. (1992) were able to identify the strains of the organisms that cause trachoma as A, B, Ba, and C. The organism has an incubation period of 5 – 7 days and begins slowly as a mild conjunctivitis. Chlamydia trachomatis provokes an inflammatory reaction in the eye with formation of follicles in the conjunctiva. It then develops into a fulminant infection producing large amounts of discharge and swollen lids. The initial stage lasts several weeks and may progress to a chronic stage if the condition is not treated it causes irritation and scarring on the inside of the eyelids. The scarring causes the eyelids and the lashes to turn inward rubbing and damaging the cornea. The corneal scars eventually lead to visual loss and blindness.

2.5 Factors influencing the spread of Trachoma:

Many studies have shown that different factors influence the pattern of the disease: -

Trachoma (Smith 1992) produces such a poor – lived immunity that re – infection is very likely to occur. In 1991, West et al. found out that clinical trachoma in Tanzania were compatible with repeated episodes of re – infection among younger children and girls, with intermittent episodes of re –infection occurring as children become older.

Trachoma is not very infectious and can only spread in poor overcrowded communities where hygiene is bad and conjunctival discharges frequently pass from eye to eye. In overcrowded houses especially where there are many children, trachoma spreads wildly from child to child by direct contact on the fingers of the children and their mothers, and through the mutual use of clothes, handkerchiefs, towels and pillows. Crowding is measured by the number of household per room and clustering in a community. According to Güraksin and Güllülü, families with five or more children has a higher prevalence of trachoma. West et al (1991) also realized in their study that siblings are important source of infection and this is realized more when the family size increases to three or more pre-school children.

West et al. (1991) observed that infected siblings in an overcrowded house increased the risk of demonstrable trachoma infection. They also observed that if a child lived in a household that herded cattle, there is the likelihood of becoming infected due to poor hygienic conditions

Houseflies were observed as an increasing risk of trachoma infection. These flies are produced as a result of poor sanitary conditions. They lay their eggs on rotten rubbish or feces where they multiply rapidly. These flies are easily attracted by the nasal and eye discharge and as they feed on it they move from eye to eye to spread the disease (Smith 1992). To West et al, (1992) these flies are physical vectors that are more efficient transmitters of trachoma than the hands or clothing of the pre-school aged child. This implies that, the infection requires the presence of both extra ocular site as well as a fly vector to exist. West et al in 1992 demonstrated that flies were associated with a positive laboratory test in children with clinical disease with increasing number of houseflies around their house.

The main carriers of the infection are children below the age of ten and especially pre-school children, this was observed by Katz et al in their study on prevalence and risk factors for trachoma in Nepal. The disease spreads through contact with eye discharge from an infected person towels, handkerchiefs, clothes, pillows, fingers etc. Schacter and Dawson in (1979) also observed that extra-ocular chlamydial infection and autoinoculation, particularly from the respiratory tract are common in children.

Water used to maintain personal hygiene especially face washing plays a vital role in the prevention of trachoma, Katz et al (1988), observed that distance to a water source was more strongly associated with trachoma risk. This was also demonstrated in Malawi where trachoma was more prevalent in children coming from households where the primary water source was more than 30 minutes walk from the house (Tielsh et al).

Quality and quantity of water used in increased face washing has also been demonstrated in the reduction of trachoma. West et al (1995) observed that the quantity of water used is important because it is associated with facial cleanliness. In a community intervention to increase face washing, they were able to demonstrate a reduction in trachoma prevalence. A study in Gambia also found an association between the amount of water used to wash children and trachoma risk, (Bailey et al 1991).

The type of water source was also found to be important in Taiwan where lower rates of trachoma were found in households with internal piped water compared with hand pumps and wells. (Luna EJA 1991).

However distance to a water source has generally been found to be more strongly associated with trachoma risk than quantity or quality of water. (Prost A. & Negrel AD 1989).

The number of houses per water source within a ward measured access to water. In Nepal access was measured by the number of houses per water source within a ward, and they realized that it was marginally associated with higher rates trachoma for wards with more than 30 houses per water source.

Heat is another factor that influences the spread of trachoma. Comparisons of two areas in West Africa show how important climatic conditions are in the spread of trachoma. (Smith 1992) realised that near the coast, the climate is very humid and though trachoma is common it is not a very significant course of blindness. Further north towards the Sahara desert, however, the climate becomes much drier, and blinding trachoma becomes increasingly common.

According to Smith geographically, the highest incidence of trachoma is in the dry hot, dusty climate zone which stretches from North India through the Middle East to North Africa and the Sahel regions of Central and West Africa. It is also common in the rest of Central and South Asia, Indonesia, North Australia, Africa and Central and South America.

2.6 Studies on children

West et al in (1991) compared their findings on risk factors for ocular chlamydial infection with risk factors for active trachoma in a trachoma-hyper-endemic area of Tanzania. Their findings indicated that the most important factor for predicting chlamydial infection was the presence of a sibling with laboratory evidence of infection, increased number of flies around the house, a household that herded cattle and practice of local religion. These findings stress the likely importance of the intrafamilial transmission of infection, possibly through sharing of nasal discharge. The author recommended fly – control measures to be instituted in these areas.

In 1989, Taylor et al reported that children with unclean faces appeared to be at a higher risk of trachoma. West et al supported their findings in 1991. They're finding also indicated that more females are affected than males.

A combination of nasal discharge and flies on a child's face has been found to be a consequence of trachoma infection. Malaty et al in 1981 also reported the regular recovery of chlamydia from the nasopharynx, throat, and rectum of young children in trachoma – endemic areas of the Nile delta. However, West et al (1991) have shown that nasal secretions alone, in the absence of flies are not associated with an increased risk of trachoma.

Another explanation for these data is that trachoma itself causes an increase in nasal secretion, which is a known fly attractant.

Congdon N. et al in 1993 surveyed the trachoma status of women and children in Tanzania. This was to describe the importance of exposure to young children as a

risk factor for active trachoma in women. Their findings indicated that active disease in women is associated with direct care taking of young children with active disease.

In 1992 McCauley et al conducted a risk factor survey for trachoma in the Dodoma region of Tanzania and learned that 60% of all pre-school children had trachoma. Later they conducted a descriptive study of household water use to determine water use patterns, attitudes towards face washing, responsibility for child hygiene, and decision making processes in the household and community. They learned that women did not want to initiate face washing because they were afraid of being criticized for taking time and water away from agricultural activities. More so, the women felt they could not change their behaviour if they did not have the men's and the community support. Based on these findings the researchers designed the health education campaign to be appropriate to the accepted patterns of decision making.

In 1992 Sukwa et al conducted a study on the prevalence and distribution of trachoma in the Luapula valley, Zambia. Their findings indicated that trachoma is a public health issue in the valley but not a major cause of blindness.

In 1997 Dolin PJ et al studied the reduction of trachoma disease in a village in the Gambia in absence of a control program. They compared results of eye examinations conducted in 1959, 1987, and 1996. They observed that among children under 10 years of age, the prevalence of active trachoma infection dropped from 65.7 cases per 100 in 1959 to 2.4 per 100 in 1996. Declines were also recorded among children 10 – 19 years old from 52.5 to 1.4/100 and among those 20 years and older from 36.7 to 0 cases/100. This dramatic fall which occurred without any specific trachoma control programs in the area, is presumed attributable to both improvements in socio economic standards and the training of village health workers and traditional birth attendants in eye care.

West et al in 1996 carried a study on risk factors for constant, severe trachoma, among pre-school children in Kongwa, Tanzania. It was found that familial cattle ownership, having one or more siblings with trachoma at baseline and being a female were significantly related to severe trachoma. They also realised that improved face washing plus antibiotic treatment may decrease the likelihood that these children will be at risk for blinding complications in adulthood.

2.7 Studies In Ghana

Though there is no published data on trachoma in Ghana, a preliminary survey was conducted in 1998. The results of the study revealed that over 70% (319 out of 438) of the reported cases of trachoma were found in women and children and they are all from the northern and upper west regions of Ghana. Based on these records, a trachoma control task force has been formed to plan and implement control activities to reduce "active" trachoma so that it will no longer be a public health problem.

2.8 Trachoma Treatment

Since trachoma is still the largest single cause of preventable blindness, many studies have been done to find out the effective drug that can help prevent the disease.

In 1975 Dawson C. R. et al compared topically applied tetracycline or rifampicin ointment with boric acid ointment administered for ten weeks for its effect on endemic trachoma in Tunisia. The study revealed that treatment did alter the disease temporarily but did not affect its course in the long run since environmental factors, which originally produced the disease, had not changed. They concluded that only communitywide chemotherapy would have significant effect. However, antibiotic treatment is necessary to reduce the occurrence of later complications. Dawson C.R et al repeated their chemotherapy trial of topical tetracycline and erythromycin in 1981. In this study, the efficacy of intermittent treatment was evaluated for the treatment of severe and moderate intensity trachoma in children in southern Tunisia. Tetracycline or erythromycin ointment (specific antichlamydial drugs) was compared with 5% boric acid ointment (a simple antiseptic) giving by the intermittent schedule during the winter and spring. There was a statistically significant degree of improvement at only one-examination four weeks after the full course of treatment had been completed. When re-examined five months later, there were no differences in intensity. They concluded that the limited effect of topical chemotherapy might be attributable to several causes, among which could be inadequate drug levels, inadequate treatment periods, and then re-infection from non treatment children in the community, and auto infection from extra ocular sites (respiratory tract) in the same child.

In 1993, Bailey et al conducted a randomized single- blind study in two Gambian villages in order to assess the effectiveness and safety of a single oral dose of azithromycin. They observed that the clinical signs of trachoma had resolved at six months. However, during a follow up they realized that some of the respondents had resolutions at some point, which reflects the scale of re-emergent disease.

2.8 Efforts of WHO in the Elimination of Trachoma

Based on the various findings on trachoma the World Health Organization is currently leading an International alliance of interested parties to work for the global elimination of trachoma. This was initiated in 1996. The alliance is supporting and collaborating with the WHO in carrying out essential activities such as epidemiological assessment, including rapid assessment and mapping, project implementation, coordination and monitoring.

International efforts to eliminate trachoma as a blinding disease is based on the World Health Organization developed strategy - combination of interventions known by the acronym "SAFE" which stands for **S**urgery for trichiasis, Antibiotics, **F**acial cleanliness and **E**nvironmental improvement.

Currently, WHO and its partners are implementing the "SAFE" in sixteen priority countries including Ghana.

According to WHO (1996), azithromycin - a new long acting antibiotic has been developed. This new drug may eventually replace tetracycline eye ointment, which is currently being used in the treatment of trachoma. The new drug has already been tested in a number of countries including Morocco and the Gambia. The initial results look very promising; one dose of this antibiotic per year will help eliminate the blinding propensity of trachoma.

2.9 Diagnosis of Trachoma

WHO in 1993, came out with a simple grading system for trachoma, which are;

Trachomatous inflammation of the inside lining of the eyelids – the conjunctiva - starts with the appearance of small white dots, 0.2 – 2mm in sizes known as follicles. The conjunctiva is red and swollen, and there may be visible red dots called papillae. In cases of intense inflammation, the normal large blood vessels in the conjunctiva are hidden by the diffusely thickened, swollen conjunctiva. With time, scars in the conjunctiva replace the follicles and inflammation.

Severe scarring on the inside of the eyelid causes inturned eyelashes - trichiasis, which rubs the cornea causing damage to it. This corneal opacification is responsible for blindness in trachoma.

The five key signs that can be used to assess trachoma and its complication outlined by WHO are: -

- Trachomatous Inflammation - Follicular (TF) - the presence of five or more follicles in the upper tarsal conjunctiva. (The follicles must be at least 0.5 mm in diameter)
- Trachomatous inflammation - Intense (TI) - pronounced inflammatory thickening of the upper tarsal (eyelid muscle) conjunctiva that obscures more than half of the normal deep tarsal vessels.
- Trachomatous scarring (TS) - the presence of scarring on the tarsal conjunctiva. (These scars are easily visible white lines, bands or sheets. They are glistering and fibrous in appearance with straight, angular or feathered edges).

- Trachomatous Trichiasis (TT) - at least one eyelash rubs on the eyeball.
- Corneal Opacity (CO) - basically visible corneal opacity over the pupil. (This sign refers to central scarring that is so dense that at least part of the pupil margin is blurred when viewed through the opacity).

2.10 Significance of Trachoma Grades

- The presence of TF indicates current infection and these people are normally treated with topical 1% tetracycline eye ointment. The proportion of TF amongst children less than ten years old demonstrates how widespread the infection is in the community.
- TI - indicates severe current infection with increased risk of scarring. In addition to the topical antibiotic, systemic antibiotic treatment may be given to individuals with very severe inflammation, not responding to the topical treatment.
- TS - Presence of scarring, showing that the patient has, or has had trachoma. It demonstrates how common trachoma was in the past.
- TT - indicates patient who will develop corneal opacity and visual loss; this is therefore a potentially disabling lesion, which may rapidly lead to blindness. These patients need corrective lid surgery. If patients with trichiasis are many in a community it indicates the immediate need to provide surgical services for lid correction. The proportion of people with corneal opacity demonstrates the impact of trachoma in the community in terms of visual loss. This is a disabling lesion.

CHAPTER THREE

3.0 Aims of the Study

3.1 Main Objective:

The main objective of this study was to find out the prevalence of trachoma in the Builsa district where different types of common eye infections exist.

3.2 SPECIFIC OBJECTIVES

1. To find out the prevalence of active inflammatory disease in school children.
2. To estimate the extent of the problem in the district.
3. To find out the environmental factors that influences the spread of trachoma in the district.
4. To describe the practices of mothers that help in the spread of the disease.
5. To make recommendations to the district.

3.3. Rationale for the Study

To develop appropriate strategy for the prevention and treatment of the disease

CHAPTER FOUR

4. METHODS AND PROCEDURE

4.1 The study Design

A descriptive cross-sectional study was carried out to determine the prevalence of trachoma in the Builsa district between the months of June and July 1999. During this period eye screening for the children was the main method, supplemented by a questionnaire to collect information on age, sex and the risk factors for trachoma

4.2 Type of Study and Baseline Information

The study was designed as a descriptive cross – sectional survey and employed the methods outlined below.

A review of the annual reports of the Builsa district as well as records of mobile eye unit was carried out in order to get a baseline information on eye infections in the district.

4.3 Sampling technique and sample size calculation

WHO rapid knowledge, practice and coverage (RKPC)/20 cluster sampling technique was used to select the clusters. (Annex 2)

With a precision of 0.05 confidence interval of 1.96 it was determined that a sample size of 300 was needed. This size was calculated using EPI6 to allow for estimation of 20% prevalence rate.

4.4 Data Collection Techniques

In all seven (7) assistants were recruited from the areas where the study was carried out for data collection. This is to help in the location of the households and translation of the questionnaire into the local language. Questionnaires were administered to mothers with children aged 3-12 years in the randomly selected 20 clusters, between July 15th and July 20th 1999. Fifteen mothers were interviewed from each cluster giving a sample size of 300. These mothers were invited to a central site in the village near the chief's palace or nurses outreach point for eyelid examination. The eyelids of the children were everted and examined for signs of trachoma using a magnifying loupe (x 2.5) and torchlight by two Ophthalmic nurses. Examinations of the eye for signs of trachoma were performed with the aid of torchlight and a binocular loupe with X 2.5 magnification.

Each eye was examined separately, starting with the right eye. The eyes were first examined for trichiasis (inturned eyelashes actually rubbing on the eye or previously removed lashes) in order to check for this, the upper eyelid is pushed upwards slightly with the thumb to expose the lid margins. The cornea was then examined for opacities. The inside of the upper eyelid, the tarsal conjunctiva was then examined for follicles and intense inflammation.

To examine the inside of the upper eyelid, the eyelid was everted by first asking patient to look down and gently holding the eyelashes between the thumb and first finger of the left hand. Using a glass rod or right thumb the eyelid is everted. The everted lid is then steadied with the left thumb and tarsal conjunctiva examined. When finished, the examiner gently re-everts the eyelid.

The findings were graded according to the current simplified WHO grading scheme. Findings were then entered on the same questionnaire used for collection of background information.

4.5 Training and Pre-testing

The researcher trained seven (7) interviewers in the interpretation of questionnaire into the local language, community entry, how to approach the respondents by seeking permission from head of household and introductory remark including assurance of confidentiality and how to fill questionnaire. Two ophthalmic nurses were retrained in the grading of trachoma (Annex 4).

The questionnaire was pre-tested using mothers and their children who visited the hospital. The results of the pre-testing provided useful information on the responses anticipated and specified areas of the questionnaire that required modification before the main study began. There were no changes in the questionnaire after pre-testing.

4.6 Quality Checks

At the end of each day when the interviewers returned from the field, the resident checked questionnaires for completeness. The resident visited the team and randomly selected some of the examined respondents and re-examined them to confirm diagnosis.

4.7 Data Processing, Analysis & Report Writing

Data was coded and sorted out manually by the resident, with the help of a typist and a biostatistician at the Upper East Regional Headquarters of the Ministry of Health data was sorted and entered into the computer. Data was organized and analysed using EPI6. Preliminary, report was prepared and presented to the Builsa District Director.

4.8 Ethical Considerations

Though there was no ethical issues verbal consent for the study were sought from the District Chief Executive and the Paramount chief of the area. Individual consent for the interview was also sought from the head of household/mothers who were interviewed.

4.9 Limitation of the Study

1. Three clusters have to be changed because the study was conducted during the rainy season and floods cut off those areas.
2. Time for the study was very short so (a) re-visits to places where people were absent was not possible (b) The sample size could not be increased to involve more communities.
3. The households in nearly all the clusters are scattered so those who were near the central site were brought together for the study. This is as a result of transportation problems.

CHAPTER FIVE

5.0 Results of the Study

5.1 Socio-economic and demographic characteristics of samples (Parents and children)

The background characteristics of the parents and children involved in the survey are summarized below.

Table 1a shows the distribution of mothers by age, ethnicity, occupation and education. 1b shows husbands occupation, education and religion whilst 1c shows children by age, group and sex.

Mothers less than 30 years constitute 23.7% of the total. More than half of the women 58.3% were aged between 30 and 39 years with 14.7%, between 40 and 49 and 3.3% between 50 years and above.

Over half of the mothers (57.3%) were Builsas, other groups identified were the Kantosis, who formed 14 % of the study population. The Kasena – Nankanas were 11.7% the Dagombas 7.3% and Sisallas 6.7%. These women are predominantly farmers and traders.

More than half of these women are illiterates, the rest had some education either Primary, Middle/Junior Secondary schools, JSS or Senior Secondary school (SSS) and above. Most of these women 89.3% had between 1-5 children.

TABLE 1a Characteristics of Mothers

CATEGORY	NUMBER	%
Age in years		
23 – 29	71	23.7
30 – 39	175	58.3
40 – 49	44	14.7
> 50	10	3.3
Ethnicity		
Builsa	172	57.3
Kantosi	42	14
Dagomba	22	7.3
Sissala	20	6.7
Kasena-Nankana	35	11.7
Others	9	3
Occupation		
Farming	140	46.7
Trading	111	37.0
Civil/Public Servants	24	8.0
Self – employed	14	4.7
Un-employed	11	3.6
Education		
None	176	58.7
Primary	43	14.3
Middle/JSS	50	16.7
Senior Secondary School	8	2.7
Tertiary	16	5.3
Adult Literacy Class	7	2.3
Number of Children		
1 – 5	268	39.3
6 – 10	32	10.7

The husbands of these women are predominantly farmers (51.7%). Of the rest 8.7% were traders; 32.3% were in salary employment whiles 7.3% were self-employed. Most of the husbands (69.3%) have a wife each. 20.7% of them have two wives, 7.0 % have three wives whiles 2.3% and 0.7% have between four and five wives. Of the numbers so far encountered, 43.7% are Christians, 34% are traditionalist and the rest 22.3% are Moslems.

Table 1b - Characteristics of Husbands

CATEGORY	NUMBER	%
Occupation		
Farming	155	51.7
Trading	26	8.7
Public Servants	97	32.3
Self Employed	22	7.3
Education		
None	148	49.4
Primary	27	9.0
Middle/JSS	64	21.3
Senior Secondary	13	4.3
School	46	15.3
Tertiary	2	0.7
Adult Literacy Class		
Religion		
Christianity	131	43,7
Traditionalist	102	34.0
Moslem	67	22.3

A little over half (57.3%) of the 300 children were females and the rest 42.7% were males. The ages ranged from 3 – 12 years with 144 (48%) aged less than 8 years whiles the rest 156 (52%) was between 8 – 12 years.

Table 1c - Category of Children Involved In The Study

CHILDREN		
Age in Years	No. of Males (%)	No. of Females (%)
3 – 7	60 (20)	84 (28)
8 – 12	68 (22.7)	88 (29.3)
Total	128 (42.7)	172 (57.3)

5.2 Prevalence of trachoma

The WHO standard was used as the reference for diagnosis, trachoma was classified into TF (presence of 5 or more follicles on the upper tarsal conjunctiva), TI (pronounced inflammatory thickening of the upper tarsal conjunctiva that obscures more than half the normal deep tarsal vessels.

Children below the age of 3 years were not included in the study because it is very difficult to examine them. Children were categorised into age groups and trachoma status.

Table 2 Trachoma Status By Age

Variable		No(%) of children with TF/TI	
Age (Years)	No. of Children Seen	TF (%)	TI
3	9	3(33)	0
4	16	3(27)	2 (12)
5	8	2 (25)	0
6	26	4 (15)	1 (4)
7	69	2(3)	1 (1)
8	76	5 (6)	0
9	46	1(2)	1 (2.1)
10	40	0	0
11	9	0	0
12	11	0	0
Total	300	20	5

Table 2b Trachoma Status By Sex

Sex	No. Of Children Seen	No (%) of Children with TF/TI
Male	128	9 (36)
Female	172	16 (64)
Total	300	25

5.3 Trachoma status by age and sex

Complete assessment was obtained for all the 300 children. Of the 300 children that were assessed 172 (57.3%) were females whilst the rest (42.7%) 128 were males. In all 25 (8%) were observed to have signs of trachoma. Comparison between the two sexes showed that more female children 16 (64%) were affected and those between the ages of 3 and 8 were more affected than any other in each group.

The results indicated that 20 (80%) of the children had trachoma follicles whilst only 5 (20%) had trachoma intense inflammation. 9 children aged 3 years were among the respondents for the study. Of this number, 3 (33%) had follicles. Of the 16 children aged four, 3 (19%) had follicles whiles 2 (12%) had intense inflammation. Only 8 of the five-year-old children were examined and out of this number, 2 (25%) had follicles. Of the twenty-six children who are 6 years, 4 (15%) had follicles. Children aged between seven and ten years numbered two hundred and seventy one. Of this number, 69 (23%) were seven years old. 2 (3%) follicles whiles only 1 (1%) had intense inflammation. 76 (25%) of the number was made up of eight year old children, of this number 5 (6%) had follicles. Nine-year-old children numbered up to 46 and only 1 (2%) had trachoma follicles. However there were no signs of trachoma in the children between the ages of 10 and 12.

Characteristics of children with siblings aged between one and ten

Households with three or more children aged between 1 and 10 years were expected to show more signs of trachoma, however, the results indicated that 18 (9%) of these children were affected. Of the children who are 2 or less than that in their homes, 7 (7%) of them showed signs of inflammation.

Table 3 Family Characteristics of Children with siblings aged 1 to 10 years

No of Children in Family	Number	No (%) of Children Trachoma
2	92	7 (7.6)
> 3	208	18 (8.6%)
Total	300	25

Socio Demographic Characteristics

Prevalence of trachoma was higher in families with parents who had never had any formal education. Of the mothers who never had any formal education (176 or 58.6%) trachoma was higher in their families. The educational level of parents and the work that they do seem to have effect on the children. Most of the parents are farmers (41.3% of mothers and 51.7% of fathers) and 11 (44%) of the children who had signs of the disease belonged to that group. Children whose mothers are either traders or housewives 9 (36%) also showed an increase in infection whiles the number of children whose parents are in salary employment were less.

Children whose parents are traditionalists suffered more than any other sect. 15 (60%) of the affected children were traditionalists. This is followed closely by Moslem religion in trachoma prevalence.

Table 4a Socio Demographic Characteristics Prevalence of Trachoma

Mothers

VARIABLE	NUMBER(%)	TF	TI
Education			
None	176 (58.6)	8 (4.5)	3(1.7)
Primary	43 (14.3)	6 (14)	1(2)
Middle / JSS	50 (16.6)	3(6)	1(2)
Secondary /SSS	8 (2.6)	2 (25)	0
Tertiary	16 (5.3)	0	0
Adult Literacy Class	7 (2.3)	1 (14)	0
Total	300	20	5
Occupation			
Trading	111 (37)	4 (3.6)	1(0.9)
Salary Employment	24 (8)	2 (8)	0
Farming	124 (41.3)	8 (6)	4(3)
Seamstress	14 (4.6)	2(14)	0
Housewife	27 (9)	4(14)	0
Total	300	20	5

Table 4b Husbands

Education

None	161 (53.7)	9(5)	4(2)
Primary	14 (4.6)	7(50)	1(70)
Middle	64 (21.3)	4(6)	0
Secondary SSS	13 (4.3)	0	0
Tertiary	46 (15.3)	0	0
Adult Literacy Class	2 (0.6)	0	0
Total	300	20	5
Occupation			
Salary Employment	95 (31.6)	2 (2)	0
Farming	155 (51.7)	15(10)	4(2)
Self Employed	50 (16.6)	3(6)	1(2)
Total	300	20	5
Religion			
Christianity	131 (43.7)	3(2)	1(0.7)
Tradition	102 (34)	12 (12)	3(3)
Moslem	67 (22.3)	5 (7)	1(1)
Total	300	20	5

Table 5 Risk Factors for Clinical Trachoma

Factor	Number	TF %	TI %
House Type			
Cement	77	6 (8)	1 (1.2)
Mud	223	14 (6)	4 (1.7)
Total	300	20	5
People per Room			
< 5	239	6 (2.5)	2 (0.8)
> 5	61	14 (23)	3 (5)
	300	20	5
Primary Household - Water Source			
Pipe Borne	75	2 (2.6)	0
Borehole	121	4 (3)	0
Hand Dug well Covered	55	6 (11)	2 (3.6)
Hand Dug well Uncovered	48	8 (16)	2 (4)
Dams	1	0	1 (100)
	300	20	5
Distance from Water Source			
< 30 minutes Walk	188	6 (3)	2 (1)
> 30 minutes Walk	112	14 (12.5)	3(2.6)
Total	300	20	5
Face Washing			
< 2 times	253	13(5.1)	3 (1.2)
> 2 times	47	7 (15)	2(4.2)
Total	300	20	5
Use of same Towel			
Yes	177	16 (9)	4 (2.2)
No	123	4 (3.2)	1 (0.8)
Total	300	20	5

The risk factors for trachoma in this group of children were investigated. The most important factors were the type of house, people per room, water source and distance from water source. Also included in the investigation is face washing and sharing of towel. An increased risk was observed if the child lives in a mud house with more than five people in a room. Of the 223 children who live in mud houses, 14 (6%) were found to have follicles whilst 4 (1.7%) had intense inflammation. Of the 77 living in houses made of cement, only 6 (8%) had follicles.

Sixty-one children lived in houses where more than five people sleep in one room. Of this number, 17 (68%) showed signs of trachoma. The risk of infection was quite low among those who live in houses where less than five or five people 32% sleep in one room.

Primary household water source also plays an important role in the risk of trachoma. Of the 300 respondents' 48 used water from an uncovered hand dug well. Of the number using water from the uncovered hand dug wells, 10 (40%) had signs of trachoma. Use of water from dams may have a higher increase of infection, though only one respondent used water from a dam the respondent had intense inflammation. The quality of water used at home may increase or decrease the risk of trachoma. This was observed when only 2 (2.6%) of those using pipe borne water had signs of trachoma.

Distance from water source helps in the amount of water used to maintain personal hygiene. This was reflected in the results when 17 (68%) of the respondents whose water source is more than 30 minutes walk from their homes showed signs of infection.

As seen in the table, the prevalence of trachoma was higher for those who washed their faces less than twice a day. Of the 253 children who wash their faces less than twice a day 13 (52%) had follicles and 3 (1.2%) had intense inflammation.

One hundred and seventy-seven children share the same towel with other siblings and parents at home. Of this number 16 (9%) had follicles whilst 4 (2.2%) had intense inflammation.

CHAPTER SIX

6 DISCUSSION

6.0This study describes trachoma status of children between the ages of three to twelve years. Existing literature indicate that development of trachoma depend on the following factors; poor over crowded houses, poor-lived immunity, poor hygiene, houseflies, lack of water, heat and dust.

6.1 Background characteristics of parents and children involved in the study.

According to WHO 1993, trachoma is a disease of poverty. The disease is considerably higher among family members without education or only primary school education than those with secondary or higher education. In the Builsa district, about 90% of both male and female population involved in the study were illiterates or had only primary to JSS education. The same applies to occupation where 78% of the mothers were traders and farmers. Majority of the mothers (80.9%) was within the age group of 20 – 39 years with a mean age of 33.8 years. Mothers above 40 years constitute 10.1%. The ethnic groups interviewed were mainly Builsas, Kantosis, Kasena Nankanas and others like Akans and Dagombas. They are mostly from the Upper East with little variations in cultural practices.

There was no relationship between trachoma and mother's age as well as ethnicity. However there was a relationship between occupation educational status and trachoma among the children in the Builsa district. This is in agreement with West et al (1991) and Güraksin and Gülülülü (1997), when they observed that husbands/household head educational background as well as occupation is associated with prevalence of trachoma.

6.2 Prevalence of Trachoma

Trachoma, based on the findings of WHO (1993) graded it under five main headings.

Signs that a child has "active" trachoma imply the presence of ongoing trachomatous inflammation, which corresponds to TF with or without TI. This can be diagnosed when the tarsal conjunctiva is examined. Eyelid examination is difficult in children below three years of age. Therefore children above this age were selected for the study.

In the Builsa district the children were examined for "active" trachoma and the findings graded into TF and TI. It was observed that the number of children with follicles were 6.6% whiles TI was only 1.6%. Overall 8.3% of the children showed signs of trachoma.

6.3 Risk Factors

All the factors enumerated in the literature that favor the transmission of trachoma are found in the Builsa district. Courtright et al in 1991, documented that the number of children in the same household probably reflect both infectious nature of trachoma and the strong dependence of intensity of inflammatory disease on environmental and socio- demographic factors common to the household. Eight percent of children who were two in a family predominantly showed signs of trachoma follicles thus confirming the above findings of Courtright et al.

Latrines in the Builsa district are practically non existent especially in the rural settings. Small children defecate wherever it suits them especially on refuse dumps located in front of their houses. This fecal matter around the house contributes to increased fly density. The location of kraals inside the compound of the house further compounds this problem. The cattle also defecate in the yard helping to increase the fly population. This indiscriminate defecation coupled with poor hygiene; dust and heat favor the transmission of trachoma.

The results of the study also indicated that where more than five people (76%) sleep in one room there is the likelihood for trachoma to spread, especially where the hygiene is very poor. This confirms the study of Güraksin and Gülülülü who found out that those families with five or more children sleeping in one room had a higher incidence of trachoma.

Most of the houses in which the children in the study come from (74.3%) were built of mud. Small rooms with narrow window spaces characterize these houses, which does not allow good ventilation. More than five people sleeping in such a room mean there is the likelihood of infecting others if one person has contracted a disease. West et al further confirmed this when they observed that infected siblings in an overcrowded house increased the risk of demonstrable infection.

Household water use patterns and attitudes towards face washing plays an important role in the elimination of trachoma as a blinding disease. One hundred and twelve respondents have to walk for more than 30 minutes to fetch water for household use. This truly reflected on their personal hygiene and face washing. More than half (68%) of the number of children whose mothers walk for more than 30 minutes to fetch water showed signs of trachoma. This finding agrees with those of other researchers, like Katz et al 1988 and McCauley et al.

The quality of water used in face washing did not show any positive effect on the prevention of trachoma. In the study conducted, all the respondents showed some signs of trachoma, which agrees with the findings of West et al (1995) that, the quantity of water used is more important because it is associated with facial cleanliness.

The disease spreads through contact with eye discharge from an infected person who shares the same towels/handkerchief or clothes with others. A little over half (59%) of the respondents said they share towels at home and 20 (80%) of this number had signs of trachoma which agrees with the findings of Katz et al.

CHAPTER SEVEN

7.0 Conclusion and Recommendation.

7.1 Conclusion

This chapter presents key conclusions based on the results of the study involving the children of the Builsa district who are between three and twelve years.

Eyelid findings were predominantly follicles and papillae. There were no other signs of trachoma such as trichiasis, entropion or, corneal opacities in these children. It was found generally that the parents' educational status as well as occupation and the number of siblings present in the family play a significant role in the care of children.

Another important finding is that traditional religion favors unhygienic practices, which helps in the spread of all kinds of diseases. There was no relationship between trachoma and mothers age. Children with normal eyes constituted more than half of the study population. The overall results indicate that approximately one out of every twelve children between three and twelve years have signs of trachoma follicles or intense inflammation.

The main risk factors identified included poor hygienic practices like indiscriminate defecation around the houses. This indiscriminate defecation helps in the breeding of flies, which are known to be transmitters of trachoma.

Other risk factors identified included lack of water, sharing of same towels and washing of face less than 2 times.

Only follicles and papillae were identified in the study. There was no evidence of other signs of trachoma in the children used for the study. Moreover these follicles and papillae may be due to allergic conditions, which also presents almost the same signs as trachoma but heals without scars. Apart from that there was no laboratory evidence to help confirm diagnosis.

7.2. Recommendations

On the basis of the study findings, it is recommended that

- The DHMT should train at least one ophthalmic nurse to help with eye care in the district.
- The DHMT should involve health staff like community heath nurses and medical assistants in giving talks on trachoma elimination at gatherings.
- The DHMT should involve the assembly members in order to encourage general improvement in family and personal hygiene, especially keeping children's faces clean.
- The DHMT should train the community-based distributors (CBDs) of family planning devices to include face-washing practices in their counseling.

- The DHMT in collaboration with the District Assembly should encourage one or more members with TF or TI and treat them with topical antibiotic regimes.
- The DHMT should train the community Health nurses to teach children face washing.
- The DHMT in collaboration with the Ghana Education Service should entreat teachers to ensure that children wash their face at least once before the close from school.
- The DHMT in collaboration with the District Assembly should train the VAP members to ensure that children in the rural areas wash their face at least three times a day with clean water.
- The DHMT should carry out laboratory study to confirm the diagnosis.
- The DHMT should liase with the District Assembly in order to ensure that potable water is made available to the rural folk.

REFERENCES

1. **Bailey R L; Arullendran P; Whittle H C;Mabey D C.** (1993) Randomized controlled trial of single dose Azithromycin in treatment of trachoma, Lancet 342 (8869): 453-6
2. **Beem M O, Saxon E M.** (1977) Respiratory-tract colonization and distinctive pneumonia syndrome in infants infected with chlamydia trachomatis. M Engl. J Med. 296; 463-470.
3. **Chumbley,L C & Thomson, I M.** Epidemiology of trachoma in the West Bank and Gaza Strip; Eye 1988, 2; 463-470
4. **Congdon N; West, S: Vitale, S; Katala, S; Mmbaga, B. B.** (1993) Exposure to children and risk of active trachoma in Tanzanian women. Am J of Epid. 137 (3): 463-470.
5. **Courtright, P. et al.** Latrine ownership as a protective factor in inflammatory trachoma in Egypt; Br. J. Ophthlmol.1991; 75, 322-325.
6. **Datta, P. et al.** Ophthalmia neonatorum in a trachoma endemic area; Sexually Transmitted Disease, 1994; Jan-Feb; 21(1): 1- 4
7. **Dawson, CR et al.** Topical tetracycline and rifampicin therapy of endemic trachoma in Tunisia. Am. J. Ophthalmol.1975; 79 (5):803-11
8. **Dolin, P J. et al.** Reduction of trachoma in a sub-Saharan village in absence of a disease control programme. Lancet 1997; 349 (9064); 1511-2
9. **Güraksin, A. & Gülay G.** Prevalence of Trachoma in Eastern Turkey; Int. J. Epid. 1997:26,2; 436-441.
10. **Katz, J. et al.** Prevalence and risk factors for trachoma in Sarlahi district, Nepal; Br J Ophthalmology 1996,80: 1037- 1041.
11. **Kmietowicz, Z.** WHO steps up efforts against trachoma; Br. Med. J. 1996, 313; (7070): 1428
12. **Luna, EJA. et al.** Epidemiology of trachoma in Bebedouro State of Sao Paolo, Brazil: prevalence and risk factors. Int. J Epidemiol.1991; 20: 169-77.
13. **Mabey, DC: Whittle HC.** Genital and neonatal chlamydial infection in a trachoma endemic area. Lancet.1982; 7; 2(8293): 300-1.
14. **McCauley, AP; West S; Lynch M** Household decisions among the Gogo people of Tanzania: determining the roles of men, women and the community in implementing a trachoma prevention programme. Soc. Sc. Med.1992; 34 (7): 817-24.
15. **Malaty, R et al.** Extraocular infections in children in areas with endemic trachoma. J Infect.Dis.1981; 143:853.

16. **Prost, A. Negrel AD.** Water trachoma and conjunctivitis. Bull WHO 1989; 67:9-18.
17. **Sandford-Smith J.** Eye Diseases in Hot Climates: 2nd Ed. 1992
18. **Smith, R** Trachoma still undefeated; Br. J. Ophthalmol. (Editorial) 1991; 75,321
19. **Sukwa, T.Y. et al.** Prevalence and distribution of trachoma in the Luapula Valley, Zambia; East Afr. Med. Journal 1992, 69: 34- 36.
20. **Thylefors, B.** Trachoma-new opportunities to tackle an old problem; Br J. Ophthalmology 1996,80:1033-1034.
21. **Tielsh, J.M. et al.** The Epidemiology of trachoma in Southern Malawi; Am. J. Trop. Med. Hyg. 1988; 38, 393-399..
22. **Wang, S. & Grayston J.I** Immunologic relationship between genital TRIC, lymphogranuloma venerum, and related organisms in new microtiter indirect immunofluorescence test; Am. J. Ophthalmol. 1970: 70:367-374.
23. **West SK et al.** Facial cleanliness and risk of trachoma in families; Arch Ophthalmol 1991; 109, 855-877.
24. **West, SK et al.** Epidemiology of ocular chlamydial infection in a Trachoma – hyperendemic area; The Journal of infectious diseases 1991:163:752-756.

ANNEXES

Annex 1

Population Structure

Age group	Population	% of total
0 – 11 months	4234	4
12months – 4years	15530	15
5 - 14 years	20008	19
Women 15 - 49 years	25610	25
Men 15 - 49 years	24895	24
Men and Women 50-60 years	8299	8
Men and Women > 60 years	5157	5
Total	103733	100.00

Annex 2

1.Selection of cluster

Cluster were selected using the following steps:

A list of all the villages and sectors of towns was obtained from the district Health Administration.

Individual population of village and sector of big towns was compiled using the projected population from the District Assembly. A total population of the district was obtained by summing up the cumulative population of each town and village.

The resident summed up the cumulative population of each village and town on the list to get the total population of the district, which was 103,733.

" Grouping the villages into three categories of known or estimated endemicity as follows

a) Villages with evidence of the disease.

b) Villages with some evidence of trachoma.

c) Villages with no evidence of trachoma

II.Calculating the sampling interval

(A sampling interval is a number used to systematically select clusters).

To calculate the sampling interval (S1) from formula divide the total population by the requisite number of clusters.

$$S1 = \frac{\text{Total population}}{\text{Number of clusters required.}}$$

$$S1 = \frac{103.733}{20}$$

$$= 5186$$

III Cluster identification

Use a random numbers table, a pocket calculator with a random numbers function or the serial numbers of bank notes to choose a random number between one (1) and the sampling interval (S1 86). Example if serial number of currency is 1322695, you start from the left and work towards the right to get the random number. If the S1 is 4 digits then the RN will be 1322.

For the study, the serial number on the currency note was 3242547. Counting from the left, the random number (RN) obtained was 3242.

Selection of first cluster

Generate cumulative population sizes from list of communities and their populations. The first cluster is that population of a community on the list whose cumulative population is equal to or exceeds that of the random number.

Adding the new random number to the new S1 chooses the second cluster

Population in 2^{nd} community + S1

Example Random number is 3,600 + S1 86 = 8786

Which falls between 9,000 and 10,566 in the cumulated population column.

In identifying the subsequent clusters the following formula was used.

Number which was identified in the previous cluster + sampling interval = Location of next cluster

Cluster 3 will be

New RN + S1 = 8786 + S186 = 13,972. Then 13,972 + S186 (another cluster) until the 20th cluster was obtained.

ANNEX 4: **Selection of Household**

Determine the starting point of the first household where cluster begins.

Locate a central point e.g. the cluster – it may be a market, school, mosque/church or chief's palace.

Randomly select a direction by spinning a bottle/pen. Count the number of houses and the directions chosen to the boundary of the cluster making sure you do not enter the next cluster. If there are 10 houses, randomly select the first house to enter, by balloting. The next household is the one whose front gate is closer to the front door of the one you have just visited.

If there is more than one child within the specified age for the study, randomly select one.

ANNEX 5: **Training of eye examiners**

The senior examiner selected a total sample of about 20 people including both children and adults.

The sample includes at least 8 – 20 people presenting the sign of TF and/or T1.

Everyone in this group was given an identification number beginning from 01. This number was written on a card and given to the person to show to each trachoma examiner.

On a pile of grading forms prepared by the resident, the examiners code number was entered at the top of each form. (One form was used for each person by each examiner).

SAMPLE OF DATA FORM RELIABILITY TEST

Trachoma examiner (code)					Patient ID: 01
Write one of the following codes for each sign					
0 = Absent					
1 = Present					
	TF	TI	TS	TT	CO
Right eye					
Left eye					

The senior examiner (examiner No.1) first enters the individual number, e.g. 01 and then proceeds to grade for the signs of trachoma. The person then moves to examiner No.2 who enters the individual's code number and independently records his grading. Individual then moves onto the next examiner and the process in repeated until all the selected individuals are seen in turn by all the trachoma examiners. At the end of this exercise, results were compared. The percentage agreement was 90%, which is acceptable.

QUESTIONNAIRE

Prevalence of Trachoma in the Builsa district

Date of interview: -------------------------

Location: Town/village Household Number (Code):______

Name of Interviewer: ---

Head of household: Last name: First name:

Socio-Economic and Demographic Characteristics

Mother

Last name **First name** **Age** **Ethnicity**

Occupation

Educational background 1.None 2.Primary 3.Middle/JSS 4.Secondary/SSS

5.Tertiary 6.Adult literacy class

Number of children and sex 1. 2. 3. 4. 5.

Husband's occupation Number of wives

Religion

Educational background 1.None 2.Primary 3.Middle/JSS 4.Secondary/SSS

5.Tertiary 6.Adult literacy class.

CHILD

1. Name of respondent 2. Age Sex male [ ]

Female [ ]

Educational background **1.Pre-school**

1. Crèche/Nursery
2. Primary
3. JSS

Risk factors for trachoma

1.Type of house:

Mud/Traditional roof: [ ]

Cement block [ ]

2. Number of rooms: 1 2. 3. 4. 5. 6. 7.

3.Number of people per room:

a) Less than five

b) More than five

4.Primary household water source:

a) Pipe borne.

b) Bore hole

c) Hand dug well (covered)

d) Hand dug well (uncovered)

e) Dams

f) Streams

5. Number of bore holes/hand-dug wells in the village/town:

6. Distance from water source:

a) Less than 30 minutes walk

b) More than 30 minutes walk

Washing of the face: a) Less than 2 times

b) More than 2times

Use of same towel/handkerchief by all family members:

Yes [ ] No [ ]

CLINICAL EXAMINATION

Name of Examiner: ____________________

Eyelid findings:

a) Follicles only (TF)
b) Intense inflammatory Trachoma (TI)

Enter one of the following symbols for each sign

0 =Absent
1 =Present

	TF	TI
Right eye		
Left eye		