

**Retrospective Study of Sociodemographic
Characteristics of Patients Attending Trichomatous
Trichiasis Surgery in Ophthalmology Department of
JUSH**

By: Amsale kebede

**A RESEARCH PAPER SUBMITTED TO COLLEGE OF PUBLIC
HEALTH AND MEDICAL SCIENCES DEPARTMENT OF
NURSING, JIMMA UNIVERSITY, IN PARTIAL FULFILLMENT
OF THE REQUIREMENT FOR THE AWARDE OF A DEGREE
OF BACHELOR OF SCIENCE IN NURSING.**

MAY, 2013

JIMMA, ETHIOPIA

Jimma University

College of Public Health and Medical Sciences

Department of Nursing

**Retrospective Study of Sociodemographic Characteristics
of Patients Attending Trachomatous Trichiasis Surgery in
Ophthalmology Department of JUSH**

By: Amsale kebede

Advisor

Ebrahim Yimam (RN, BSc, MSc)

MAY, 2013

JIMMA, ETHIOPIA

Abstract

Background:

It is well known that tarsatomy has great contribution in preventing blindness caused by trichiasis. But there is low uptake of surgery in many endemic countries. Many researches have been undertaken to find out what social and economical factors are involved for low utilization of the surgery. This study aims to find out the Sociodemographic characteristics of patients who got trichiasis surgery in ophthalmology department of Jimma University Specialized Hospital.

Objective:

To assess the sex, age and location characteristics of trichiasis surgery users in Ophthalmology Department of JUSH.

Method:

All patients who underwent trichiasis surgery from January 2010 to December 2012 were included in the study. Pertinent data required about these patients were collected from the patient's register book kept by the ophthalmology department of JUSH. The data was analyzed manually and by scientific calculator and presented by tables.

Result:

A total of 1,176 patients, who had trachomatous trichiasis surgery in Ophthalmology Department of JUSH, were incorporated in the study. Majority were 803 (68.3%) were females. About 56% of total patients are in the age of 30-60 years. Of the total patients 23 (2%) of the patients were under 15 years of age. Greater part of patients was within 20 km radius constituting 53% of the total. Generally there is a gradual decrease of attendance number as the distance of their location from the hospital increases.

Conclusion and Recommendation:

The majority of patients that were using the service were females. This finding is in stark contrast with other studies done in other parts of the country, which showed high proportion of male users compared with females. This might reflect increased awareness on the part of women and existence of gender equity. But the real reason for higher utilization of females in this area should further be investigated through another community based study. It has been shown that when patients are close to the service the surgical uptake increases. Thus taking the service close to the community should be considered to achieve the goal of SAFE. This creates opportunity to elderly (>60 years of age) who are unable to travel long distances and always requires the assistance of someone else.

ACKNOWLEDGEMENT

I would like to express my deepest appreciation to my adviser Ato Ebrahim Yimam for his invaluable advice and constructive comments in preparing this research proposal.

I would also like to extend my heartfelt thanks to my husband who helped much in searching valuable reference materials and editing the research proposal.

Table of Contents

Content	page
Abstract	I
Conclusion and recommendation.....	II
Acknowledgments	III
Table of content.....	IV
List of table.....	VI
Acronyms	VII
Chapter one –Introduction.....	1
1.1 Back ground information.....	1
1.2 Statement of the problem	2
1.3 Significance of the study	5
Chapter two-Literature review	6
Chapter three-objectives.....	8
3.1. General Objective.....	8
3.2. Specific Objective	8
Chapter four-Methodology.....	9
4.1. Study area	9
4.2. Study period	9
4.3. Population.....	9
4.3.1 Source population.....	9
4.3.2 Study population.....	9
4.4 Sampling size and sampling technique	9
4.5 Study variable.....	10

4.5.1 Independent variable	10
4.5.2 Dependent variable.....	10
4.6 Operational definition.....	10
4.7 Plan for data collection.....	10
4.7.1 Data collection instrument.....	10
4.7.2 Data collection procedure (technique)	10
4.7.3 Data processing and analysis.....	10
4.7.4 Data quality management.....	10
4.8 Ethical consideration	11
4.9 Limitation of the study	11
4.10 Dissemination plan of the result.....	11
Chapter Five: Result	12
Chapter Six: Discussion	14
Chapter Seven: Conclusion and Recommendation.....	17
References	19
Annex 1: Check list	21

LIST OF TABLES and FIGURES

Table 1. Distribution of patients attending TT surgery by age and sex

Figure 1. Distribution of patients attending TT surgery by distance

ACRONYMS

TT - trachomatous trichiasis

WHO - World Health Organization

JUSH - Jimma University Specialized Hospital

CHAPTER ONE

1. INTRODUCTION

1.1 BACKGROUND INFORMATION

Trachoma, caused by ocular infection with *Chlamydia trachomatis*, is the world's leading cause of blindness. Repeated infection causes inflammation and scarring of the conjunctival lining of the upper eyelid, which distorts the lid margin and causes the lashes to touch the surface of the eye (trichiasis). In addition to disabling discomfort, constant abrasion of the cornea causes physical damage that leads eventually to corneal opacification and blindness [1].

The World Health Organization, WHO, estimates that 1.3 million people worldwide are blind due to trachoma, and recent estimates showed that 40.6 million people are suffering from active trachoma and more than 8.2 million people are in imminent danger of going blind from trichiasis [2].

Trachoma is currently endemic in 57 countries, most of which are in sub-Saharan Africa and Asia. The highest disease prevalence estimates come from countries in the Sahel belt and East Africa. One can imagine easily how high the economic impact of blinding trachoma on individuals and communities will be, particularly as affected communities are already poor [2].

According to the national survey conducted in 2006 the prevalence of active trachoma in Ethiopia (either TF or TI) for children in the age group 1-9 year is 40.1%. This prevalence is very high and clearly indicates the burden of trachoma in a rapidly growing population. Moreover, the highest prevalence is registered in the big regional states of the country; namely, Amhara (62.6%), Oromia (41.3%), and SNNP (33.2%). The prevalence of active trachoma is four-fold in the rural population compared to the urban (42.5% Vs 10.7%) [3].

The national prevalence of Trachomatous trichiasis (TT) for the age group 15 and above is 3.1%, with the highest prevalence in Amhara regional state (5.2%) followed by Somalia and Oromia regional state (4.2 and 2.8%, respectively). It also shows a close to fourfold increase in prevalence in the rural population as compared to the urban (3.5% Vs 0.9%) [3].

The prevalence among females is also over twofold compared to males (4.1% Vs 1.6%). The trachomatous trichiasis and ensuing blindness is much higher among women [3].

1.2 STATEMENT OF THE PROBLEM

Trachoma trichiasis is a condition in which one or more eyelashes from an in turned eyelid rub on a cornea. It follows scarring of the tarsal conjunctiva from repeated inflammation caused by trachoma. Trichiasis may eventually lead to corneal opacity and blindness if uncorrected. Blinding trachoma is a leading preventable cause of blindness in the world [4].

Trachoma is the second most common cause of blindness in Ethiopia where trichiasis affects 3% of people above 14 years of age. The proportion of cases that eventually lose their sight from trichiasis is low. However, quality of life of most people with trichiasis is seriously affected by the disease. The discomfort from trichiasis results in an economic burden comparable to visual impairment caused by trachoma [4].

Considering the enormous socioeconomic impact on individuals and public, the World Health Organization (WHO) has launched an initiative to eliminate blinding trachoma by the year 2020 using the SAFE strategy: **Surgery**, Antibiotic, Facial Cleanliness and Environmental improvement. Surgical correction of the upper eyelid using tarsal rotation procedure is the most effective intervention for trichiasis. It provides relief from irritating pain in the eye and prevents vision loss from trachoma. SAFE intervention makes surgical service available and disseminates health promotion messages to create demand for services. [4]

Accordingly, many countries of endemic regions have launched trachoma control programs with goal of reducing the incidence of trachoma and minimize risk of developing irreversible blinding corneal opacification because of trichiasis.

Following this global campaign, WHO estimate in 2009 people who have active trachoma has markedly decreased from 81 million in 2003 to approximately 41 million. But Over the same period, however, there has been a modest increase in the backlog of unoperated trachomatous trichiasis (TT) from 7.6 million to 8.2 million cases, despite expanding trichiasis surgery services in many endemic countries [2]. Despite the provision of free surgery in many areas, attendance rates are frequently low.

Mainly surgical coverage in affected communities in Africa is lower than 50% [5]. In trachoma endemic areas of central Ethiopia utilization of eye care services in general was found to be 27.8% [6]. Many researches in endemic areas, particularly in Africa, were undertaken to find out the factors resulting in backlog. These studies have identified a number of *barriers* for uptake of trachomatous trichiasis surgery. Multiple behavioral, social and demographic factors have been identified. Some of these were cost, awareness, lack of escort, distance, lack of time and fear of the operation are the commonly reported barriers to trichiasis surgery [7,8].

Moreover these studies have shown that women and elderly were also less likely to use the surgical service than men and young ones in spite of TT is more prevalent in these group of people. Some barriers were particularly frequent in these high risk groups: lack of escort, fear of surgery and not knowing the surgical location hinder women more frequently than men, while financial constraints, transport difficulties and lack of escort affected more of those aged over fifty years than younger participants [4, 6, 7)

In many setting women are two to four times as likely to have trichiasis, in part as a result of their exposure to young children who are the reservoir of infection. Trichiasis, even apart from its impact on vision, has a devastating impact on the daily lives of people affected. Women with trichiasis but no vision loss have been shown to have the same difficulty with daily activities as women who had vision loss from other causes [9].

There are numerous, theoretical reasons to postulate that women do not have trichiasis surgery proportional to their needs compared to men. These gender equity concerns can be based on women having less access to money (for surgery or for travel or hospital expenses) less time from chores to get surgery, more fear of the procedure and any unsightly after-effect [9, 10].

A few community based studies that were undertaken in the Amhara, Tigray and eastern part of Oromia have identified the barriers in use of tarsatomy. These studies have reported that cost, awareness, lack of escort, distance, lack of time and fear of the operation are common barriers to trichiasis surgery. However, to the knowledge of the researcher, no other similar study has been

carried out in the Jimma zone. Thus, understanding the seriousness of low uptake of trichomatous trichiasis surgery and the existing gap with respect to data on the area, this study has been initiated to answer the following research questions:

1. What variations exist among patients managed with tarsatomy in terms of age, sex and location?
2. Is there a relationship between catchment distance and number of users of the tarsatomy procedure?
3. What is the pattern of the occurrence of trachoma trichiasis (TT) in terms of age, sex and location?

This study aims in identifying the characteristics of users in terms of age, sex and location by retrospectively reviewing the sociodemographic characteristics of users of trichomatous trichiasis surgery in Ophthalmology Department of Jimma University Specialized Hospital who have attended from January 2010 up to December 2012.

Of course this study doesn't intend to identify the barriers in detail at community level as other studies did it

1. 4. SIGNFICANCE OF THE STUDY

Trachoma is endemic in most of developing countries especially in sub-Saharan Africa and Asia. The prevalence of the disease was high in Sahel belt and East Africa. As a result of that it has a high economic impact secondary to blindness on individuals and communities affected. Considering the magnitude of the problem, this study would give a baseline data for other similar studies and source of information for other community-based studies that will be done in the region.

CHAPTER TWO

2. Literature Review

Trachoma was once a public health problem worldwide. It was eliminated from North America and Europe in the early 20th century due to combination of control efforts and improved standard of living. Trachoma now largely affects people in low socio-economic condition in the rural; often remote areas of Africa, south-east Asia, central and South America, the middle east and Australia. Regions such as Sahel, Nile and rift valleys of Africa are setting of limited economic development low sanitation coverage and poor access to preventive health care. [11]

After launching SAFE strategy, there is marked improvement in the prevalence of trachoma in most of endemic countries. Surgery is the one component of the SAFE strategy that has been shown to prevent blindness. It usually produces immediate and dramatic relief of discomfort and in some subjects and improvement in visual acuity. For these reasons, surgery is usually the first component of the SAFE strategy to be introduced into a community and is important in gaining community acceptance for the other elements of SAFE, which may not be perceived to have these immediate and obvious benefits. However the acceptance of surgery is still low in many of these countries [5, 6, 7, 8]. Because of this, the need to investigate barriers to and improve uptake of trichiasis surgery was identified as a research priority by the WHO Alliance. [8]

Geographic access to surgery has been reported as an obstacle on Tanzania and Gambia studies. The highest rates of uptake have been described in the Gambia when surgery was provided at the village level [9].

SAFE intervention has brought trichiasis surgery closer and free of charge to communities that has minimized distance as barrier as demonstrated in some studies. For example, a cross sectional trichiasis prevalence surveys were conducted in four areas across Ethiopia between 2002 and 2008 before and after receiving SAFE intervention by Assegid Aga Roba et.al (2012). It was concluded that accessibility (cost and distance) initially reduces barriers to trichiasis surgery. Of course this doesn't include direct costs. However awareness and acceptance related barriers remain significant factors in seeking trichiasis surgery. [4] The degree of impact of awareness and acceptance related barriers considerably vary between areas based on local

conditions and cultural practices. Although there is no charge for surgery, studies in Malawi, Ethiopia and Tanzania have reported that indirect costs, such as time away from home and the need for a companion to travel with, pose barriers for those who need trichiasis surgery [5,6,7, 8]

Gender variation in surgery uptake was observed in many of studies. Many studies in Ethiopia and elsewhere have demonstrated that women have statistically significant increased risk of trichiasis [12, 13, 14]. A recently prepared metanalysis of trachoma surveys from around the world showed that several women were 1.8 times more likely to have trichiasis compared to men. The above mentioned Ethiopian study showed that most of their cases were illiterate and middle aged females with limited access to resources. Women had up to four fold increased risk of living with trichiasis, which is more than double the global estimate [4, 15]. Other studies done in different parts of Ethiopia have reported 2 to 3 fold increased risk for women [16, 17]

As women are more affected by trichiasis, relatively more women should get trichiasis surgery. But it is known that women in rural areas are usually reluctant to accept trichiasis surgery [7]. If health education and promotion keeps targeting women and house hold leaders can bring marked change in gender equity in surgery uptake. This was found to be true in the study undertaken by S West et. Al, *Gender equity and trichiasis surgery in the Vietnam and Tanzania*, shows the rate of trichiasis in both countries 1.4 fold to 6 fold higher in females. However in both countries the female to male rate of surgery was the same or even higher than the female to male rate of trichiasis in the population [18]; According to the assumption of the author, this was a result of increasing awareness through health education.

Among other factors age also has been considered as one barrier in surgery uptake. Saul N. Rajak et al in s study done in northern part of Ethiopia, has reported that there were a differences between people below and above the age of 50. The reported barriers in people 50 years or older were more frequently unable to attend surgery because of financial constraints, transport difficulties or lack of someone to accompany them. Someone to accompany and assist them before, during and after immediate surgery was particularly a problem for women and older patients [2].

CHAPTER THREE

3. OBJECTIVE OF THE STUDY

3.1. General objective

- To assess the Sociodemographic characteristics of patients attending trachomatous trichiasis (tt) surgery

3.2. Specific objective

- To assess the age characteristics of trachomatous trichiasis (tt) surgery users
- To determine the effect of distance on the number of patients who use trichiasis surgery. (Which geographical area is benefited from this service either rural or urban the far or the near village or districts?)
- To evaluate which gender group is more benefited the service of tarsatomy procedure

CHAPTER FOUR

4. METHODOLOGY

4.1. Study area

This study was conducted in Ophthalmology department of Jimma University Specialized Hospital, found in Jimma City, Oromia Regional State. Jimma City is located southwest of Ethiopia; 353km from Addis Ababa .The department of ophthalmology is one of the clinical departments that operate under the Collage of Public Health and Medical Sciences, Jimma University. The department was established as eye unit in the hospital in the 1950's by the Ethio-Italian cooperation as part of the prevention of blindness activity all over the country.

4.2. Study period

From March 2013 - May 2013

4.3 Population:

4.3.1. Source of population:

All patients who underwent trichiasis surgery in ophthalmology department

4.3.2. Study population:

All patients who have used the service from January 2010 to December 2012

4.4. Sample size & sampling technique:

This was not necessary since all study population was included in the study.

4.5. Study variable:

4.5.1. Independent variable: Age, sex and location

4.5.2. Dependent variable: Trichiasis surgery

4.6. Operational definition of terms:

- **Trachomatous trichiasis:** Evidence of one or more eyelashes rubbing on the eye ball.
- **TT surgery (Tarsatomy):** Surgical procedure performed to correct the eye lashes from rubbing the cornea.
- **Catchment area:** The geographical area served by Ophthalmology Department of JUSH

4.7. Plan for data collection:

4.7.1 Data collection instrument:

The patient registration book, compiling formats, checklist, pen and pencils were used to during data collection period.

4.7.2. Data collection procedure:

Compiling formats and checklist were prepared to summarize the required data from the registration book to simplify further analysis of the data.

4.7.3. Data processing and analysis:

The principal investigator drafted dummy tables and checklist. With the checklist completeness and consistency of the data was checked using manual calculator. Then the data was manually processed. Descriptive statistical test procedure were utilized.

4.7.4. Data quality management:

The suitability of the checklist was checked to ensure their accuracy and consistency in data summarizing prior to actual collection of data. Detail orientation wase given for data

collector. Moreover the principal investigator checked the document and gave feedback and correction on daily basis.

4.8. Ethical consideration:

Permission was obtained from the clinical director of the hospital and head of department of ophthalmology for using the patient registration book ensuring them that it wouldn't be used for any other purpose except obtaining information that are pertinent for this study. They were also assured that the confidentiality would be maintained.

4.9. Limitation of the study:

There was inconsistency on the part of medical personnel when they recorded the address of the patients. Some used *Kebele*, others *woreda* or *zone*. This has made it difficult to assign patients to distance ranges set by the investigator. Moreover, it was not easy to know the exact location of some of the *kebeles*.

4.10. Dissemination plan of the result:

After compilation of the study the result will be submitted to Nursing Department and Ophthalmology Department of Jimma University, as well as to other concerned governmental and non-governmental offices.

CHAPTER FIVE

Result

DISTRIBUTION OF PATIENTS ATTENDING TT SURGERY BY AGE AND SEX IN OPHTHALMOLOGY DEPARTMENT OF JUSH FROM JANUARY 2010 TO DECEMBER 2012

In this retrospective study, all patients who have attended trachomatous trichiasis (TT) surgery were collected from patients' registration book. They made up a total of 1,176 patients. None were excluded from the study. Then their characteristics were reviewed in terms of age, sex and location.

The age of patients ranges from 6-85 years of age. The highest attendance was noted within the age group of 30-44 and 45-60 together comprising 56% of the total. Females made up 76.8% of these groups. Of note is the age group below 15 years of age, which normally considered to be less likely to develop TT, made up about 2% of the total. Males were 373 (31.7%) while females were 803 (68.3%). (See table 1)

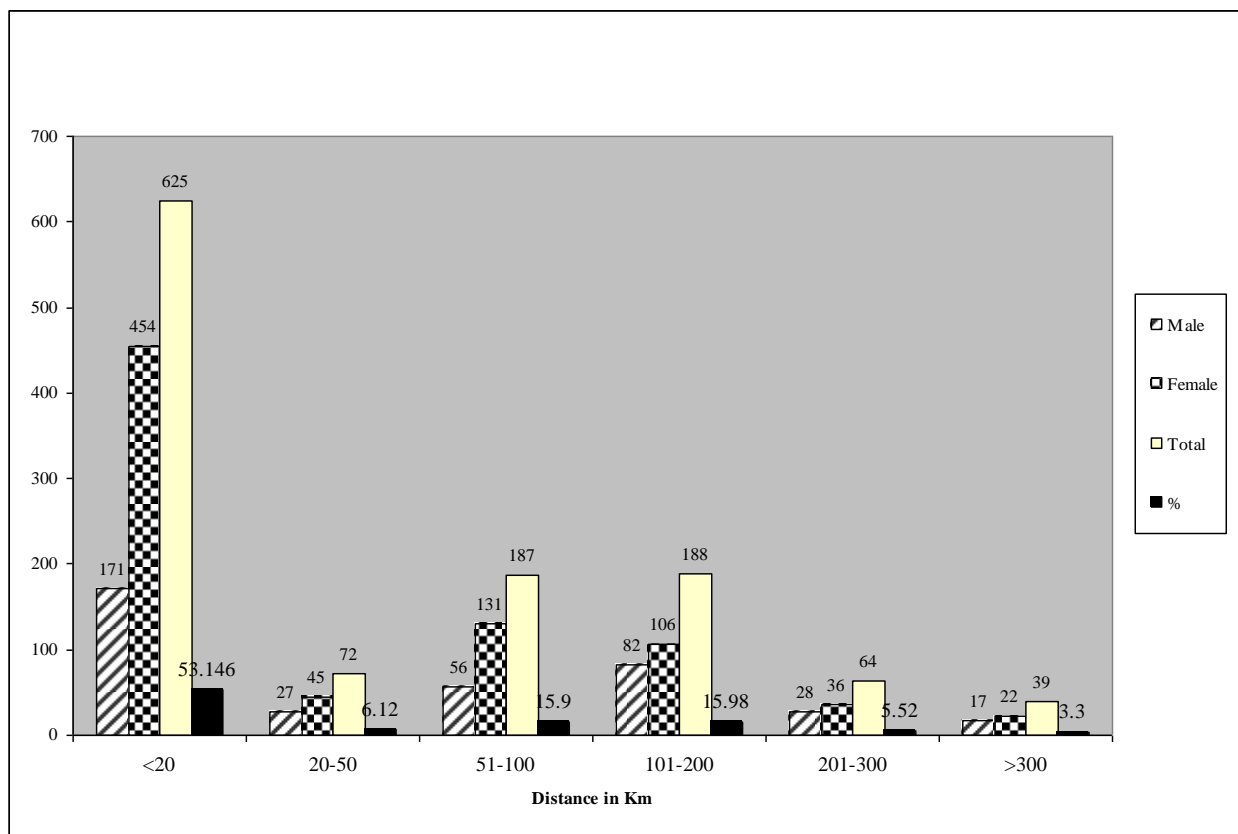
Table 1: Distribution of patients attending trichiasis surgery by age and sex in Ophthalmology Department of JUSH from January, 2010 to December, 2012

Age	Male		Female		Total	
	No	%	No	%	No	%
<15	10	0.55	13	1.10	23	1.96
15 - 29	38	3.23	118	10.03	156	13.27
30 – 44	64	5.44	250	21.25	314	26.70
45 – 59	89	7.56	250	21.76	345	29.34
60 - 74	130	11.05	153	13.00	283	24.06
≥ 75	42	3.57	13	1.10	55	4.68

DISTRIBUTION OF PATIENTS ATTENDING TT SURGERY BY DISTANCE IN OPHTHALMOLOGY DEPARTMENT OF JUSH FROM JANUARY 2010 TO DECEMBER 2012

When we see the geographical location from which the patients came from, majority of patients (53%) are within the radius of 20 Km from the hospital. Generally the number of attendance gradually decreases as the distance from hospital increases except the distance range between 20 and 50 Km. This catchment area within this radius are relatively much lower (6%) compared to the subsequent highest distance ranges. (See figure 1)

Fig 1. Distribution of the patients attending trichiasis surgery by distance in Ophthalmology Department of JUSH from January, 2010 to December, 2012



Chapter Six

5. Discussion

Blindness and vision loss due to trichomatous trichiasis is preventable with timely lid surgery. Trichomatous trichiasis is provided free or subsidized in most trachoma settings. However, only 18-66% of TT patients attend for surgery (7).

This retrospective study analyzes the sociodemographic characteristics of patients attended TT surgery in Ophthalmology Department of JUSH.

The age groups from 30-60 years are the highest to attend TT surgery. They constitute 53% of the total. This is expected as the active age group is more likely to seek treatment than elderly. One study done in Amhara region observed that there were differences in reported barriers between people greater or less than 50 years of age. People 50 years or older were more frequently unable to attend surgery because of financial constraints, transport difficulties or a lack of someone to accompany them. Those below 50 years of age more frequently reported lack of time or symptoms as barriers.

Special note of in this study is there were trichiasis cases in age group under 15 years of age. They comprise 2% of the total.

In this study females comprise 68.3% of the total. It is not simple to explain the reason why surgery uptake is much higher in females than males in this region. Many other studies have shown females are always at a disadvantage. Studies done in northern part of Ethiopia have shown that women in rural areas are usually reluctant to accept trichiasis surgery. They found out specific barriers (like no one was available to accompany them, fear of surgery and not knowing the surgery location) for their low utilization of surgery in addition to common barriers for both sexes (4, 7). Courtright P in his study found out similar factors as barriers for acceptance of surgery in Malawian rural women. Thus, he suggested considerable education and encouragement are needed to increase acceptance of surgery for trichiasis.

However there are other studies, similar to ours, who have observed no gender differences or higher rate of utilization of surgery by females. For example, S. West et al. in their study '*gender equity and trichiasis surgery in Vietnam and Tanzania*' have noted that in both female: male ratio of eyes having trichiasis surgery actually exceeded the female: male prevalence ratio of eyes with trichiasis in the population (18). This was attributed to effective community health education. In another study done by Micheal Mahande et al in Tanzania has shown no differences in overall 1-year surgery uptake between men and women (5).

Geographical location is known to be a barrier to surgical uptake. In this retrospective study the major part of attendance was within 20km radius making 53% of the total and generally the attendance progressively decreases as the catchment distance increases. That observation was similar to Habte D et al., who have studied determinants of uptake of surgical treatment in Amhara region, noted that longer walking distance (more than one hour) to the nearby health facility was a negative predictor of uptake of surgical treatment (19). Bowman RJ et al. in his randomized community trial to investigate the effect of providing surgery in villages on surgical uptake in the Gambia, have concluded as the service was taken closer to the community better surgical uptake was noted. The uptake was 66% in the village-based surgery service compared to 44% in the health center-based service (8).

In this retrospective study there is one exception to that general observation. The distance range between 20 and 50 km has low attendance rate than the next highest distance ranges (51-100 Km and 101-200 Km). It was difficult to explain why it is comparatively low. This could partly be attributed to the outreach surgery service provided by the ophthalmology department with main focus on those catchment areas. (Patients that were treated at outreach are not included in this study).

A number of other studies have shown lack of time, financial constraints and lack of escort are the most common barriers for surgery uptake. This could be directly or indirectly related with the geographical distance [4, 7, 8].

CHAPTER SEVEN

6. Conclusion and Recommendation

7.1 Conclusion

In summary, the result of this study has shown that the majority of patients that were using the service were females. This finding is in stark contrast with other studies done in other parts of the country, which showed high proportion of male users compared with females. This might reflect increased awareness on the part of women and existence of gender equity.

The highest attendance was noted within the age group of 30-44 and 45-60 together comprising 56% of the total. Females made up 76.8% of these groups.

In this study one exceptionally observed finding is there were patients under the age of 15 years who had TT surgery constituting 2% of the total.

It has been shown that when patients are close to the service the surgical uptake increases.

7.2 Recommendation

1. Further community based study is necessary to clarify why surgical uptake of females is better than males compared with other studies done in Ethiopia.
2. The fact that there were patients under 15 years of age who had TT surgery suggests the presence of repeated infection at the earliest childhood possible from mother to child transmission of infection. This could have been prevented with facial cleanness. Thus, to alleviate this problem community health education including facial cleanliness should be undertaken.
3. Village-based TT surgery is effective in increasing surgical uptake. Taking the service close to the community should be considered to achieve the goal of SAFE. This creates opportunity to elderly (>60 years of age) who are unable to travel long distances and always requires the assistance of someone else.

References

1. Paul M Emerson, Mathew Burton, Anthony W Solomon, Robin Bailey, & David Mabey, The Safe Strategy for Trachoma control: Using Operational Research for Policy, Planning & Implementation. *Bulletin of the World Health Organization* 2006; 84: 613-619.
2. Saul N. Rajak, J. Richard O. Collin, and Matthew J. Burton, Trachomatous Trichiasis and its Management in Endemic Countries, *Surv Ophthalmol.*, 2012; 57-341(2): 105–135.
3. Yemane Berhane, Alemayehu Worku, Abebe Bejiga, Liknaw Adamu Wondu Alemayehu, Amir Bedri, Zegeye Haile, Allehone Ayalew, Yilikal Adamu , Teshome Gebre, Tewodros D. Kebede , Emily West, Sheila West, Prevalence of Trachoma in Ethiopia, *Ethiop.J.Health Dev.* 2007;21(3):211-215
4. Assegid Aga Roba ,Assfaw Wondimu and Zelalem Eshetu ; Effect of SAFE Intervention on Pattern of Barriers to Trichiasis Surgery , *J Community Med Health Educ* 2012 2.7
5. Michael Mahande, ManishaTharaney, Edward Kirumbi, Edith Ngirawamungu, Robert Geneau, Lisa Tapert, and Paul Courtright; Uptake of trichiasis surgical services in Tanzania through two village-based approaches, *Br J Ophthalmology*, Feb. 2007; 91(2): 139-142
6. Muluken Melese, Wondu Alemayehu, Eva Friedlander and Paul Courtright, Indirect costs associated with accessing eye care services as a barrier to service use in Ethiopia, *Tropical Medicine and International Health*, 2004; 9 (3) p 426–431
7. Saul N.Rajak, Esmael Habtamu, Helene A.Weiss, Amire Bidre, Mulat Zerihun,et al, Why Do People Not Attend for Treatment for Trachomatous Trichiasis in Ethiopia?A Study of Barriers to Surgery.*PLoS Med* 6:e5611001136
8. Richard J. C. Bowman, Hannah Faal, Buba Jatta, Mark Myatt, Allen Foster, Gordon J. Johnson, and Robin L. Bailey, Longitudinal Study of Trachomatous Trichiasis in The Gambia: Barriers to Acceptance of Surgery, *IOVS*, April 2002, Vol. 43, (4): 936-940

9. Bowman R, Sey O, Alexander N. *et al*, Should trichiasis be offered in the village? A community-randomised controlled trial of village vs. community health center-based surgery. *Trop Med Int Health* 2000. 5528–533.533.
10. Courtright P. The acceptance of surgery for trichiasis among rural Malawian women. *East Afr Med J* 1994. 71803–804.804.
11. Women and Trachoma, achieving Gender Equity in the implementation of SAFE, Carter Center
12. West S, Lynch M, Munoz B, Katala S, Tobin S, Mmbaga BB, Predicting surgical compliance in a cohort of women with trichiasis, *Int Ophthalmol*. 1994;18(2):105-9
13. R J C Bowman,H Faal, M Myatt,R Adegbola,A Foster, G J Johnson,R L Bailey, Longitudinal study of trachomatous trichiasis in the Gambia, *Br J Ophthalmol* 2002;86:339_343
14. Resnikoff S, Pascolini D, Etya'ale D, Kocur I, Pararajasegaram R, et al. (2004) Global data on visual impairment in the year 2002. *Bull World Health Organ* 82: 844-851.
15. Mariotti SP, Pascolini D, Rose-Nussbaumer J (2009) Trachoma: global magnitude of a preventable cause of blindness. *Br J Ophthalmol* 93: 563-568.
16. Zerihun N. Trachoma in Jimma zone, southwestern Ethiopia. *Trop Med Int Health*. 1997;2:1115–1121.
17. Bejiga A, Alemayehu W. Prevalence of trachoma and its determinants in Dalocha District, Central Ethiopia. *Ophthalmic Epidemiol*. 2001;8(2–3): 119–125.
18. S West, M Phuong Nguyen, H Mkocha ET.AL, Gender equity and trichiasis surgery in the Vietnam and Tanzania national trachoma control programmes, *Br J Ophthalmol* 2004;88:1368-1371
19. Habte D, Gebre T, Zerihun M, Assefa Y, Determinants of Uptake of Surgical Treatment for Trachomatous Trichiasis in Northern Ethiopia, *Ophthalmic Epidemiol*. 15: 328-333.

Annex I

Checklist

Checklist for age in years and sex variables

S.No	<15		15-29		30-44		45-59		60-75		≥75		Total
	M	F	M	F	M	F	M	F	M	F	M	F	
1													
2													
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													

Checklist for distance in Km

S.No	<20		20-50		51-100		101-200		201-300		>300	
	M	F	M	F	M	F	M	F	M	F	M	F
1												
2												
3												
4												
5												
6												
7												
8												
9												
10												
11												
12												
13												
14												
15												
16												
17												
18												