Acceptability of Azithromycin Mass Treatment for Trachoma Elimination in Injibara Town and Adjacent Banja Woreda of Awi Zone, Amhara Region

By

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Under the supervision of Dr. Teferi Gedif

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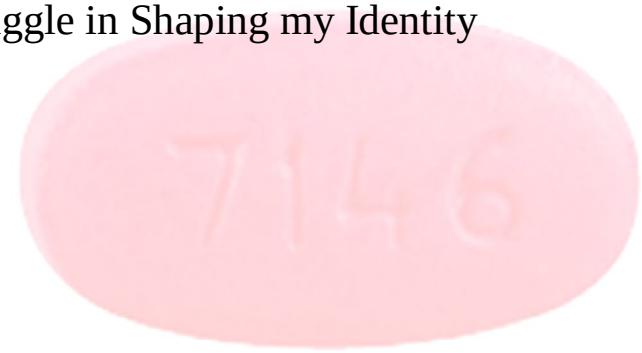
Head of the Department

Dedication

To my Mother and my Late High School Teachers; Especially for His Excellence Mr. Alemaw Mengist (State Minister of Ethiopia's Ministry of Women, Children and Youth Affairs) and Desalegn Asfaw for Their Enormous Struggle in Shaping my Identity



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Acronyms and abbreviations

AMT	Azithromycin Mass Treatment
AOR	Adjusted Odd Ratio
ARHB	Amhara Regional Health Bureau
COR	Crude Odd Ratio
CSA	Central Statistics Agency
EFY	Ethiopian Fiscal Year
FMHACA	Food, Medicine and Health Care Administration and Control Authority
FMOH	Federal Ministry of Health
GET 2020	Global Elimination of blinding Trachoma by the year 2020
HEW	Health Extension Workers
IAPB	International Agency for the Prevention of Blindness
MDA	Mass Drug Administration
NTD	Neglected Tropical Diseases
SAFE	Surgery, Antibiotic, Facial Cleanness and Environmental Sanitation
SNNP	Southern Nations, Nationalities and Peoples
TF	Trachomatous Inflammation Follicular
TI	Trachomatous Inflammation Intense
TT	Trachomatous Trichiasis
WHO	World Health Organization

Abstract

Acceptability of Azithromycin Mass Treatment for Trachoma Elimination in Injibara Town and Adjacent Banja Woreda of Awi Zone, Amhara Region

Zelalem Tilahun

Addis Ababa University, 2014

Trachoma is the leading cause of infectious blindness worldwide. Globally 1.2 billion people live in endemic areas. In Ethiopia, approximately 67 million people are at risk for trachoma. The Amhara National Regional State of Ethiopia is the most trachoma-endemic among all nine regional states and two city administrations, with Trachomatous inflammation Follicular prevalence of 62.6%. Mass azithromycin treatment is the one arm of the SAFE strategy. The trachoma elimination program would be successful if and only if the coverage is as high as possible with full community participation. If not all the community members attend the mass treatment, the trachoma infection will return to the baseline prevalence after the treatment stopped due to high transmission rate. The objective of this study was to assess the acceptability of the azithromycin mass treatment and its determinants in Injibara town and the adjacent Banja woreda of Awi zone, Amhara National Regional State. A community based cross sectional survey with both quantitative and qualitative methods was conducted from July 7-25, 2013. Households' survey with structured questionnaire, FGDs and key informant interviews were used for data collection. A total of 5826 eligible household members from 1267 households were enrolled in the survey. The 2012 annual azithromycin mass treatment coverage obtained from the present study was 92.9%. From the total 6 rounds of azithromycin mass treatment in the study area, only half (50.6%) of the community took for more than three times. On average, each illegible person in the community had taken the drug for 3.6 times. The percentage of rural household members who had taken azithromycin more than three times was higher than the corresponding urban members. The rural residents were at better performance in taking the 2012 treatment as compared to the urban residents (AOR=2.35; 95%CI [1.80-3.06]). Household heads interference with the drug uptake of their family members' has negative association with azithromycin uptake (AOR=0.153; CI=95% (0.086-0.272). All the study participants who were

greater than 30 years more likely took azithromycin more than 3 times as compared with children less than 15 years (COR=2.81, AOR=2.74, 95% CI [1.95-3.02]). Azithromycin uptake status of female household heads was less than the corresponding male household heads (AOR=0.41; 95% CI [0.24-0.720]). Household heads awareness about trachoma (AOR=2.55; 95% CI [1.19-5.44]) and azithromycin mass treatment (AOR=7.19; 95% CI [3.27-15.82]) had positive association with acceptability. The 2012 azithromycin mass treatment coverage in Injibara town and Banja *woreda* was higher than the WHO minimum target. But, concerning to the overall coverage, the data taken from the present study contradicts the coverage data taken from the *woreda*. The communities' Azithromycin mass treatment acceptability had increased in the recent campaigns as compared to the previous campaigns. There is low coverage and acceptability of the treatment in the urban community as compared to the rural residents. Supplementary benefits of azithromycin, health education about trachoma and the drug, willingness and being old are some of the factors positively related with acceptability whereas educational status, marital status and experience with side effects were not associated with the drug uptake status. Strengthen the program in the urban and consideration of additional campaigns for both areas as well as providing additional health education with skilled health professionals is mandatory.

Key words: Azithromycin mass treatment, Mass drug administration, Acceptability, Trachoma, Trachoma elimination

1. Introduction

Trachoma is the leading cause of infectious blindness worldwide (Mariotti *et al*., 2009). It is an infectious disease of the eye caused by the bacterium *Chlamydia trachomatis*. The bacteria can spread via an infected person's hands or clothing and may be carried by flies that have been exposed to discharge from the eyes or nose of an infected person (Emerson and Rotondo, 2009). Repeated infection with the ocular strains of *Chlamydia trachomatis* can lead to a cascade of conjunctival scarring, in-turned eyelids and eyelashes (trichiasis); and eventually blindness due to corneal opacity (WHO, 2004).

The early signs of trachoma (follicular disease and intense inflammation) are seen in children whereas scarring and trichiasis is observed in the older population. The resulting abrasion of the cornea by in turned eyelashes (trichiasis) causes pain and eventually leads to corneal opacity and blindness (Cook and Mariotti, 2011).

Trachoma has been recognized since antiquity; however, trachoma remains a leading cause of blindness due to infection in the 21stcentury (Mori, 2001). Eight million people are visually impaired from the disease globally and more than 46 million people with active disease are in need of treatment to prevent blindness. Globally 1.2 billion people live in endemic areas. From this, 48.5% of the global burden of active trachoma is concentrated in five countries including Ethiopia, India, Nigeria, Sudan, and Guinea (Mariotti *et al*., 2009). In Ethiopia, approximately 67 million people are at risk for trachoma (Carter, 2010). According to 2006 national blindness and low vision survey of the Federal Ministry of Health (FMOH), the prevalence of blindness in Ethiopia was estimated 1.6%, among the highest in the world. The Amhara Regional State of Ethiopia was the most trachoma-endemic among all nine regional states and two city administrations (FMOH, 2006; Carter, 2010).

Trachoma remains a significant cause of blindness in the poor developing countries and the productivity costs of trachoma-related reduced vision and blindness have been estimated US $ 5.3 billion annually in 2003 (Frick *et al*., 2003). It is considered to be among the most common of all human chronic infections and the most common cause of preventable blindness today (Mori, 2001).

Different treatment modalities were practiced for treating and preventing trachoma in different periods. The early Egyptians described the first effective therapeutic modality using copper sulphate sticks for trachoma thousands of years ago. However, trachoma remains a leading cause of blindness in the 21st century in rural Egypt. Various groups to prevent trachoma by immunization with trachoma antigens conducted different studies. The vaccine produced has only short immunity to infection; a sensitized subject develops more serious ocular disease than an unimmunized control because of the development of hypersensitivity induced by the vaccine. In a study done on monkeys, the hypersensitivity reaction was usually more severe than the protective effects of the vaccine. To date there is no effective vaccine for trachoma (Mori, 2001).

For many years, topical agents such as tetracycline were used as a treatment of choice for ocular infection with *Chlamydia trachomatis.* This was done due to the absence of systemic side effects in children. However, topical tetracycline must be used every day for four to six weeks to be effective. It also results in blurred vision due to its oily base. Because of these, compliance (regular use of the prescribed medicine) with topical agents is typically quite poor (West and Solomon, 1999).

In recent years, many randomized control trial studies indicated that azithromycin is the treatment of choice for ocular infection with *Chlamydia trachomatis* (Bailey *et al*, 1993; Solomon *et al*., 2004; Mariotti, 2004; Solomon *et al*., 2008).

Azithromycin is a semi synthetic azalide antibiotic that is structurally related to erythromycin but has a broader spectrum of antibacterial activity and a more favorable pharmacokinetic profile (Foulds *et al*., 1990). Azithromycin is also associated with a short-term reduction in diarrheal morbidity in children (Keenan *et al*., 2011; Coles *et al*., 2011). It is easy to administer and higher coverage may be possible as compared to tetracycline topical treatment (Fraser-Hurt, 2001).

In 1997, WHO founded an alliance of ministries of health as well as nongovernmental organizations for the global elimination of blinding trachoma by 2020 (GET 2020). Based on this initiative the World Health Assembly passed a resolution for the 57 countries where trachoma remains endemic to take steps to eliminate blinding trachoma by implementing the “SAFE” (surgery, antibiotic, facial cleanness and environmental sanitation) strategy (WHO, 1998).

Surgery (S) is the first component of the strategy, because it addresses the needs of those at imminent risk of blindness and because its tangible benefit can provide a basis of credibility for preventive activities. It is the usual treatment for trachomatous trichiasis (TT), the immediate precursor to blindness. The WHO has endorsed a simple and cost-effective surgical procedure that rotates eyelashes away from the eye and thus prevents further scarring on the cornea. The antibiotic (A) component of the SAFE strategy aims to suppress transmission in the community by treating the pool of infection (TF or TI) found in specific groups of individuals. Facial cleanliness (F) which depends on water availability and use is important determining factors in the transmission of trachoma. Improving availability of water and facial cleanliness is important to decrease the trachoma transmission. Environmental (E) improvement is part of the overall process of community development. Many environmental factors can cause and prevent trachoma. In addition to increasing access to water availability and utilization, the management of human waste is important. Trachoma elimination programs worldwide are involved in provision of water and construction of household latrines in order to address these needs in the most endemic areas (ITI, 2010).

Mass drug administration with antibiotics predominantly with azithromycin is one of the four arms of the SAFE strategy. To reduce the prevalence of trachoma infection, WHO had recommended community-wide distributions of oral azithromycin when the prevalence of trachomatous inflammation follicular (TF) is greater than 10% in children aged 1–9 years, and trichiasis prevalence in persons aged over 14 years exceeds 1% (Foulds *et al*., 1990; WHO, 2004). WHO advocates at least three mass drug administrations' with antibiotics when the prevalence of follicular trachoma (TF) in children less than 10 years is greater than 10%. Full child participation is necessary for maximizing the impact of trachoma control programs (Ssemanda *et al*., 2012). Antibiotic distribution teams should offer azithromycin to all individuals over the age of six months in eligible communities. Tetracycline eye ointment should be given to children below six months of age, and to older individuals who refuse or cannot receive azithromycin. Overall coverage should be as high as possible, but treatment of 80% of the resident population should be the minimum target (Melese *et al*., 2004).

2. Statement of the Problem

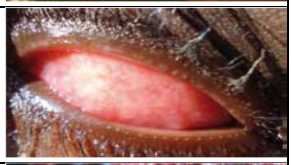
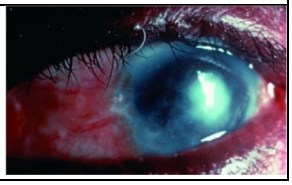
Trachoma is the leading cause of infectious blindness worldwide. Globally 1.2 billion people live in endemic areas. From this, 48.5% of the global burden of active trachoma is concentrated in five countries: Ethiopia, India, Nigeria, Sudan, and Guinea (Mariotti *et al*., 2009). In Ethiopia, approximately 67 million people are at risk for trachoma (Carter, 2010). The 2006 national prevalence of active trachoma (either TF or TI) for children in the age group 1-9 year was 40.1% and trichiasis among adults 15 years and older was 3.1% (FMOH, 2006). The Amhara region is the most trachoma endemic region in the country (62.6%) (FMOH, 2006; Carter Center, 2010). Awi zone is one of the trachoma endemic zones among the 10 zonal administrations in Amhara region with a TF and TT prevalence of 38.9% and 5.4%, respectively in 2007 (Carter Center, 2010; Emerson *et al*., 2008). The mass treatment was first initiated in the Amhara region and Awi zone in 2000 and 2007, respectively. Many randomized control trial studies showed that mass distribution of azithromycin for trachoma control is the most effective way of rapidly reducing trachoma infection (Emerson and Ngondi, 2009; Coles *et al*., 2011; Porco *et al*., 2009; Gebre *et al*., 2011). However, the elimination of ocular chlamydial infection is only achieved as long as the azithromycin mass treatments (AMT) are given frequently enough and at a high enough coverage (Ray *et al*., 2007; Melese *et al*., 2004). Therefore, offering AMT to all individuals over the age of six months in eligible communities is mandatory (Melese *et al.*, 2004; Malaty *et al*., 1981). Unlike patient oriented treatments that are commonly self-initiated, there may not be full acceptance of the community for drugs that are given in the form of campaign due to different reasons. (University of Twente, 2013; Desmond *et al*., 2005). In Ethiopia, even if there are many studies addressed the azthtromycin mass treatment effectiveness for trachoma control, studies that addressed the community acceptability and related factors are very limited. In addition to this, from my anecdotal observation in Injibara town and adjacent Banja Woreda, there was a continuous rumor from the society and from the treatment providers concerning to azithromycin mass treatment. In line with this background, this study tried to assess the acceptance of the community to AMT for the elimination trachoma in Injibara town and adjacent Banja *woreda* of Awi Zone.

3. Literature Review

3.1. Epidemiology of Trachoma Infection

Trachoma is caused by the bacteria *Chlamydia trachomatis*, which is easily spread from person to person through hands, clothes, and flies (Carter Center, N.D.). The initial infection of trachoma will result after a brief incubation period of 5–10 days. Repeated infections may result in intense inflammation and scarring of the upper sub tarsal conjunctiva, distortion of the lid margin those results in a shortened upper lid. This shortened upper lid pulling the eyelashes inward (trichiasis). The early signs of trachoma (follicular disease and intense inflammation) are seen in children whereas scarring and trichiasis is observed in the older population. The resulting abrasion of the cornea by inturned lashes (trichiasis) causes pain and eventually leads to corneal opacity and blindness (Cook and Mariotti, 2011; Wolle *et al.*, 2009). The simplified WHO trachoma grading system is shown in the table below (Table 3.1).

Table 3.1: The WHO simplified trachoma-grading system

Grade	Clinical signs	Image
Trachomatous inflammation follicular(TF)	Five or more follicles of >0.5 mm on upper tarsal conjunctiva	
Trachomatous inflammation intense(TI)	Inflammatory thickening obscuring more than half of the normal deep tarsal vessels	
Trachomatous conjunctival scarring(TS)	The presence of easily visible scars in the tarsal conjunctiva	
Trachomatous trichiasis (TT)	At least one eyelash rubbing on the eyeball or evidence of recent removal of in-turned eyelashes	
Corneal opacity (CO)	Easily visible corneal opacity over the pupil	

(Thylefors *et al.*, 1987) DOI: 10.1371/journal.pmed.0030041.t001

The duration of active disease showed a significant decline with age even after accounting for lower rates of re-infection and disease at older ages ($p = 0.004$). Infection with *C. trachomatis* was estimated to last a median of about 17 weeks and active disease (TI/TF) somewhat longer at about 21 weeks in the standard model (Grassly *et al*., 2008). The infectious pool includes children, especially preschool children, mothers, and women involved in childcare. Within this group, tears and secretions infected with chlamydia are easily and frequently swapped among the young children and their caretakers leading to repeated episodes of reinfection (Taylor K and Taylor H, 1999). Children consist of the highest burden of trachoma infections. As women are the traditional caregivers for children, they are almost twice as likely as men to develop trichiasis (Carter center, N.D.). However, women are predicted to live longer and spend a greater proportion of their lives with disabling trichiasis, low vision, and blindness compared to men (Ngondi *et al*., 2009).

Trachoma has been recognized in ancient Egyptians (Mori, 2001). Globally 1.2 billion people live in endemic areas. Out of these, 40.6 million People are suffering from active trachoma, and 8.2 million have trichiasis. About 48.5% of the global burden of active trachoma is concentrated in five countries: Ethiopia, India, Nigeria, Sudan, and Guinea. On the other hand, 50% of the global burden of trichiasis is concentrated in only three countries: China, Ethiopia, and Sudan. Overall, Africa is the most affected continent. More than 27.8 million cases of active trachoma (68.5% of all) and 3.8 million cases of trichiasis (46.6% of all) are located in 28 of the 46 countries in the WHO African Region, with an estimated population of 279 million living in endemic areas (Mariotti *et al*., 2009).

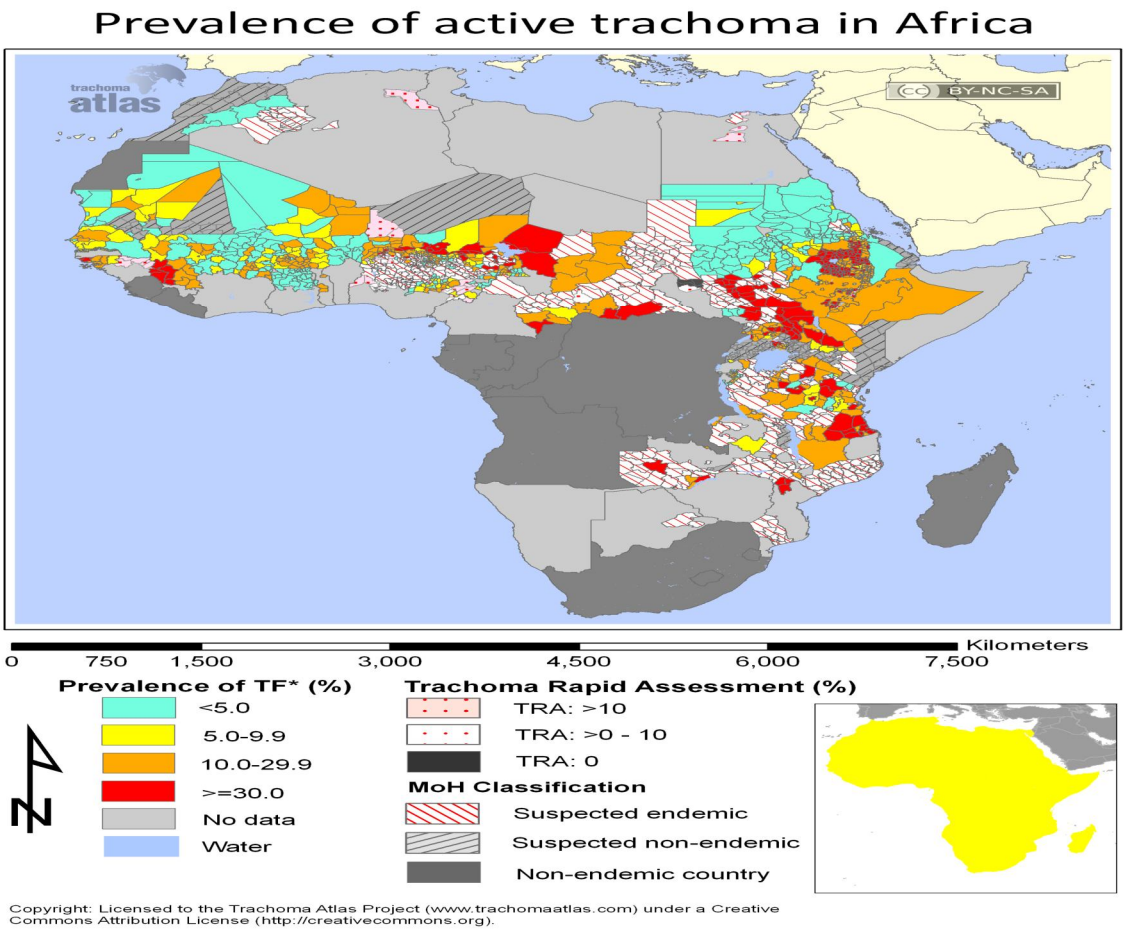


Fig 3.1.1: Trachoma atlas showing the distribution of active trachoma in African countries

According to the Ethiopian blindness and low vision survey of 2006, the national prevalence of both TF and TI in children in the age group 1-9 year was 40.1%. The national prevalence of trachomatous trichiasis (TT) for the age group of 15 and above was 3.1%. From the total 1.6 million blind persons found in the survey, trachoma contributes 11.5% of the burden. The highest burden of trachoma was found in the big regional states of the country; namely, Amhara (62.6%), Oromia (41.3%), and SNNPR (33.2%) whereas the prevalence of active trachoma was very low in Afar regional state (1.9%), Beneshangul Gumz region (0.9%), Addis Ababa (0.9%) and Dire Dawa (0.5%). In major towns where there is better sanitation status and water supply, the prevalence of active trachoma was very low. The prevalence of trachoma in the rural population showed a fourth fold increase as compared to the urban (P <0.001). The prevalence trichiasis among females was over two fold as compared to males (p < 0.001) (FMOH, 2006).

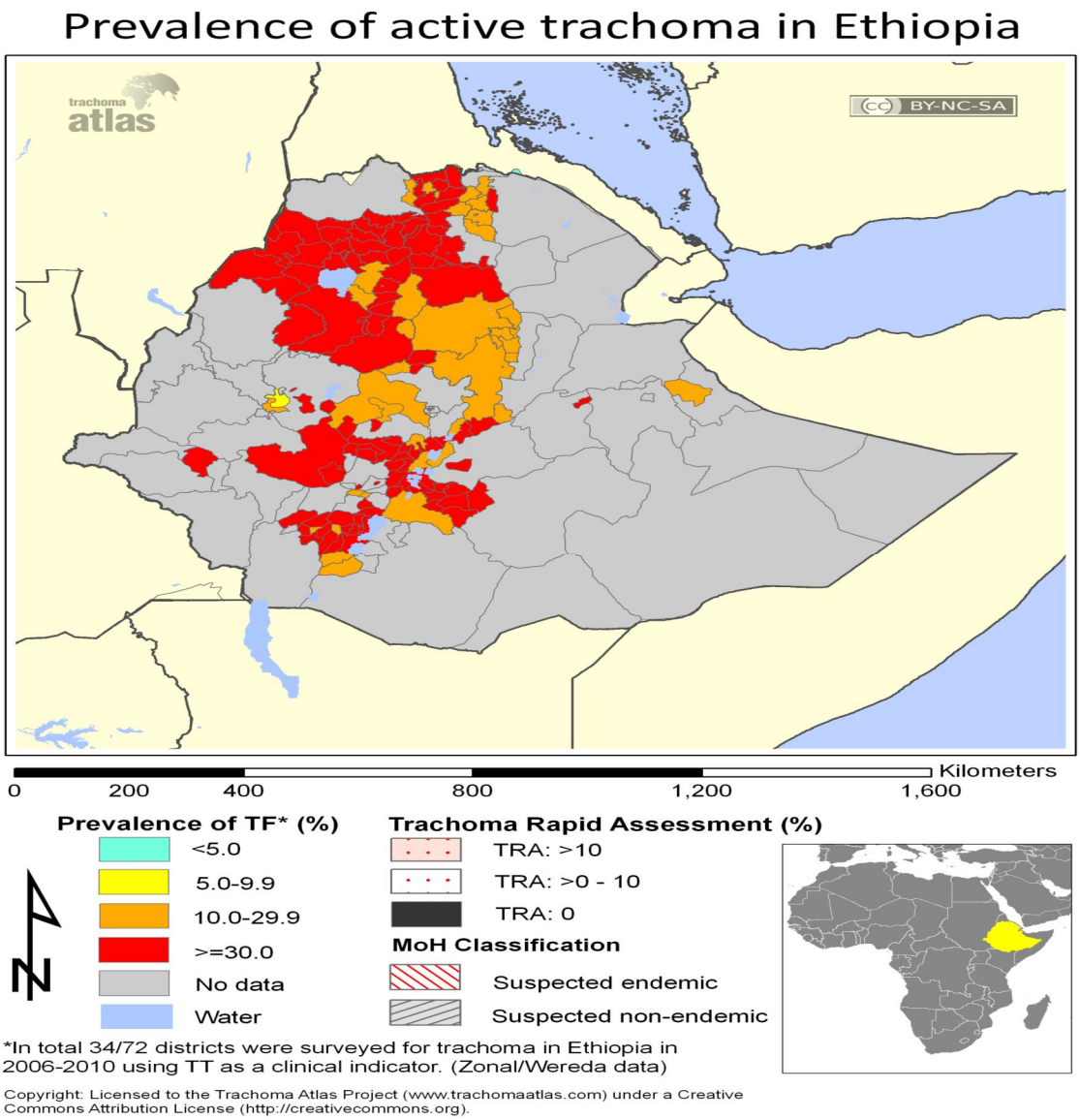


Fig 3.1.2: Trachoma atlas showing the distribution of active trachoma in Ethiopia

Attempts to prevent trachoma by immunization with trachoma antigens were not well effective. Now a day, there is no effective vaccine for trachoma (Mori, 2001).The only possible prevention and treatment techniques for trachoma is the SAFE (surgery, antibiotic, facial cleanness and environmental sanitation) strategy recommended by the WHO in 1997 (WHO, 1998).

3.2. Trachoma Elimination Program

Being trachoma is one of the neglected tropical diseases (NTD), the WHO founded an alliance of ministries of health as well as nongovernmental organizations for the global elimination of trachoma by 2020 (GET 2020) (WHO, 1998). The main aim of the World Health Assembly resolution (Resolution 51.11) was to take actions to eliminate blinding trachoma by implementing the SAFE strategy for more than 57 countries where trachoma remains endemic (WHO, 1998). WHO and the International Agency for the Prevention of Blindness (IAPB) in collaboration with international non-governmental organizations had launched a global initiative called "VISION 2020: The Right to Sight" in 1999 with the aim of eliminating the major causes of avoidable blindness by the year 2020 (Pizzarello *et al.*, 2004).

Mass drug administration with antibiotics predominantly azithromycin but also topical tetracycline is one of the four arms of the SAFE strategy advocated by WHO. Large-scale vertical control programmes currently operated and the control program is integrated with other NTDs (Hotez *et al*., 2007; WHO, 2004). According to WHO, the full SAFE strategy is warranted at the district level if the prevalence of trachomatous inflammation follicular (TF) is greater than 10% in children aged 1–9 years, and trichiasis prevalence exceeds 1% in persons aged over 14 years (Foulds *et al*., 1990; WHO, 2004). WHO recommends at least three mass drug administration's with antibiotics when the prevalence of TF is greater than 10% in children under age ten (Ssemanda *et al*., 2012).

In the first 10 years of the global trachoma elimination program, there has been a rise in the number of countries receiving azithromycin from two to 19 and in annual azithromycin treatments from around 700,000 to 41,400,000 in 2010 and 58 million in 2011. More than 80% of the 2009 azithromycin shipments went to five countries: Ethiopia (42%), Mali (13%), Niger (10%), United Republic of Tanzania (8%) and Burkina Faso (8%). Pfizer has donated nearly 190 million treatments since the start of the program to 2010. However, the numbers of distributed treatments were still below the 80% threshold target (72.76%). In 2016, more than 160 million azithromycin treatments are projected for distributing in trachoma endemic areas (WHO, 2010A; WHO, 2010B).

Unlike tetracycline, azithromycin oral administration is well tolerated in pregnant women. A randomized controlled trial study on treatment of pregnant mothers for sexually transmitted diseases has provided useful data. In the study, neonatal death, low birth weight, pre-term delivery and infant ophthalmia were all significantly less common in the treated group as compared to those not given any of treatment (Gray *et al*., 2001). Oral azithromycin is easy to administer and offer better resolution for controlling blinding trachoma for long period as compare to tetracycline. In one study conducted after 2 months of the treatment, the prevalence of trachoma was decreased from 16% to 4.6% and 5.1% in the azithromycin and the tetracycline groups, respectively. After 12 months, the prevalence rose to 16% in the tetracycline group, while remaining at 7.7% in the azithromycin group (AOR = 0.52; 95% CI [0.34-0.80] (Fraser-Hurt *et al*., 2001). Oral AMT is given as a single oral dose about 20mg/kg with a maximum of 1000mg (Solomon *et al*., 2001; FMHACA, 2010).

In non-respondent patients to oral dosage forms, 1.5% azithromycin eye drop is taken as alternative treatment for trachoma. In a randomized, controlled, double masked clinical trial study including 670 children from Guinea Conakry and Pakistan results a cure rate of 93.0%, 96.3% and 96.6% in 2-day eye drop group, 3-day eye drop group, and oral treatment group, respectively. In addition to this, azithromycin eye drops can minimize oral azithromycin misuse practices (Cochereau *et al*., 2007). Active trachoma mass treatment with azithromycin 1.5% eye drops is feasible, well tolerated, and effective (Amza *et al*., 2010). However, re-infection from extra ocular sites can occur if only topical treatment is used (Malaty *et al*., 1981).

In addition to controlling blinding trachoma, AMT has complementary benefits. A single dose of AMT has an impact in children with short-term reduction in diarrheal morbidity (RR = 0.61, 95% CI) (Coles *et al*., 2011). In a survey conducted in 24 communities in rural Ethiopia, children 1–5 years of age who had received azithromycin at baseline had a lower all-cause mortality rate (2.79 deaths per 1000 person years) compared with those who had not (8.18 deaths per 1000 person years) (OR=0.35, 95% CI) (Keenan *et al*., 2011).

On the other hand, studies showed that azithromycin treatment increases the risk of cardiovascular death. In one study with 5 days of azithromycin therapy, there was most pronounced risk of cardiovascular death for patients with a high baseline risk of cardiovascular

disease. Patients taking azithromycin, as compared with those who took no antibiotics, had an increased risk of cardiovascular death (hazard ratio=2.88; 95% CI [1.79-4.63]. Relative to amoxicillin, azithromycin was associated with an increased risk of cardiovascular death (hazard ratio=2.49; 95% CI [1.38-4.50] (Ray *et al*., 2012). Based on this result, the United States Food and Drug Administration was warning the public that azithromycin (Zithromax or Zmax) can cause abnormal changes in the electrical activity of the heart that may lead to a potentially fatal irregular heart rhythm (FDA, 2013). In Ethiopia, in two rounds of adverse event surveillance conducted on a random sample of communities after community-wide mass azithromycin treatment, the prevalence of any reported adverse event ranged from 4.9% to 7.0% in children 1–9 years of age and from 17.0% to 18.7% in persons ≥ 10 years of age (Ayele *et al*., 2011A).

AMT is not a significant factor for the development of drug resistant bacteria. In a study conducted in Ethiopia to investigate antimicrobial drug resistance in ocular *C.trachomatis* after 18 months of four biannual communitywide distributions of antimicrobial drugs, there was no significant differences in susceptibilities to azithromycin and doxycycline in six post treatment and four pretreatment samples (Hong *et al*., 2009).

Studies recommended that azithromycin should be distributed to all individuals over the age of six months in eligible communities, and full child participation is necessary for maximizing the impact of trachoma control programs. Tetracycline eye ointment should be given to children below six months of age, and offered to older individuals who refuse or cannot receive azithromycin. Overall, treatment coverage of 80% should be the minimum target in the resident population (Melese *et al*., 2004; Ssemanda *et al*., 2012).

A modeling study conducted in three countries namely Tanzania (with 16% infection in children pre-treatment), Gambia (9%), and Ethiopia (64%); projects that three annual treatments at 80% coverage would reduce the mean prevalence of infection to 0.03% in Tanzanian, 2.4% in Gambian, and 12.9% in the Ethiopian communities. This Modeling study suggested that graduating communities from a program when the infection is reduced to 5% is a reasonable strategy (Ray *et al*., 2009).

There is little doubt that the mass distribution of azithromycin for trachoma elimination is the most effective way of rapidly reducing ocular infection with *C. trachomatis*, and that mass distribution have many additional benefits beyond trachoma elimination (Emerson and Ngondi, 2009). Even, one round of the mass treatment with high coverage decreases infection by over 50% (Cajas-Monson *et al*., 2011). However, studies indicated that unless it is going along with effective facial cleanliness and environmental improvements, mass treatment alone would not result in eliminating trachoma in the most affected areas (Emerson and Ngondi, 2009). Especially in trachoma endemic regions like Ethiopia, infection often returns to the community after mass distribution of antimicrobial drugs stopped (Lakew *et al*., 2009B).

In addition to this, treatment of a few cases in trachoma endemic settings results re infection from familial or neighborhood sources unless the treatment is more widespread (Malaty *et al*., 1981; Ssemanda *et al.,* 2012). Mass azithromycin treatments should be also continued in households that have missed prior mass antibiotic treatments, especially in households with clinically active trachoma, and in larger communities (Ayele *et al*., 2011B). Transmission of ocular *C. trachomatis* infection within households is typically very efficient. Failure to treat all infected members of a household during mass administration of antibiotics is likely to result in rapid re-infection of that household followed by a more gradual spread across the community (Blake *et al*., 2009).

Elimination from larger areas may require repeated biannual treatments and prevention of re-introduction from outside to treated areas. The stochastic model study suggested that treatment given to 90% of the population biannually would eliminate infection in 95% of the villages after 5 years. According to this modeling study, the WHO's recommended strategy of annual treatment of 80% of the population would eliminate infection in an estimated 95% of hyper-endemic villages in 12 years (Ray *et al*., 2007). Another modeling study done in 71 hyper endemic communities of Tanzania suggested that, with average coverage of 75% and a starting trachoma prevalence of 50%, it would take more than 7 rounds of annual mass treatment to reach a prevalence of trachoma 5% (Sheila *et al*., 2011). As all this modeling studies indicated, lower coverage or less frequent treatments would not be successful for eliminating trachoma.

In some of the most severely affected communities, eliminating trachoma is a great challenge. The trachoma infection may return to the baseline data after many mass treatment programs. In a study conducted in 40 villages of Ethiopia with a mean coverage of 90.6%, the mean prevalence of ocular Chlamydia was decreased from 48.9% (95% CI [42.8 -55.0%] to 5.4% (95% CI [3.9-7.0%] at two months after mass treatments. The infection was returned to 7.9% (95% CI [5.4-10.4%] by six months after the mass treatment (Lakew *et al*., 2009A).

In a similar 42-month longitudinal study conducted in Gurage zone of Southern Nations Nationalities and Peoples Region indicated, the average prevalence of infection in 1-5 year old children was reduced from 63.5% pre-treatment to 11.5% six months after the first distribution ($P<0.0001$). It further decreased to 2.6% six months after the fourth and final treatment ($P = 0.0004$). However, after 18 months the infection prevalence was returned to 25.2% (Lakew *et al*., 2009B).This indicates that the need of full community participation to the treatment program with giving great emphasis to children.

Being Ethiopia is the most trachoma-endemic country, the VISION 2020 Initiative was launched in September 2002 (FMOH, 2006). In the five-year health sector development program, the FMOH set 2015 as the target year for the elimination of blinding trachoma as a public health problem (FMOH, 2010).

Knowing the actual coverage and community' acceptability to AMT, as well as related determinants may facilitate the elimination program. The information extracted from this type of studies are important for filling the gap in attaining the elimination program as well as used as a baseline study for conducting further studies and interventions.

3.3. Public Acceptance for Mass Drug Administrations

Control or elimination of infectious diseases using annual mass drug administration (MDA) is one of the cheapest and most beneficial disease control strategy in the annals of public health history. The annual MDA is feasible and each MDA is carried out over a period of just two to three days with minimum additional burden to the existing health system or communities (Ramaiah and Das, 2004). In a typical MDA program, all consenting residents of selected villages in endemic areas would be eligible for taking the drug. However, depending on the formulation and safety profile of the drugs, certain criteria may be used to guide exclusion of subjects from the study. We should give careful consideration on the safety impact in special populations, including elderly, pediatric patients, and patients with co-morbid conditions. In addition to special follow-up and evaluation studies, other direct and indirect measures may be taken to assess the risk-benefit ratio of the treatment (Alemayehu *et al*., 2010).

MDA program is different from other preventive programs since it targets health behaviors in many ways. MDA program is delivered in a campaign mode at the door steps (Nujum *et al*., 2012). Unlike patient oriented treatments that are commonly self-initiated, in MDA there may not be full acceptance of the program by the community due to different factors. Potential factors that are thought may affect MDA acceptance include age, sex, socio-economic status, education, poor acceptability of ingesting many pills, knowledge and awareness, and attitudes, beliefs and perceptions about the diseases. Reinforcing factors such as satisfaction with health services, policy support from decision makers, and social support from family and community, as well as enabling factors such as availability and accessibility of diagnostic and treatment services, and self-efficacy or the confidence in one's ability to take action may likewise affect MDA acceptance (University of Twenty, 2013). Based on the Health Belief Model, when perceived benefits outweigh the perceived barriers; people are more likely to comply with MDA. Moreover, increased knowledge about the drugs and their side effects may result in a better perception of its benefits than its barriers. Consistent with the Health Belief Model, the study results showed that the protection provided by the drugs was perceived to be beneficial and significantly associated with drug intake (Dheimann, 2003).

In addition to these, health education, promotion activities, utilizing locally translated information, education, communication materials and other media may increase the community's level of awareness and knowledge on the diseases and MDA. This heightens their understanding of the benefits of the drug and participation in MDA, resulting in increased treatment coverage and eventual elimination of the diseases (Amarillo *et al*., 2008).

In a study conducted in Kerala district of India, there was no significant association of MDA compliance with awareness of filariasis, experience with filariasis and MDA awareness. Health workers were the most common source of knowledge regarding MDA (48.5%), followed by television (20.7%) and newspapers (10.1%) (Nujum *et al*., 2012). In another study conducted in seven zones of the Surat city (Gujarat), among the total 3640 persons interviewed for MDA compliance revealed that actual drug consumption was 76.7%. Another 11.9% although took the drug but did not consume and 11.4% refused. Important reasons for consuming was fear to get the diseases (40.7%), persuasion by drug distributors (17.1%), free supply (8.2%), effective to prevent filariasis (7.1%) and others (6.6%). The main reasons for not consuming were 'will consume after meal' (6.9%), too many tablets (1.7%), seek consent from doctor (1.5%), and lack of awareness (1.4%) etc. Refusal was mainly due to the reason as respondents felt apparently healthy followed by lack of faith in distributors and fear of side effects (Vaishnau and Patel, 2006).

In a similar study conducted to assess community compliance to ivermectin for onchocerciasis control in Southwestern Ethiopia, factors positively associated with compliance were; high risk perception to the infection of onchocerciasis and support of family members to participate in treatment. The study also showed that perceived good performance of community drug distributors by the population is associated with increased compliance. Another strongest factor associated with increased compliance in this study was found to be belief on the use of measuring height as a proper way to determine somebody's dose. Some community members apparently cited lack of trust and confidence on the community drug distributors as reason for noncompliance (Yirga *et al*., 2010).

In a study conducted in Philippines to assess factors associated with the acceptance of MDA for the elimination of lymphatic filariasis, the majority of the sampled population expressed their

willingness to participate and ingest the drugs in the next round of MDA. This was attributed to their perceived threat of becoming infected with lymphatic filariasis in the future, as well as their knowledge on its prevention (Amarillo *et al*., 2008).

In a study conducted in Northern Tanzanian community, only 76% of the population eligible to receive azithromycin was treated. Acceptance was higher among women (79% treated) than men (72%). The main factors affecting acceptability were local prevention norms (such as the belief on injections rather than oral medicines), perceptions of drugs in general and azithromycin in particular, perceptions of the distribution team's expertise, witnessing adverse effects in others, and the timing, quality and quantity of information and its availability. Socio-economic status and use of traditional healers were not affecting azithromycin utilization (Desmond *et al*., 2005). In another study conducted among 16 hyper endemic Tanzanian villages after six rounds of AMT, the average coverage was 76.9%. Of these, only 62.8% of the villages had a treatment coverage of >75% (Sheila *et al*., 2011).

In a study conducted in Plateau State of Nigeria, only 60.3% of the participants reported having received azithromycin or tetracycline eye ointment during MDA (95% CI: 47.9–73.8%). Participation in MDA among children ages 1–9 years and children ages 6–15 years was 58.8% (95% CI: 42.9–74.6%) and 54.1% (95% CI: 35.1–73.1), respectively. The coverage report taken from administrative data (75.8%) overstates the coverage obtained from survey point estimate (60.3%). This discrepancy is due to the fact that administrative records are not always reliable and often biased due to a reliance on population estimates for the denominator, which can be incorrect between census years. Administrative data is also vulnerable to bias from lost forms or inaccurate records (Cromwell *et al*., 2013).

In a community randomized trial in 48 communities in four Gambian districts, mean treatment coverage of eligible communities randomized to standard treatment was 85.5% at baseline and 82.5% and 87.4% at one and two years, respectively (Harding-Esch *et al*., 2013).

In a survey conducted in the Goncha siso Ense woreda in Amhara region, Ethiopia after 26 months of AMT, only 88.8% of the eligible community members had received the treatment. The most common reasons for refusal were absence, refusal without reason and taking

tetracycline eye ointment. In this, study, children 6-10 years of age had taken the treatment two times more likely than children with 1-5 years (AOR=1.91; 95%CI [1.65-2.20]). On the other hand, children with 1-5 years of age had taken better than those >10 years of age. Female household members uptake status was lower as compared to males (AOR=0.79; 95% CI [0.73-0.86]) (Keenan *et al.*, 2011).

4. Objectives

4.1. General Objective

To assess the acceptability of azithromycin mass treatment for the elimination of trachoma and identifying factors influencing acceptability of azithromycin mass treatment.

4.2. Specific objectives

To determine the acceptability rate of the community to azithromycin mass treatment for trachoma elimination

To identify factors influencing the communities' acceptability to azthtromycin mass treatment

To make comparative analysis on azthtromycin mass treatment uptake between urban and rural communities

5. Methods and Materials

5.1. Study Area

Awi Administrative Zone is one of the three special zones that are found in Amhara Regional State. The zonal capital town, Injibara is located at 118 Kms southwest of Bahir Dar and 435 kms North West of Addis Ababa. The zonal administration has an area of 9,148.43 square kilometers. Zonal altitude ranges from 1800 to 3020 meters above sea level and more than 70% of the zonal districts have Woina Dega type of environment. The zone is divided into eleven administrative *woreda*s with eight rural *woredas* and three town administrations. The eleven *Woredas* are further divided into 180 rural kebels and 20 urban kebeles (Awi development association, 2013). The study was conducted in Injibara town and Banja rural *Woreda*, which is located surrounding Injibara town. Injibara town was administered under Banja *Woreda* before it was changed into administrative town in 2003. The town administration has two urban and one rural kebeles whereas the Banja *Woreda* has 25 rural kebels and 1 urban kebele. Awi zone had 1605 personals working in health sectors with 706 different health professionals, 418 rural health extension workers (HEW), 36 urban HEW and 445 administrative staffs. There are also Health Development Armies at kebele level who are working in collaboration with HEWs and government officials (Awi zone, 2012).

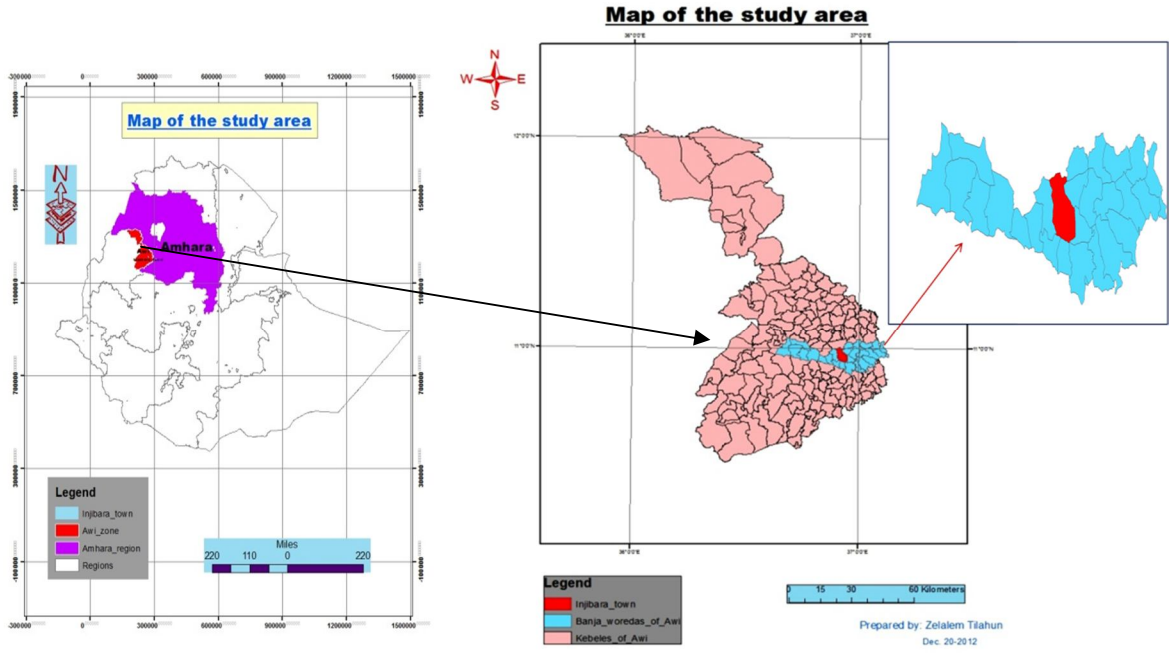


Figure 5.1: Geographical map of the study area

Based on the 2007 CSA Report, Injibara town administration had a total population of 21,065. The adjacent Banja *Woreda* had 89,502 rural and 1408 urban populations. The town administration had 6352 households, and there were 17, 975 rural and 329 urban households in the adjacent rural *Woreda* (CSA, 2008).There were 40 health centers and 185 health posts in Awi zone. Of these, 4 health centers and 25 health posts were found in Banja *Woreda.* Injibara town administration had one health center and one health post. One zonal hospital was under construction in the town (Awi zone, 2012).

5.2.Study design

A community based cross sectional survey was conducted in both urban and rural kebeles from July 7 to July 25, 2013. Both quantitative and qualitative data collection methods were employed in the study.

5.3. Source population

The source population for the study was all individuals living in Injibara town and Banja *Woreda*.

5.4. Study population

The study population was all individuals who live in the selected two urban and six rural kebeles. All family members who lived more than 8 months in that household during the time of the survey were included. All children who were older than 6 months during 2012 AMT program were also included in the study.

5.5. Sample size determination

The number of households to be involved in the survey was determined using the single proportion formula (Lwanga and Lemeshow, 1991).

$$N = \frac{(Z)^2 \times P (1- P)}{d^2}$$

Where: N= Sample size

P= Prevalence of azthtromycin uptake (either took or did not take)

Z= Z-score at 5% significance level

d= absolute sampling error that can be tolerated

The sample size was calculated by taking the value of P as 0.5. The absolute sampling error to be tolerated was taken as four with 95% confidence interval.

Hence, the sample size was

$$N = \frac{(1.96)^2 \times 0.5(1-0.5)}{(0.04)^2} = 600.25$$

To minimize the design effect, the sample size was multiplied by two

$$N = 600.25 \times 2 = 1200.5$$

With the assumption of 10% non-response rate, a total of 1321 households were included in the survey.

5.6. Sampling method

The number of households to be covered in urban and rural kebeles were allocated based on proportionate to the size of population established in 2007 CSA census (28% Urban and 72% Rural) (CSA, 2008). Then, six rural and two urban kebels were randomly selected. Finally, the sample size of households in each kebele was determined based on proportion to size of households in each kebele. The number of households to be covered in each *gott* was also assigned based on proportionate to the size of the population. In rural kebeles, systematic random sampling technique was employed based on the order of registration of each household by the HEWs. The households were selected systematically relative to the first household until the quota was filled. Similarly, the sample size of households in each urban kebele was determined based on the proportion to size of the households in each kebele. The number of households to be covered in each Village *(Mender)* was also assigned based on proportionate to size. Since there was no house-number as well as adequate data about each household in the urban kebeles, we used a systematic random sampling technique after counting the total households in each Village. This systematic random sampling technique was used since the houses were built with a plan. There is one row of houses at the front and another row of houses at the back. There is no house between the two rows and there are horizontal roads that classify the two rows of houses from others. A wide vertical road classifies each village (*mender*).

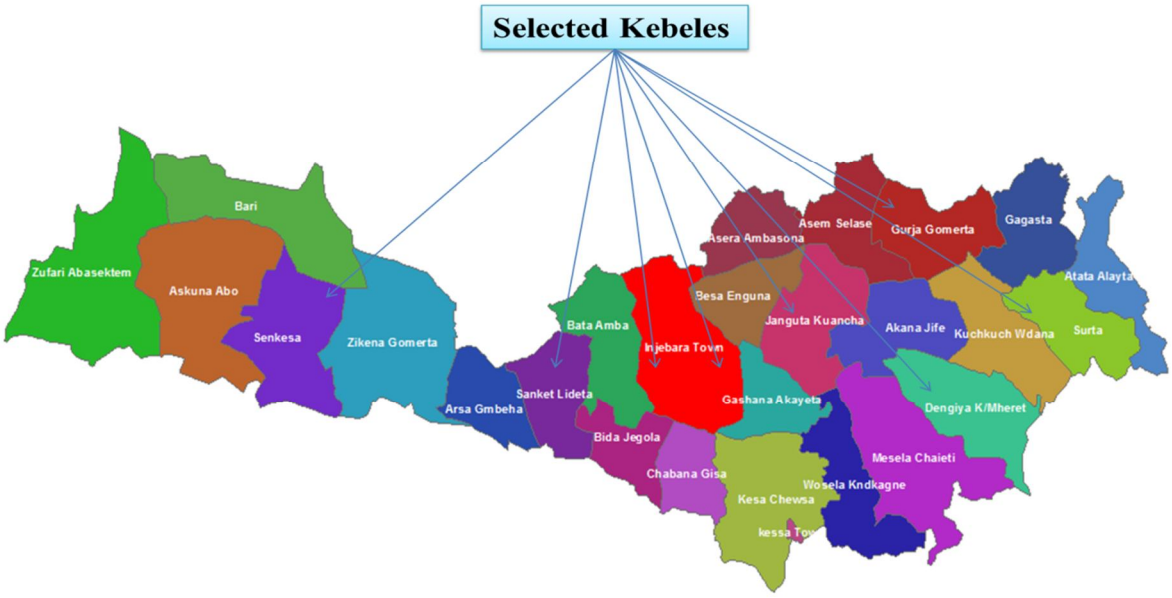


Figure 5.6.1: A map showing the eight randomly selected kebels for the study

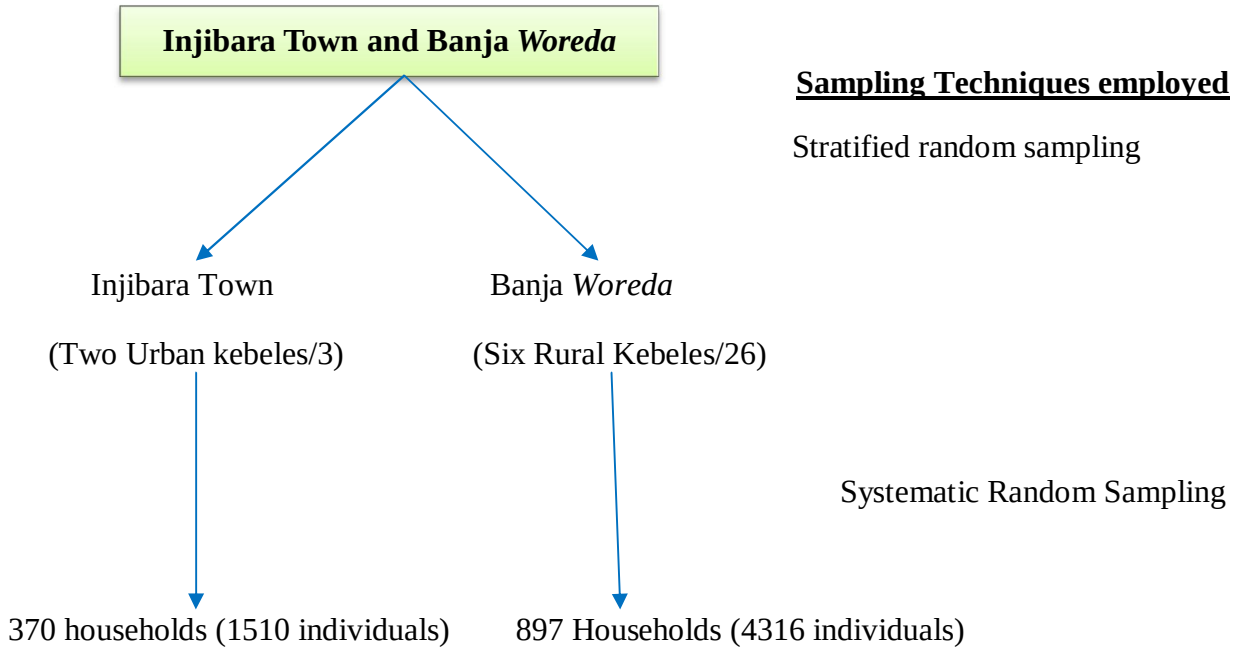


Figure 5.6.2: The sampling techniques employed in the quantitative survey

The FGD participants were selected based on snowball sampling technique. First, two key persons who had high respect in the community were contacted with the help of other community members. Then, a snowball sampling technique was employed to select the other FGD participants. A great effort was done to make the FGD participants homogenous in the aspects of their characteristics such as age, sex, wealth status, educational status, marital status etc. To minimize bias, persons ever participated in the drug distribution and politically active persons were not included in the FGD. The participants of the key informant interview were selected based on their experience in relation with AMT program.

5.7. Data collection methods

5.7.1. Data collection tools

Quantitative information was collected from each household members with a pre tested structured questionnaire by trained data collectors. The structured questionnaire was translated to the official language (Amharic) and most of them were asked with this official language. For those participants who can speak both the official and the local language (*Awigni*), two data collectors who can speak both the local and the official language fluently were used. The data collectors translated some unclear words to their local language for clarification. The head of each household was interviewed with structured questionnaire about himself and eligible children less than 18 years old as well as for family members absent during the data collection. Any available adult member of the household was asked about themselves. Mothers of the family member were asked when the household heads were not present during the data collection period. If both the father and the mother were absent during the data collection, the household was skipped to another. One urban and two rural focus group discussions were conducted among opinion leaders (religious leaders and respected persons) of the community to collect detail qualitative data. A note taker was used for recording the qualitative data raised in the focus group discussion. To make the transcription process easy, a tape recorder was used based on the consent of the participants. In addition to these, key informant interviews were conducted with three HEWs, one *Woreda* health office staff and one Carter Center Official.

5.7.2. Data collectors

One MSc. holder was selected as an assistant coordinator. Thirteen data collectors were selected based on their qualification and experience after an open vacancy announcement. Three were degree holders, four were university students and six were diploma holders in health and related fields. The principal investigator, with the help of one note taker, conducted focus group discussions and key informant interviews.

5.8. Study variables

5.8.1. Independent variables

Socio demographic variables (Age, Sex, Job, Educational status, marital status, Religion, Income/wealth)

Awareness and perception of trachoma

Azithromycin use related variables (side effect of the drug, information about the drug)

Additional variables (rumors from the neighbor, cultural influence, side effect of the drug in others, attitude and practice of AMT)

5.8.2. Dependent variables

Took azithromycin

Did not take azithromycin

5.9. Data quality assurance

To increase the quality of the data collected, questionnaires used for household survey, and guiding questions used for FGD were pretested before the actual data collection. Adequate training was given for all data collectors before the actual data collection. Native data collectors asked each person in the official language. Data collectors who can speak the local language were used to collect data from persons speaking the local language. Tape recorder was used for focus group discussion, and the information was transcribed as soon as possible after the discussion.

5.10. Operational definition

Acceptability: It is the uptake status of eligible community members to azithromycin mass treatment campaign

Active trachoma: It is the first stage of trachoma mostly occurred in children less than 10 years old and contains both TF and TI according to WHO grading system

Health extension Workers: HEWs are female health workers with a minimum age of 18 years recruited from the communities in which they are expected to work. They are given a one-year course of instruction and fieldwork on 16 packages developed in line with the Essential Health Service Package and assigned to a health post after completion.

Health Development Armies: are any members of the society who are working in cooperation with HEWs to improve the health status of the society.

Kebele: It is the smallest administrative unit of the Ethiopian government, which is composed of *gotts (menders)* and consists of at least five hundred families.

Mass treatment: Is the azithromycin treatment given for all of the eligible community members for trachoma elimination purpose.

Medium: Rural households who have 2-5 cows, 3-8 sheep, 2-4 horse and 3-8 *kada* land

***Mender* (*Gott*):** The smallest administrative organization that is sub division of the kebele by rivers, mountains, roads and land locations, and it usually contains around 50-100 households.

Poor: Rural households who have less than 2 cows, 3 sheep, 2 horse, and 3 *kada* land

Rich: Rural households who have 6-10 cows, 9-12 sheep, 5-6 horse and 9-12 *kada* land

Serious adverse effects: An adverse experience following AMT that results of either death, life threating condition, in-patient hospitalization, disability, birth defect, cancer or overdose.

Very rich: Rural households who have greater than 10 cows, 12 sheep, 6 horse and 12 *kada* land

Woina Dega: It is a subtropical zone, which includes the highland areas of 1830 - 2440 meters in elevation and has an average annual temperature of about 22 degree Celsius with annual rainfall between 510 and 1530 millimeters.

Woreda: It is the third-level administrative division of the Ethiopian government, which is composed of kebeles and managed by a local government.

5.11. Data analysis and interpretation

First, all the collected data were checked for its completeness and internal consistency. The data was coded and entered into Epi Info version 3.5.3 by three trained data entry clerks after a data entry template was prepared. Then, the data was exported to Microsoft Excel spreadsheet and later transferred to SPSS version 20.0. The data was cleaned one by one by sorting each variable. Random checking was done to confirm the validity of the data entry clerks work. Finally, the quantitative data was analyzed with the SPSS. Simple descriptive statistics was done for the dependent and independent variables. Chi square test, Correlation analysis, and Logistic regression both binary and multinomial types were conducted to show possible associations between the dependent and independent variables. For convenience, a Hosmer-Lemeshow Statistic test was conducted to check the overall fitness of Logistic Regression model for the dependent and independent variables. In addition to this, other model tests like Likelihood Ratio Test Statistic (-2LL) and Wald Statistic test (Cox & Snell R^2 and Nagelkerke $R^{2)}$ were checked for model fitness before proceeding to the result interpretation. P-value < 0.05 was considered as statistically significant association.

The qualitative data was transcribed and translated. Then, it was coded and analyzed based on a thematic approach. After the analysis, the data was interpreted based on the listed objectives of the research.

5.12. Ethical consideration

The proposal was reviewed and approved by the School of Pharmacy Ethical Review committee of Addis Ababa University. Then, a formal letter was written from the Department of Pharmaceutics and Social Pharmacy to Amhara Regional Health Bureau (ARHB) to get

permission for conducting the study. A formal letter was written from ARHB to Awi Zone Health Department. Awi Zone Health Department wrote official letters to Injibara City Administration Health Office and Banja *Woreda* Health Office. Then, consistent official letters were written to the selected kebels and health centers to get permission for conducting the data collection. Permission was granted from each kebele leaders and managers to conduct the study. The purpose of the study was clearly explained for all study participants, and verbal informed consent was taken after they comprehended the information delivered. Test questions were given for some of the participants to check whether they understood or not the information given by the data collectors (Annex VII). Any individual identifiers were not included in the data collection to protect the privacy of the participants. The data obtained from the study participants were analyzed in aggregate. Collective consent was ensured from FGD participants. Tape recorder was used after taking informed verbal consent from all FGD participants and key informant interview participants.

5.13. Result dissemination plan

The findings of this study will be first disseminated to the school of pharmacy community in Addis Ababa University. Then, it will be disseminated to the concerned bodies including the Carter Center-Ethiopia, FMOH, ARHB, Awi zone health departement, Banja Woreda health office and Injibara town administration health office.

6. Results

6.1. Quantitative Findings

A total of 1321 households were enrolled in the survey. But, complete questionnaires were returned for only 1267 households, which gives a response rate of 96%. All the household members in the 1267 households who fulfilled the inclusion criteria were included. A total of 1267 household heads and a total of 5826 eligible household members were considered in the subsequent analysis.

6.1.1. Socio Demographic Characteristics of the Study Participants

Among the total 1267 households included in the study, 370 (29.2%) of them were from urban area. Most of the household heads 973 (76.8%) were males. The number of female household heads in the urban was higher than the rural female household heads. The average family size among the population was 4.6. There was similar number of males and females with slight predominance of females. The number of males in the urban residents was less than females. There was similar distribution of sex in the rural residents. The mean age of the participants was 25.1 ±17.64 with a minimum of 1 and a maximum of 101 years. The mean age of household heads was 46.3±14.2 with a minimum of 16 and a maximum of 101 years. More than half of the population was less than 20 years. Children less than five years and geriatrics greater than 60 years constitute 453 (7.8%) and 263 (4.5%) of the population, respectively. The majority of the population were students and farmers, which shared 2314 (39.7%) and 1842 (31.6%) of the population, respectively. The proportion of students and government employees in urban residents was higher than rural residents. The proportion of farmers in the rural 1791(41.5%) was higher than the urban residents 51 (3.4%). The proportion of merchants and jobless people was higher in the urban. Almost all of the residents 5773 (99.1%) were followers of Orthodox Christianity. The rest 0.13%, 0.24% and 0.53% were Protestants, Muslims and others, respectively. Among the rural residents, 1970 (45.6%) were unable to read and write and 964 (22.3%) were from grade four to eight. On the other hand, 336 (22.3%) of the urban dwellers were unable to read and write. The proportions of urban and rural residents reached high school and above were 554 (36.7%) and 456 (10.6%), respectively. The majority of the participants 3433 (58.9%) were single and 2135 (36.7%) were married (Table 6.1.1.1).

Table 6.1.1.1: Socio demographic distribution of the respondents in Injibara town and Banja *Woreda,* Awi zone, July 2013.

Socio demographic variables N=5826	Urban Residents		Rural Residents						Total =N (%)
	Injibara Kebele 01	Injibara Kebele 02	Janiguta Kuancha	Sanikit Lideta	Senkesa	Dangia K/Mihret	Gurija Gomerta	Surita	
1. Sex									
Male	425	281	368	289	343	462	339	371	2878 (49.4)
Female	457	347	373	302	407	417	322	323	2948 (50.6)
2. Age									
1-5 years	75	60	31	58	52	93	50	34	453 (7.8)
6-10 years	121	87	85	102	96	151	101	70	813 (14)
11-15 years	121	86	149	92	105	142	149	90	934 (16)
16-20 years	141	83	134	78	122	120	115	127	920 (15.8)
21-40 years	289	248	157	153	207	181	143	225	1603 (27.5)
41-60 Years	118	51	142	82	120	144	74	109	840 (14.4)
> 60 years	17	13	43	26	48	48	29	39	263 (4.5)
3. Job									
Student	387	248	334	210	305	292	326	212	2314 (39.7)
Farmer	39	12	328	250	155	460	231	367	1842 (31.6)
Merchant	56	44	4	0	21	1	7	12	145 (2.5)
Government employee	151	94	1	3	6	3	1	22	281 (4.8)
House wife	100	82	1	0	141	33	4	2	363 (6.2)
Jobless	28	28	8	18	0	2	1	3	88 (1.5)
Others*	121	120	65	110	122	88	91	76	793 (13.6)
4. Religion									
Orthodox	877	620	710	588	745	878	661	694	5773 (99.1)
Muslim	0	0	4	2	1	1	0	0	8 (0.13)
Protestant	5	8	0	0	1	0	0	0	14 (0.24)
Others**	0	0	27	1	3	0	0	0	31 (0.53)
5. Educational Status									
Unable to read and write	194	142	292	266	369	445	260	338	2306 (39.6)
Able to read and write	58	39	56	47	37	68	50	64	419 (7.2)
Grade 1-4	94	73	96	78	96	153	99	82	771 (13.2)
Grade 4-8	202	154	219	132	141	171	167	134	1320 (22.6)
Grade 9-12	169	92	75	62	97	41	85	52	673 (11.6)
College and Above	165	128	3	6	10	1	0	24	337 (5.8)
7. Marital Status									
Single	527	344	448	366	444	525	446	333	3433 (58.9)
Married	322	251	268	217	253	320	182	322	2135 (36.7)
Divorced	16	16	10	4	24	12	15	21	118 (2.0)
Widowed	17	17	15	4	29	22	18	18	140 (2.4)

*=Daily laborer, handicraft, local beer maker, monk, tailor **=Catholic, paganism

The majority of the urban households 192 (51.9%) earned less than 1000 birr per month income. Only 70 (18.9%) of them earned greater than 2000 birr per month. From the total urban households, 425 (47.4%) owned less than 2 cows, 3 sheep, 2 horses, and 3 *kada* land. Only 27 (3 %) of them were considered as very rich in the community (Table 6.1.1.2).

Table 6.1.1.2: Rural and urban households' income and wealth distribution, Awi zone, July 2013.

Income or Wealth N=1267	Urban Residents		Rural Residents						Total=N (%)
	Injibara Kebele 01	Injibara Kebele 02	Janiguta Kuancha	Sanikit Lideta	Senkesa	Dangia K/Mihret	Gurija Gomerta	Surita	
Income									
≤ 500 birr	67	50							117 (31.6)
501-1000 birr	41	34							75 (20.3)
1001-1500 birr	44	26							70 (18.9)
1501-2000 birr	17	21							38 (10.3)
>2000birr	41	29							70 (18.9)
Wealth									
Poor			133	104	48	57	11	72	425 (47.4)
Medium			22	6	39	102	79	81	329 (36.7)
Rich			5	1	44	19	28	19	116 (12.9)
Very Rich			0	0	19	1	4	3	27 (3.0)

6.1.2. Household heads' awareness and perception about trachoma

Among the total 1267 household heads, 1203 (94.9%) had ever heard about trachoma and the rest 64 (5.1%) had never heard about it. Among the urban household heads enrolled in the study, 361 (97.5%) had ever heard about trachoma, whereas 842 (94%) of the rural household heads had ever heard about trachoma. However, there was no significant difference in the awareness of trachoma between the urban and rural household heads (AOR=1.467, P=0.548). Household heads' sources of information are indicated below (Table 6.1.2.1).

Table 6.1.2.1. Sources of information for the household heads about trachoma, Awi Zone, July 2013

Source of information N=1203	Frequency (%) *
Health Professional	1076 (89.44%)
Neighbor	87 (7.23%)
Mass Media	64 (5.32%)
School	55 (4.57%)
Family	26 (2.16%)

*=Multiple responses were possible

The main information sources for most of the household heads who had ever heard about trachoma were health professionals 1076 (89.44%) followed by neighbors 87 (7.23%). Family was less frequently stated as a source of information for trachoma.

Household heads mentioned different causes of trachoma as showed in Table 6.1.2.2. Poor environmental sanitation was mentioned by 717 (59.6%) of them as a cause of trachoma. The other 331 (27.5%) of the household heads reported that they did not know the cause of trachoma. Poor personal hygiene, cultural beliefs, flies and germs were mentioned by 138 (11.5%), 113 (9.4%), 59 (4.9%) and 31 (2.6%) of the household heads as a cause of trachoma, respectively.

Table 6.1.2.2. Causes of trachoma mentioned by the household heads, Awi Zone, July 2013

Causes of trachoma N=1203	Frequency (%) *
Poor environmental sanitation	717 (59.6%)
Did not know	331 (27.5%)
Poor personal hygiene	138 (11.5%)
Cultural beliefs**	113 (9.4%)
Fly	59 (4.9%)
Germs	31 (2.6%)
Others***	13 (1.1%)
In-turned eyelash (*Trachomaitous trichiasis*)	4 (0.3%)

*=Multiple responses were possible ***= wound, sharing, over drinking, reading many times

**=Exposure to sun (*mich*), crying, cold air (*bird*), smoke of wood (c*hise*), genetically, see infected eye, God punishment)

The household heads expressed different ways of trachoma transmission. The most frequently mentioned way of trachoma transmission was with fly followed by physical contact and greeting, poor personal hygiene and with dirty materials with a frequency of 428 (35.6%), 203 (16.9%), 52 (4.3%), and 50 (4.2%), respectively. Among the household heads who had ever heard about trachoma, 401 (33.3%) of them did not know the way of trachoma transmission. Few numbers of household heads (1.8%) believed trachoma as a non-communicable disease.

Table 6.1.2.3: Ways of trachoma transmission mentioned by the household heads, Awi zone, July 2013.

Ways of trachoma transmission mentioned N=1203	Frequency (%)*
With fly	428 (35.6%)
Did not know	401 (33.3%)
With Physical contact and greeting	203 (16.9%)
Poor personal hygiene	52 (4.3%)
With dirty materials	50 (4.2%)
With Sharing cloths	49 (4.1%)
Others**	32 (2.7%)
It is not transmitted	22 (1.8%)
With air	11 (0.9%)
With Bacteria	6 (0.5%)

*=Multiple responses were possible **=Smoke of wood, drinking, with blood, with sputum, see people with eye diseases

Among the household heads who had ever heard about trachoma, 1084 (90%) of them responded that trachoma is a preventable disease. Out of the total household heads who believed that trachoma is a preventable disease, 702 (64.8%) mentioned keeping personal hygiene as a prevention method for trachoma infection. Keeping environmental management, taking azithromycin, seeking medical care and different personal beliefs were mentioned by 257 (23.7%), 185 (17.1%), 26 (2.4%), and 28 (1.6%) of them as a trachoma prevention mechanism, respectively. However, 77 (7.1%) of them did not know any prevention methods for trachoma.

Table 6.1.2.4: Ways of trachoma prevention methods mentioned by the household heads, Awi zone, July 2013.

Ways of trachoma prevention methods N=1084	Frequency (%)
Keep personal hygiene	702 (64.8%)
Keep environmental management	257 (23.7%)
Taking azithromycin	185 (17.1%)
Did not know	77 (7.1%)
Seeking medical care	26 (2.4%)
Personal beliefs**	28 (2.6%)
Differentiating animal living class	11 (1%)
Others***	9 (0.8%)

*=Multiple responses were possible

** = don't see people with eye diseases, with God help, purchasing new cloths and using cooking cabinet

***= with vaccine, by removing eye lashes

Taking azithromycin drug was mentioned as a treatment method for trachoma by 524 (43.6%) of the household heads who had ever heard about trachoma. Seeking medical care from health institutions and keeping personal sanitation were mentioned by 442 (36.7%) and 57 (4.7%) of household heads, respectively. In addition, few household heads mentioned purchasing new cloths and traditional medicines as a treatment for trachoma whereas few others (12.5%) did not know any treatment methods for trachoma.

Table 6.1.2.5: Trachoma treatment methods mentioned by the household heads, Awi zone, July 2013.

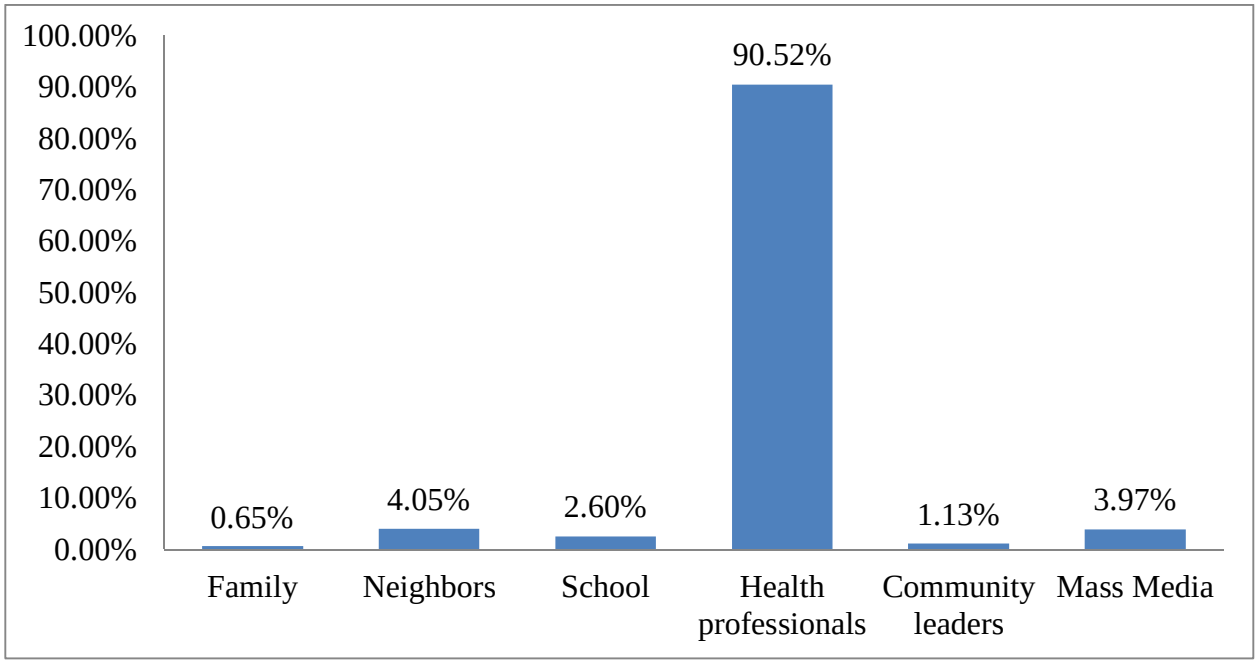
Trachoma treatment methods N=1203	Frequency (%)
Taking medication (azithromycin or eye ointment)	524 (43.6%)
Seeking medical care from health institutions	442 (36.7%)
Did not know	150 (12.5%)
Keep personal sanitation	57 (4.7%)
Others*	18 (1.5%)
Traditional medicine	6 (0.5%)
It is not possible to treat	6 (0.5%)

*= with God help, with vaccine, removing eye lashes, not possible to treat, purchasing new cloth

Among the total 5826 eligible household members included in the study, 193 (3.3%) were reported having eye problem at the time of the survey. Among these, 100 (51.8%) were below 15 years of age. However, the type and severity of the illness was not further assessed since it was not the objective of the study. It may be an indicator for other researchers who are interested to assess the prevalence of trachoma and other eye diseases in the area.

6.1.3. Awareness and perception of Household Heads about AMT

From the total household heads participated in the survey, 1234 (97.4%) of them had ever heard about AMT administrated for the elimination of trachoma. Among these, 1117 (90%) of them had heard from health professionals about the mass treatment. Neighbors, mass media, school, community leaders and family were mentioned by 50 (4.05%), 49 (3.97%), 32 (2.6%), 14 (1.13%) and 8 (0.65%) of them as a source of information about AMT, respectively.



*= Multiple responses were possible

Figure 6.1.3: Sources of information for household heads about the AMT, Awi Zone, July 2013.

Out of the total household heads participated in the survey, almost all of them 1263 (99.7%) reported that mass drug treatment had ever been given in their kebele. Only 843 (66.5%) of the household heads had mentioned different reasons for the administration of azithromycin to the public without payment. The most frequently mentioned reason among the respondents was government donation followed by foreign donation with a frequency of 364 (43.18%) and 198 (23.49%), respectively.

Table 6.1.3: Reasons mentioned by the household heads for the free administration of AMT, Awi Zone, July 2013.

Reasons N=843	Frequency (%)
Government donation	364 (43.18%)
Foreign donation	198 (23.49%)
To assist and benefit the society	185 (21.95%)
To prevent and eliminate trachoma	96 (11.39%)

Among the total household heads participated in the study, 1204 (95%) reported that they were volunteer to participate in the mass treatment if it is continued in the future. Among those households who reported that they were not volunteer to participate in the future, 23 (6.2%) were urban residents and 40 (4.5%) were rural residents. The most frequently mentioned reasons for their withdrawal in the coming campaign include; fear of illness and death by the drug, serious side effect in the previous campaign, having chronic illness (*Yebet Himeme*), religious reason (*Kuriban*) and absence of change to their eye health. Few of them were not interested to mention their reason.

6.1.4. AMT Coverage and Related Factors

Among the total household head respondents, 150 (11.8%) responded that the drug was given not only for those willing to take but also it was given for those who were not volunteer at the time of AMT administration. On the other hand, 88.2% of them said that the mass treatment was given based on free will.

Out of the total 1267 households surveyed, 27 (2.1%) claimed that none of the members had taken AMT in any round of the campaign. Among these, the proportion of urban and rural households were 14 (3.8%) and 13 (1.5%), respectively. The most frequently mentioned reasons by these household heads were refusal without reason by 18(66.6%) of them followed by absence during the campaign, due to other health problem and the fear of severe side effects with a frequency of 11.1% for each reason. In 1240 (97.9%) of the households, at least one member had ever participated in any round of the campaign.

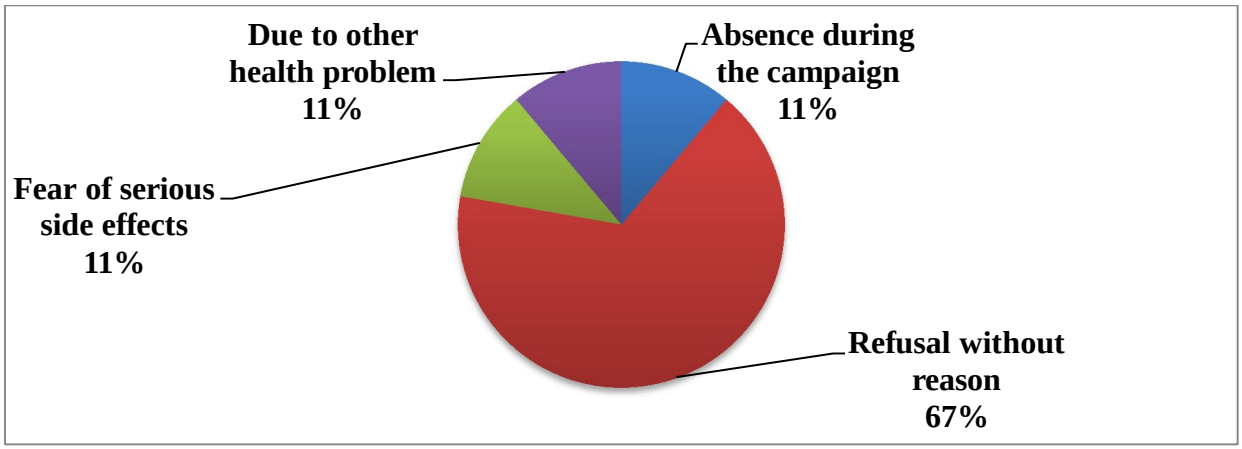


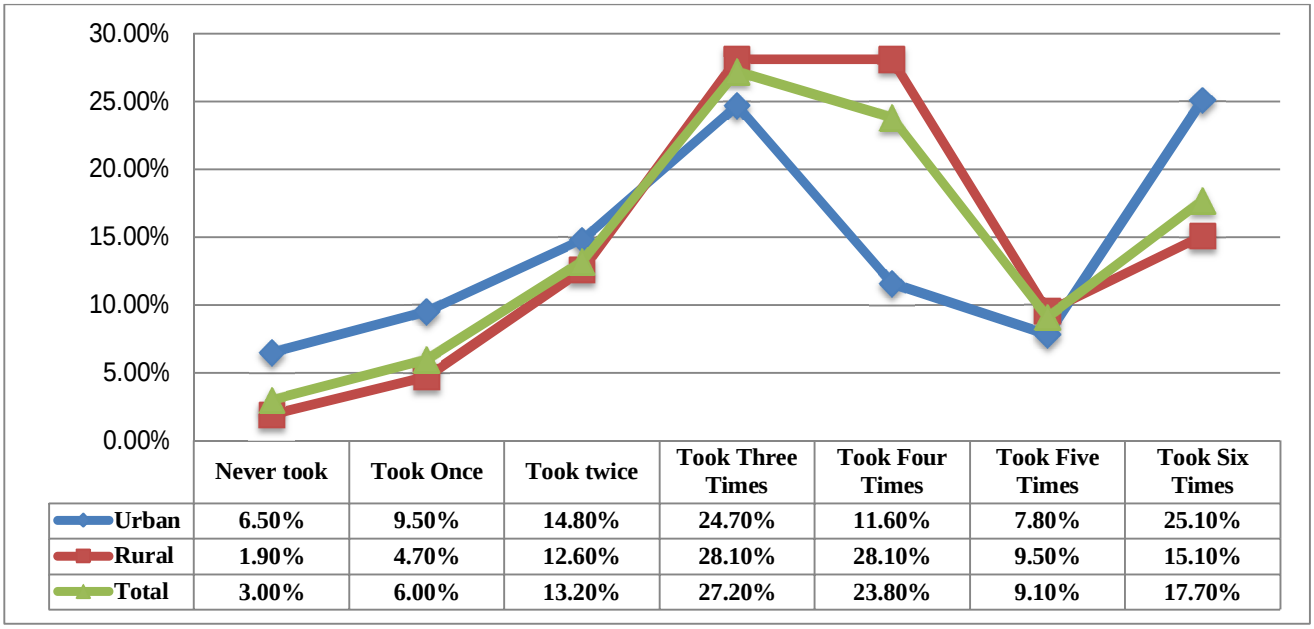
Figure 6.1.4.1. Reasons for those households who had never participated in any of AMT, Awi Zone, July 2013.

Out of the total six rounds of AMT campaign in the area, the number of household members who had taken azithromycin more than three times was 2947 (50.6%). The majority of household members had taken azithromycin for three and four rounds of the campaign. However, the number of household members who had taken the drug for more than four times are less than 25%. On average, each eligible person took the drug for 3.6 times.

Table 6.1.4.1. Number of times that the Urban and Rural household members participated in AMT Campaign, Awi Zone, July 2013

Number of times they took AMT	Residence						Total
	Urban (N=1510)			Rural (N=4316)			
	Male	Female	Total	Male	Female	Total	
Took Six Times	173	206	379 (25.1%)	327	325	652 (15.1%)	1031 (17.7%)
Took Five Times	51	67	118 (7.8%)	194	217	411 (9.5%)	529 (9.1%)
Took Four Times	92	83	175 (11.6%)	626	586	1212 (28.1%)	1387 (23.8%)
Took Three Times	176	196	372 (24.7%)	603	609	1212 (28.1%)	1584 (27.2%)
Took Twice	103	121	224 (14.8%)	272	272	544 (12.6%)	768 (13.2%)
Took once	68	76	144 (9.5%)	110	94	204 (4.7%)	348 (6.0%)
Never took	43	55	98 (6.5%)	40	41	81 (1.9%)	179 (3.0%)

From the total 1510 urban household members enrolled in the study, 6.5% of them had never taken the drug. The percentage of rural persons who had never taken the drug was 1.9%. Among the total urban and rural female participants, only 356 (44.2%) and 1128 (52.6%) had taken the treatment for more than three times, respectively.



	Never took	Took Once	Took twice	Took Three Times	Took Four Times	Took Five Times	Took Six Times
Urban	6.50%	9.50%	14.80%	24.70%	11.60%	7.80%	25.10%
Rural	1.90%	4.70%	12.60%	28.10%	28.10%	9.50%	15.10%
Total	3.00%	6.00%	13.20%	27.20%	23.80%	9.10%	17.70%

Figure 6.1.4.2. The number of times of AMT uptake between the urban and rural household members, Awi Zone, July 2013

The AMT coverage of the 2012 campaign in the urban and rural residents from the present study was 89.2% and 94.3%, respectively. The 2012 AMT coverage reported by the Banja *woreda* was 95.8% (Table 6.1.4.2.).

Table 6.1.4.2. The survey and *Woreda* reported coverage of AMT in Urban and Rural household members, Awi Zone, July 2013

Year	Source of the data	Urban Residents Coverage (%)	Rural Residents Coverage (%)
2007	BW& ITA report	NA	94.34
	Survey report	-	-
2008	BW& ITA report	75.8	83.5
	Survey report	-	-
2009	BW& ITA report	94.84	91.3
	Survey report	-	-
2010	BW& ITA report	90.8	95
	Survey report	-	-
2011	BW& ITA report	93.33	95.06
	Survey report	-	-
2012	BW& ITA report	NA	95.8
	Survey report	89.2	94.25

BW&ITA report= Banja *Woreda* and Injibara Town Administration Health offices report

NA= Not available

Out of the total number of eligible household members included in the survey, 411 (7.1%) of them did not take the 2012 AMT. The most frequently mentioned reasons reported by household heads and adult members were absence during the campaign, illness with other disease during the campaign, refusal without reason, lack of information about the campaign and serious side effect during the previous campaign with a frequency of 26.3%, 12.4%, 11.7%, 8% and 4.2%, respectively. A significant number of household members did not have any reason and others gave different reasons related with pregnancy and religion. Among the total 4559 eligible household members living in 1267 households, 58 (1.3%) had ever been advised by the household heads to refuse the drug uptake.

Table 6.1.4.3: Frequently mentioned reasons by the study participants for missing the 2012 AMT, Awi Zone, July 2013

Reasons N=411	Frequency (%)
Absence during the campaign	109 (26.3%)
Illness with other disease during the campaign	64 (15.6%)
Did not have any reason	59 (14.4%)
Refusal	48 (11.7%)
Lack of information about the campaign	33 (8.0%)
Serious side effect during previous campaign	17 (4.2%)
Being pregnant or nursing during the campaign	14 (3.4%)
Having healthy eyes	11 (2.7%)
Fear of the drug's side effects	10 (2.5%)
Others*	46 (11.2%)

*= being a child, their mother did not allow, being a monk

Out of the total 1227 household heads who had ever taken azithromycin, 61 (5%) believed that AMT was not beneficial. The rest 1166 (95%) said it was beneficial. Out of whom, 978 (83.9%) related the benefit to eye health; 481 (41.3%) for eradicating intestinal worm; 15 (1.3%) for improving the general health. Other benefits such as hemorrhoid treatment and stimulating appetite were mentioned by 5 (0.4%) of the respondents as an added advantage of taking AMT.

Table 6.1.4.4: Benefits of AMT mentioned by the household heads, Awi Zone, July 2013

Benefit they got from AMT N=1166	Frequency (%)*
Improving eye health	978 (83.9%)
Eradicating intestinal parasite	481 (41.3%)
Improving general health	15 (1.3%)
Others**	5 (0.4%)

*= Multiple responses were possible **= treating hemorrhoid, increase appetite

6.1.5. Prevalence of Reported Side Effects and Serious Adverse Effects Related with AMT

From the total 1227 household heads who had ever taken the drug, 538 (43.9%) had experienced side effects of azithromycin. Around half of them reported diarrhea and anal burning sensation after they took azithromycin. Others stated heart problem, urination problem, back pain, fever and abortion as side effects of azithromycin in addition to those shown in the graph below.

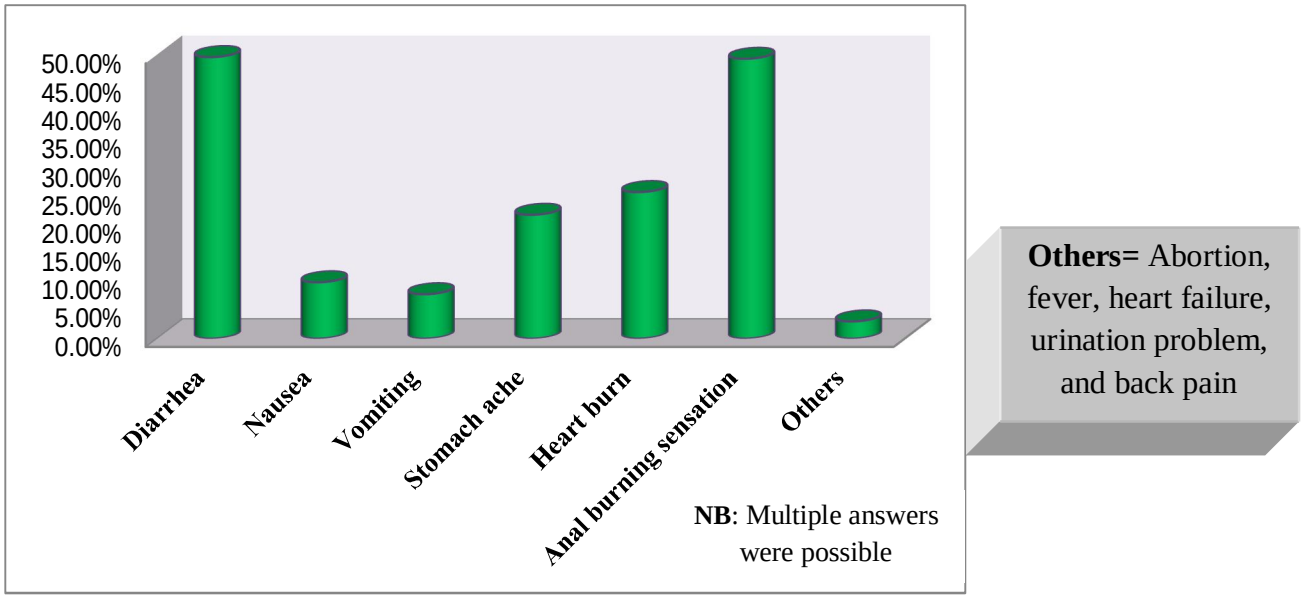


Figure 6.1.5.1: Types of side effects reported by household heads after they took AMT, Awi zone, July 2013.

Out of the total 538 household heads who had ever encountered side effects of azithromycin, 83 (15.4%) had experienced with serious adverse effect of the drug. Out of these, 61 (73.5%) occurred in male household heads and 69 (83.1%) occurred in rural household heads.

Among the total household heads participated in the study, 296 (23.4%) had ever heard other persons complaining about the side effects after they took the drug. The most prevalent complaints include diarrhea, anal burning sensation, heartburn, stomachache, vomiting, nausea and abortion with a frequency of 51.4%, 49.3%, 38.2%, 23.7%, 15.9%, 12.2% and 1.7%, respectively.

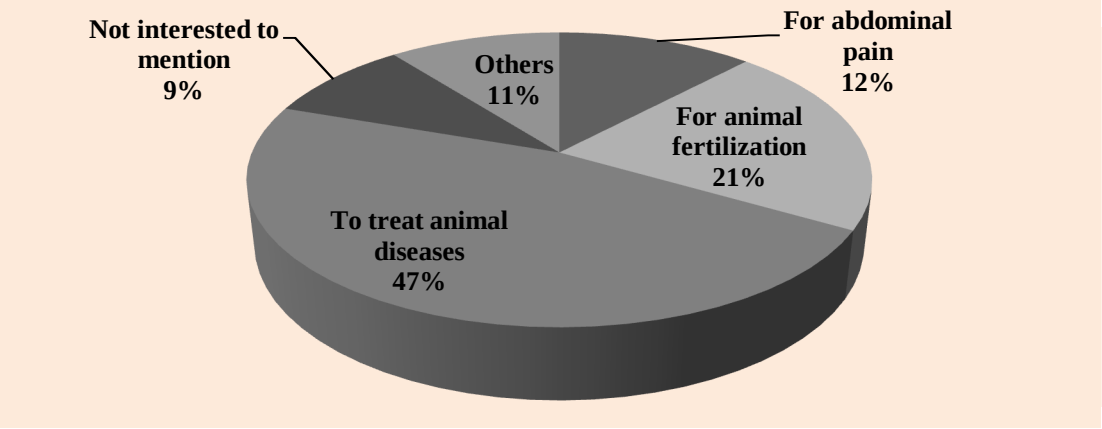
Table 6.1.5: Side effects of azithromycin that the household heads had ever heard from others, Awi zone, July 2013.

Side effects of azithromycin **N=296**	**Frequency (%)***
Diarrhea	152 (51.4%)
Anal burning sensation	146 (49.3%)
Heart burn	113 (38.2%)
Stomachache	70 (23.7%)
Vomiting	47 (15.9%)
Nausea	36 (12.2%)
Abortion	5 (1.7%)

*= Multiple answers were possible

Among the household heads who had ever heard azithromycin side effects from other persons, 88 (29.7%) had ever heard about serious adverse effects of the drug. More than half of them (51.5%) had ever heard about death followed by birth defect (34.1%), inpatient hospitalization (22.7%) and disability (4.6%). From the household heads who had heard about serious adverse experiences of the drug in other people, 38 (43.2%) know persons encountered with at least one of serious adverse effects of the drug.

As shown in Figure 6.1.5.2, from the total 1227 household heads who had ever taken the drug at least once, 66 (5.4%) used the drug for different purposes other than trachoma.



Others= to treat angina, common cold and shared to their neighbors

Figure 6.1.5.2: Using azithromycin for purposes other than trachoma by the household heads, Awi zone, July 2013.

Out of the 66 household heads who had ever used azithromycin for other purposes, 31(47%) used it for treating animal disease. As they reported, they used the drug when animals got sick, to treat abdominal distension of animals by grass (*Washima*) during the summer season and to protect their hens from bird diseases (*Fenigle*). The other 14 (21.2%) of them used azithromycin for animal fertilization purpose. On the other hand, 8 (12.1%) of them used it for treating abdominal pain of family members. Few of them had shared the drug to their neighbors and used it for treating common cold and angina. The rest 6 (9.1%) were not interested to mention.

6.1.6. Assessment of Informations Provided with AMT

Only 567 (46.2%) of the household heads claimed that they had ever been asked about their previous illness history by AMT providers before providing the treatment. From the total household heads who had ever participated in at least one round of the campaign, only 892 (72.7%) said that they had ever been provided with some information related with azithromycin from mass treatment providers. The most frequent types of information given by AMT providers were do not drink alcohol, eat enough amount of food before taking the drug, drink much amount of water, advice about the benefit of the drug, health education about personal and environmental

sanitation, asking pregnancy status, telling about the side effect and others as mentioned by 60.5%, 33.4%, 24.1%, 11.7%, 4.4%, 1.8%, 0.8% and 0.9% of the household heads, respectively.

Table 6.1.6: Kinds of information inquired during the campaign by AMT providers for the household heads, Awi zone, July 2013

Informations given N=892	Frequency (%)*
Do not drink alcohol	540 (60.5%)
Eat enough amount of food before taking the drug	298 (33.4%)
Drink much amount of water	215 (24.1%)
Give advice about its benefit	104 (11.7%)
Give health education about personal and environmental sanitation	39 (4.4%)
Asking pregnancy status	16 (1.8%)
Telling the drug side effects	7 (0.8%)
Others**	8 (0.9%)

*=multiple answers were possible **=how to take the drug, forgot it

6.1.7. Determinants of Azithromycin Mass Treatment Acceptability

6.1.7.1. Socio Demographic Factors Affecting AMT Uptake

Azithromycin uptake was not found to be influenced by socio demographic characteristics, except job. Students' participation in the mass treatment was higher as compared to the farmers, merchants and others (table 6.1.7.1). Residency affects the drug uptake status. In this regard, rural residents had significantly higher uptake status compared to urban residents (AOR=2.35, 95%CI [1.80-3.06]). Household heads' interference with the drug uptake of their family members affects acceptability. The household members who were advised not to take the drug by the household heads had taken the 2012 AMT significantly less than those who are not advised (AOR=0.153; 95% CI [0.086-0.272]).

Table 6.1.7.1. Association between socio demographic variables of participants and AMT uptake in 2012, Awi Zone, July 2013

Socio demographic variables [N=5826]	Took 2012 AMT		95% Confidence Interval	
	Yes	No	COR	AOR
Residence				
Rural	4068	248	1.99 [1.61-2.44]	2.35 [1.80-3.06]
Urban	1347	163	1.00	1.00
Sex				
Female	2732	216	0.92 [0.75-1.12]	0.89 [0.71-1.11]
Male	2683	195	1.00	1.00
Age				
>60 years	234	29	1.02 [10.63-1.66]	0.52 [0.25-1.06]
41-60 years	774	66	1.49 [1.01-2.19]	0.79 [0.41-1.50]
21-40 years	1471	132	1.41 [1.01-1.99]	0.83 [0.46-1.48]
16-20 years	860	60	1.82 [1.3-2.69]	0.69 [0.39-1.21]
11-15 years	901	33	3.46 [2.20-5.45]	1.26 [0.68-2.32]
6-10 years	773	40	2.45 [1.59-3.77]	1.24 [0.75-2.04]
1-5 years	402	51	1.00	1.00
Job				
Farmer	1699	143	0.51 [0.39-0.66]	0.47 [0.29-0.78]
Merchant	129	16	0.35 [0.20-0.60]	0.48 [0.25-0.94]
Government employee	250	31	0.35 [0.27-0.53]	0.84 [0.42-1.70]
Housewife	338	25	0.58 [0.37-0.91]	0.87 [0.47-1.62]
Jobless	76	12	0.27 [0.14-0.52]	0.50 [0.24-1.04]
Others	704	89	0.34 [0.25-0.46]	0.39 [0.24-0.64]
Student	2219	95	1.00	1.00
Educational Status				
College and above	292	45	0.64 [0.45-0.90]	0.73 [0.40-1.36]
Grade 9-12	638	35	1.80 [1.24-2.60]	1.56 [0.93-2.62]
Grade 4-8	1253	67	1.84 [1.39-2.45]	1.16 [0.77-1.75]
Grade 1-4	740	31	2.35 [1.60-3.47]	1.24 [0.77-1.99]
Able to read and write	393	26	1.49 [0.98-2.27]	1.50 [0.95-2.35]
Unable to read and write	2099	207	1.00	1.00
Marital Status				
Married	1957	178	0.72 [0.58-0.88]	1.25 [0.83-1.88]
Divorced	109	9	0.79 [0.39-1.58]	1.42 [0.64-3.14]
Widowed	126	14	0.59 [0.33-1.04]	1.21 [0.60-2.44]
Single	3223	210	1.00	1.00

6.1.7.2. Socio Demographic Factors Associated with Number of Times of AMT Uptake

There was a significant difference between the rural residents and urban residents in the number of times they took azithromycin. High number of rural residents had taken azithromycin more than 3 times as compared to urban residents (AOR=1.55; 95% CI [1.32-1.82]). There was no significant difference in frequency of AMT uptake between males and females. There was a significant difference in the frequency of AMT uptake when children less than 5 years of age compared with other age groups (Table 6.1.7.2). Age groups greater than 5 years took the drug more than 3 times as compared to children less than 5 years. Adults between 16-30 years were at better performance in taking azithromycin more than 3 times as compared to children less than 15 years (AOR=2.74; 95% CI [1.95-3.02]). The study participants who were older than 30 years were at better enactment in taking azithromycin more than 3 times as compared with children less than 15 years. A bivariate correlation analysis also showed that there was positive correlation between the number of times they took azithromycin and age (r=0.235; 95%CI, p=0.01). As age increased, the number of times they took drugs has increased. Students were better in taking azithromycin more than three times as compared to farmers (AOR=0.71; 95%CI [0.54-0.92]). However, there was no significant difference in taking the drug more than 3 times between students and other occupations. Being literate had no effect in taking the azithromycin more than 3 times as compared with those unable to read and write. Being single had no significant difference in taking azithromycin more than 3 times as related with married, divorced and widowed.

Table 6.1.7.2. Socio demographic factors Associated with the frequency of AMT Uptake, Awi zone, July 2012

Socio demographic variables [N=5826]	Frequency of AMT uptake		95% Confidence Interval	
	> 3 Times	≤ 3 Times	COR	AOR
Residence				
Rural	2275	2041	1.39 [1.24-1.56]	1.55 [1.32-1.82]
Urban	672	838	1.00	
Sex				
Female	1484	1464	0.98 [0.89-1.09]	0.94 [0.83-1.07]
Male	1463	1415	1.00	
Age				
>60 years	165	98	15.65 [10.5-23.32]	15.50 [9.15-26.25]
41-60 years	531	309	15.97 [11.36-22.5]	16.89 [10.61-26.88]
21-40 years	969	634	14.21 [10.25-19.7]	15.81 [10.25-24.4]
16-20 years	543	377	13.39 [9.55-18.77]	10.52 [6.92-16.0]
11-15 years	447	487	8.53 [6.10-11.94]	6.7 [4.44-10.14]
6-10 years	248	565	4.08 [2.89-5.76]	3.9 [2.65-5.74]
1-5 years	44	409	1.00	1.00
Job				
Farmer	1082	760	1.44 [1.28-1.63]	0.71 [0.54-0.92]
Merchant	83	62	1.36 [0.97-1.91]	0.85 [0.56-1.29]
Government employee	156	125	1.27 [0.99-1.62]	0.91 [0.59-1.42]
Housewife	234	129	1.84 [1.46-2.32]	1.07 [0.76-1.50]
Jobless	48	40	1.22 [0.79-1.87]	0.72 [0.45-1.15]
Others	195	598	0.33 [0.28-0.40]	0.81 [0.61-1.08]
Student	1149	1165	1.00	1.00
Educational Status				
College and above	183	154	1.31 [1.04-1.64]	0.96 [0.64-1.43]
Grade 9-12	416	257	1.78 [1.49-2.12]	1.17 [0.89-1.54]
Grade 4-8	712	608	1.29 [1.13-1.48]	1.10 [0.88-1.38]
Grade 1-4	296	475	0.67 [0.58-0.81]	0.82 [0.65-1.04]
Able to read and write	242	177	1.50 [1.22-1.86]	0.87 [0.68-1.12]
Unable to read and write	1098	1208	1.00	1.00
Marital Status				
Married	1280	855	1.93 [1.73-2.15]	0.90 [0.71-1.15]
Divorced	79	39	2.61 [1.77-3.85]	1.23 [0.77-1.96]
Widowed	88	52	2.18 [1.54-3.09]	1.15 [0.73-1.80]
Single	1500	1933	1.00	1.00

6.1.7.3. Socio Demographic Factors Affecting AMT Uptake of Household heads in 2012

The rural household heads had more likely complied with the 2012 mass treatment as related with their counterpart urban household heads (AOR=2.33; 95% CI [1.07-5.10]). Azithromycin uptake status of female household heads was significantly less than the corresponding male household heads (AOR=0.41 95% CI [0.24-0.720]). Household heads at the age of 31-45 years were two times more likely to participate in the 2012 AMT than the household heads at the age of 15-30 years. There was no significant difference between occupational status of the household heads and their azithromycin uptake status. Household heads that were unable to read and write had no significant difference in the drug uptake status as compared with others. Marital status did not affect the drug uptake status among the household heads. Urban households' income had no significant association with the 2012 azithromycin uptake status of the household heads. Household heads who live in households that were considered as poor in the community complied better with azithromycin uptake in 2012 as compared to those living in medium and rich households.

Table 6.1.7.3. Socio demographic factors affecting AMT uptake of household heads in 2012, Awi zone, July 2013.

Socio demographic variables [N=1267]	Took 2012 AMT		95% Confidence Interval	
	Yes	No	COR	AOR
Residence				
Rural	821	76	1.69 [1.12-2.47]	2.33 [1.07-5.10]
Urban	320	50	1.00	1.00
Sex				
Female	246	48	0.45 [0.31-0.66]	0.41 [0.24-0.72]
Male	895	78	1.00	1.00
Age				
>60 years	183	23	1.67 [0.94-2.97]	0.99 [0.49-2.00]
46-60 years	329	29	2.39 [1.40-4.07]	1.65 [0.89-3.09]
31-45years	472	41	2.42 [1.48-3.96]	2.00 [1.15-3.47]
15-30 years	157	33	1.00	1.00
Job				
Farmer	787	76	2.96 [1.16-7.55]	1.06 [0.29-3.85]
Merchant	93	11	2.42 [0.80-7.27]	1.62 [0.43-6.11]
Government employee	137	16	2.45 [0.86-6.95]	1.61 [0.41-6.41]
House wife	35	10	1.00 [0.32-3.15]	1.34 [0.33-5.41]
Jobless	17	3	1.62 [0.35-7.45]	2.13 [0.40-11.3]
Others	51	4	3.64 [0.93-14.24]	2.81 [0.59-13.33]
Student	21	6	1.00	1.00
Educational Status				
College and above	139	19	0.64 [0.52-1.55]	1.44 [0.82-2.52]
Grade 9-12	45	6	0.92 [0.38-2.24]	0.97 [0.27-3.46]
Grade 4-8	92	13	0.87 [0.46-1.64]	1.32 [0.41-4.24]
Grade 1-4	74	6	1.51 [0.63-3.61]	0.92 [0.44-1.90]
Able to read and write	292	21	1.70 [1.01-2.85]	1.29 [0.52-3.23]
Unable to read and write	499	61	1.00	1.00
Marital Status				
Married	904	98	1.43 [0.69-2.98]	0.54 [0.22-1.33]
Divorced	80	7	1.77 [0.62-5.04]	1.23 [0.38-4.04]
Widowed	99	12	1.28 [0.51-3.22]	1.21 [0.40-3.59]
Single	58	9	1.00	1.00
Urban Income [N=370]				
>2000birr	63	7	0.51 [0.20-1.27]	1.04 [0.30-3.58]
1500-2000 birr	31	7	1.03 [0.40-2.66]	1.63 [0.44-6.09]
1000-1500 birr	65	5	0.35 [0.13-0.98]	0.61 [0.16-2.28]
500-1000 birr	65	10	0.70 [0.31-1.59]	1.06 [0.40-2.83]
< 500 birr	96	21	1.00	1.00
Rural Wealth [N=897]				
Very rich	27	0	0	0
Rich	112	4	0.26 [0.09-0.72]	0.23 [0.08-0.65]
Medium	309	20	0.46 [0.27-0.78]	0.47 [0.27-0.82]
Poor	373	52	1.00	1.00

6.1.7.4. Association between Awareness about trachoma and AMT uptake in 2012

Household heads awareness about trachoma had a positive impact in complying with the treatment given in 2012. Those who had ever heard about trachoma took azithromycin 2.55 times more likely than those who had never heard about trachoma (AOR=2.55; 95% CI [1.19-5.44]). Household heads who believed that "*trachoma is preventable diseases*" were more likely to take azithromycin better than those who believed "*trachoma is not preventable diseases*" (AOR=2.19; 95% CI [1.22-3.94]).

6.1.7.5. Association of AMT Awareness and Uptake of Household heads in 2012

Awareness of AMT had a positive association with the drug uptake among the household heads in the 2012 campaign. Household heads who had ever heard about the treatment were 7 times more likely to participate in the 2012 campaign as compared to those who were not aware (AOR=7.19; 95% CI [3.27-15.82]). Household heads who believed that the mass treatment was given based on free will were more likely to participate in the 2012 campaign than the opposite side (AOR=2.93; 95% CI [1.77-4.86]). Household heads perception about the benefit of azithromycin has to had a positive association with their uptake status (AOR=7.33; 95% CI [4.13-13.02]). A multivariate logistic regression results showed that there was no association between household heads' previous experience with the drug's side effects and it's sever adverse experiences with the drug uptake status in the 2012 campaign. Hearing side effects and serious adverse effects of azithromycin from other persons was not found to be associated with the uptake status of the household heads in the 2012 campaign. Household heads who had got any type of information related with drug in the previous campaigns from mass treatment providers had better compliance with the 2012 mass treatment as related with those who did not get information (AOR=2.49; 95% CI [1.53-4.08]). Household heads who expressed their willingness to take the treatment in the future were better conforming to the 2012 mass treatment as compared to those who were at the opposite side.

Table 6.1.7.5 Association between awareness AMT and uptake status of household heads in 2012, Awi Zone, July 2013

Variables	Took 2012 AMT		95% Confidence Interval	
	Yes	No	COR	AOR
Heard about AMT				
Yes	1125	109	10.97 [5.39-22.32]	7.19[3.27-15.82]
No	16	17	1.00	
Did they Know why AMT given in free?				
Yes	764	79	1.21[0.82-1.77]	0.97 [0.63-1.48]
No	377	47	1.00	1.00
Was the treatment given to those willing to take?				
Yes	1024	93	3.11 [2.0-4.83]	2.93 [1.77-4.86]
No	117	33	1.00	1.00
Did they think that the drug is beneficial?				
Yes	1100	87	12.03 [7.37-19.63]	7.33 [4.13-13.02]
No	41	39	1.00	1.00
Did they experience any side effects' of the drug?				
Yes	495	43	1.00	1.00
No	646	43	1.31 [0.84-2.02]	1.40 [0.87-2.26]
Had they got SAE of the drug?				
Yes	75	8	0.78 [0.35-1.75]	0.87 [0.35-2.12]
No	419	35	1.00	1.00
Heard drug's side effects from other Persons?				
Yes	257	39	1.00	1.00
No	884	87	1.54 [1.03-2.31]	1.34 [0.78-2.32]
Did they know a person with SAE of the drug?				
Yes	32	6	1.02 [0.32-3.22]	1.16 [0.24-5.57]
No	42	8	1.00	
Did treatment providers provide any information?				
Yes	852	40	3.39 [2.17-5.29]	2.49 [1.53-4.08]
No	289	46	1.00	
Willingness to take the drug in the future				
Yes	1113	91	15.29 [8.90-26.26]	5.78 [2.44-13.68]
No	28	35	1.00	

SAE=Serious adverse effect

6.2. Qualitative findings

Three FGDs, two in the rural residents and one in the urban residents were conducted to collect qualitative data. The FGD participants in the rural setting had an average age of 45 years whereas the urban participants had an average age of 42 years. Only male participants were selected in each FGD. The FGD participants in each group had similar socio demographic characteristics. In addition to FGD, key informant interviews were conducted to complement the quantitative survey. The Carter Center focal person in Awi zone, focal person of trachoma in Banja *woreda* health office and three health extension workers were interviewed about the program.

6.2.1. Focus Group Discussions

Is trachoma (*ayine maze*) a common problem in the community?

Most of the urban FGD participants said trachoma was not a common health problem in their community except in case of elders and children. Peptic ulcer diseases, Tuberculosis and Typhoid were frequently mentioned as common health problems in the community. In the rural FGD participants, Trachoma was mentioned as a common health problem in the community.

Causes of trachoma

Most of the urban and rural FGD participants said that trachoma was caused by poor personal and environmental sanitation. Few participants from the rural area said that trachoma could be caused by smoke of wood (*chise*). Fly, physical contact and sharing of clothes were mentioned as methods of trachoma transmission by most of the participants both in the urban and rural. But, few rural participants had mentioned sharp materials and physical contact of injured body part as a way of trachoma transmission. All of them adequately mentioned the prevention techniques for trachoma.

Acceptability of AMT in the community

The rural FGD participants explained that trachoma infection was considered as household diseases (*yebet himeme or Yewikabe tebe*) in some of the community members. These persons

did not believe that trachoma is treated by azithromycin. As a result, they refused to take the mass treatment.

The majority of the urban participants suggested that the actual percentage of persons who took the drug in each round was not greater than 50%. As most of the participants explained, the community took the drug due to fear of the community leaders and health extension workers. One of the urban FGD participants said:

...*"In the first and the second campaign, most of the household members did not take the drug. Even some persons threw it to the toilet and hole after they took from the treatment providers. But, I knew that the health professionals reported wrong data for the office. After the two campaigns, the number of people who took the drug increased from time to time due to additional benefits of the drug*."

Most of the rural participants also shared the above statements raised by the urban residents. As they explained, the community had challenged the drug providers in the first and the second campaign. But, the mass treatment supplementary benefits increased the acceptability of the program. Decreasing intestinal infection was one of the additional benefits of the drug explained by most of the participants. Especially, there was high abdominal pain due to helminthiasis in children before they took the treatment. During the study period, there was no much compliant from their children after they took the treatment. One of the rural FGD participants said:

> … *"Severe anal burning sensation, diarrhea and nausea were the side effects of the drug that I encountered. But, I benefited from the treatment. It increased my appetite and decreased my intestinal infection. Now I can eat what I got. Since the benefit outweighs the harm, I continued taking the treatment"*.

Most of the FGD respondents said that some individuals still refused to take the drug by providing different reasons such as "I did not eat my breakfast, I am pregnant, I am ill, and I had had alcohol".

As most of the rural participants pointed out, the rural community had now positive attitude towards the treatment since they got an improvement to their eyes, their general health and their children's health.

But, the acceptability was still in question in the urban community as most of the participants explained. One of the participants explained the common refusal reason he heard from others like this;

"*When we were discussing about this drug, most of them were not interested to take the drug. They said I am not ill, I will take the drug when I become ill"*

Azithromycin distribution system and acceptability

According to rural FGD participants, drug distribution site affects the drug acceptance. In some cases, the drug was distributed house to house whereas the others distributed the drug at schools, markets or churches. Especially, students still refused by complaining that "*this is double, I took it in my house*" and sometimes they spit out after the drug distributors left.

This was demonstrated by one of the rural participants' speech:

"*My child was absent from school for many days since they gave him the drug without his consent by physical punishment for the second time"*

Both of the participants from the urban and the rural described the drug administration process like this*:*

"...The mass treatment providers hold water and gave the drug with follow up. Sometimes, drug providers gave the drug on hand to the household heads to give for their family members. There was also hand delivery of the drug for those who complained like this "I am in fasting, I did not eat my breakfast, my wife did not take ..."

As clarified by most of the participants, this type of drug distribution system exposed persons for unnecessary damage. There were individuals who took the drug more than once in one campaign and used for other purposes. One of the rural FGD participant supplements this issue:

"I took the drug two times in the 2012 campaign. First, I took it in my kebele. Then, I took the drug from Injibara town when they gave around the market. Finally, I took the second drug after 2 weeks of the first one since the drug increases my appetite and decreases my intestinal infection"

In addition, one of the urban FGD participants said,

"Some women used the drug illegally for abortion purpose; therefore, it is better to stop hand delivery of the drug."

Communities' perception and experience about azithromycin side effects

As most of the participants explained, there was high rumor from the community in the first and the second campaigns about the drug side effects and adverse effects. Abdominal pain, nausea, anal burning sensation, diarrhea, gastritis and constipation were the common side effects of the drug raised by the FGD participants. There was one participant from the urban who claimed to have had known a woman who had an abortion and a man who died due to the drug during the first campaign. Almost all of the FGD participants believed that the drugs given in the first and second campaign were very dangerous. However, they said that the harmful effect of the drug decreased from time to time.

This was exemplified by one rural FGD participant:

> *"….In the first campaign I took the drug, but I suffered for one month with its side effects. There was high anal burning sensation, gastritis, nausea, and diarrhea. I refused in the second and third campaign. Through time, the community appreciated the benefit of the drug and my eye also stayed in good health after I took the drug. Then, I started to take the drug in the fourth campaign. However, in the last three campaigns, there was no pronounced side effect like what I experienced in the first campaign. I am sure that there was a great difference between the drugs given in the 1st and 2nd campaigns as compared to those given after the 2nd campaign."*
>
> One of the urban FGD participant also said, *"I have never taken the drug due to fear of the drug adverse effects that I heard from others."*

Interaction of the community and treatment providers

Concerning the interaction between the community and the treatment providers, the urban participants had said:

"The drug was given by health extension workers and community health development armies. The community has no good feeling towards them. Especially, the health development armies had no any health background. Some of the community members may also have earlier conflict with them due to different things."

Most of them said that they had doubt even on the delivery of appropriate dose. Based on these reasons, they did not feel comfortable and some of them refused due to fear of attack based on their earlier conflict. Distributing the drug with only health professionals or with selected persons who have high respect from the community was recommended by most of them.

There was a similar complaint raised on health extension workers from one of the rural FGD participants. As most of the participants agreed, there was a great problem during the first two campaigns between the health extension workers and the society. They distributed the drug without prior health education. The society did not believe them. As a result, the acceptance of the program by the community was very low. All FGD participants believed that still enough amount of health education was not given about the drug benefit, side effect and contraindication.

As both of the urban and rural participants explained, there was a practice of providing the drug without the person consent. One of the participants stated the issue emotionally like this:

"…giving the drug by force should be stopped. To take the drug treatment, the person should first believe on its benefit. Hence, it is better to teach the community about its benefit, and then they will start to take the drug by themselves. Finally, they should leave the decision for the persons rather than pressurizing them to take the drug."

6.2.2. Key Informant Interviews

The Carter center Awi zone focal person said that the program was going on as planned. He had stated the communities' acceptability to AMT like this:

"*There was rumor from the society in the first two consecutive campaigns. They said that the drug causes severe side effects. But, we had not got any person with serious adverse effects of the drug after each campaign. There was no any reported case. The acceptability is still a problem in the urban residents whereas the acceptability is high in rural communities*."

Concerning the difference of the drugs given in each campaign, he said:

"*There was neither generic nor brand difference between the drugs given in each campaign. The dose and the type of drug given in each campaign was similar*"

The other trachoma focal person in Banja *woreda* also agreed with the above. He explained that the community's acceptability has increased from time to time. Concerning to the AMT coverage report, he had responded like this:

"*First the drug was distributed to each kebele based on our plan which is prepared based on the population size and distribution. Then, the drug coverage data was collected from health extension workers in each kebele. Finally, the woreda coverage report will be prepared by summing up the whole kebels"*

He explained like this when he responded to the question related with the validity of the report taken from treatment providers:

"*…. The health extension workers gave the drug with others and they report the coverage based on their actual distribution. But, sometimes there may be mistake and mis reporting."*

Absence of the household members during the campaign was one of the challenges during the campaign as explained by three of the health extension workers. Anal burning sensation, Nausea, diarrhea, and abdominal discomfort were the common complaints of the community as explained

by two of the health extension workers. But, one of the health extension worker from the urban said I had never heard any severe compliant from the community.

All of them had agreed that still there are individuals who are not volunteer to take the drug by giving different reasons. They clarified this issue like this:

"*…they did not directly refuse. But, they say, I did not eat my food. So, please give me and I will take later. Others raised issues related with their religion. They said, I am in fasting. I am pregnant is a common complaint for women.* "

As two of the rural health extension workers explained, the community's acceptability to the program was affected by the drug side effects and the community's rumors. The other health extension worker from the urban said that some of community members had no reason for their refusal.

7. Discussion

Azithromycin mass treatment coverage

The 2012 azithromycin mass treatment coverage obtained from the present survey was 89.2% in the urban and 94.25% in the rural residents with an overall coverage of 92.9%. This was higher than 80%, the minimum attainable coverage set by WHO. This finding was also higher than 76% taken from the mass treatment coverage in Tanzania (Desmond *et al*., 2005); and the mean treatment coverage taken from 48 eligible communities in four Gambian districts (85.5%) at baseline and 82.5% and 87.4% at one and two years, respectively (Harding-Esch *et al*., 2013). Another study conducted in Goncha siso Ense woreda in Amhara region after 26 months of AMT reported that only 88.8% of the eligible community members had received the treatment (Keenan *et al*., 2011. The rural coverage taken from the present survey (94.25%) was slightly less than the reported coverage obtained from Banja *Woreda* health office (95.8%).

It is impossible to discover the coverage of the drug in each year of the previous campaigns via survey since there will be recall bias. But, it is possible to estimate the overall coverage of the six campaigns based on the number of times that each patient had taken the treatment. Among the six mass treatment campaigns, the proportion of household members who took azithromycin more than three times was 50.6%. On the other hand, almost all of the reported coverages in each campaign by the Banja *woreda* and Injibara Town administration health offices were close to 90%. If the average reported coverage in each campaign was considered as 90%, it means that each person had taken the drug 5.4 times on average. This contradicts the present survey result, which states each person had taken azithromycin 3.6±1.57 times on average. According to the present study report, the overall average coverage of AMT in the six campaigns approached to 60%. This controversy indicates that there was low coverage in the previous campaigns. This is in agreement with what was said by one of the FGD participants:

...*"In the first and the second campaign, most of the household members did not take the drug. Even some persons threw it in the toilet and hole. But, I knew that the health professionals reported wrong data for the office. After the two campaigns, the number of persons who is taking the drug has increased from time to time due belief that the drug has many additional benefits"*

There is sometimes discrepancy between the administrative coverage report and the survey coverage report. This was better observed in a study conducted in Plateau State of Nigeria, in which only 60.3% of the participants received azithromycin or tetracycline eye ointment during MDA (95% CI: 47.9–73.8%). However, the coverage report taken from administrative data (75.8%) overstates the coverage obtained from survey point estimate (60.3%) (Cromwell *et al*., 2013). This discrepancy may be due to the fact that administrative records are not always reliable and often biased due to a reliance on population estimates for the denominator, which can be incorrect between census years. In addition, administrative data is also vulnerable to bias from missing forms or inaccurate reporting from the drug providers.

As most of the FGD participants explained, there was high rumor from the community in the first and second campaigns about the drug side effects and serious adverse effects. As a result, the actual coverage might be less than the target, especially in the first three campaigns. The overall coverage is still less than the minimum WHO target (80%). It is also less than 76.9%, the overall average coverage report taken from 16 hyper endemic Tanzanian villages after 6 rounds of AMT in a similar study (Sheila *et al*., 2011). This may have negative impact in the program success as elimination of ocular chlamydial infection is only achieved as long as the mass treatments are given frequently enough and at a high enough coverage.

Study by Ray and his colleagues (Ray *et al*., 2007) suggested that treatment given to 90% of the population biannually would eliminate infection in 95% of the villages after 5 years. In their modeling study, they indicated that the WHO's recommended strategy of annual treatment of 80% of the population would eliminate infection in an estimated 95% of hyper-endemic villages in 12 years. Another modeling study in 71 hyper endemic communities of Tanzania suggested that, with average coverage of 75% and a starting trachoma prevalence of 50%, it would take >7 rounds of annual mass treatment to reach a prevalence of trachoma 5% (Sheila *et al*., 2011).

This is an indicative to consider other extra campaigns since the trachoma elimination is achieved only with full community and family member participation. This is due to the fact that treatment of a few persons in endemic areas result reinfection from familial or neighborhood sources unless the treatment is more widespread (Malaty *et al*., 1981; Blake *et al*., 2009; Lakew *et al*., 2009B).

Factors Affecting AMT Acceptability of the community

The proportion of rural residents who had taken the treatment 3-5 times was more than the urban residents whereas, the percentage of urban residents who took the drug for 1 time, 2 times and 6 times were greater than the rural ones. Overall, there was a significant difference between the rural residents and urban residents in the number of times they took azithromycin. The rural residents were at better enactment in taking azithromycin more than three times as compared to urban residents (AOR=1.55 95%; 95%CI [1.32-1.82]). Similarly, the rural residents were at better performance in taking AMT as compare to the urban residents in the 2012 campaign (AOR=2.35; 95%CI [1.80-3.06]). This inconsistency may be due to high resistance of the urban community to the program as explained by the FGD participants. But, better acceptance and coverage of the program in the rural community is more appreciated since the prevalence of trachoma in the rural population showed a fourth fold increase as compared to the urban (FMOH, 2006).

There was a significant difference between children less than 5 years and other age groups in terms of the frequency of AMT uptake. All age groups greater than 5 years more likely took the drug more than 3 times as compared to children less than 5 years. Adults between 16-30 years were at better performance in taking azithromycin more than 3 times as compared to children less than 15 years (AOR=2.74; 95% CI [1.83-3.92]). A bivariate correlation analysis also showed that there is positive correlation between the number of drugs they took and age (r=0.235, p=0.01). A similar study by Keenan and his colleagues (Keenan *et al*., 2011) in Goncha siso Ense woreda in Amhara showed that children 6-10 years of age had taken the treatment two times more likely than children with 1-5 years (AOR=1.91; 95%CI [1.65-2.20]). On the other hand, children with 1-5 years of age had taken better than those >10 years of age. Therefore, the drug uptake status of children less than five years old in the present study was in disagreement with most of the researches that advocate high coverage should be attained in children less than 15 years (Ssemanda *et al*., 2012; Melese *et al.*, 2004). This is due to the fact that the average duration of trachoma infection at younger ages is long. This is because of tears and secretions infected with chlamydia are easily and frequently swapped among the young preschool children and their caretakers leading to repeated episodes of reinfection (Grassly *et al*., 2008; Taylor K and Taylor H, 1999).

Farmers less likely took the treatment for more than three times as compared with students (AOR=0.71; 95% CI [0.54-0.92]). This is may be due the effect of the administration site. Students took the drug in schools whereas farmers took the drug in their houses. The farmers may not available during the campaign. Educational status and marital status did not affect the community's mass treatment acceptance. Household heads interference with the drug uptake of their family members affects acceptance. The household members who were advised not to take the drug by the household heads took the 2012 AMT less than those who were not advised by their parents (AOR=0.153; CI=95% [0.086-0.272]).

Out of the total 1227 household heads who had ever taken the drug, 538 (43.9%) of them reported to have experienced side effects of azithromycin. Among these, 83 (15.4%) of them had ever experienced with serious adverse effect of the drug. This is consistent with another study conducted in Ethiopia that reports the prevalence adverse events in children 1-9 years of age as 4.9% to 7.0% and in person's ≥ 10 years of age as 17.0% to 18.7% after two rounds of adverse event surveillance (Ayele *et al.*, 2011A). High prevalence of the drug adverse effect after AMT campaigns may be due to co-morbidity with heart problem since there was no screening program to identify such like patients during the distribution. As it is indicated in a recent study, patients taking azithromycin had an increased risk of cardiovascular death as compared to those who did not take (hazard ratio=2.88; CI=95% [1.79 to 4.63]) (Ray *et al.*, 2012; FDA, 2013). Giving careful consideration on the safety impact of the mass treatment in special populations; including elderly, pediatric patients, and patients with co-morbid conditions is mandatory as explained by researchers (Alemayehu *et al.*, 2010).

A multivariate logistic regression analysis showed that there is no association between household heads' previous experience with the drug's side effects and the drug uptake status in 2012 (AOR=1.40; CI=95% [0.87-2.26]). This is in agreement with the FGD participants' explanation that says there was high rumor from the community in the first and second campaigns about the drug side effects and serious adverse effects. However, now the communities' rumor and side effects did not affect the acceptance. This may be due to the fact that azithromycin is a broad-spectrum drug, which can attack many bacteria at a time (Foulds *et al.*, 1990). As a result, super infection will occur when given to persons for the first time. But, the side effects will decrease when they exposed to the second time.

In addition to this, the actual drug uptake coverage has increased in the recent campaigns due to the community's acceptability for seeking supplementary benefits of the drug other than trachoma elimination. Decreasing intestinal infection was one of the additional benefits of the drug explained by most of the study participants. This is consistent with the health belief model which says the individuals will comply more in mass treatments when perceived benefits outweigh the perceived barriers (Dheimann, 2003). A survey conducted by Keenan and his colleagues (Keenan *et al*., 2011) in 24 communities in rural Ethiopia also indicated that children 1-5 years of age who had received azithromycin at baseline had a lower all-cause mortality rate compared with those who had not.

Factors Affecting AMT Acceptability by household heads

The rural household heads had complied more with AMT as compared to their counterpart urban household heads (AOR=2.33; 95% CI [1.07-5.10]). Azithromycin uptake status of female household heads was less than the corresponding male household heads (AOR=0.41; 95% CI [0.24-0.720]). This is in spite of the fact that the trachoma burden is higher in women than men since they are traditional caregivers of children (FMOH, 2006). Therefore, it was expected to take the drug more than men. This discrepancy may occur due to their complaint of *"I am pregnant, I will take later"* as explained by the health extension workers. There was no significant difference between occupational status and marital status of household heads and their azithromycin uptake status. Rural household heads living in poor households were better complied with azithromycin uptake in 2012 as compared to the mediums and rich household heads.

Household heads awareness about trachoma had a positive impact in complying with the treatment (AOR=2.55; 95% CI [1.19-5.44]). Household heads who believed that "*trachoma is preventable diseases*" took azithromycin better than those who believed "*trachoma is not preventable diseases*" (AOR=2.19; 95% CI [1.22-3.94]). This is consistent with the health belief model, which says that knowledge, awareness, attitudes, beliefs and perceptions about the diseases positively affects the acceptability of the mass treatment (University of Twenty, 2013).

Awareness of AMT has a positive association with the drug uptake. Household heads who had ever heard about the treatment taken 7 times more likely than those who were not aware (AOR=7.19; 95% CI [3.27-15.82]). Household heads perception about the benefit of azithromycin has a positive association with their uptake status (AOR=7.33; 95% CI [4.13-13.02]). This is in parallel with a study, which says increased knowledge about the drugs given in mass treatment and their side effects may result in a better perception of its benefits than its barriers (Dheimann, 2003).

Household heads who were willing to take the treatment in the future highly complied with the treatment uptake as compared to those who were at the opposite side (AOR=5.78; 95%CI [2.44-13.68]). Household heads who had any type of information related with drug in the previous campaigns from mass treatment providers took better than those who did not get (AOR=2.49; 95% CI [1.53-4.08]). This is consistent with the study conducted by Amarillo and his colleagues (Amarillo *et al*., 2008) that says health education and promotion activities, utilizing locally translated information, education and communication materials and other media may increase the community's level of awareness and knowledge on the diseases. This enhances their understanding of the benefits of the drug and participation in MDA, resulting in increased treatment coverage and eventual elimination of the diseases. The FGD participants in this study also explained that their acceptance was changed after they got health education about the diseases and the drug’s benefit.

On the other hand, giving the drug without free will affects the acceptability of the community to AMT. Household heads who believed that the mass treatment was given only based on free will were participated in the 2012 campaign better than the opposite side (AOR=2.93; 95% CI [1.77-4.86]). This indicates that providing mass treatments should be preceded by adequate health education and announcement instead of enforcing the community to take the drug.

8. Limitations of the study

- This study might be subjected to recall bias as it is also true to all cross sectional surveys.
- This study was covered only one hand of the SAFE strategy for trachoma elimination
- The study did not assess the current eye health condition of the participants in relation with azithromycin uptake status.
- Female household heads were not participated in FGD

9. Conclusion

The 2012 azithromycin mass treatment coverage in Injibara town and Banja *woreda* was higher than the WHO minimum target. However, the overall coverage of the treatment in all campaigns obtained from the present study contradicts the reported coverage taken from the *woreda* health office. On average, each person had taken the drug for 3.6 times (60%) among the total six campaigns. The communities' acceptance to the mass treatment has increased in the recent campaigns as compared to the previous campaigns. There is low coverage and acceptability of the treatment in the urban community as compared to the rural residents. As a result, there is a need to strengthen the program in the urban and due consideration of additional campaigns for both areas. Supplementary benefits of azithromycin, awareness about trachoma and azithromycin, willingness and being old are some of the factors positively affecting acceptability. Educational status, marital status, previous experience with side effects did not affect the AMT acceptability. Being female, being urban residents and low awareness about trachoma and azithromycin negatively affects the acceptability of the household heads.

Recommendations

- ✓ It is better to continue the mass drug administration after conducting impact assessment
- ✓ It is better to distribute the drug in one site to avoid repetition
- ✓ It is better to provide additional health education about trachoma and the drug
- ✓ Announcement with different medias or with health professionals is very important before the campaign
- ✓ The drug should be given with qualified health extension workers
- ✓ The health professionals should dress Gown while providing the treatment
- ✓ It is better to create awareness about the diseases and the treatment rather than pressurizing the community to take the drug
- ✓ It is better to conduct researches that assess the acceptability and impact of AMT for trachoma elimination in relation with other SAFE strategies
- ✓ It is better to conduct prospective studies to assess the impact of AMT in the area.

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Annexes

Annex I: Structured questionnaires for household heads' interview to assess the acceptability of azithromycin mass treatment

Addis Ababa University

School of Pharmacy

Department of Pharmaceutics and social pharmacy

Kebele code No _____ *Gott* code No_____

Verbal consent form before conducting interview

Greeting, my name is _____. I am working with the research team of the Department of Pharmaceutics and Social Pharmacy, School of Pharmacy, Addis Ababa University. I would like to ask you a few questions concerning your perception and experience regarding to azithromycin mass treatment as well as your family's azithromycin mass treatment taking experience. The interview would take 20-30 minutes of your time. The purpose of this study is to assess the communities' acceptability to azithromycin mass treatment. This will be helpful for improving the azithromycin mass treatment program for the future. Your participation is voluntary. You can refuse to answer any questions if you are not interested. You can also withdraw from the study at any time, and there is no any problem happening to you for withdrawing in the study. All your responses will remain strictly confidential. No one will have the access to the information you will give for me. I will not ask your name and it will not appear on the interview guide. The information you provide will be analyzed in aggregate form with the other participants.

If you have/will have any questions or problems, you can contact

1. Zelalem Tilahun (Principal Investigator) : +251923109539
2. Dr. Teferi Gedif (the research project Advisor): +251911684854

Do you understand all the information I gave you? A. yes B. No

If yes, do I have your permission to continue? A. yes B. No

If Yes, Continue to the Next Page (encircle or write the response accordingly)

If No, Skip to the next Respondent

Date of Interview_____

Time Started _____

Time Finished _____

Section I: Socio demographic information of the household heads			
Qu.No	**Questions**	**Response alternatives**	**Skip Pattern**
1.	Sex	1. Male 2. female	
2.	How old are You ?	Age in years_____	
3.	What is your Job?	1. Student 2. Farmer 3. Merchant 4.Government employee 5. House wife 6. Jobless 7. Others, specify_____	
4.	What is your Religion?	1.Orthodox 2. Muslim 3. Protestant 4. Others, specify _____	
5.	Educational status	1. Unable to read and write 2. Able to read and write but no formal education 3. Grade 1-4 4. Grade 4-8 5. Grade 9-12 6. College and above	
6.	Income per month/ wealth 6.1.For urban community (income/ month)	1. ≤ 500 birr 2. 501-1000 birr 3. 1001-1500 birr 4. 1501-2000 birr 5. >2000birr	
	6.2. For rural community (wealth)	1. less than 2 cows, 3 sheep, 2 horse, and 3 *kada* land 2. 2-5 cows, 3-8 sheep, 2-4 horse and 3-8 *kada* land 3. 6-10 cows, 9-12 sheep, 5-6 horse and 9-12 *kada* land 4. Greater than 10 cows, 12 sheep, 6 horse and 12 *kada* land	

7.	Marital status	1. Single 2. Married 3. Divorced 4. Widowed	
Section II: Questions related to azithromycin mass treatment for the household head			
8.	Have you heard about trachoma?	1. yes 2. No	If No, skip to 15
9.	From where have you heard about trachoma?	1. Family 2. Neighbors 3. School 4. Health professionals 5. Mass Media (TV, Radio, Magazines)	
10.	What do you think is the cause of trachoma?	1. _____ 2. _____ 3. _____	
11.	How trachoma is transmitted from one person to the other?	_____ _____ _____	
12.	Is trachoma a preventable disease?	1. Yes 2. No	If No, skip to 14
13.	How can we prevent trachoma?	_____ _____ _____	
14.	How trachoma is treated?	_____ _____ _____	
15.	Have you heard of azithromycin mass treatment?	1. Yes 2. No	If No, skip to 17
16.	From where have you heard about the azithromycin mass treatment?	1. Family 2. Neighbors 3. School 4. Health professionals 5. Community leaders 6. Mass Media (TV, Radio, Magazines	

17.	Was it given in your kebele?	1. Yes 2. No	
18.	Do you know why azithromycin treatment is given free of charge?	1. Yes 2. No	If No, skip to 20
19.	Why it is given free of charge?	_____ _____ _____	
20.	Is the treatment given to those willing to take?	1. Yes 2. No	
21.	Have you or any member of your household taken azithromycin?	1. Yes 2. No	If Yes, skip to 23
22.	Why you did not take azithromycin?	_____ _____ _____	
23.	How many times had you taken?	1. One 2. Two times 3. Three times 4. Four times 5. Five times 6. Six times	
24.	Had you yourself taken the treatment given in 2012 (2005 E.C)?	1. Yes 2. No	If Yes, skip to 26
25.	Why you hadn.t taken the treatment given in 2012 (2005 E.C)?	_____ _____ _____	
26.	Do you think it is beneficial?	1. Yes 2. No	If No, skip to 28
27.	What did you benefited from taking it?	1. Increase of my eye health 2. decrease in intestinal infection 3. Others, specify_____	
28.	If it is not beneficial, why did you take it?	1. _____ 2. _____ 3. _____	
29.	Did you experience any side effects after taking the drug?	1. Yes 2. No	If No. skip to 32

30.	What type of side effects had occurred on you?	1. Diarrhea 2. Nausea 3. Vomiting 4. Stomach ache 5. Heart burn 6. Anal burning sensation 7. Others, specify_____	
31.	Have you ever encountered with serious adverse effects of the drug?	1. Yes 2. No	
32.	Have you ever heard about other persons who were experienced side effects?	1. Yes 2. No	
33.	What side effects of the drug have you heard in other persons?	1. Diarrhea 2. Nausea 3. Vomiting 4. Stomach ache 5. Heart burn 6. Anal burning sensation 7. Others, specify_____	
34.	Have you ever heard serious adverse effects of the drug in other persons?	1. Yes 2. No	
35.	What serious adverse effects had you heard?	1. Death 2. Disability 3. Birth defect 4. In patient hospitalization	
36.	Do you know any person encountered with serious adverse effects of the drug?	1. Yes 2. No	
37.	Have you ever used the drug for other purposes?	1.Yes 2. No	If No, skip to 39
38.	For what purpose you have used?	1. _____ 2. _____ 3. _____	
39.	Did the drug treatment providers ask you about your previous illness history before giving the treatment?	1. Yes 2. No	
40.	Did the drug treatment providers have provided any information when they gave you the drug?	1. Yes 2. No	If No, skip to 42

41.	What did they say?	1. _____ 2. _____	
42.	Are you willing to take the drug if the mass treatment continuous in your kebele?	1.Yes 2. No	
43.	If No for question 43, what is your reason?	_____ _____	

Section III: Questions related to azithromycin mass treatment for household head about his family members and for adults.

A. Socio demographic informations about household members

	Questions	House Hold Members						
		Wife	01	02	03	04	05	06
44.	Sex							
45.	Age in years	____	_____	_____	_____	_____	____	____
46.	Religion							
47.	Educational status							
48.	Marital status							
49.	Job							
	B. Questions related to azithromycin mass treatment							
50.	How many times had you/she/he taken the treatment?							
51.	Did you/she/ he take the last treatment given in 2012?							
52.	If you/she/he did not take the last treatment, why?							
53.	Is there any person who illed his/her eye right now?							
54.	What side effects had occurred on you/her/him after taking the drug in the last treatment?							
55.	Had you ever advised her/him not to take the drug?							
56.	For what other purpose did your families use the drug?							

Thank you for your cooperation!

Annex II: **FGD Guiding Questions**

Verbal consent form before conducting focus group discussion

Introduction

My name is Zelalem Tilahun. I am postgraduate student in Addis Ababa University. I conduct this research for the partial fulfillment of Master's Degree of science in pharmacoepidimology and social pharmacy program. I would like to discuss few questions with you concerning your perception and experience regarding to azithromycin mass treatment. The discussion would take 1 to 1 and half hours of your time. The purpose of this study is to assess the communities' acceptability to azithromycin mass treatment. This will be helpful for improving the azithromycin mass treatment program for the future. Your participation is voluntary. You can also withdraw from the discussion at any time, and there is no any problem happening to you due to withdrawing from the study. All your responses will remain strictly confidential. No one will have the access to the information you will give for me. I will not ask your names and your names will not be recorded. The information you will provide will be analyzed without expressing your identity.

Are all of you volunteer to participate? A. yes B. No

If yes, continue the discussion

Is it possible to use tape recorder? A. Yes B. No

If all the participants agree, tape recorder will be used

1. What are the common health problems in your kebele?
2. Is trachoma infection (*ayine maze*) a common health problem in your kebele?
3. What do you think is the cause of trachoma?
4. How many times was the azithromycin mass treatment program given in your kebele?
5. Are there persons who were not participated in any of the programs?
6. What is the opinion of the community to azithromycin mass treatment program?
7. For what purpose did the community use this drug other than trachoma control?
8. How is the interaction of the community and the drug treatment providers?

I heart fully thank for investing your precious time!

Annex III: **Semi structured questions for key informant interview**

Introduction

My name is Zelalem Tilahun. I am postgraduate student in Addis Ababa University. I conduct this research for the partial fulfillment of Master's Degree of science in pharmacoepidimology and social pharmacy program. The aim of this study is to assess the acceptability of the Injibara town and Banja *woreda* communities' to azithromycin mass treatment for trachoma elimination. Considering that the results emanated from this study will be very important for the community and the country, you are kindly requested to participate in this study. The information you will provide will kept confidentially.

Are you voluntary to participate? A. Yes B. No

If yes, the interview will be continued

Section I: Semi structured questions for key informant interview for carter center officials

1. How is the azithromycin mass treatment program going on?
2. How is the mass azithromycin treatment coverage for each campaign?
3. How is the communities' acceptability for the program?
4. What challenges from the community had reported during the drug distribution?

Section II: Semi structured questions for key informant interview to health extension workers

1. What practical challenges had you faced during the drug administration?
2. What rumors had you heard from the community about the drug?
3. What were the mostly raised reasons by persons who were refused to take azithromycin mass treatment?
4. What factors do you think that affects the drug treatment acceptability by the community?
5. What solutions were taken for persons who were refused to take the drug?
6. Had you noticed any health problem in persons after the drug administration?

Thank you for your cooperation

Annex IV: Amharic version Structured questionnaire for household head interview to assess the acceptability of azithromycin mass treatment

አዲስ አበባ ዩኒቨርሲቲ

የፋርማሲ ትምህርት ቤት

የፋርማሲዩቲክስና ሶሻል ፋርማሲ ዲፓርትመንት

የቀበሌ መለያ ቁጥር _____ የጎጥ መለያ ቁጥር_____

ጤና ይስጥልኝ፡፡ ስሜ_____እባላለሁ፡፡በአሁኑ ሰዓት ከአዲስ አበባ ዩኒቨርሲቲ የፋርማሲ ትምህርት ቤት የፋርማሲዩቲክስና ሶሻል ፋርማሲ ዲፓርትመንት የጥናት ና ምርምር ቡድን ጋር አብሬ እየሰራሁ ነው፡፡ ቃለመጠይቁ ከ 20-30 ደቂቃ ያህል ሊወስድ ይችላል፡፡ የዚህ ጥናት ዋና ዓላማ ማህበረሰቡ ለትራኮማ ህክምና በዘመቻ በሚሰጠው መድሃኒት ላይ ያለውን ተቀባይነት ለማጥናት ነው፡፡ ይህ ደግሞ ወደፊት የመድሃኒቱን ህክምና መርሃ ግብር በሚገባ ለማከናወን ይረዳል፡፡በጥናቱ የመሳተፍ ወይም ያለማሰተፍ የራስዎ ምርጫ ነው፤በጥናቱ መሃል አቋርጠው የመውጣት መብትዎም የተጠበቀ ነው፡፡ ይህ በመሆኑም ወደፊት በእርስዎ ላይ የሚደርስ ምንም አይነት ተፅዕኖ አይኖርም፡፡ ለቃለመጠይቁ የሚሰጧቸው ምላሾች ሁሉ በሚስጢር የተጠበቁ ይሆናሉ፡፡ ከጥናትና ምርምር ቡድኑ ውጭ ማንም ሰው የሰጡንን መረጃ ሊያገኘው አይችልም፡፡ለዚህም ሲባል ስመዎትን አንጥይቀዎትም፤ የሚሰጡንን መረጃም ከሌሎች ሰዎች ጋር እንጂ ብቻውን አንጠቀምበትም፡፡

ከጥናቱ ጋር የተያያዘ ጥያቄ ካለዎት ወይም ችግር ካጋጠመወት በሚከተለው አድራሻ መደወል ይችላሉ፡፡

1. ዘላለም ጥላሁን (መሪ ተመራማሪ)፡ +251923109539
2. ዶ/ር ተፈሪ ገድፍ (የምርምሩ ዋና አማካሪ)፡+251911684854

የሰጥሁዎትን መረጃዎች በሙሉ በትክክል ተረድተውኛል ሀ) አዎ ለ) የለም

መልስዎ አዎ ከሆነ፤ በጥናቱ ለመቀጠል ፈቃደኛ ነዎት ሀ) አዎ ለ) አይደለሁም

መልስዎ አዎ ከሆነ ወደሚቀጥለው ገፅ ይቀጥሉ፡፡

መልስዎ አይደለሁም ከሆነ መጠይቁን ለመረጃ ሰብሳቢው ይመልሱ፡፡

የቃለመጠይቁ የተደረገበት ቀን_____

የተጀመረበት ሰዓት_____

ያለቀበት ሰዓት_____

ክፍል አንድ፡ የቤት አባወራውን የተመለከቱ ማህበራዊ መረጃወች			
ጥያቄ ቁ.	**ጥያቄዎች**	**የመልስ አማራጮች**	**የመዝለያ እርከኖች**
1.	ፆታ	1. ወንድ 2. ሴት	
2.	እድሜዎት ስንት ነው?	እድሜ በ አመት_____	
3.	ስራዎት ምንድን ነው?	1.ተማሪ 2.ገበሬ 3. ነጋዴ 4. የመንግስት ሰራተኛ 5 የቤት እመቤት 6. ስራ አጥ 7. ሌላ ካለ ጥቀሱ_____	
4.	ሐይማኖትዎ ምንድን ነው?	1.ኦርቶዶክስ 2. ሙስሊም 3. ፕሮቴስታንት 4. ሌላ ካለ ይጥቀሱ_____	
5.	የትምህርት ደረጃ	1. ማንበብና መፃፍ የማይችል 2. መደበኛ ትምህርት ያልተማረ ነገር ግን ማንበብና መፃፍ የሚችል 3. ከ1ኛ-4ኛ ክፍል 4. ከ5ኛ-8ኛ ክፍል 5. ከ9ኛ-12ኛ ክፍል 6. ኮሌጅና ከዚያ በላይ	
6.	የወር ገቢ/ የሃብት መጠን 56.1. ለከተማ ነዋሪዎች (ገቢ/ወር)	**1.** ከ 500 ብር ያነሰ **2.** ከ501-1000 ብር **3.** ከ1001-1500 ብር **4.** ከ1501-2000 ብር **5.** ከ 2000 ብር በላይ	
	56.2. ለገጠር ነዋሪዎች (የሃብት መጠን)	1. ከ 2 ላም፣ ከ 3 በግ፣ ከ 2 ፈረስ እና ከ 3 ቃዳ መሬት በታች 2. ከ 2-5 ላም፣ ከ 3-8 በግ፣ ከ 2-4 ፈረስ እና ከ 3-8 ቃዳ መሬት 3. ከ 6-10 ላም፣ ከ 9-12 በግ፣ ከ 5-6 ፈረስ እና ከ 9-12 ቃዳ መሬት 4. ከ 10 ላም፣ ከ 12 በግ፣ ከ 6 ፈረስ እና ከ 12 ቃዳ መሬት በላይ	

7.	የጋብቻ ሁኔታ	1. ያላገባ/ች 2. ያገባ/ች 3. የፈታ/ች 4. የሞተበት/ባት	
ክፍል ሁለት: የቤት አባወራውን የተመለከቱ ከአዚትሮማይሲን የዘመቻ ህክምና ጋር የተየያዙ ጥያቄወች			
8.	ስለ ትራኮማ (አይን ማዝ) በሽታ ሰምተው ያውቃሉ?	1. አዎ 2. የለም	መልስዎ የለም ከሆነ ወደ ጥያቄ 15 ይለፉ
9.	ስለትራኮማ ሰምተው የሚያውቁት ከየት ነው?	1. ከቤተሰብ 2. ከጎረቤት 3. ከትምህርት ቤት 4. ከጤና ባለሙያዎች 5. ከመገናኛ ብዙሃን (ከቴሌቭዥን, ከሬዲዮ,ከጋዜጦች)	
10.	የትራኮማ በሽታ መንስኤው ምን ይመስለዎታል?	_____ _____	
11.	የትራኮማ በሽታ ከአንድ ሰው ወደ ሌላ ሰው የሚተላለፈው እንዴት ነው?	_____ _____ _____	
12.	ትራኮማ መከላከል የምንችለው በሽታ ነው?	1. አዎ 2. አይደለም	መልስዎ አይደለም ከሆነ ወደ ጥያቄ 14 ይለፉ
13.	ትራኮማን እንዴት ነው መከላከል የሚቻለው?	_____ _____	
14.	ትራኮማን እንዴት ማከም ይቻላል?	_____ _____	
15.	ለትራኮማ ህክምና በዘመቻ ስለሚሰጥ አዚትሮማይሲን ስለተባለ መድሃኒት ሰምተው ያውቃሉ?	1. አዎ 2. የለም	መልስዎ የለም ከሆነ ወደ ጥያቄ 17 ይለፉ
16.	በዘመቻ ስለሚሰጠው አዚትሮማይሲን ህክምና ከየት ነው የሰሙት?	1. ከቤተሰብ 2. ከጎረቤት 3. ከትምህርት ቤት 4. ከጤና ባለሙያዎች 5. ከሀገር ሽማግሌች 6. ከመገናኛ ብዙሃን (ከቴሌቭዥን, ከሬዲዮ,ከጋዜጦች)	

17.	በእርስዎ ቀበሌ ተሰጥቷል?	1. አዎ 2. የለም	
18.	የአዚትሮማይሲን የመድሃኒት ህክምና በነፃ የሚሰጠው ለምን እነደሆነ ያውቃሉ?	1. አዎ 2. አላውቅም	መልስዎ አላውቅም ከሆነ ወደ ጥያቄ 20 ይለፉ
19.	ለምንድን ነው ህክምናው በነፃ የሚሰጠው?	_____ _____	
20.	የመድሃኒት ህክምናው የተሰጠው ለመውሰድ ፈቃደኛ ለሆኑ ሰዎች ነው?	1. አዎ 2. አይደለም	
21.	እርስዎ ወይም የቤተሰብዎ አባላት መድሃኒቱን ወስዳችሁ ታውቃላችሁ?	1. አዎ 2. የለም	መልስዎ አዎ ከሆነ ወደ ጥያቄ 23 ይለፉ
22.	ለምንድን ነው መድሃኒቱን ያልወሰዳችሁ?	_____ _____	
23.	በዘመቻ የሚሰጠውን የመድሃኒት ህክምና እርስዎ ለምን ያህል ጊዜ ወስደዋል?	1. አንድ ጊዜ 2. ሁለት ጊዜ 3. ሶስት ጊዜ 4. አራት ጊዜ 5. አምስት ጊዜ 6. ስድስት ጊዜ	
24.	በ 2005 ዓ.ም. በዘመቻ የተሰጠውን የትራኮማ የመድሃኒት ህክምና እርስዎ መስደዋል?	1. አዎ 2. የለም	መልስዎ አዎ ከሆነ ወደ ጥያቄ 26 ይለፉ
25.	በ 2005 ዓ.ም. በዘመቻ የተሰጠውን የትራኮማ የመድሃኒት ህክምና ለምን አልወሰዱም?	_____ _____ _____	
26.	መድሃኒቱ ጠቃሚ ነው ብለው ያስባሉ?	1. አዎ 2. የለም	መልስዎ የለም ከሆነ ወደ ጥያቄ 28 ይለፉ
27.	መደሃኒቱን በመውሰድዎ ምን ጥቅም አገኙ?	1. የዓይኔ ጤንነት ጨመረልኝ 2. የሆዴ ህመም ቀነሰልኝ 3. ሌላ ካለ ይጥቀሱ, _____ _____	
28.	መድሃኒቱ ጠቃሚ ካልሆነ ለምን ወሰዱት?	1. _____ 2. _____ 3. _____	
29.	መድሃኒቱን ከወሰዱ በኋላ በመድሃኒቱ ምክንያት ያጋጥመዎት የጎንዮሽ ጉዳት ነበር?	1. አዎ 2. የለም	መልስዎ የለም ከሆነ ወደ ጥያቄ 32 ይለፉ

30.	ምን አይነት የጎንዮሽ ጉዳት አጋጥሞዎት ያውቃል?	1. ተቅማጥ 2. ማቅለሽለሽ 3. ትውኪያ 4. የሆድ ቁርጠት 5. የሆድ ማቃጠል 6. ፊንጢጣ ማቃጠል 7. ሌላ ካለ ይጥቀሱ,_____	
31.	ከፍተኛ የጎንዮሽ ጉዳት አጋጥሞዎት ያውቃል?	1. አዎ 2. የለም	
32.	በመድሃኒቱ ምክንያት በሌላ ሰው ላይ የደረሰ የትኛውም አይነት የጎንዮሽ ጉዳት ሰምተው ያውቃሉ?	1. አዎ 2. የለም	መልስዎ የለም ከሆነ ወደ ጥያቄ 37 ይለፉ
33.	በሌሎች ሰዎች ላይ የደረሱ ምን ምን አይነት የመድሃኒቱ የጎንዮሽ ጉዳቶችን ሰምተው ያውቃሉ?	1. ተቅማጥ 2. ማቅለሽለሽ 3. ትውኪያ 4. የሆድ ቁርጠት 5. የሆድ ማቃጠል 6. ፊንጢጣ ማቃጠል 7. ሌላ ካለ ይጥቀሱ,_____	
34.	በሌሎች ሰዎች ላይ የደረሰ ከፍተኛ የጎንዮሽ ጉዳት ሰምተው ያውቃሉ?	1. አዎ 2. የለም	መልስዎ የለም ከሆነ ወደ ጥያቄ 36 ይለፉ
35.	ምን አይነት ከፍተኛ የጎንዮሽ ጉዳት ሰምተው ያውቃሉ?	1. ሞት 2. አካል መጉደል 3. የወሊድ ችግር 4. ሆስፒታል የሚያስተኛ ህመም	
36.	በመድሃኒቱ ምክንያት ከፍተኛ የጎንዮሽ ጉዳት የደረሰበት በአካል የሚያውቁት ሰው አለ?	1. አዎ 2. የለም	
37.	በዘመቻ የሚሰጠውን የትራኮማ ማከሚያ መድሃኒት ለሌላ ዓላማ ተጠቅመውት ያውቃሉ?	1. አዎ 2. የለም	መልስዎ የለም ከሆነ ወደ ጥያቄ 39 ይለፉ
38.	ለምን ዓላማ ተጠቅመውት ያውቃሉ?	1. _____ 2. _____	
39.	በዘመቻ የሚሰጠውን የመድሃኒት ህክምና የሚሰጡ ሰዎች መድሃኒቱን ከመስጠታቸው በፊት ስለ ጤንነትዎ ሁኔታ ጠይቀዎት ያውቃሉ?	1. አዎ 2. የለም	
40.	በዘመቻ የሚሰጠውን የመድሃኒት ህክምና የሚሰጡ ሰዎች መድሃኒቱን ሲሰጡዎት አብረው የሚሰጡዎት መረጃ ነበር?	1. አዎ 2. የለም	መልስዎ የለም ከሆነ ወደ ጥያቄ 42 ይለፉ

41.	ምን ምን ብለዎት ያውቃሉ?	1. _____ 2. _____ 3. _____	
42.	በዘመቻ የሚሰጠው የመድሃኒት እደላ በቀበሌያችሁ መሰጠት ቢቀጥል ለመውሰድ ፈቃደኛ ነዎት?	1. አዎ 2. አይደለሁም	
43.	ለጥያቄ 42 መልስዎ አይደለሁም ከሆነ ምክንያትዎ ምንድን ነው?	_____ _____ _____	

ክፍል ሶስት: የቤት አባወራውን ቤተሰቦች የተመለከቱ ከአዚትሮማይሲን የዘመቻ ህክምና ጋር የተየያዙ የአባወራው ጥያቄወች

ሀ) የቤተሰቡን አባላት የተመለከቱ መህበራዊ መረጃዎች

	ጥያቄዎች	**የቤተሰብ አባላት**						
		ሚስት	**01**	**02**	**03**	**04**	**05**	**06**
44.	ፆታ							
45.	ዕድሜ/በዓመት	____	___	___	___	____	___	___
46.	ሐይማኖት							
47.	የትምህርት ደረጃ							
48.	የጋብቻ ሁኔታ							
49.	ስራ							

ለ) ከአዚትሮማይሲን የዘመቻ ህክምና ጋር የተያያዙ ጥያቄዎች

50.	በዘመቻ የተሰጠውን የመድሃኒት ህክምና ለስንት ጊዜ ወስደሃል/ሻል/ዷል/ዳለች?							
51.	በ 2005 ዓ.ም. የተሰጠውን የመድሃኒት ህክምና ወስደሃል/ሻል/ዷል/ዳለች?							
52.	በ 2005 ዓ.ም. የተሰጠውን የመድሃኒት ህክምና ካለወሰድህ/ድሽ/ደ/ች ለምን?							
53.	ከቤተሰብዎ አባላት መካከል በአሁኑ ሰዓት ዓይኑን የታመመ አለ?							
54.	በ 2005 ዓ.ም. የተሰጠውን የመድሃኒት ህክምና ከወሰድህ/ድሽ/ደ/ደች በኋላ ምን የጎንዮሽ ጉዳት ደረሰብህ/ሽ/በት/ባት?							
55.	የመድሃኒት ህክምናውን እንዳይወስድ/ አንዳትወስድ መከረውት/ዋት የውቃሉ?							
56.	የቤተሰብ አባላቱ በዘመቻ የሚሰጠውን መድሃኒት ለሌላ ለምን ዓላማ ተጠቅመውት ያውቃሉ?							

ስለ ትብብርዎ ከልብ አመሰግናለሁ::

Annex V: Amharic version of FGD Guiding Questions

ለቡድን ውይይት የመነሻ ጥያቄዎች

ከቡድን ውይይቱ በፊት የቃል መግባቢያ ሰነድ

መግቢያ

ስሜ ዘላለም ጥላሁን ይባላል፡፡ በአሁኑ ሰዓት የአዲስ አበባ ዩኒቨርሲቲ የሁለተኛ ዲግሪ ተማሪ ነኝ፡፡ይህን ምርምር የምሰራው በፋርማኮኢፒዲሞሎጅና እና ሶሻል ፋርማሲ መርሃግበር ለምማረው የማስተርስ ዲግሪ ማሟያ ነው፡፡ ለትራኮማ ህክምና በዘመቻ መልክ በሚሰጠው መድሃኒት ዙሪያ የእናንተን ምልከታና ልምድ በተመለከተ በተወሰኑ ጥያቄዎች ላይ እንድንወያይ እፈልጋለሁ፡፡ውይይቱ ከ አንድሰዓት እስከ አንድ ሰዓት ተኩል ያህል ሊወስድ ይችላል፡፡ የዚህ ጥናት ዋና ዓላማ ማህበረሰቡ ለትራኮማ ህክምና በዘመቻ በሚሰጠው መድሃኒት ላይ ያለውን ተቀባይነት ለማጥናት ነው፡፡ ይህ ደግሞ ወደፊት የመድሃኒቱን ህክምና መርሃ ግብር በሚገባ ለማከናወን ይረዳል፡፡በውይይቱ የመሳተፍ ወይም ያለማሰተፍ የራስዎ ምርጫ ነው፤በውይይቱ መሃልም አቋርጠው የመውጣት መብትዎ የተጠበቀ ነው፡፡ ይህ በመሆኑም ወደፊት በእርስዎ ላይ የሚደርስ ምንም አይነት ተፅዕኖ አይኖርም፡፡ በውይይቱ የሚሰጧቸው ምላሾች ሁሉ በሚስጢር የተጠበቁ ይሆናሉ፡፡ ከጥናትና ምርምር ቡድኑ ውጭ ማንም የቀበሌ አመራርም ሆነ የጤና ኤክስቴንሽን ባለሙያዎች ሊያገኙአቸው አይችሉም፡፡ለዚህም ሲባል ስመዎትን አንጥይቀዎትም፤የሚሰጡንን መረጃም የምንጠቀምበት የእርስዎን ማንነት ሳንገልፅ ይሆናል፡፡

ሁላችሁም በውይይቱ ለመሳተፍ ፈቃደኛ ናችሁ? 1. አዎ 2. አይደለንም

ሁሉም ፈቃደኛ ከሆኑ ወደ ውይይቱ ይገባል

የድምፅ መቅጃ መሳሪያ መጠቀም አንችላለን? 1 አዎ 2. አይቻልም

ሁሉም የውይይቱ ተሳታፊዎች ፈቃደኛ ከሆኑ፣ የድምፅ መቅጃ እንጠቀማለን?

1. በቀበሌያችሁ የተለመዱ የጤና ችግሮች ምን ምን ናቸው?
2. ትራኮማ (ዓይን ማዝ) በሽታ በቀበሌያችሁ የተለመደ የጤና ችግር ነው?
3. ለትራኮማ በሽታ መንስኤው ምን ይመስላችኋል?
4. የአዚትሮማይሲን የዘመቻ ህክምና መርሃ ግብር በቀበሌያችሁ ለምን ያህል ጊዜ ተሰጥቷል?
5. በየትኛውም የአዚትሮማይሲን የዘመቻ ህክምና መርሃ ግብር ያልተሳተፉ ሰዎች አሉ?
6. ስለ አዚትሮማይሲን የዘመቻ ህክምና መርሃ ግብር ማህበረሰቡ ያለው አመለካከት ምን ይመስላል?
7. ማህበረሰቡ ይህን መድሃኒት ከትራኮማ ህክምና ውጭ ለምን ለምን ይጠቀምበታል?
8. ህብረተሰቡና የአዚትሮማይሲን የዘመቻ ህክምና ሰጭዎች ያላቸው ግንኙነት ምን ይመስላል?

ጊዜያችሁን ሰውታችሁ በውይይቱ ስለተሳተፋችሁ ከልብ አመሰግናለሁ

Annex VI: **Amharic Version of Semi structured questions for key informant interview**

ለጽ/ቤት ኃለፊዎችና ለጤና ኤክስቴንሽን ሰራተኞች የመነሻ ጥያቄወች

መግቢያ

ስሜ ዘላለም ጥላሁን ይባላል፡፡ በአሁኑ ሰዓት የአዲስ አበባ ዩኒቨርሲቲ የሁለተኛ ዲግሪ ተማሪ ነኝ፡፡ይህን ምርምር የምሰራው በፋርማኮኢፒዲሞሎጅና እና ሶሻል ፋርማሲ መርሃግበር ለምማረው የማስተርስ ዲግሪ ማሟያ ነው፡፡የዚህ ጥናት ዋና ዓላማ በእንጅባራ ከተማና በባንጃ ሽኩዳድ ወረዳ የሚገኙ የህብረተሰብ ክፍሎች ለትራኮማ ህክምና በዘመቻ መልክ በሚሰጠው መድሃኒት ላይ ያላቸውን ተቀባይነት ለማጥናት ነው፡፡ ይህ ደግሞ ወደፊት የመድሃኒቱን ህክምና መርሃ ግብር በሚገባ ለማከናወን ይረዳል፡፡ከዚህ ምርምር የሚገኘው ውጤት ለማህበረሰቡና ለሃገሪቱ ጠቃሚ በመሆኑ እርስዎም በጥናቱ እንዲሳተፉ በትህትና አንጠይቀዎታለን፡፡ የሚሰጡን መረጃዎች በሙሉ በሚስጢር ይጠበቃሉ፡፡

በጥናቱ ለመሳተፍ ፈቃደኛ ነዎት? 1. አዎ 2. አይደለሁም

መልሳቸው አዎ ከሆነ ቃለመጠይቁ ይቀጥላል

ክፍል 1: ለካርተር ሴንተር ጽ/ቤት ኃለፊዎች የሚሆኑ የመነሻ ጥያቄወች

1. የአዚትሮማይሲን የዘመቻ ህክምና መርሃ ግብር እንዴት እየሄደ ነው?
2. የአዚትሮማይሲን የዘመቻ ህክምና መርሃ ግብር የእያንዳንዱ ዘመቻ ሽፋን ምን ይመስላል?
3. ማህበረሰቡ ለመርሃግብሩ ያለው ተቀባይነት ምን ይመስላል?
4. በዘመቻው ወቅት ከማህበረሰቡ ዘንድ የተነሱ ምን አይነት ችግሮች ሪፖርት ተደርገዋል?

ክፍል 2: ለጤና ኤክስቴንሽን ሰራተኞች የሚሆኑ የመነሻ ጥያቄወች

1. መድሃኒቱን በምታድሉበት ጊዜ ምን አይነት ችግሮች ገጥሟችሁ ነበር?
2. መድሃኒቱን በተመለከተ ከማህበረሰቡ ምን አይነት አቤቱታ ትሰማላችሁ?
3. በዘመቻ የሚሰጠውን የአዚትሮማይሲን መድህኒት ህክምና አንወሰድም ያሉ ሰዎች ብዙ ጊዜ የሚያነሱዋቸው ምክንያቶች ምንድን ናቸው?
4. ህብረተሰቡ ለትራርኮማ የመድሃኒት ህክምና ያለው አቀባባል ላይ ተፅዕኖ የሚያሳድሩ ምክንያቶች ምንድን ናቸው?
5. የመድሃኒት ህክምናውን አንወሰድም ያሉ ሰዎች ላይ ምን መፍትሔ ተወሰደ?
6. መድሃኒቱን ከወሰዱ በኋላ የጤና ችግር ያጋጠማቸው ሰዎች አሉ?

ሰለትብብራችሁ ከልብ አመሰግናለሁ፡፡

Annex VII: Test questions to check the participants understanding to the consent form

English Version

1. Is the aim of the study clear for you?
2. Could you explain the aim of this study?
3. Could you tell me all the informations I told for you?

Amharic Version

1. የጥናቱ ዓላማ ግልፅ ሁኖለዎታል?
2. የጥናቱ ዓላማ ምን እንደሆነ አስኪ ይንገሩኝ?
3. የሰጠሁዎትን መረጃዎች አስኪ በዝርዝር ይንገሩኝ?