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Oromo Ethiopians Perceptions of the Prevalence, Causes, Treatment and Prevention of Trachoma

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Abstract

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Linda Lorraine Gross

MA, Trinity International University 2004

BA, Vanguard University 1984

Dissertation Submitted in Partial Fulfillment

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Abstract

In Ethiopia, one of the primary contributors to blindness is trachoma, which is an infectious ocular disease. There is no record of any prevention programs in rural Ethiopian villages of Oromia, where the prevalence of trachoma is high. The original purpose of this phenomenological study was to explore the perceptions of rural Oromo villagers in Ethiopia on the causes, treatment, and prevention of trachoma, using the health belief model and the social-ecological model as a theoretical framework. Due to a security situation in Ethiopia, final interviews were conducted with immigrant Ethiopians in the US, all of them from the trachoma-endemic rural areas of Oromia, all now living in Phoenix, Arizona. Results showed that this sample of former villagers had limited knowledge of the causes, prevention or treatment of trachoma, and could not recognize, or differentiate it from other eye diseases. The participants had some knowledge of governmental and nongovernmental efforts to control trachoma in their home country - through education and pit latrines. They also knew about the limitations of those programs. All reported that people would be willing to attend classes for trachoma prevention if held at a convenient time and place. These results may be useful in preparing a program to prevent trachoma in rural Ethiopia, and reduce blindness in this population, enabling more individuals to become educated and contributing to their community's well-being. Since trachoma is highly infectious, and participants in this study come from a trachoma-endemic area and do not know how to recognize it for themselves, the need for screening for trachoma on arrival in the US should be examined in more detail.

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Dedication

This study is first and foremost dedicated to my Lord Jesus Christ, my Messiah, for sustaining and providing me the strength and vision to take on the strenuous effort of this study.

This study is dedicated to the memory of my late parents, Frank and Blanche Gross, though they passed away in my young life, they established, in my very early years, a hunger for learning, study, excellence in practice of all endeavors in my future and dedication to helping people.

Again, this study is dedicated to Dr. Jonathan Bernis, Executive Director of Jewish Voice Ministries, International, who opened the door to me to serve on the JVMI medical teams to Ethiopia and permitted me to study among the Lost Tribe Jewish Gafat Beta Israel villagers in Ethiopia.

Finally, this study is dedicated to the memory of the late Dr. Gerald Goetzen, veteran missionary to Ethiopia, who “opened my eyes” to the grave situation of trachoma and resulting impaired vision and blindness in Ethiopia which influenced me to write my dissertation on this subject.

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I want to extend my heartfelt appreciation to the following individuals:

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Chapter 1: Introduction to the Study

The villages of rural Oromia in Ethiopia are remote, sparsely populated, and subject to severe health conditions. The availability of food and water is limited, medical care is almost nonexistent, and the entire area is exposed to intermittent political protests (Allo, 2016). Scant medical literature is available concerning the health of villagers of Oromia (Bero et al., 2016). There are many Ethiopian immigrants from trachoma-endemic locations in Oromia.

Background

Trachoma, an infectious ocular disease that has been in existence since prepharaonic times (Taylor, 2009), is the leading infectious cause of blindness worldwide, especially in low-income countries (Benderly, 2009; Neglected Tropical Diseases, 2010; Voice of America, 2012). Out of 195 countries in the world that are recognized by the United States, there are 56 trachoma-endemic countries (Rosenberg, 2012). Only 34 of those countries report reliable population-based prevalence data (Ngondi, Reacher, Matthews, Brayne, & Emerson, 2009). In 2013 the World Health Organization (WHO, 2013) estimated that 84 million people worldwide are affected by this disease. Eight million of the people suffer visual impairment (WHO, 2013). Overall, 3% of blindness worldwide is caused by trachoma (WHO, 2013).

The primary trachoma-endemic regions and countries are in Africa, Asia, and Latin America. In Latin America, the disease is endemic in Brazil, Columbia, Guatemala, and Chiapas, Mexico (Pan American Health Organization [PAHO], 2012); in Asia it is commonly seen in China, India, Myanmar, and Pakistan; in Africa it is prevalent in Ethiopia, Nigeria, Mali, and Sudan (NTD, 2010). Worldwide, China, Sudan, and Ethiopia

bear at least 50% of the burden of trachoma prevalence (NTD, 2010). Because contaminated water and poor sanitation are major contributing factors to trachoma, and these are most common in rural areas, rural communities are more vulnerable than urban communities (Central Intelligence Agency [CIA], 2013).

In Ethiopia, which is the subject of this study, blindness is a major health concern (Berhane et al., 2007) and more than 70% of blindness is caused by trachoma and cataract (Federal Democratic Republic of Ethiopia Ministry of Health (Federal Democratic Republic of Ethiopia <FDRE> 2011). The prevalence of trachoma in Ethiopia remains high despite the efforts of multiple agencies using a series of prevention measures. In the Oromia region trachoma presents a public health problem in that both active and blinding trachoma is prevalent in 218 *woredas* or districts of that region (Bero et al., 2016). In 2010, when the national population was estimated at 75 million, some 67 million people – approximately 90% - were considered to be at risk of the disease (The Carter Center, 2010). Those most at risk are children and women (Edwards et al., 2012). The national prevalence of trachoma in Ethiopia for children ages 1-9 years is currently 26.2% (Carter Center, 2010). Ethiopia is one of the most severely affected trachoma-endemic countries in the world with the highest prevalence is in Amhara, Oromia and the Southern Nations, Nationalities, and Peoples (SNNPR) regions (Berhane et al., 2007; The Carter Center, 2010). Bero et al., (2016)the high prevalence of trachoma in Oromia.

Problem Statement

In the face of this public health problem a goal was set by the The Carter Center (2011) and other local organizations to eliminate trachoma from the Amhara region by 2015. For some years, Amhara was the focus of an aggressive effort to control and/or

prevent trachoma (The Carter Center, 2010). The same degree of prevention effort has not been noted in the Oromia region. These preventive measures followed a strategy recommended by the WHO in its Global Elimination of Trachoma 2020 program (Mariotti, Pararajasegaram, & Resnikoff, 2003). This strategy included surgery, antibiotic, health education promoting facial cleansing and hygiene, environmental sanitation, notably pit latrines (SAFE); The Carter Center, 2010). However, this SAFE strategy has met with limited success. The antibiotic azithromycin reduces the prevalence of trachoma in the short term, but prevalence is reported to increase in the treated population within two years (Emerson & Ngondi, 2009). Likewise, recurrence of advanced trachoma, conjunctival and eyelid inflammation has been reported following trichiasis surgery due to reinfection (Kerrie & Bejiga, 2010). Therefore, the disease has not been eliminated in Ethiopia or other nations to date.

Although poor access to clean water and poor sanitation are the contributing factors, both are a factor of extreme poverty. Ethiopia has been economically recovering from a failed Marxist government during the past 2 decades. The World Bank (2015) reported that there is an improvement in the poverty index in Ethiopia. However, regional, geopolitical conflicts have also slowed economic development in this country. Malnutrition and illiteracy remain high. These, in turn, slow economic development. Although there is an effort to improve the economy, according to the United Nations Development Programme's Human Development Index, Ethiopia still ranks 174th of 187 countries on the poverty index (Borgen, 2016).

A lack of adequate healthcare in Ethiopia is another concern because there is a need to provide treatment and health teaching concerning trachoma. Bero (2016)

described how the problem is beginning to be addressed but will likely take further research and planning to prevent ocular trachoma and trachoma-related blindness in Oromia. According to Orbis International (2012), there is only one ophthalmologist per 3 million people in Ethiopia. ORBIS is a non-profit organization working to treat and prevent trachoma in Oromia and SNNPR regions where a high percentage live in rural areas. The exact numbers are difficult to estimate because census data are rare; however, according to a 1994 census, some 90% of the population of the Oromia region was rural 20 years ago (Federal Democratic Republic of Ethiopia, 2014). Orbis (2012) reported its efforts to treat and prevent trachoma in Gondar, Ethiopia and the National Eye Institute. West (2011) reported that 24 communities in the Amhara region were the focus of collaborative clinical trials by the The Carter Center and the Ministry of Health in Ethiopia, under the guidance of Lietman. However, there is a high prevalence of trachoma, both active trachoma and trichiasis, Oromia (Bero et al., 2016) which constitutes a public health problem.

Despite efforts to prevent trachoma, prevalence remains high among rural Oromo Ethiopians with severe implications concerning the productivity and wellbeing of the population. Bero et al., (2016) documents this trend but there is not reference to what local villagers think or know about this situation, or about any aspect of trachoma - including its prevalence, causes, treatment, and prevention. This study filled that gap to provide data on which to base an appropriate intervention that could reduce the prevalence of trachoma.

Purpose of the Study

Because access to Ethiopia was restricted, data was gathered from Oromo immigrants to Phoenix, Arizona, to document their perceptions of the causes, treatment, and prevention of trachoma in Ethiopia. All of these individuals were recent (1 year or less) immigrants, whose memory of conditions in Ethiopia were fresh. Some of them travel back and forth to Ethiopia each year. There were some Oromo rural dwellers in Ethiopia I had hoped to have participated through social media. However, due to political unrest and telecommunications being interrupted for an extended period it was not possible to include them in this study. The results of my research my contribute to the development of a trachoma education and prevention program for the Oromo people, leading to improved access to clean water and sanitation, and culturally sensitive ocular health education. Some of the participants who travel back and forth to Ethiopia may be interested in being trained to work on such a program in the future.

The primary goal of this study was to contribute to social change in Ethiopia by providing a knowledge basis for the reduction and elimination of trachoma in rural Oromia, Ethiopia. A secondary outcome was data on the risks of trachoma being reintroduced into the United States.

Research Questions

1. What are the perceptions of rural Oromians living in the United States concerning the high prevalence, causes, treatment and prevention of trachoma in Oromia?

2. Under what circumstances might Ethiopian immigrants to the United States be infected with trachoma on entering the United States?

Theoretical Framework

Creswell (2007) states that "qualitative research begins with assumptions, a worldview, the possible use of a theoretical lens, and the study of research problems inquiring into the meaning individuals or groups ascribe to a social or human problem" (p. 37). In this study, my worldview was ecological and my chosen theoretical framework for this study was the social-ecological theory (SET). Also, I used the health belief model (HBM) to develop the interviews around the interview questions for the study.

The HBM focuses on health-related behavior change resulting from motivation, perceived threat from the problem, and reducing the risk. The SET is also concerned with health-related behavior change but broadens the inquiry to include other individuals, interpersonal, institutional and, community factors as well as public policy factors to the extent that they formally exist for this community of people (McKenzie, Neiger, & Thackery, 2009; Ruderman, 2013).

Definitions

Azithromycin. The antibiotic of choice in treating trachoma medicinally (WHO, 2014).

Cataract. The opacity of the lens of the eye, or its capsule, or both (Taber, 2013).

Chlamydia trachomatis. The bacteria-like organism that causes trachoma (CDC, 2009).

Cicatricial trachoma disease. The later stage of trachoma; the conjunctival scarring caused by repeated and finally chronic inflammatory episodes associated with trachoma infection (Burton, 2007).

Conjunctiva. The lining of the underside of the eye and the lining of the white of the eye (Longstaffe, 2014).

Conjunctivitis. Is inflammation of the conjunctiva; also called pink eye or red eye (Longstaffe, 2014).

Entropian. A condition of trachoma where the eyelids curl inward with the lashes that begin to scratch the eye (Taber, 2013).

Follicular conjunctivitis. Inflammation of the follicles of the conjunctiva of the eye "characterized by pinkish round bodies in the retrotarsal fold" of the eyelid (Taber, 2013. p. 550).

Glaucoma. An eye disease with increased intraocular pressure finally resulting in atrophy of the ocular nerve and causing blindness (Taber, 2013).

Musca sorbens fly. Houseflies that carry the bacteria, Chlamydia *trachomatis*, from contaminated material to the faces including eyes of children, teens and adults (Hopkins et al., 2008).

Ocular. A term pertaining to the eye or vision (Taber, 2013).

Ophthalmia. Severe inflammation of the eye normally including conjunctivitis (Taber, 2013).

Photophobia. An abnormal visual intolerance of or sensitivity to light. It may occur in trachoma or other diseases like measles or meningitis (Taber, 2013).

Serovar or serotype. A species variant based on serological reactions including antigenic activity and distinguishing it from other strains of the same bacteria (Ding et al., 2013).

Trachoma. A chronic, contagious infection of the conjunctiva and cornea of the eyes. It is characterized by the formation of granulations and scarring caused by the bacteria Chlamydia *trachomatis* (Longstaffe, 2014).

Trachomatous trichiasis (TT): A condition of trachoma that results from repeated infections by Chlamydia *trachomatis*. In turn, the tarsal conjunctiva becomes chronically inflamed. Conjunctival scarring, entropion, trichiasis, and finally blinding corneal opacification results (Rajak, Collin & Burton, 2012).

Trichiasis. The condition where the eyelashes are inverted so that they rub against the cornea and cause a continual irritation of the eyeball (Taber, 1962).

WHO simplified grading system for trachoma: TF (trachomatous inflammation – follicular), TI (trachomatous trichiasis intense), active trachoma designated by TF and TS (trachomatous scarring), TT (trachomatous trichiasis) and CO (corneal opacity) (Kalua et al., 2010).

Assumptions

I assumed that I would be able to recruit an adequate sample of immigrant Oromo rural dwellers living in the United States who were in trachoma-endemic Oromia, Ethiopia during the past year, and were able to supply accurate retrospective data. Another assumption was that this group of immigrant rural Oromos were willing to participate in the research fully. A final assumption is that it was possible for immigrant Oromos to return to the United States infected with trachoma.

Scope and Delimitations of the Study

The scope of this study was immigrant Oromo rural dwellers' perceptions of the high prevalence of trachoma in rural Oromia, as well as the causes and prevention of trachoma. I did not intended to do a complete ethnographic study of this culture.

Limitations

A potential limitation was that the participants were living in the United States, although they frequently traveled back and forth to Ethiopia. Other potential limitations include gender differences among the interviewees, the small sample for this study, and telecommunications that were cut off in Ethiopia due to political unrest.

Significance

Significance and Social Change Implications

This study was designed to contribute to the prevention of trachoma and blindness in Ethiopia and the United States. This anticipated positive social change would then be a step towards resolving a treatable and preventable health problem. When persons have adequate vision, they are facilitated in going to school, working, and managing their lives. The result should be a meaningful contribution to the further development of the rural Oromo rural community in Ethiopia. Also, my study of the perceptions of such immigrants can be useful in advancing a surveillance program related to immigrants from trachoma endemic areas of the world.

Significance for Literature and Professionals

This study could stir greater awareness of trachoma in rural Oromia, Ethiopia and increase interest in the creation of progressive teaching, treatment and prevention programs. Although medical teams have gone to some locations in Oromia, and have observed and treated trachoma there, scholars have not done a formal research project to

document villagers' perceptions of the prevalence, incidence, causes, access to care, treatment, or prevention of trachoma in their villages. This study was designed to fill a gap in the literature. It also provided information for healthcare professionals to begin to treat Oromo rural dwellers in general.

Summary

In this chapter, I described how trachoma is a preventable yet debilitating, infectious ocular disease. Ethiopia hosts nearly the highest prevalence of this disease worldwide. The Oromo rural dwelling communities are impoverished, with many living in relatively primitive conditions, and lacking regular hygiene, sanitation, and medical care. I described a qualitative study of the rural dwellers' perceptions of the causes, treatment, and prevention of trachoma. With its focus on trachoma, this study contributes to this large population by highlighting a need for a limited surveillance program for immigrants from trachoma-endemic areas to the United States. Chapter 2, I will present a literature review focused on the cause, prevalence, treatment and prevention of trachoma in Ethiopia. I will outline the characteristics of Ethiopian immigrants in the United States.

Chapter 2: Literature Review

Introduction

Although considerable effort has been expended in Ethiopia to eradicate trachoma (The Carter Center, 2015). Oromo rural dwellers appear to have not benefited from these efforts (Bero et al., 2016). There is a high prevalence of eye diseases including trachoma in rural Oromia. In addition, there is no stating what Oromo villagers think about this situation or the prevalence or any other aspect of trachoma in Oromia. The purpose of this study was to determine the perceptions of the U.S., immigrant Oromo rural dwellers concerning the prevalence, causes, treatment and prevention of trachoma in their communities.

Trachoma is a worldwide, including Ethiopia (Carter Center, 2010; WHO, 2013). The purpose of this literature review was to present the causes, treatment and prevention of trachoma in Ethiopia; the potential of trachoma-infected individuals immigrating to the United States; and some of the life issues encountered by Ethiopian immigrants in the United States. The United States had a history of trachoma between 1897-1960. It was prevalent in the "trachoma belt" or the Midwest and among Native Americans living on reservations. It has since declined to being unlisted among current reportable infectious diseases in the United States (Allen & Semba, 2002). When Chlamydia trachomatis is posted among reportable diseases it refers to the sexually transmitted disease serotype of Chlamydia trachomatis and not to trachoma (CDC, 2017).

Literature Search Strategy

Key words used in digital searches were *trachoma; trachoma background, prevalence, causes, vulnerability, transmission, treatment, intervention, prevention,*

treatment follow-up, SAFE strategy, prevention success models; Ethiopian/Oromia state of, economy, African and Ethiopian immigration to the United States, and Ethiopian lifestyle in the United States; Western healthcare in Ethiopia; and, organizations and agencies working toward treatment and prevention of trachoma in Ethiopia and worldwide. Databases used for the literature search were Google Scholar, Thoreau Mullti-Database Search, Academic Search Complete, ProQuest Central, Science Direct, CINAHL & Medline simultaneous search, and PubMed.

The Literature

The literature is presented according to the following areas: (a) nature of trachoma; (b) distribution and prevalence of trachoma in Africa; (c) epidemiology of trachoma; (d) treatment and prevention of trachoma, (including the challenges with preventing trachoma, and models of successful trachoma reduction); (e) population and general environment of Oromia; (f) African and Ethiopian immigration to the United States (including characteristics of Ethiopian Immigrant Life in the United States); (g) potential for Ethiopian immigrants to be trachoma-infected; (h) theoretical and conceptual Framework.

Nature of Trachoma

Trachoma is a bacterial infection caused by the bacterium *Chlamydia trachomatis,* which attacks the eyes, causing a painful roughening of the inner surface of the eyelid, and breakdown of the cornea (Hopkins, Richards, Ruiz-Tiben, Emerson & Withers, 2008). The vector of trachoma is the ordinary house fly also named *Musca sorbens* (Hopkins et al., 2008) Trachoma is differentiated from onchocerciasis, also

called river blindness in which the vector is the black fly which carries the causative worm or nemotode O*nchocerca volvulus* to the eye from another infected person (Hopkins et al., 2008).

Other names for trachoma are Egyptian ophthalmia or granular conjunctivitis. The primary agent of the disease is swarming flies, *Musca sorbens,* that thrive on human waste at the site of poor sanitation and find their way into the eyes of the human population (Kifle, 2009). Symptoms include eyelid swelling, photophobia, and finally corneal and conjunctival scarring of the eyes in the advanced stage. Stages of trachoma, established by WHO, are designated by the symbols TF, TI, TF and/or TI, TS, TT, and CO (as cited in Kalua et al., 2010).

Distribution and Prevalence of Trachoma in Africa

Trachoma is endemic is endemic in 56 identified countries (Rosenberg, 2012). These are developing countries with low income, rural populations in Latin America, the Middle East, Africa, Australia, and the Pacific Islands (Wright & Taylor, 2014).

African countries with the highest prevalence of trachoma are countries with a large rural population, inadequate water supplies and inadequate sanitation (Center for Disease Control and Prevention, 2013; ([CIA], 2013a-j). The countries with a high trachoma prevalence, are Eritrea, Ethiopia, Kenya, Mali, Nigeria, Sudan, Tanzania, and Uganda (Mariotti, Pascolini1, & Rose-Nussbaumer, 2009; The Carter Center, 2015). These countries share the same unimproved water source and unimproved sanitation issues (CIA, 2013a-j). Two countries, The Gambia and Ghana, have improved water sources and sanitation and the trachoma prevalence is low (Mariotti et al., 2009). The

majority of the populations of the other countries live in rural settings with unimproved water and sanitary facility (CIA, 2013 a). In Ethiopia, in 2005, there were more than 9 million children infected with trachoma, and over 1.2 million adults have (TT) (Alemayehu, Melesse, Fredlander, Worku, & Courtright, 2005). According to The Carter Center (2015), Ethiopia has the highest prevalence of trachoma in the world. Figure 1 shows:

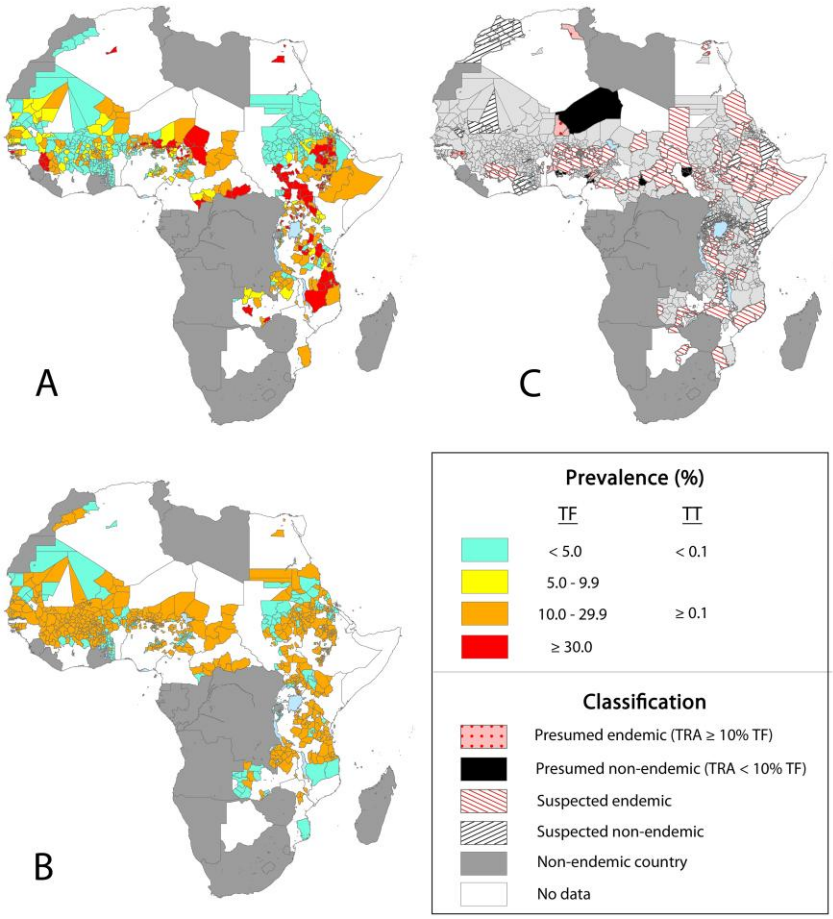

Figure 1. Geographical Distribution of trachoma in Africa (Smith et al., 2013).

Figure 2: Distribution of trachoma in Ethiopia (Gebremedhin, 2015).

Epidemiology of Trachoma

Microbiological Determinants

In all geographic locations where the disease is found the bacterium that causes trachoma is the ocular serovars (serotype) of Chlamydia *trachomatis* which is gram negative and aerobic for microbiological assessment (Cumberland et al., 2008; Mishori, McClaskey, WinklerPrins, 2012). The bacterium infects the columnar epithelial cells of the genital sites (cervix, urethra, and rectum) and the nongenital sites, namely the lungs and eyes. Chlamydia *trachomatis* is not only the primary source of infectious blindness in the world; it also causes the most widely reported sexually transmitted disease in the United States and causes other genitourinary, respiratory, and arthritic diseases (Mishori et al., 2012). Trachoma is distinguished from the Chlamydia *trachomatis* in that it causes sexually transmitted infection with serovars A, B, Ba, and C, which target ocular epithelial cells. Chlamydia *trachomatis* causes sexually transmitted diseases with

serovars D through K that target the epithelial cells of the genital and rectal tracks (Ding et al., 2013).

Behavioral and Social Determinants

The behavioral and social determinants of trachoma are related to poor hygiene, poor sanitation, poverty, and geography. Concerning geography, altitude is a useful marker for tracking trachoma. The higher the altitude, the lower the prevalence of trachoma (Alemayehu et al., 2005).

Behavioral and social determinants of trachoma are related to the transmission of the disease through poor hygiene, direct contact, and flies wherever trachoma is found. The birth process may subject the neonate to maternal discharges that carry Chlamydia *trachomatis* (Mishori et al., 2012). Although this may cause conjunctivitis and require antibiotic treatment, it is unlikely to cause trachoma in the baby (Mishori et al., 2012). Primary transmission of the disease is through ocular and respiratory secretions from person-to-person (Kifle, 2009). Secondary transmission is through vectors such as houseflies (Kifle, 2009). The flies, or Musca sorbens, thrive on locations of poor sanitation particularly related to human waste contaminated by the bacteria (Kifle, 2009). After leaving the waste, they may be seen swarming and finding their way to the eyes of the human population, especially children (Kifle, 2009). Risk factors that contribute to contracting trachoma in Ethiopia are household cluster living characteristics, illiteracy, sharing rooms with animals, inadequate water source, poor sanitation and lack of hygienic practices, inadequate face-washing practices, cooking food in the living room, living at low altitude locations, high density living, general poor health, and rural living (Alene & Abebe, 2000).

Age and Gender Vulnerability to Trachoma

Three groups of people are most at risk for developing trachoma. They are newborn babies, children ages 1-9 years, and women caring for the babies and children with trachoma. Mothers are caring for babies and children who have trachoma easily become infected themselves because they are handling the secretions of babies and children and the cloths used to clean them. In this way, the disease is spread to other children and babies under their care (Darville, 2005;; Kifle, 2009; Masesa et al., 2007; Francis & Turner, 1995).

Trachoma is automatically prevented in newborn babies because the mother's milk is a natural antibiotic source (Turin & Ochoa, 2015); but, Chlamydia *trachomatis* may be transmitted at birth from the infected mother and cause conjunctivitis and pneumonia in the baby. It is necessary to distinguish this from Neisseria *gonorrhea*, the bacteria causing gonorrhea. Once the diagnosis is determined, the newborn may receive oral erythromycin or azithromycin. Otherwise, if left untreated, the newborn may develop conjunctival or corneal scarring (Darville, 2005).

Treatment and Prevention of Trachoma

Interventions

Interventions to treat and prevent trachoma are being introduced worldwide by the WHO for the Global Elimination of Trachoma by 2020 a rigorous effort entitled GET2020 using a strategy entitled SAFE. SAFE, standing for surgery, antibiotics, facial cleansing and hygiene, and environment (sanitation) (Mariotti and Pruss, 2001). A variety of studies and articles are being conducted on this program worldwide and in Ethiopia

(Edwards et al., 2008; Mariotti, Pararajasegaram, & Resnikoff, 2003; Orbis, 2012; Solomon et al., 2006).

Most of the challenges of treatment of trachoma are related to repeat occurrence of trachoma after antibiotic administration and surgical intervention (Chidambaram et al., 2006; Dreses-Werringloer, Padubriin, Zeidler, & Kohlar, 2001; Kerrie & Bejiga, 2010). Treatment and prevention are dealt with together in the GET 2020 SAFE strategy (Mariotti & Pruss, 2001). Every country is encouraged to apply this approach for the treatment and elimination of trachoma in their respective regions. Treatment and prevention are the two components of the GET SAFE strategy (Mariotti & Pruss, 2001).

Prevention includes facial cleansing and hygiene and environmental sanitation. Emerson et al. (2006) report that though the antibiotic Azithromycin contributes to reducing the prevalence of trachoma, the disease prevalence increases again within 2 years of administration (Chidambaram et al., 2006). Also, Kerrie & Bejiga (2010) have reported that following trichiasis surgery, patients can experience recurrence of advanced trachoma, conjunctival and eyelid inflammation.

In conjunction with the Center for Communication Programs, the John Hopkins Bloomberg School of Public Health and Sightsavers (JHU-CCP, 2012) propose two points in a primary approach to trachoma prevention. The JHU-CCP focused on the individuals' perceptions of risk for poor hygiene and community response at the environmental level. At the environmental level they include a focus on contextual factors including sanitation and community response to individual deviant behaviors from the norm, such as those who do not comply with health instructions.

Prevention of trachoma is associated with treatment and intervention. the Amhara Trachoma Control Program is a collaborative effort to eliminate trachoma in the Amhara Region of Ethiopia. Stakeholders include the Organization for Rehabilitation and Development in Amhara, the Regional Amhara Government leadership and development office, The Carter Center, and the Christian Blind Ministry (CBM). According to McComiskey (2014) "the main objective of the program is to enhance the hygiene and sanitation situation of the intervention areas to reduce the prevalence of blinding trachoma in Amhara Regional State, and contribute towards the achievement of GET 2020" (p.7). Ethiopia is the most trachoma-endemic country in the world, carrying 30% of the world's burden of the prevalence of trachoma (The Carter Center, 2015). Therefore, many are concerned with treating and preventing trachoma in Ethiopia (Benderly, 2009; Berhane, et al., 2007; Carter Center, 2011; Edwards, et al., 2008; Emerson, Burton, Solomon,, Bailey, & Mabey, 2006; Mariotti, Pararajasegaram, & Resnikoff, 2003; Ngondi, et al., 2010).

The prevention of trachoma has some challenges that also need to be considered, such as Ethiopia's the low literacy rate (Colyar, 2013) and the low economic index (Weidman, 2014). The low literacy rate makes teaching health education slower and at times ineffective. The poor economy prevents the country from the purchase of items that could help eliminate the fly vectors for transmitting trachoma, such as insecticides and provision of latrines.

Although 2020 is the target year for the worldwide elimination of trachoma, there are still some challenges to meeting that date. For example, in a follow-up study, the prevalence of trachoma 12 years after baseline surveys in Kidal Region, Mali was lower

than 12 years earlier yet it remained higher than the threshold of intervention established by the WHO (Bamani et al, 2010. Therefore, further intervention will be needed to meet the 2020 goal of trachoma elimination in that region (Bamani et al. 2010).

Challenges to Preventing Trachoma.

Cultural challenges. An important point to be considered is whether there will be cultural challenges involved in presenting Western healthcare solutions to rural Oromo immigrants to the United States from Ethiopia. An example of the traditional beliefs concerning healthcare among Oromos in Ethiopia includes drawing blood for a sample or blood test would be seen as an aggression against the body and not be permitted (Hodes, 1997).

Social and behavioral changes are integral to two of the four components of the SAFE strategy developed by the WHO (Voice of America, 2012). These components are facial hygiene or cleansing and environmental sanitation (JHU-CCP, 2012). In Nigeria, Rabiu, Rabiu, Muhammed, and Isiyaku (2011) noted that challenges to trachoma prevention in endemic areas include community apathy and/or ambivalence to health services, and the need for socio-cultural changes to accept the sustainable trachoma prevention, especially hygiene and facial cleanliness, and the need for community participation to enhance trachoma program effectiveness.

In Ethiopia, Hodes (1997) points out that people frequently trust traditional medicine more than they do Western healthcare approaches and may, therefore, be slow to adopt teachings on the treatment and prevention of trachoma. He reports that it is not uncommon to find a rural woman going to the doctor to ask for help with her infant baby who had *kuul,* a thick black substance made of lead-based black powder covering his

eyelids, for protection from disease and to encourage eyebrow growth for beauty. Some women also squirt milk from the mother's breast into the eyes of the baby (Hodes, 1997). These approaches do not determine what the eye disease is. In addition, there is no study or report that states that self-meditating Ethiopians can determine if trachoma or *Neisseria gonorrhea* were the cause of the eye redness and conjunctivitis. Behaviors associated with traditional medicine may cause further injury to the eyes. Herbal medicinal treatment could be contraindicated in the use of other medications. Further, it is likely to take slow, careful, and sensitive instruction to facilitate more effective approaches to eye care (Hodes, 1997). This type of behavior can be included in cultural and educational challenges to the prevention of trachoma.

Economic challenges. Financing health programs in Africa is a challenge. According to Dr. Louis Gomes Sambo, former WHO director for Africa. African health programs require funding from donations, governmental funding, and outside funding. He also stated that more efficient management of funding needs to be established (Voice of America, 2012). Developing countries, such as Ethiopia face strenuous economic challenges. Such challenges affect how healthcare and all other areas of life are addressed. Frequently health care suffers. Ethiopia is ranked as 146 out of 177 countries that were measured low economically (Weidman, 2014). "Low economy" relates to the Gross Domestic Product per capita and a countrys' capacity to produce its own products. A low economy is one where the country has limited or no capacity to develop it's GDP. A low GDP leads to poverty. (Callen, 2018; Shane, 2019).

Deltamethrin spraying for the fly vectors responsible for transmitting trachoma is an effective way to control the fly population, thereby reducing the prevalence of

trachoma. However, the cost of this method is prohibitive in countries with a low economy (Emerson, Cairncross, Bailey, & Mabey, 2000). Ethiopia, for example, has one of the lowest economies in the world and is one of the highest trachoma endemic countries in the world. Because Ethiopia is placed among the economically repressed countries (Weidman, 2013), regularly purchasing adequate supplies of deltamethrin would further create economic economic hardships for the population.

Educational challenges. The literacy rate in Ethiopia is 43%; worldwide, Ethiopia's literacy rate ranks 204 out of 215 countries (Colyar, 2013). It may be surmised that a village in Ethiopia is populated predominately by illiterate or minimally educated individuals who will not have adequate job skills to provide financially for their families. Therefore, they will not have the necessary funds to pay for healthcare of any kind. Illiterate or minimally educated people require specific teaching approaches along with information that can dispel traditional healthcare practices and beliefs that may encourage the development and initiation of diseases.

Operational challenges. The challenges with trachoma control in a trachoma-endemic area of northern Nigeria include the care of trachoma patients and prevention of trachoma in other areas of Africa (Rabiu et al., 2011). Rabiu et al. (2011) highlighted challenges such as severe lack of situational data concerning trachoma. Rabiu et al., (2011) found that the SAFE strategy was implemented in a fragmented way potentially complicating eyelid surgery. Additional challenges included management of children with trichiasis (advanced trachoma), control of the expected high rate of "early-onset" recurrence of trichiasis after eyelid surgery, maintaining adequate amounts of antibiotics and consistent implementation and control of the SAFE strategy.

Compliance challenges.

In order to break the cycle of infection, one of the most significant challenges in trachoma control is changing behavior at the individual levels (JHU-CCP, 2012). The behavior of cutting eyelids to treat conjunctivitis and allowing the blood to drip into the eyes is an example of behavior that needs to be changed. JHU-CCP has partnered with Sightsavers to research social and behavioral change factors related to trachoma affected families. Perception of risk at the individual level and contextual factors in the environment are highly important in understanding behavioral changes and communication of interventions in trachoma prevention (Mariotti & Pruss, 2001). The HBM supplied a theoretical foundation that prompted the survey questions that illustrate the beliefs, norms, and behaviors related to the cause and prevention of trachoma in rural Oromo communities in Ethiopia (McKenzie et al., 2009).

Models of Successful Trachoma Reduction

There is an impression that it is impossible to eradicate and prevent trachoma in developing, third world countries. However, there are some models of successful treatment and prevention of trachoma even though these countries ae economically challenged.

One such model comes from Pakistan where Masud (2013) reported on the use of a holistic approach to dramatically reduce trachoma in the village of Killa Virkan which used to have the highest prevalence of trachoma in the country. Killa Virkan was filled with heaps of garbage accompanied by flies and mosquitoes. Very few people had latrines, and adequate personal hygiene was nearly non-existent. The Nazim, or village head, took responsibility for solving the problem. Due to the prevalence of trachoma in

the village, Sightsavers in partnership with the College of Ophthalmology and Allied Vision Sciences (COAVS) met with the Nazim. There was a joint decision to work with and help the village in addressing the high prevalence of trachoma. Requirements were established for a successful project such as the involvement of the entire community. In order to oversee the project and retain motivation of the community, village health committees were set up. The next step included the COAVS representatives treating people with trachoma and training health committee members in eye health. In this way, they could expand the effort by providing awareness in the community and conducting education on eye health for teachers in the schools. The final step in the project development included bringing change to the village infrastructure. Clean filtered water was provided, roads were paved and gas was piped in. Finally, sample latrines were constructed as a model to encourage villagers to build their own. The overall result was a reduction in the prevalence of eye diseases, removing the threat of trachoma, and paved roads. Life has changed for the better in Killa Virkan.

In Mali, another moderately successful project was carried out to fight trachoma despite a weak national healthcare system (Cavalli et al., 2010). In 1988, the organization Helen Keller International started to collaborate with the Carter Center in addressing the high prevalence of trachoma in Mali. In addition, between 2002-2004, Mali's National Blindness Control Program was assisted by the JHU- CCP) and the InternationaI Trachoma Institute in the Right to Sight campaign. They implemented a behavior change program in two Malian regions, Kayes and Koulikoro. Program objectives included increased knowledge of the transmission of prevention and treatment. The success of the program was demonstrated by increased awareness of trachoma, its seriousness, and

treatment and prevention methods. There were resultant behavioral changes that would eventually lead to the reduction of trachoma within the target group (Sow, 2005). During 2009 an aggressive effort to control trachoma in Mali was conducted. It consisted of 30 outreach surgical missions providing 787 trichiasis surgeries and 36,000 radio broadcasts in five languages communicating health messages about trachoma (Helen Keller International, 2013). The prevalence of trachoma has been significantly reduced since the year 2000 (Mwikisa, 2013).

One promising approach to trachoma control and prevention in Ethiopia has been the installation of pit latrines in five districts of the Amhara region (Ngondi et al., 2010). This is expected to reduce the Musca sorbens fly population, which is the vector for the transmission of Chlamydia *trachomatis*. Ngondi et al. (2010) report that this approach is intended to implement the environmental component of the SAFE strategy. The construction of latrines has been facilitated by the implementation of an intensive community mobilization process through the enlistment of partners such as UNICEF and NGOs like The Carter Center. One problem with this project is the partners provided neither cash or materials to subsidize the construction and the community participants have had to become responsible for the program (Ngnodi et al., 2010). O'Loughlin, Fentie, Flanmery, and Emerson (2006) confirmed that all of the labor, materials, and financial resources to construct the latrines were provided by community members. Some households paid about $4 each. The overall median cost of the latrines was $0.80 per latrine (O'Loughlin et al., 2006). All components of the SAFE strategy were taken into consideration during latrine. There remains the need for a survey to determine whether the prevalence of trachoma has decreased since the installation of the latrines while the

other SAFE components are also observed. This program, in principle, resembles the approach that was used in Pakistan.

Three models for successful treatment of trachoma have been reported, in three different countries in Africa – The Gambia, Tanzania, and Ethiopia (Ray et al., 2009). Ray et al., (2009) reported that after an extended period of administrating azithromycin once, trachoma infections have been reduced to 5% of the previous prevalence the administration and dosage of the antibiotic can be reduced. This indicates that trachoma has been effectively treated and is being prevented. The authors also stated that it will take years to determine whether these models are effective long-term. However, The Gambia has improved its drinking water and sanitation, whereas the majority of the populations in Ethiopia and Tanzania still suffer from unimproved water sources and poor sanitation. This suggests due to the fly population not decreasing due to unimproved sanitation and inadequate hygiene due to unimproved water sources, the prevalence of trachoma cannot be lowered sustainably with azithromycin alone. According to Chidambaram et al. (2006), the prevalence of trachoma tends to increase two years after the antibiotic has been administered because the actual source of the trachoma has not been fully removed.

Even though there is a successful model of trachoma prevention in Pakistan, no one has yet tried the Pakistan approach in Africa. The work in the Amhara Region may come close to replicating this successful approach, but the Amhara approach is not yet widespread in Ethiopia. Further study of the Pakistan approach is still required to see how it could be replicated in Ethiopia, and especially among the communities in the Oromia and SNNPR.

Trachoma Reduction in Rural Ethiopia

All efforts at reducing trachoma are hampered by Ethiopia's fragile healthcare system. The indigenous rural population in this region is impoverished and though they are severely affected by trachoma, adequate treatment and healthcare is almost entirely lacking (WHO, 2017). Bero et al. (2016) reported that efforts have begun in Oromia to address the problem, but it will take further study and planning to prevent trachoma infection and trachoma-related blindness there. Oromia has 17 zones, 245 woredas (districts), 36 town administrations, and at least 6500 kebeles or subdivisions (Adugna, 2008), and the majority do not have access to medical care. The Oromo village environment may be compared with the Mosebo Tribe in the Amhara Region: The Mosebo Tribe is located close to one of Ethiopia's Regional Health Centers (Melancon, 2014), and has been focused on for trachoma treatment and prevention. Rural Oromos face the same environmental and weather issues and health issues as the Mosebo but have no access to care despite their need.

Ethiopian immigration to the U.S.

African immigration to the United States has surged in the last twenty years, from 80,000 in 1970 to over 800,000 in 2000 and 2.1 million in 2015 (Anderson, 2017; see Figure 3). Of these, Ethiopians are now the second largest national grouping, behind Nigeria (see Figure 4). Ethiopian immigration to the United States used to be negligible but accelerated during and after the Eritrean–Ethiopian War (1998-2000), when over 60% of Ethiopian immigrants to the United States arrived, mostly through the family reunification program (see Figure 5).

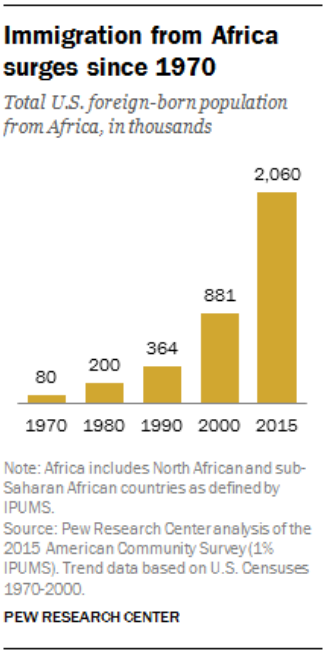

Figure 3. Immigration from Africa, 1970-2015, from Anderson (2017).

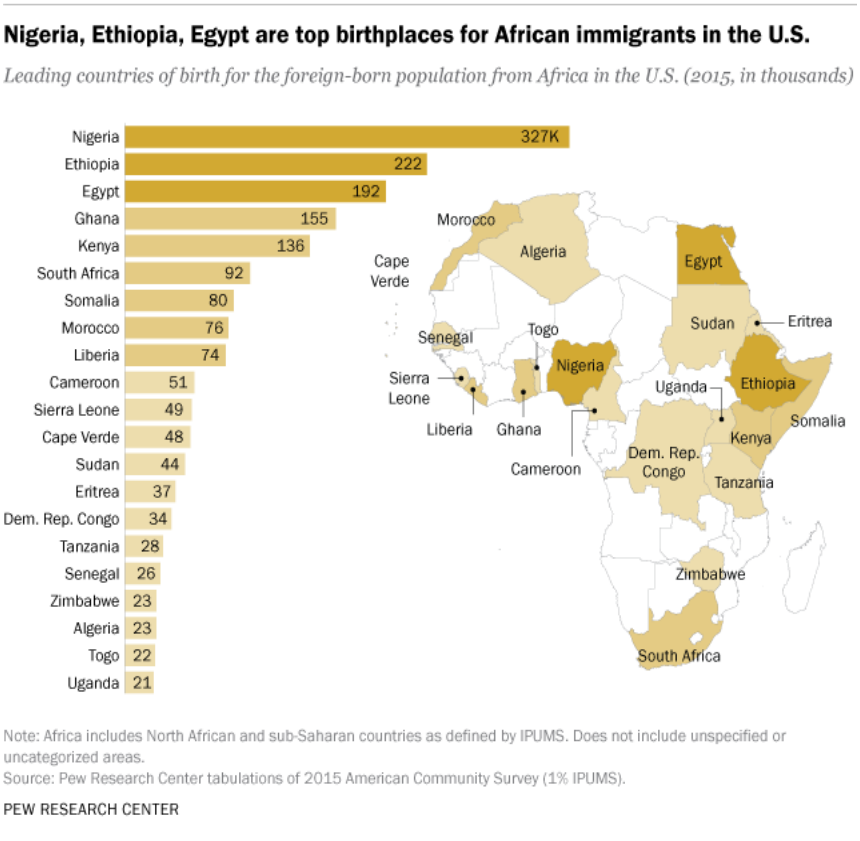

Fig 4.

African foreign-born population in the US by Country

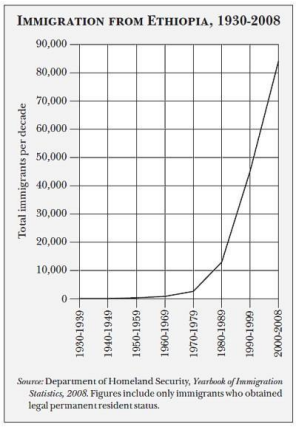

Fig 5. Immigration from Ethiopia, 1930-2008 (US Dept. Homeland Security, 2008).

Characteristics of Ethiopian Immigrants

Culture.

Ethiopians are composed of two peoples, the Habesha and the Anyuak. Habesha Ethiopians originate from the first Axumite Empire in the northern regions of Amhara and Tigre, and they see themselves as superior to other Ethiopians (Nyang, 2009). Much of the Jewish Beta Israel community are Habesha, though some have migrated from the north to the south and are now identified as Gafat Beta Israel (D. Yohannes, Personal communication, April , 2014).

The Anyuak are from Southwestern Ethiopia and occupy Oromo land (Nyang, 2009). The Anyuak comprises about 35% of the Ethiopian population (Allo, 2016). They live under extreme repression including discrimination, restricted rights and freedoms, policing, disproportionate surveillance, imprisonment, and persecution (Allo, 2016).

Religious affiliations vary widely and include Ethiopian Orthodox, Evangelical Christian, Muslim, and Jews; this religious diversity is reflected in the Ethiopian American community (Hailu, 2017; MPI Editors, 2014).

Many Ethiopian Americans are from rural Oromia and were farmers before their migration. Until 2016, many of them regularly traveled to and from Ethiopia, but since then, their mother country has been in an indefinite state of emergency. However, some still travel to Ethiopia and remain in close contact with family and friends there.

Language and geographic distribution.

Many Ethiopian immigrants arrive with a basic command of English, so they are more likely to integrate into local populations. They settle in various disparate neighborhoods. Most live in California, Virginia, Maryland, Minnesota, Texas, and Washington, D.C. (MPI, 2014), but there is also a significant Ethiopian population in Arizona.

Education and Employment.

The educational level of Ethiopian immigrants is high relative to other immigrant groups, similar to the overall U.S. population, but average incomes are less, and they hold fewer managerial jobs than the overall U.S. population (MPI, 2014). Their annual household median income is $36,000 in contrast to the $50,000 earned by U.S. born citizens. Like other immigrant groups, they remit a substantial portion of their income to the home country; by 2012, Ethiopian immigrants had remitted $181 million, the largest source of remittances to Ethiopia from immigrants from any country (MPI, 2014). Bank transfers account for many remittances, but a significant number return to Ethiopia with money and gifts-in-kind (O'Neil, 2003).

Potential for Ethiopian Immigrants to be Trachoma-infected.

Before 1900, trachoma was endemic to the United States; thus, routine screenings were performed to prevent entry by anyone with the disease. Only in 1938, when the last

trachoma hospital (in Kentucky) was closed was the disease considered to have been eliminated (Allen & Semba, 2002; Kumaresan, 2005). Today, visa screening for Ethiopians before immigrating to the United States are limited to tuberculosis, gonorrhea, and a short list of chronic medical conditions; trachoma is not listed (U.S. Embassy, 2017). Diseases screened for upon an immigrant's arrival in the United States include tuberculosis, HIV, Hepatitis B, STD's related to syphilis, gonorrhea, and chlamydia, malaria, schistosomiasis (parasitic disease), strongyloidiasis, (parasitic disease), other soil transmitted helminths (parasites) and Varicella (chicken pox). There is no screening for ocular Chlamydia *trachomatis* (CDC, 2017). Considering that Ethiopia has a high trachoma prevalence of trachoma -- if not the highest in the world -- Ethiopian immigrants could be infected with trachoma upon arrival in the United States.

Theoretical and Conceptual Framework

Creswell (2007) stated that "qualitative research inquiring into the meaning individuals or groups ascribe to a social or human problem" (p.37) begins with assumptions, a worldview, and the possible use of a theoretical lens. In this phenomenological study, the theoretical lens is provided HBM and the SET.

The HBM was used to form research questions on the perceived causes, treatment, and prevention of trachoma. Based on Lewin's model of decision- making, (Lewin, 1935), the HBM was designed in the 1950s by a group of psychologists examining why people would or would not utilize health services. Fig. 6 shows the stages that people may go through in accepting responsibility for their health condition; it includes constructs for 'pre-conceived barriers' and 'self-efficacy, which were later added (McKenzie, Neiger & Thacery, 2009).

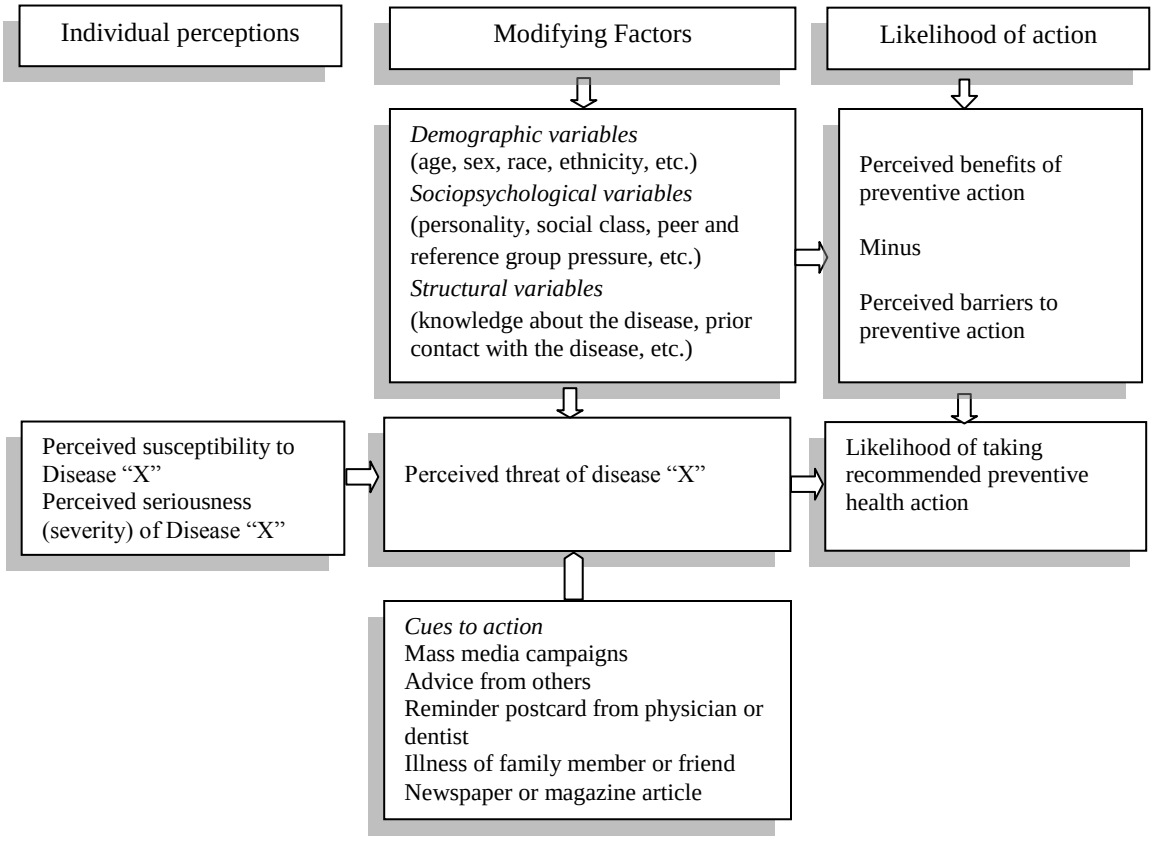

Figure 6. The Health Belief Model

An example of the use of HBM is a study by Thompson, Hutchins, Cassama, Nabicassa, and Last (2015) of health beliefs and perceptions in the Bijagos Archipelago of Guinea Bissau. Among the Bissago, Thompson et al. (2015) discovered widespread rudimentary knowledge of trachoma but the population lacked the terminology to identify it. There was little to no understanding of trachoma in rural villages and a semi-urban environment. Western medicine was respected among rural dwellers, but they still hung onto traditional medicine. Hygiene was seen as more important among semi-urban dwellers than among rural dwellers. In the current study the main focus has been the perceptions of trachoma among rural Oromo immigrants in the United States. Applying the HBM has been useful in understanding their perceptions of trachoma and their

behaviors in relation to the healthcare issues related to trachoma. Also, in contrast to the study in Bijagos Archipelago, the Ethiopian participants were more knowledgable of trachoma overall.

The phenomenological approach to qualitative research was applied to developing investigative questions for interviewing participants. An example of this in another setting is a study of perceptions of Iranian midwives working in community-based maternity care (Kohan, Sayyedi, Nekuei, & Yousefi, 2015). Data were collected from semi-structured individual interviews with the respective participants. Analysis of the data revealed the emergence of three main themes and 10 sub-themes (Kohan et al., 2015). The value of citing this study is it has demonstrated the usefulness of the phenomenological approach. It illustrated that interpretation of the data collected will result in themes and sub-themes that will guide the future development of focused training for this population.

Qualitative method have been used in other studies of trachoma in the The Gambia to gain information on the people's concepts of trachoma, for example Ajewole, Faal, Johnson, and Hart (2001) conducted focus groups and semi-structured commumity interviews to yield useful results indicating that strong traditional beliefs that caused an ambivalent attitude toward the disease. Ajewole et al. (2001) showed that members had a very poor understanding of trachoma. Even though this was a case study and not a phenomenological study, the methodology was very close to what was used in the current study. Instead of focus groups, 12 U.S. immigrant Oromos were interviewed.

A study by Alemu, Kumnie, Medhin, Gebre and Godfrey (2017) did socio-ecological research of improved sanitation and "barriers to the adoption of and

sustainability of sanitation facilities" (p. Abstract). Barriers noted were listed categorically as follows:

> "1) individual-level factors (e.g., past latrine experience, lack of demand and perceived high cost to improved latrines), 2) household-level factors (e.g., unaffordability, lack of space and absence of a physically strong family member), 3) community-level factors (e.g., lack of access to public latrines, lack of shared rules against open defecation, lack of financial access for the poor), and 4) societal-level factors (e.g., lack of strong local leadership, flooding, soil conditions, lack of appropriate sanitation technology, lack of promotion and demand creation for improved latrines, (Alemu, et al 2017, p. Abstract).

Finally, the application of the social-ecological model contributed to broadening the overall understanding of factors that influence the perceptions of rural U.S. immigrant Oromos related to trachoma. The emphasis of this model is the importance of physical and social environments in the development of responses to a disease, as well as shaping the pattern of the disease and its consequences. The ecological model is well accepted as a useful tool in public health. The model links multiple factors or determinants that influence health. These determinants may be categorized as individual, interpersonal, institutional, and community factors (Ruderman, 2013).

For this study, individual factors dealt with individual behaviors. Interpersonal determinants included family characteristics. Institutional factors included work sites. The fourth category broadly included such determinants as social, economic, and political factors and those related to government intervention. These four categories of factors

assisted in understanding individual interviewees perceptions of trachoma (Ruderman, 2013).

Use of the social-ecological model in this study was validated by the likelihood of showing a diversity of responses to trachoma, its cause, treatment, and prevention. Response diversity contributed to a broadening understanding rural Oromos perceptions of trachoma (Leslie & McCabe, 2013).

Summary and Conclusions

Trachoma has been defined by its distribution and prevalence in Africa and Ethiopia. The epidemiology of trachoma includes microbiological determinants, behavioral and social determinants, and vulnerability based on age and gender. Treatment and prevention of trachoma has been hampered by challenges such as individual, household, community, and societal level factors. The population and general environment of Oromia was described followed by a discussion of Ethiopian immigrants to the United States. The potential for Ethiopian immigrants to be trachoma-infected was discussed, followed by the theoretical and conceptual framework of this study. Chapter 3 is focused on data collection, methodology, trustworthiness, and ethical procedures all to guarantee gathering valid and reliable information.

Chapter 3: Research Method

Introduction

Although effort has been made to eradicate trachoma in Ethiopia, Oromo rural dwellers appear not to have benefited from many of them. The purpose of this study was to determine the perceptions of U.S. immigrant Oromo villagers concerning the causes, treatment, and prevention of trachoma. Oromo rural communities in Ethiopia are impoverished (Freeman & Pankhurst, 2003) and have a high prevalence of eye diseases, including trachoma (Berassa, 2015; Hailu, 2015).

This study was conducted concerning trachoma from the U.S. immigrant representatives of the Oromo rural communities. Apart from two medical doctors' report (Berassa, 2015; Hailu, 2015), there was minimal scientific literature concerning trachoma among Oromo rural dwellers in Ethiopia. This study contributed to filling this gap in the literature by focusing on perceptions of immigrant rural Oromos concerning the causes, treatment, and prevention of trachoma. It was intended to provide data that could be used to reduce the trachoma load for rural Oromos in Ethiopia.

Chapter 3 I describe the research design and rationale, and the role of the researcher. I also discuss the research methodology including instrumentation, procedures for recruitment, data collection, trustworthiness, ethical procedures, and data analysis.

Research Design and Rationale

This study concerns exploratory qualitative phenomenological research wherein the HBM and the SET provided a theoretical framework to explore the perceptions of Oromo Americans concerning the causes, treatment, and prevention of trachoma.

The primary research questions were the following: What are the perceptions of rural Oromos living in the United States concerning the high prevalence, causes, treatment, and prevention of trachoma in Oromia? Secondly, under what circumstances might Ethiopian immigrants to the United States be infected with trachoma prior to entering the United States?

The data collection method was individual interviews. Interview questions (see Appendix A) included inquiry into what trachoma is, the causes of trachoma, the determinants of trachoma, susceptibility to trachoma, age and gender factors, susceptibility to trachoma, acceptance of Western medicine, and village environments that may facilitate or prevent treatment of trachoma, any known public policy in the region that would assist this population to receive medical care for trachoma. Depending on the individual responses, prompt questions were asked to gain in-depth answers. Saturation was determined when the participants gave the same or similar answers to the questions.

Role of the Researcher

I first established relationships with rural Oromo in Ethiopia when I chose to volunteer to serve in seven different medical clinics on different dates in their area between 2011 through 2015. During that time, the living and healthcare circumstances of this population, and especially their high rates of eye disease, became evident.

Originally, I intended to conduct my research with a sample of elders in the villages of the rural Jewish Ethiopians, the Gafat Beta Israel. About two years ago some of their villages were attacked, with two people being killed. Others needed to be treated for serious injuries. Nine homes (huts) were decimated and many people fleeing to other

locations in fear for their lives. I attempted to adjust the research methods by agreeing to meet with the voluntary subjects in a central location in Addis Ababa. However, as a result of widespread political protest, a nationwide state of emergency was declared by the government in effect for 10 months. This state of emergency lifted in July, 2017, but the U.S. State Department and Canada still cautioned travelers to be alert for spontaneous protests arising again (Public Health Agency of Canada, 2017). If I were to go into the Oromo areas as a Westerner to collect data, my life could have been in danger. One female researcher from California was killed in Addis Ababa at the outset of the state of emergency in October 2016 (Kuo, 2016).

After consulting with my chair, I redesigned the research to investigate the same problem via U.S. immigrant Oromos. I established a relationship with some of the leaders of this population in Phoenix, Arizona and a U.S. immigrant Oromo public health practitioner who was active in this community, spoke excellent English, and agreed to serve as an objective and ethical interpreter. As it turned out, his services were not needed because the participants were all efficient in proper English.

As the researcher, I distributed fliers in a location where former rural Oromo dwellers congregate to invite voluntary participants. I was alert to the possibility of bias in light of my past experiences in Ethiopia and to ideas suggested by the semi-structured and open-ended research sub-questions, as recommended by Creswell (2007). The phrase "empathetic neutrality" (Patton, 2002, p. 132) best described my approach. I made an effort to maintain unclouded judgment. I maintained a close enough relationship with the interviewees to be sympathetic and distant enough to remain objective.

Methodology

The HBM theory and SET were used to establish the immigrant rural Ethiopian perceptions of trachoma. The phenomenological method was used to accomplish this end by influencing the development of semi-structured and open-ended interviews of participants.

Sample

Twelve Oromos living in the United States were chosen according to the following inclusion criteria:

(a) male and female adults 25 years old or older;

(b) former resident in trachoma-endemic rural areas of Oromia,Ethiopia;

(c) have been to Ethiopia within the past year, if possible;

(d) English-literate;

(e) and, willing to participate in the interviews.

The participants who were proficient in English. If the political environment in Ethiopia had permitted, an effort would have been made to interview a few English-speaking rural Oromos in Ethiopia. Potential participants would have been invited through a flier posted via social media such as phone number. However, political unrest in Ethiopia prevented access to the English-speaking Oromo population in Ethiopia. Arizona participants were scheduled to meet with me in a designated building in Phoenix, Arizona. I provided travel expenses with $20 gas cards, although initially I stated I would provide a $10 gas cards to every participant who attended the interview. The reason for the increase in gas card value was to accommodate increased gas prices in the area of the interviews in Arizona.

Purposeful sampling with the target sample size of 12 in this study was chosen to focus on the phenomenon of trachoma to discover rich information from the interviewees (as suggested by Patton, 2002). Key issues were illuminated in this approach. Participants provided information on issues such as weaknesses in an area that could be foci for a needed program and additional research. Twelve participants were accepted for interviews because a small sample like this, can accomplish thicker, richer data than random probability samples (Patton, 2002). Information gleaned from this sampling strategy illuminated useful insights of rural Oromos living in the United States about trachoma as the phenomenon (Patton, 2002).

Data Collection

Interviews were conducted with 12 male and female participants, who were 25 years old and older, had been in Ethiopia during the preceding year, were English literate, and were former residents in trachoma-endemic Oromia. Confidentiality was maintained by assigning a number to each participant. They were interviewed by number. Each number had recorded responses to each of the 28 interview questions. An attempt was made to ensure the quality, reliability, and validity of the data being collected. I interviewed the individual participants, one at a time. My hand written notes include the responses of each participant. Following each interview, I confirmed my accuracy in stating my understanding of my handwritten documentation of their responses.

Trustworthiness

Credibility is achieved in qualitative research through the use of methods to establish confidence in the results (Shenton, 2004). Triangulation is an approach to enhance credibility. It may involve various methods, such as focus groups, observation,

theories, or interviews (Shenton, 2004). In this study I attempted to use triangulated interviews. The use of multiple sources of information added a variety of impressions, thickening knowledge of the subject being studied. One such method used to establish credibility in this study was a random selection of participants yielding participant triangulation, which balanced out the subjective views of the participants (Flick, 2004). This was accomplished by interviewing immigrant rural Oromo Ethiopians in person. It was not possible, to interview English-speaking rural Oromos in Ethiopia through SKYPE or telephone due to inaccessibility and political protests. Transferability of the data is how much the information can be applied to other populations (Howson, 2010). It also supports external validity (Howson, 2010). Transferability was established by the random participant selection, rendering the data generalizable or useful in another study. Dependability in qualitative research is the assurance that research results are consistent and repeatable, and therefore reliable (Chowdhury, 2015). Dependability in this study was established through random, varied participant interviews. Confirmability refers to what degree of the findings are from the participants and not researcher bias (Sutton & Austin 2015). It was dependent on the reporting of the data reflecting the participants ideas and experiences (Chowdhury, 2015). I refrained from inserting my own ideas.

Initially, the main threat to validity was that initially rural Oromo dwellers in Ethiopia might have wanted answers to their problems so much that they would give answers to questions that they thought would contribute to their receiving the help they genuinely need, even if the answers were not honest or truthful. This problem was mitigated because the Oromo dwellers in Ethiopia were unavailable. Concerning the Oromo immigrants to the United States, as the researcher, I believe I communicated my

concern without compromising impartial data collection. I interviewed the participants individually in person in the United States.

Ethical Procedures

Ethical procedure began with obtaining permission through the Institutional Review Board (IRB) to conduct this study and data collection. Ethical issues concerning data collection included identification of participants. I pointed out risks (if any) to the participants, guaranteed confidentiality to the participants, assured the participants that they could withdraw at any time, and protected the names of any participants who withdraw. Before the interview commenced, the participant was asked to sign a consent form (Appendix B) showing their willingness to participate in the interviews. Individual identities were kept in confidence by assigning numbers to the interviewees. I explained that the participants' names would be kept in a secure location in my office for five years and that no one else would know the names of the participants. I explained that the final data analysis, it would not indicate any participant's contribution or any persons identity. Data dissemination was done for information only.

Data Analysis

I hand-coded the data by hand-transcribing the interviews and assembling my field notes. Creswell (2007) recommended a template for coding that includes meaning units. Each interview question represented a meaning unit in this study. Emergent themes were then identified. I read through the transcripts and identified themes that may not have been explicit in the data, but appeared to lie behind the actual words. By using this strategy, I intended to reveal the actual perceptions of rural Oromos living in the

United States concerning the high prevalence, causes, treatment, and prevention of trachoma in Oromia.

Summary

This chapter summarized the research methods that were used in this phenomenological qualitative research study. Interviews were conducted with 12 Oromo immigrants in the United States to examine their perceptions concerning trachoma, its prevalence, causes, prevention, treatment, and potential transmission in the United States. Rural Oromos still living in Ethiopia were not accessible. This chapter also described the research design and rationale, the role of the researcher, the research instrumentation, and guidelines regarding trustworthiness and ethical procedures. Chapter 4 records the results of data collection with 12 interview participants. In Chapter 5, the importance of these findings will be discussed.

Chapter 4

Introduction

The purpose of this study was to contribute to social change in Ethiopia by providing a knowledge basis for the reduction or elimination of trachoma in rural Oromia, Ethiopia. A secondary purpose is to provide data on the risks of trachoma being re-introduced into the United States.

Research Questions

1. What are the perceptions of rural Oromos living in the United States concerning the high prevalence, causes, treatment, and prevention of trachoma in Oromia?

2. Under what circumstances might Ethiopian immigrants to the United States be infected with trachoma on entering the United States?

The purpose of this chapter is to record the results of data collection with 12 interview participants. It includes a summary of participant demographics, data collection methods, data analysis and evidence of trustworthiness and a summary. Ten themes were determined as a result of interviews.

Setting

Eleven interviews were conducted in a quiet, private room in a church in Phoenix, Arizona. One male had different work hour, so we met at Starbucks one early evening, per his request, and did the interview there in a quiet area. His was the 12th interview. All of the interviews took place between February 2, 2018 to April 20, 2018.

Sample

I knew I would find many Ethiopians at a particular church, so I contacted the church and the pastor invited me to place my flier there. He also enabled me to make the study known at a church picnic. Volunteers came from there if they met the inclusion criteria, which were:

Twelve Oromos living in the United States were chosen according to the following inclusion criteria:

(a) male and female adults 25 years or older;

(b) a former resident in trachoma-endemic Oromo rural areas of Ethiopia;

(c) have been in Ethiopia within the past year if possible.

(d) English literate;

(e) willing to participate in the interviews.

Twelve Ethiopian immigrants from trachoma-endemic Oromo rural areas of Ethiopia, all resident in the United States, who had been in Ethiopia within the past year participated. There were four men and eight women. Men were fewer due to their work schedules. There were 20 potential participants. However, some had to work and declined participation, some were called to different job duties, some did not meet the criteria. Finally 12 individuals, 75% women and 25% men, and met the criteria, were available as their schedules permitted and were accepted as participants. Before each interview, I went over the criteria again to confirm their qualifications. They were encouraged to read the consent form for the purpose of the study, sign and date it and were assured that their identity and responses would be kept in full, secure confidence. In the consent form, they saw that at the end of the interview, they would be given a $10 incentive as an offer of

appreciation for their participation. I increased it to $20 per person at the end of each interview which was unexpected by them. The increased value of the gas card was to accommodate the increased gas prices in the interview area. I also explained that they could withdraw from the interview at any time without negative consequences. Each participant indicated that he or she understood these points before the interview proceeded.

Data Collection

The 12 participants were interviewed with all of the 28 interview questions included in Appendix B. The length of the interviews was 1½ to 2 hours. The data were recorded by hand and not via a recorder because it seemed to be intimidating and diminished the participant's open responses. The only variations in data collection from the originally planned procedures were (a) the elimination of a tape recorder, and; (b) no attempt was made to interview persons in Ethiopia due to the political unrest and inaccessibility. There were no unusual circumstances encountered during data collection. Each interviewee was assured of confidentiality, and I explained that they would be assigned a number, and not his or her name, to identify him or her for the interviews and responses. The consent form was discussed and reviewed with each interviewee individually in the privacy of the interview area. Each interviewee signed his or her consent with the date, and he or she was assured that his or her consent would be kept in a locked, private file for 5 years then destroyed. When the participants were asked if they understood or had any questions, each one responded he or she understood and had no questions.

Data Analysis

The qualitative analysis includes an iterative set of processes (Miles & Huberman, 1994). The set of processes was used to move inductively from descriptively identified units to larger categories that involved several steps. The process involved data reduction to identify essences or codes (Miles & Huberman, 1994). First, all 12 responses to each of the 28 questions were listed. Second, the essences of each of the responses to the 28 questions were highlighted. Third, essences were summarized and converted to themes for each question. Fourth, similar or the same themes were combined finally resulting in ten themes. The ten themes are given below with examples of supporting data.

Results

Perceptions of Prevalence and Causes of Trachoma.

Theme 1. All participants knew trachoma is an eye disease associated with flies, dust, and poor sanitation in hot, dry, rural village areas of Oromia. However, they did not know if it was present or how differentiate it from other eye diseases.

Responses included the following: “Trachoma is caused by dust, poor hygiene, poor sanitation, cattle, dogs, sheep all that live inside the homes.” “Trachoma is prevalent in dry rural areas where there are high temperatures and hot air.”

Perceptions of Susceptibility to Trachoma

Theme 2. Respondents thought that families with close living circumstances and poor hygiene are more likely to catch trachoma.

Responses included the following: “Trachoma can be highly transmitted through close living. Also, flies move from one person to another and can spread trachoma that way.” “Trachoma is transferable between people, like if you touch your eyes and have

trachoma then touch someone else it can be spread. You can catch trachoma from lack of hygiene and through physical touch."

Perceptions of Treatment of Trachoma

Theme 3. Access to Western medical treatment is limited by lack of education, lack of services, and lack of political will therefore many turn to traditional medicine.

Responses included the following: "Go to hospital but not focused on eyes. There are general practitioners and general treatment. Trachoma is present, but there is no recognition of it. At this time, most focus on politics and not health care."

Two types of medical help. 1) traditional medicine, including plants and leaves. They do not tell where the leaves come from as it has to do with family background. They provide help based on what the sickness is. 2) To an area clinic or city hospital. Many are en route to these locations.

"Men go easier for treatment for practical reasons. In villages and outlying areas, men are treated more. All get treated, but responsibilities are given to women (like caring for children and household duties) that keep them back."

Perceptions of Prevention of Trachoma

Theme 4. Respondents recognized that hygiene is critical, and medical education is essential for the treatment of trachoma, but there are barriers to obtaining treatment.

Responses included the following: "You need to have a good knowledge of trachoma, so you know how to prevent it, especially in the villages because they are far from doctors." "Keep clean to prevent trachoma." "Prevent trachoma through hygiene, but it is difficult because of animals (donkeys), and dust are all around in markets.

Perceptions of the benefits of curing trachoma

Theme 5. Respondents reported that curing trachoma provides good eyesight leading to better health, education, and economic well being all helping their families.

Respondents reported that curing trachoma provides good eyesight leading to better health, education, and economic well being all helping their families. Responses included the following: "Will not lose eyesight." "Health and economic growth." "Become healthier. Get an education."

Perceived role of water and hygiene

Theme 6. Respondents reported that hygiene and clean water is needed to prevent trachoma.

Responses included the following: "One respondent reported that there is a substitute for water that is fermented and alcoholic and called Tej." "Hygiene affects trachoma and other diseases, preventing it and them, but our water is unclean most of the time." "There is no option for good hygiene in villages. The water is dirty and used for everything like cleaning, bathing, cooking, drinking. If I treat the water by boiling it that may help prevent trachoma."

Perceptions of the Provisions for Sanitation in Villages and Knowledge of Pit Latrines

Theme 7. Respondents shared that sanitation is inadequate, despite government efforts to improve sanitation through education and pit latrines.

Responses included the following: **"**I know about pit latrines. The government sends trucks to sack the waste and clean the latrine. Some are clean, and some are not. Some families cover it and move to another area." "People dig holes for their bathroom, put wood down. When it is full they dig another hole. But there are some flies that go to

the eyes causing itching and some get infections (trachoma) from this method (because it is) dirty."

Perceptions of Government Efforts to Provide Water and Adequate Sanitation

Theme 8. Respondents acknowledged government and non-government help to provide adequate sanitation and potable water to Oromo villages and people's homes.

Responses included the following: **"**There is government and non-government collaboration such as CARE with UNICEF and U.N. with World Vision, to provide water." "The government is trying to bring clean water by digging wells. It is still limited, and they need to do repairs. They are working at purifying water in certain places, but this is not widespread yet." "The government tries to help schools, medical centers, but money is short. They teach and train people to provide water and sanitation for themselves."

Perceptions of Self-Efficacy to Attend Classes and Follow Instructions on Trachoma Care and Prevention.

Theme 9. People would be willing to attend trachoma prevention classes if their certain conditions were met, such as providing incentives.

Responses included the following: "Yes, people would be willing to attend classes concerning preventing trachoma, but they want snacks and some water to be provided. They need incentives and do not want to pay." "Only some people will go to classes during the farming season. They will go in free time when not the farming season or on weekends."

Concerns Over Trachoma in the United States

Theme 10. Since respondents did not know how to recognize or differentiate trachoma from other eye diseases, none had concerns about contracting trachoma in the United States as long as they observe good hygiene and healthcare.

Responses included the following: "[We are] not concerned; [here we have] clean environment, [here we have] easy [access to] medical care." "Negligence could cause it." "[We have] no concern over catching trachoma in the U.S.A." "I never thought of getting trachoma in the United States, but we do need to take responsibility for our health."

Evidence of Trustworthiness

In this study, there is evidence of trustworthiness in the data collection through substantiating four strategies, namely credibility, transferability, dependability, and confirmability (Korstjens, 2018). Credibility was substantiated through conducting 90-120 minute relaxed interviews without interruptions allowing each participant to thoroughly and thoughtfully express him or herself honestly. In addition, I used a selection of voluntary Ethiopian immigrant participants from rural Oromia, who were male and female, 25 –50 years of age and had varying family, education, and work backgrounds. Transferability was established through the participants reporting the same or similar responses to the majority of the interview questions. Even with age, gender, and educational differences, all of the participants had lived in rural Oromia before immigrating to the United States during recent years. Dependability and confirmability in this study were substantiated in the records maintained throughout the data collection process, by ensuring researcher neutrality in reporting the results of the interviews. Rural Oromos in Ethiopia were not interviewed over the phone or SKYPE because they were

not accessible due to ongoing political unrest in their country; therefore, this threat to validity and trustworthiness, was eliminated.

Summary

Participants responses to the issues of trachoma revealed ten themes:

Theme 1. Participants recognized that trachoma is an eye disease associated with flies, dust, and poor sanitation in hot, dry, rural village areas of Oromia; however, they could not recognize the infection or differentiate it from other eye diseases.

Theme 2. Respondents thought that families with close living circumstances and poor hygiene are more likely to catch trachoma.

Theme 3. Access to Western medical treatment is limited by lack of education, lack of services, and lack of political interest, therefore, many turn to traditional medicine.

Theme 4. Respondents recognized that hygiene is critical, and medical education is essential for the treatment of trachoma, but there are barriers to obtaining treatment.

Theme 5. Respondents reported that curing trachoma provides good eyesight leading to better health, education, and economic well being for their families.

Theme 6. These respondents reported that hygiene and clean water is needed to prevent trachoma.

Theme 7. Respondents stated that sanitation is inadequate, despite government efforts to improve sanitation through education and pit latrines.

Theme 8. Respondents acknowledged government and non-government help to provide adequate sanitation and potable water to Oromo villages and people's homes.

Theme 9. People would be willing to attend trachoma prevention classes if their certain conditions were met, such as providing incentives.

Theme 10. No respondents had concerns about contracting trachoma in the U.S.A. as long as they observe proper hygiene and healthcare. However, they could not recognize trachoma or differentiate it from other eye diseases if it were present.

In Chapter 5 the importance of these findings will be discussed. I will compare my results with the literature, reporting on my use of the methods, and coming to a set of conclusions.

Chapter 5: Discussion, Conclusions, and Recommendations

Introduction

At the beginning of this study, the purpose was to determine the perceptions of Oromo villagers concerning the prevalence, causes, treatment, and prevention of trachoma in their communities. When political unrest broke out in Ethiopia, I revised my proposal – under the supervision of my Committee – to study these same issues with a sample of Oromo immigrants to the United States.

Key findings of this study were that rural Oromo Ethiopians understand that trachoma is an eye infection that causes blindness and is associated with flies, poor hygiene and poor sanitation; the participants claimed that many turn to traditional medicine due to the lack of education and limited availability of Western medicine for treatment and prevention of trachoma. The participants claimed that curing and preventing of trachoma provides good eyesight leading to better health, education and economic well-being. In addition, the participants claimed that that prevention of trachoma is dependent on hygiene, clean water and adequate sanitation and government efforts to provide clean water and adequate sanitation. Self-efficacy to attend classes and follow instructions are acceptable if leaders provide acceptable incentives; and, there was little to no concern over catching trachoma in the United States.

Interpretation of Findings

To analyze and understand the findings of this phenomenological study the worldview was social-ecological, and the chosen theoretical framework for this study was SET. The HBM was also used to develop the interview questions for the study. The main findings from the literature and interviewee responses were as follows:

Understanding of Trachoma

There was a limited understanding of the nature of trachoma in this population. They believed it was an eye disease related to lack of hygiene, unclean water, poor sanitation, flies, and poor eyesight and possible blindness, yet did not know how to differentiate trachoma from other eye diseases, such as cataracts or onchocerciasis, also called River Blindness. The participants did not know the microbiological determinants of trachoma. Illiteracy is the cause of lack of knowledge of trachoma (The Fred Hollows Foundation, 2018).

Concerning prevalence, interviewees verbalized that trachoma or eye diseases are widespread or prevalent in Oromia mainly in the dry, rural areas but also in the cities and other Ethiopian regions of Amhara and SNNPR. However, they did not know the statistics of the prevalence of trachoma in Ethiopia, nor that Ethiopia likely has the highest prevalence of trachoma in the world. They did not indicate awareness of trachoma being distributed in other African countries as well as internationally. The Fred Hollows Foundation (2018) has noted that Ethiopia is not only the most trachoma-endemic country in the world, Oromia is still the most trachoma-endemic region of Ethiopia. Lack of knowledge of trachoma is related to illiteracy among Oromo villagers.

Susceptibility to Trachoma

Some of the interviewees thought that close living circumstances contribute to catching trachoma, though they saw this as of less concern or importance than lack of hygiene. They realized that these factors made them susceptible to this contagious disease. In a study by Alene and Abebe (2000) described association between certain variables and the presence of trachoma. They named such variables as gender, type of

face washing, cooking location in the living room, sharing a room with animals and child caretaking.

These variables were found to be significantly present with trachoma cases. There is a range of interconnected social determinants of trachoma that include rural and high-density living, poor sanitation, inadequate water sources, inadequate face washing, cooking food in the living room, illiteracy, sharing rooms with animals, and living at low altitudes. All are risk factors for trachoma in Ethiopia.

Treatment of Trachoma

Western medical treatment of trachoma in Ethiopia was limited by lack of education, lack of services and lack of political will. Therefore, many people turn to traditional medicine. Hodes (1997) pointed out that Ethiopian immigrants frequently trust traditional medicine more than Western healthcare approaches, and may, therefore, be slow to adopt teachings on the treatment and prevention of trachoma. Poverty may be a contributing factor in the inability to gain appropriate healthcare, as Hodes points out. According to Hodes, people raised in rural Africa tend to view trust as an important issue in continuing with traditional medicine. The interviewees gave a different impression stating that they stick with traditional medicine due to lack of education, enough facilities and political will on the part of the government.

Prevention of Trachoma

There were barriers to prevention because of the lack of hygiene in the living circumstances of Oromo villagers. The interviewees stated that hygiene and clean water are necessary to preventing trachoma but all of the water is unclean for all living activities, including bathing. Interviewees were asked in a probe about the GET 2020

SAFE strategy and they did not know anything about it. Mariotti and Pruss (2001) stated that treatment and prevention are dealt with together in the GET 2020 SAFE strategy. The GET 2020 SAFE strategy is an important point to include in the education of individuals such as the interviewees.

Benefits of Curing Trachoma

The Interviewees stated that there are benefits to curing trachoma, like providing good eyesight, better health, and economic well-being, to their families. Curing trachoma can have many benefits. For one, individuals will have good health and good eyesight allowing them to become educated, work, and contribute to their families and communities. Furthermore, a public health challenge will be decreased. Improved eyesight will improve the health, educational accomplishment, and working capacity of those affected families and communities. The only reference to the benefits of improved eyesight is from Alene and Abebe, (2000) who pointed out that blindness has a serious socio-economic impact on the development of a country. This impact includes economic burden on a country that tries to rehabilitate and educate the blind. Therefore, the findings of this study are important in this regard.

Provisions for Sanitation in the Villages and Knowledge of Pit Latrines

The interviewees believed that the government was making an effort to improve sanitation through education and pit latrines; however, they felt that this effort was inadequate in addressing challenges such as attracting flies, uncleanness, and infections. USAID (2019) is invested in strengthening the water supplies for sanitation and hygiene through the Water for Sanitation and Hygiene (WASH) program in cooperation with the Ethiopian government’s plan to increase access to clean water and adequate sanitation.

The interviewees recognized that, when money is available, both government and non-government sources help to provide adequate sanitation and potable water to Oromo villages and the people there. Interviewees were not informed of the GET 2020 SAFE STRATEGY and of other sizable collaborative effort to eliminate trachoma in the Amhara Region; these efforts still do not include the Oromia Region. The main objective of the program is "to enhance the hygiene and sanitation situation of the intervention areas to reduce the prevalence of blinding trachoma in Amhara Regional State, and contribute towards the achievement of GET 2020 (McComiskey, p.7, 2014)."

Self-efficacy to Attend Classes & Follow Instructions on Trachoma Care and Prevention

The interviewees reported that most villagers would be willing to go to classes for trachoma prevention if the class organizers met conditions, such as providing incentives, holding classes on weekends and not holding classes in the farming season. Prevention of trachoma has some additional challenges that need to be considered such as Ethiopia's low literacy rate (Colyar, 2013) and low economic index (Weidman, 2014). The interviewees described the economic situation with the words "poverty" and "not enough money." Therefore, this study's results are confirmed. The low literacy rate makes teaching health education slower and at times, ineffective. The low literacy rate as contributes to Oromos' setting conditions and requesting incentives for classes on trachoma prevention. Self-efficacy appears to be compromised at best.

Concerns over Trachoma in the United States

Interviewees were not concerned about contracting trachoma in the United States as long as they observed proper hygiene and healthcare. Hygiene, clean water, adequate

sanitation, available medication, adequate medical care, and education contributed to their lack of concern. One participant stated that negligence on their part could cause them to be infected with trachoma in the United States so they need to take responsibility for themselves. One interviewee stated that potential Ethiopian immigrants are screened at the U.S. Embassy in Addis Ababa, Ethiopia for various health issues, including trachoma. However, according to the U.S. Embassy, (2017) and CDC (2017) ocular Chlamydia *trachomatis* is not screened for at the U.S. Embassy prior to immigration to the United States. Given that trachoma is highly infectious, and Ethiopian vollagers entering the US may be infected without knowing it, screening provisions should be reviewed and, if necessary, upgraded.

Theoretical and Conceptual Framework.

This study was phenomenological with two theoretical lenses, the HBM and the SET which facilitated the development of the interview questions and the recommendations at the conclusion of this study. The phenomenological approach contributed to developing investigative questions for semi-structured, open-ended interviews concerning the interviewees' perceptions of trachoma, which assisted in interpreting the data. The HBM served as a guide to the discovery of perceived susceptibility to and the threat of trachoma (risk perception), perceived severity of trachoma, perceived benefits of curing trachoma, perceived self-efficacy in preventative health action, and knowledge of the disease as well as demographic variables such as age and gender. Thompson, Hutchins, Cassama, Nabicassa, and Last (2015) discovered widespread rudimentary knowledge of trachoma in the Bijagos Archipelago of Guinea Bissau; however, the population lacked the terminology to identify it. There was little to

no understanding of trachoma in rural villages and a semi-urban environment. Western medicine was respected among rural dwellers but they still preferred to hang onto traditional medicine. Hygiene was seen as more important among semi-urban dwellers than among rural dwellers.

The Socio-Ecological model contributed to an improved understanding of some of the challenges with addressing the uncontrolled presence of trachoma in Oromia. Alemu, et al. (2017) discovered "barriers to the adoption of and sustainability of sanitation facilities." These barriers are summarized as follows: noted were listed as follows: 1) individuals factors, 2) household factors, 3) community factors, and 4) societal factors (Alemu et al., Abstract, 2017).

While I investigated the broader topics of the prevalence, causes, treatment, and prevention of trachoma, some interviewees discussed sanitation, stating that sanitation was inadequate despite government efforts to improve sanitation through education and pit latrines. Respondents stated, "the government tries to help schools, medical centers but money is short. They teach and train people to provide water and sanitation for themselves."

Limitations of the Study

Telecommunication with Ethiopians in Ethiopia was cut off during an extended period of political unrest. The telecommunication incapacity made it impossible to contact them to interview them over SKYPE. Another limitation related to Ethiopian immigrants in the United States who traveled back and forth to Ethiopia regularly was the small sample for this study. Both men and women were equally informed or uninformed about trachoma, and all stated that there was no gender difference in becoming infected

with trachoma or being treated for this disease, even if women may be more vulnerable due to their taking care of infected children and babies. Their travels to and from Ethiopia were not a limitation, instead, they enhanced the freshness of their knowledge of trachoma in Oromia.

Recommendations

I documented for the first time the perceptions of Oromo villagers on a subject that hugely effects their lives, trachoma. However, further research is required to into the role of socio-economic factors in the transmission of trachoma, and into the awareness of rural populations about how to treat it and prevent it. Additional research would benefit rural Ethiopian society in general, including Oromia. In addition, since the results of this study suggest enthusiasm for an educational program in this particular rural population, it is recommended that a pilot teaching/training program be developed for rural and village/tribal groups in Oromia, to test the effects of a low-cost intervention to prevent trachoma. Finally, since trachoma is highly infectious, and participants in this study come from a trachoma endemic area and do not know how to recognize it for themselves, the need for screening for trachoma on arrival in the US should be examined in more detail.

Implications

The results of this study imply social change at the individual, family, and societal levels. Individuals without blindness and trachoma can become educated and be physically enabled to contribute to their families, rural community, and society at large. Families benefit by having working members who bring in financial and other living supplies to improve their lives. The rural society will be benefited by “seeing” members contributing to community development.

Conclusion

The findings of this study punctuate limited to basic knowledge and understanding of trachoma, its causes, prevention, and treatment among Oromo villagers. They are unaware of how to recognize or differentiate trachoma from other eye diseases. Further, villagers understand the limitations of government and non-government efforts to the control of trachoma, yet have no other solution to suggest for its control. Self-efficacy in learning to recognize, treat, and prevent trachoma is seen to be random and not easily promoted. There is an overall unawareness of the general prevalence of trachoma in Ethiopia and other countries. This conclusion opens the door to developing a training program for Oromo villagers to recognize, treat, and prevent trachoma in the future. However, considering the fragile healthcare system in Ethiopia, the economic repression in Ethiopia (Weidman, 2014), the literacy rate of 43% in Ethiopia,), and extreme repression of the Anyuak peoples (Allo, 2016), getting village leaders in a creative and acceptable approach to engage village leaders to train their villagers to prevent trachoma and choose village members who can be trained to teach the program with follow-up will require a creative approach. Several NGOs from outside of Ethiopia will need to fund programs that educate villagers on environmental behaviors and how to break the cycle of infection. The facts and situation will need to be carefully presented to the NGOs. The task appears to be overwhelming. However, taken step-by-deliberate-step, it is possible. To quote a non-academic cliché: “Question: ‘How do you eat an elephant?” “Answer, ‘One bite at a time!’”

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Appendix A: Flyer

TRACHOMA

Spring, 2017

Greetings to the Oromia rural dwelling community from Ethiopia now living in the US!

You are invited to participate in a research study about trachoma and the rural dwelling Oromo community in Ethiopia. Your immigrant community will be provided with the results of this study.

You may be eligible for this study if you can be available in Phoenix, AZ at a time we will set for interviews; if you have background as an Oromo rural dweller in Ethiopia; and, if you are interested in contributing your own views on the prevalence, causes, treatment, and prevention of trachoma in Oromia.

If you are interested in participating in this study please phone 623-202-9566.

This study is voluntary; nobody is obliged to take part. It is your decision. Your participation is voluntary. Whether or not you participate in this study will have no effect on your relationship with me or the immigrant Oromo community.

You do not have to respond if you are not interested in this study. If you do not respond, no one will contact you further.

Thank you for your time and consideration. I look forward to hearing from those who are interested in this study.

Sincerely,

Linda Gross
Researcher
Candidate PhD Public Health

Appendix B: Interview Questions

Objective: To identify themes associated with Oromo rural dwellers perceptions of trachoma, their understanding of the social/ecological aspects of trachoma and their role in the treatment and prevention of this ocular infectious disease related to the Health Belief Model. The following foci will be included:

Background

a) Welcome

1. Hi! Where do you come from?

RQ: What are the perceptions of rural dwellers in (or from) the Oromia region of Ethiopia concerning trachoma?

Today I am going to be asking you about "trachoma."

b) Perceived seriousness, susceptibility and threat of trachoma; questions on the prevalence, cause of trachoma

2. Please state your perception of whether or not trachoma is widespread in Oromia.
3. Please describe where trachoma is prevalent in Oromia.
4. Please describe your perception of what trachoma is.
5. Please describe what your perception of the causes trachoma.
6. Please describe what your perception of who may "catch" trachoma.
7. What is your perception of how hygiene may affect trachoma?
8. What is your perception of how relationship between family members affects trachoma?
9. Please describe how serious trachoma is and what the results of having trachoma are.
10. How would you describe the possibility of you and your family getting trachoma now or in the future?

c). Perceived benefits versus barriers; questions on the treatment and prevention of trachoma

11. Please describe what you know about treating trachoma in the villages and homes of Oromia?
12. Please describe your perceptions about preventing trachoma.
13. Please describe if both men and women get treated from trachoma.
14. Who do Oromo rural dwellers go to for medical help?

15. How do you perceive the benefits of treating and possibly curing trachoma?
16. How do you perceive the barriers to people getting treatment for trachoma an prevention of trachoma?

d) Perceived social/ecological considerations: questions on the role of water and hygiene

17. Please describe the sources of water in the villages.
18. Where do people get their drinking water?
19. How do people bathe when there is so little water?
20. What provisions for sanitation are there in the villages?
21. What do you know about pit latrines?
22 What efforts have there been to provide potable water and adequate sanitation in Oromo villages and people's homes?
23. What plans do the Oromo rural dwellers in Ethiopia have to improve the supply of water for drinking, bathing and sanitation?

e) Perceived self-efficacy; questions on perception of immigrants concerning rural Oromians being motivated to seek care for trachoma and following through with recommended methods of prevention and care of those infected with trachoma

24. Do you perceive that Oromo rural dwellers be willing to attend classes concerning preventing trachoma?
25. Do you perceive that Oromo rural dwellers be willing to follow instructions on preventing trachoma?
26. If medical care is available, do you perceive that Oromo rural dwellers will seek medical help when infected with trachoma?

f) Questions on trachoma in the U.S.

27. What concerns do you have concerning contracting trachoma in the USA?
28. Describe any concern you may have that some immigrants will bring trachoma into the US.

Appendix C: Recommended water programs and plans for sanitation in Ethiopia

There is considerable concern over the inadequate potable water supplies in Ethiopia. A variety of organizations are attempting to meet this need. The following is a list of some of the organizations working on supplying water and sanitation in rural Ethiopia and other parts of Africa. Each organization has its own approach to providing clean water. Some of the provisions of the organizations listed are funding for water projects, research to improve water supplies, education and training of local residents for maintaining the water and often the sanitation provided, and determining the best approach according to the terrain and geological situation of the interested area.

Water Programs

African Medical and Research Foundation (AMREF) - http://www.amrefuk.org/where-we-work/offices-in-africa/ethiopia

Charity Water - http://www.charitywater.org/projects/

Columbia Water Center, Ethiopia Project - http://water.columbia.edu/?s=Ethiopia

International Rescue Committee (IRC) – http://www.ircwash.org/projects/millennium-water-alliance-ethiopia-programme

Jewish Voice Ministries, International (JVMI) – http://www.jvmi.org

Life Straws for personal and community drinking and hygiene - http://waterislife.com/clean-water/the-straw

Light for the World - www.light-for-the-world.org

Lion's Club International Foundation - www.lcif.org

Water Aid - http://www.wateraid.org/us/where-we-work/page/ethiopia

Water Mission International - http://www.watermissions.org/world-map

Water to Thrive - https://www.watertothrive.org/where-we-work

World Vision Water, Sanitation, and Hygiene Projects - https://www.globalgiving.org/pfil/6468/projdoc.pdf

Sanitation

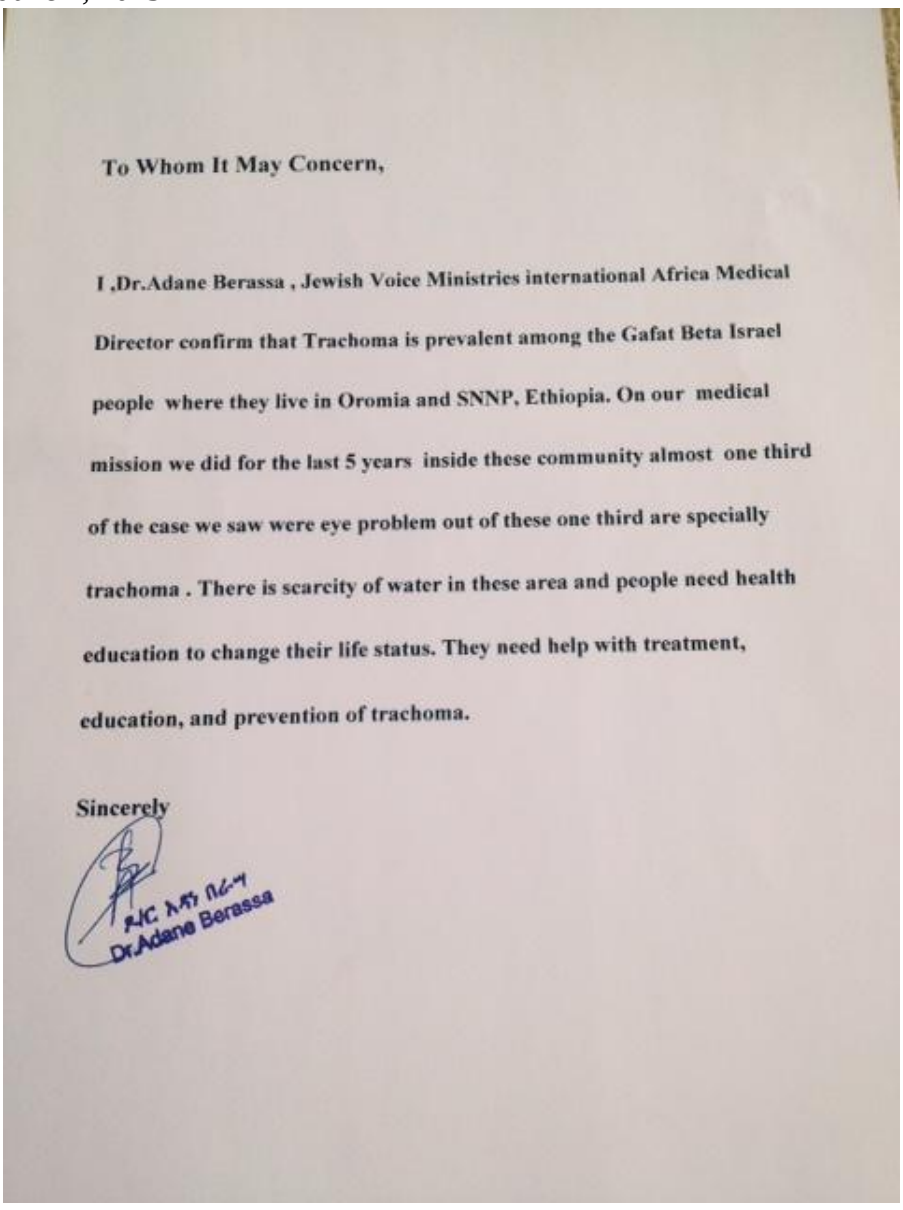
Mariotti, S.P. and Pruss, A. (2001). *The SAFE strategy: preventing trachoma. A guide for environmental sanitation and improved hygiene.* Retrieved from https://extranet.who.int/iris/restricted/bitstream/10665/66492/1/WHO_PBD_GET_00.7_Rev.1.pdf

An excellent guide for establishing sanitation and hygienic practices in the prevention of trachoma.

Appendix D: Validation of the prevalence of trachoma among the Jewish villagers in the Oromia and SNNP regions of Ethiopia

Letters from two medical doctors verifying the prevalence of trachoma among the Jewish villagers in the Oromia and SNNP regions of Ethiopia

June 7, 2015



To Whom It May Concern,

I ,Dr.Adane Berassa , Jewish Voice Ministries international Africa Medical Director confirm that Trachoma is prevalent among the Gafat Beta Israel people where they live in Oromia and SNNP, Ethiopia. On our medical mission we did for the last 5 years inside these community almost one third of the case we saw were eye problem out of these one third are specially trachoma . There is scarcity of water in these area and people need health education to change their life status. They need help with treatment, education, and prevention of trachoma.

Sincerely

Dr.Adane Berassa

Continued next page

June 9, 2015
Dear sir/madam

I am an Ethiopian Ophthalmic surgeon who has done many surgeries on a number of medical missions with Jewish Voice International Ministries(JVMI).

The mission trips were mainly in Amhara, Oromia and Southern Ethiopia regional states. These are the regions where the Jewish communities locally named “Felasha” and “Gafat” live and have the highest Trachoma prevalence.

For detailed information its possible to consult the “ National Survey of Blindness, Low vision and Trachoma of Ethiopia” document on the internet.

I am willing to make clarifications if needed

Best regards

Yemisrach Hailu, MD
Addis Abeba
Ethiopia.