

# **A SURVEY OF TRADITIONAL EYE PRACTICES: A CASE STUDY OF THE CENTRAL REGION OF GHANA**

BY

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## **Declaration**

### **Student's Declaration**

I hereby declare that this submission is my work towards the Master of Optometry degree. To the best of my knowledge, it contains no material previously published by another person nor material which has been accepted for the award of any other degree of the University, except where due acknowledgment has been made in the text.

Dr. Eugene Buah Enimah

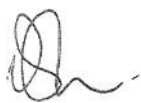
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### **Supervisor's Declaration**

I hereby declare that the preparation and presentation for the dissertation were supervised in accordance with the guidelines on the supervision of dissertation laid down by the University of KwaZulu-Natal. I, as a supervisor for this dissertation, do hereby approve of submission.

Dr. Urvashni Nirghin



Signature

Date 25 November 2020

## Abstract

**Background:** Once one becomes dependent on the eyes, loss of vision can negatively impact person-social and psychological well-being with added financial constraints. Studies have shown that apart from attending the healthcare facilities to receive professional eye care, people also resort to other means to receive eye care, which sometimes have a harmful effect on the eye.

**Aim:** This study sought to measure the prevalence, determinants, complications of traditional eye practices (use of TEM only, ophthalmic self-medication, and a combination of TEM and ophthalmic self-medication), and reasons for the non-use of professional eye care services among the Ghanaian populace.

**Methods:** The study used a mixed-method convergent parallel study design to enroll 191 residents who were 18 years old and above. The sampling method was based on the Expanded Program on Immunization survey technique. The data collection for this study included the administration of both closed and open-ended questionnaires, an interview, and an ophthalmic examination. The ophthalmic examination included the assessment of the visual integrity of the participants.

**Results:** In total, 91.83% (n=191) participants were included in the study. The prevalence of the use of TEM was 9%, ophthalmic self-medication (7%), and a combination of TEM and ophthalmic self-medication (3%). Females were two times more likely to use TEM than male participants [ $\chi^2(1) = 5.183, p = 0.023, (95\% \text{ CI}; 1.099 - 3.534)$ ]. Other socio-demographic characteristics were not associated with traditional eye practices. The predominant TEM used was herbal medicine “Nyankwa O ye,” traditional concoction, and Kajal. The reasons for the use of TEM were; others benefitted from it (37.30%), belief in its potency (21.10%), and unsatisfactory orthodox treatment (15.50%). The major ocular complication recorded were glaucoma suspect (29.41%), refractive error (27.73%), other diagnoses (18.49%), and corneal scar (10.08%). Reasons for the non-use of

professional eye care services were traditional eye practices were affordable, the eye clinics did not work on weekends, the potency of traditional eye practices, and others benefited from traditional eye practices.

**Conclusion:** The factor that influences the use of TEMs at Asikuma Odoben Brakwa District was gender. The use of traditional eye practices should be discouraged due to its devastating consequences on the eyes.

## **Dedication**

This dissertation is dedicated to my family and Mr. Thomas Enimah of blessed memory.

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The successful completion of this study would not have been possible without the guidance, cooperation, and support of several people. Though I cannot pay them back commensurably, I would like to register my appreciation for their contribution to this work.

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### **List of Abbreviations**

WHO	World Health Organization
TEM	Traditional Eye Medication
TM	Traditional Medicine
TM/CAM	Traditional /Complementary Alternative Medicine
OTC	Over the Counter'
HTEM	Harmful Traditional Eye Medications
TH	Traditional Healers
QUAN	Quantitative
QUAL	Qualitative
EPI	Expanded Program on Immunization
BREC	Biomedical Research Ethics Committee
QQ plot	Quarter-Quarter plot

### **Definition of Terms**

- i. Self-medication: An individual uses a substance or any exogenous influence to self-administer treatment for physical or psychological ailments in human behavior.
- ii. Traditional herbal medicines are naturally occurring, plant-derived substances with minimal or no industrial processing that have been used to treat illness within local or regional healing practices
- iii. Traditional healer: A person in a primitive society who uses long-established methods passed down from one healer to another to treat a person suffering from various illnesses, many of which have psychological underpinnings
- iv. Complication: a secondary disease or condition that develops in the course of a primary disease or condition and arises either because of it or from independent causes.
- v. Allopathic medicine refers to science-based, modern medicine, such as using medications or surgery to treat or suppress symptoms or the ill effects of the disease.
- vi. Ocular complication is any definitive diagnosis that causes structural or functional damage to the eye or vision due to an underlying condition.
- vii. Over-the-counter (OTC) drugs are medicines sold directly to a consumer without a prescription from a healthcare professional instead of prescription drugs, which may be sold only to consumers possessing a valid prescription.

# **CHAPTER ONE**

## **INTRODUCTION**

### **1.1 Introduction**

This study explores the prevalence and determinants of traditional eye practices, ocular complications of traditional eye practices, and barriers for not utilizing ophthalmic services. This chapter presents the background, outlines the research problem, aims, and specific objectives, significance of the study, and the overall dissertation structure.

### **1.2 Background of study**

The eye is a sensory structure that reacts to light, provides sensory input from the rods and cones photoreceptor cells in the retina to enable light perception and vision, color differentiation, and the perception of depth (Shah, 2014). Vision aids people in maneuvering through the environment, contributing more to learning about the surrounding world than any of the other four senses (Thogarapalli, n.d.). As the eye plays a vital role in one's life, one should do everything possible to maintain its functionality.

Eye care can be sought from either private practice or public practice. Eye care professionals consist of ophthalmologists, optometrists, ophthalmic nurses, opticians, and ophthalmic assistants. Most public healthcare facilities have eye clinics that attend to the needs of their clients. Apart from attending the healthcare facilities to receive professional eye care, people also resort to other means to receive eye care (Achigbu and Achigbu, 2017). Such means include the use of traditional

herbal medicines that have not been adequately tested and approved for use as reported by Nwosu and Obidiozor (2011), visiting traditional healers or spiritualists, as well as buying medicines from chemical drug sellers without consultation and prescriptions from professional healthcare providers (Gupta, Vashist, Tandon, Gupta, Kalaivani and Dwivedi, 2017). Traditional healers provide an understanding based on cultural beliefs and practices relating to eye diseases and delivering eye care at the community level, especially when patients are reluctant to get treatment from professional eye care service providers (Habtom, 2018 ). Some eye care practices can cause severe ocular complications and visual loss.

The term “traditional eye practices” in this study is used in describing the use of traditional eye medication, performing a sacred ritual and prayers, or ophthalmic self-medication to cure an ocular ailment. Some of the traditional eye practices can end up in ocular morbidity (Mselle, 1998). Traditional eye practices may involve the use of substances or mechanical or thermal devices to eye surfaces and adnexa (Eze, Chuka-Okosa, and Uche, 2009). Topical substances used in ocular treatment included “seawater, contaminated water, extracts of roots, leaves, of trees, herbs, vegetables, powdered charcoal, human urine and saliva, excreta of cattle and lizards, kerosene and petrol” (Eze *et al.*, 2009; Megbelayin, and Babalola, 2015; Ebeigbe, 2013). Many of these, especially with high pH or containing particular foreign matter, are potentially blinding while alkaline substances may penetrate and opacify the cornea (Ebeigbe, 2013; Singh, Tyagi, Kumar, Gupta, and Sharma, 2013). Other substances may damage the corneal epithelium, producing ulceration and even perforation (Ukponmwan and Momoh, 2010). The risk of microorganisms introduced in solutions may result in suppurative keratitis, followed by endophthalmitis (Ebeigbe, 2013). Among the materials implicated in Ghana are sand, smoke, seawater, and contaminated water (Kyei *et al.*, 2016).



### **1.3 Statement of Problem**

The human eye is vital in most of our everyday activities, whether it is reading, watching television, picking an outfit, showing preference in color, and other countless ways (Thogarapalli, n.d.). It is essential for language development and affects learning, communication, working, health, and quality of life (Thogarapalli, n.d.). Once one becomes dependent on the eyes, loss of vision can have a detrimental impact on a person's-social and psychological wellbeing with added financial constraints. The loss of one's sight, to a large extent, shifts their responsibility to others like family members, friends, society, and even to the government. Visual loss in children retards their educational pursuit and the ability for them to attain their full potential in their prospects. In adults, vision loss also affects work performance hence income. This unfortunate situation leads to dependence on family members for assistance. Following the failure of such a support system, the individual loses his or her dignity and becomes psychologically affected, increasing the risk for thoughts of suicide (Rim, Lee, Lee, Chung and Kim, 2015). In this respect, one would conclude that the eye should be given all the necessary attention and care to maintain its functioning. Resorting to harmful traditional eye practices resulting in a sudden loss of vision instead of getting professional eye care at the onset of the eye problem is of significant concern. This study seeks to identify possible traditional eye practices with the Ghanaian populace.

### **1.4 Aim of the study**

The aim of this study was to determine the prevalence, determinants, complications of traditional eye practices, and reasons for the non-use of professional eye care services among the Ghanaian populace.

## **1.5 Objectives of the study**

The objectives of this study are;

1. To measure the prevalence of traditional eye practices among the populace in the Central Region of Ghana.
2. To examine the determinants of traditional eye practices among the populace in the Central Region of Ghana.
3. To identify the common eye complications of traditional eye practices among the populace in the Central Region of Ghana.
4. To ascertain the reasons why the populace do not go to professional eye care facilities when they encounter an eye problem.

## **1.6 Significance of the Study**

Anecdotal evidence reveals that many individuals resort to traditional eye care practices as a form of remedy to eye-related problems. Little information is available on the traditional eye practices performed by the population in Ghana. This study will provide insight into the traditional eye practices the populace resort to as a means of eye care remedy. The findings of this study will provide an excellent basis to make a definitive statement in support of or otherwise, the reasons why the Ghanaian populace resort to these forms of traditional eye practices. It will again provide an opportunity to promote the need for proper eye care education for Ghanaians and other developing countries. Furthermore, the finding of the study will provide comparable data to help the planning of further studies in this area and add up to the existing body of knowledge.

**Key Words:** traditional eye medication (TEM), self-medication, determinants, Traditional Medical Practitioners. TEM users.

## **1.7 Organization of the Dissertation**

This dissertation is presented in the following chapters:

- ❖ Chapter 1 - This chapter outlined the introduction and background to the study as well as the problem statement, aim, objectives, and the significance of the study. It provided insight into the structure of the dissertation in its entirety and described the flow of the content.
- ❖ Chapter 2 - Literature review: This chapter provided the literature review of current trends regarding the prevalence, determinants, ocular complications, and nature of TEM. It also highlighted the reasons why people do not use orthodox medication.
- ❖ Chapter 3 - Methodology: This chapter provided details of the methods used to conduct the study.
- ❖ Chapter 4 - Results: Major study findings are provided in this chapter.
- ❖ Chapter 5 - Discussion: This chapter discussed the results of the study and compared the study findings with other related studies.
- ❖ Chapter 6 - Conclusion, Limitation, and Recommendation: This chapter provided the conclusion, limitations, and recommendation of the study.

# **CHAPTER TWO**

## **LITERATURE REVIEW**

### **2.1 Introduction**

This chapter provided comprehensive literature on the prevalence, determinants of traditional eye practices, ocular complications of traditional eye practices, barriers for not utilizing ophthalmic services, and ophthalmic self-medication. The literature was sub-sectioned under overview and the research objectives. Phrases such as harmful eye practices, traditional eye medication, eye complications of harmful eye practices, and barriers to the use of eye services were used as search terms.

### **2.2 Overview of Traditional Eye Practices**

African traditional healing practices have existed for centuries. In most regions of rural Africa, the local community finds affordable healthcare through traditional healers (Kassaye, Amberbir, Getachew, and Mussema, 2006). African traditional healing practice is sometimes the only healthcare option available (Abdullahi, 2011). Traditional medicine practices include the practical skills and knowledge that are based on experiences and beliefs that are indigenous to various cultures. Traditional medicine is believed to improve and sustain health, diagnose, or offer treatment to different types of diseases in the human body (Abdullahi, 2011). Practitioners include a range of healers such as diviners, herbalists, and medicine men, among others. It is impossible to isolate traditional African healthcare practices from religion since most of the healers are also priests, community religious leaders, and high priestesses (Mselle, 1998).

Traditional medicine is defined by the World Health Organization as “the sum of all knowledge and practices, whether explicable or inexplicable, used in diagnosis, prevention, and elimination of physical, mental, or social imbalance” (Chan, 2008). Traditional medicine (TM) has maintained its acceptance in all developing world regions, and its use is rapidly increasing in developed nations. In China, traditional herbal preparations account for 30% to 50% of the total medicinal consumption (WHO, 2015). For many developed nations, there is a trend of increasing traditional /complementary alternative medicine (TM/CAM) popularity. In Australia, for instance, it has been shown that about 68% of the populace used TM/CAM no less than once in 2005, relative to 52% in previous Australian studies (Xue, Zhang, Costa, and Story, 2007).

Ebeigbe (2013) reported in a study conducted in Benin-City, Nigeria, that traditional healers' services are usually simple, tolerable, and inexpensive to their patients. It was stated in their study that evidence proving the effectiveness of traditional treatments remained scanty. Even though their efficacy has been established with some medical conditions (Jimba, Poudyal, and Wakai, 2003), harmful effects, in some situations, have been reported (Ukponmwam and Momoh, 2010). Habtom (2018) reported that 58% of Traditional Medical Practitioners (TMPs) in Eritrea stated that traditional medical practice is more beneficial than being harmful, whereas 39% of them neither agreed nor disagreed on this idea. He stated that they did not deny the fact that some traditional medical practices are harmful. About 3% of TMPs acknowledged the existence of harmful traditional medical practices.

Self-medication is well-defined by the World Health Organization as “the selection and use of medicines by people to treat self-recognized illnesses or symptoms” (Hardon, Hodgkin, and Fresle, 2004). This behavior includes buying drugs without a prescription, using leftover doses from earlier prescriptions, sharing medications with family members, or misusing the medical

prescription either by prolonging, interrupting, or modifying the dosage and the administration period (Loyola-Filho, Lima-Costa, and Uchôa, 2004). A broad spectrum of symptoms is lessened by this practice, with eye conditions being no exception. It is well known that this kind of attitude and behavior is associated with pharmacological and toxicological hazards, not only due to the potentially severe side-effects of the topical medication itself, but also risky as a result of incorrect treatment or inability to obtain timely medical attention, thereby leading to a delay in diagnosis and, in turn to unexpected consequences (Fraunfelder and Meyer, 1984).

Self-medication with 'Over the Counter' (OTC) medicines is a typical patient behavior and has long been a health system feature (Blenkinsopp and Bradley, 1996). More than 700 medications have been changed from prescription to OTC status (Pawaskar and Balkrishnan, 2007). The authors reported that the safe and effective use of these drugs is a huge task faced by health care providers, and eye care is primarily affected by the widespread use of OTC ophthalmic drugs. Public awareness regarding the safety of self-medication with OTC eye preparations has always been deficient, especially in developing countries like Ghana, where the education level is very low (Kyei, Ocansey, Abu, and Gyedu, 2014).

## **2.3 Prevalence of Traditional Eye Medication (TEM) use**

The prevalence of TEM has been reported in various studies in Asia and Africa. In India, it is reported as 38% (Choudhary *et al.*, 2015) and 41.2% (Gupta *et al.*, 2017), and 35% in Saudi Arabia (Bifari, Alkhaldi, and Almalki, 2020). In Africa, several studies have been reported on the use of TEM. In the southern part of Africa, it is reported in Malawi as 28.6% (Bisika, Courtright, Geneau, Kasote, Chimombo and Chirambo, 2009), 36% in South Africa (Rakoma, 2017), and 61.5% in Zimbabwe (Jaya and Masanganise, 2014). In Eastern Africa, it is reported as; 12.2% in Ethiopia

(Bantihun, 2017) and 60% in Uganda (Aurunga *et al.*, 2019). In the Western part of Africa, different researchers in Nigeria have variously reported 55% (Eze *et al.*, 2009), 1.57% (Ukponmwan and Momoh, 2010), 13.2% (Nwosu and Obidiozor, 2011), 3.4% (Ajite and Fadamiro, 2013), 11.9% (Megbelayin and Babalola, 2015), 15.8% (Achigbu *et al.*, 2017), 4.3% (Oyediji, Ramyil, Odugbo, and Mpyet, 2019) and 12.2% (Munaw, Assefa and Hayilu, 2020). In Ghana, Ntim-Amponsah, Amoaku, and Ofosu-Amaah (2005) reported that 11.3% self-medicated with herbal medicine as 1.8% visited the herbalist for TEM.

## **2.4 Determinants of Traditional Eye Medication**

Munaw *et al.* (2020) conducted a community-based cross-sectional study to assess practice and associated factors among adult residents towards TEM in Gondar city, North West Ethiopia. They reported that being unmarried, being illiterate, living in traditional healers' available areas, poor access to modern eye care services, and positive family history of TEM use were significantly associated with TEM practice.

In a study to investigate the prevalence of self-medication and attitude and practice concerning the use of TEM for eye-related problems in Saudi Arabia, Bifari *et al.* (2020) reported that there was a strong association between the education status of the participants and the use of medication without consulting physician.

Bantihun (2017) reported in a study conducted in Ethiopia to assess attitude, practice, and associated factors among adult residents that variables such as a positive family history of TEM use and absence of health insurance were significantly associated with the right attitude towards

TEM use. Being illiterate and positive family history of TEM use was significantly associated with TEM use.

A cross-sectional study by Achigbu *et al.* (2017) in Nigeria to determine the prevalence, types, and ocular indications for TEM use showed that there was no significant association with age, sex, education, occupation, and illness duration. However, in a mixed-method prospective cohort study by Arunga *et al.* (2019), they reported distance from the eye clinic, and delayed presentation was associated with TEM use.

A study conducted in Nigeria by Kayoma and Ukponmwan (2016) to investigate the determinants of the use of TEM by adults in the Ekiadolor community revealed that the male gender, persons of low socio-economic class, and people that lacked formal education were more likely to use TEM.

In a cross-sectional survey by Megbelayin and Babalola (2015) to determine health-seeking behavior concerning non-orthodox eye medication use among clients visiting primary eye health centers in Nigeria, it came out that there was an association between age and health-seeking behavior with the use of harmful traditional eye medications (HTEMs).

Eze *et al.* (2009) set out to determine the incidence, socio-demographic, and clinical correlation of TEM use in newly presenting ophthalmic outpatients attending a tertiary eye care center in South-Eastern Nigeria. They used a comparative cross-sectional survey at the eye clinic. They performed an ophthalmic examination and interviewed the participants with a pretested questionnaire. TEM use was linked to a younger age, being married, rural residence, ocular anterior segment disease, delayed presentation, low presenting visual acuity, and co-morbid chronic medical disease, but not with gender and educational status.



## 2.5 Conditions Associated with TEM Use

Aurunga *et al.* (2019) reported in a mixed-method study conducted in Uganda that there was an indication that the condition of TEM Users was not as good as TEM Non-Users at presentation. The TEM Users presented later with larger corneal ulcers (both infiltrate and epithelial defect), more frequent hypopyons, and poorer vision.

Choudhary *et al.* (2015) reported that complications associated with the central and entire corneal were significantly high among TEM users in India. A significant association was observed between complications and the use of TEM. Scarring and perforation were seen in 70.8% and 31.9% of TEM users, respectively. Visual acuity of up to 6/18 was observed to be greater among non-TEM users (23.9%) in comparison to TEM users (9.7%). They stated that, at presentation, 38.9% of TEM users had already lost their vision.

Ebeigbe *et al.* (2013) reported that traditional medical practitioners (TMPs) stated that they treated common eye conditions like conjunctivitis, itching, and cloudy vision in Nigeria. These were treated by all (100%) of the TMPs. These were followed by cataract (76%), chalazion (68%), corneal ulcer (53%), entropion (35%), and glaucoma (12%). Kyei *et al.* (2016) stated that exposure to seawater was found to be associated with the development of cataracts among fishers in Ghana.

Ukponmwan and Momoh (2010), in a study of incidence and complications of TEM in Nigeria at a teaching hospital, reported that the significant ocular complications that were recorded in 54.8% of the subjects were corneal opacities in 13.35% of subjects, staphyloma in 9%, and corneal ulcers in 8%. Other complications were panophthalmitis, endophthalmitis, uveitis, cataract, and bullous keratopathy. Evisceration or enucleation of the affected eye was done for seven subjects. There was no significant difference in the type of medication used and ocular complications.

Mselle (1998) reported in their study conducted in Tanzania that these ocular complications, keratitis, endophthalmitis, and panophthalmitis, were diagnosed more in patients with a positive history of using TEM than those with a negative history. Poor visual outcome was also diagnosed more in patients who used TEMs than in those who did not use them. They also reported that the use of traditional medicines on the injured eye was associated with a very poor visual outcome.

## **2.6 Nature of TEM use**

Bifari *et al.* (2020) reported in a study conducted in Saudi Arabia that 6.0% used ‘Kohl Ethmed,’ 5.6% used ‘honey,’ 2.8% used ‘water and salt,’ 0.9% used ‘milk,’ 0.5% used ‘lemon,’ 0.2% used ‘Ghee’ and 29% used other things for eyes. Ninety percent of the participants reported that they preferred using modern medicines to treat eye problems, while 9.3% preferred traditional medication.

A study conducted by Dorcas *et al.* (2019) in Cameroon revealed that the most commonly used TEM among inhabitants in Cameroon as eye herbs were Bilberry, which helped to protect the retina, and improve poor night vision and, Euphrasia officianales, a unique herb for the eye, also called “Eyebright.” Ginkgo biloba was a well-researched herb that was reported to improve retinal deterioration. Goji Berry was reported to have a long history of use in the treatment of eye problems. The passionflower also helped relax the eye small blood vessels.

A cross-sectional, facility-based study in Nigeria by Oyediji *et al.* (2019) revealed that plant products that were used were leaf extracts, roots, and dry leaves. Chemical products reported were powder, eye pencil, salt solution, and cigarette smoke. Animal products that were reported to have been used were human saliva, human urine, human breast milk, and cow milk.

Al-Akily, Bamashmus, and El-Gorafi (2019), through a descriptive study, reported Kohl as the most familiar traditional eye therapy used for allergic eye diseases, visual improvement, and cosmetic purposes. Natural Honey was another common traditional remedy used for allergic conjunctivitis, corneal ulcer, and visual improvement. Cautery was used for painful eye, squint, and facial nerve palsy. The study stated that herbal products were mostly used for eye infections and corneal ulcers. Bloodletting was used for ocular pain, blurred vision, and headache. Couching was used as a treatment for cataracts. Picking foreign bodies by a few traditional healers' tongues (tongue picker) from the conjunctival sac was an unusual traditional eye therapy for the natives of Yemen. Most participants reported deterioration of their eye conditions, probably due to toxic effects and unhygienic applications of the traditional eye therapy.

Rakoma *et al.* (2017) reported in their study conducted in South Africa that about 57% of the participants used sugar and water solution the most for pain although 83% of those that used herbal mixtures had poor vision. Anointed tea and water were both used by 75% of those who had poor vision. Sixty percent of the participants who experienced itching eyes used urine. Breast milk was used for discharging eyes by all users.

Jagun (2014) stated in a study conducted in Nigeria that the content of the medications used by patients attending Babcock University Teaching Hospital ranged from plant extracts, breast milk, urine mixture, and other native mixtures. Twenty-five percent of patients treating eye conditions gave their medications topically, 12.5% was by incantations only, while 62.5% was by combining both.

Harjinder, Schwab, and Foster (1994) reported in a study conducted in Zimbabwe that harmful thermal practices that were performed included: the application of the hot metal plate to the upper lid in order to treat trichiasis, the treatment of the infected lacrimal sac by cautery, and, the

instillation of hot fluids into the eyes (Chana, Schwab, and Foster, 1994). Furthermore, lens couching was performed with thorns, orange sticks, or metallic probes introduced through the sclera to dislocate the lens posteriorly, a practice which is dependent on the skill of the healer. Patients are at risk of blindness as a result of secondary uveitis, glaucoma, and endophthalmitis. Scarification of the eyelids may be practiced to treat trachoma as well as other conditions (Chana, Schwab, and Foster, 1994).

## **2.7 Reasons for the Non-use of Professional Eye Care Services**

Qualitative research in Cambodia by Neyhouser, Quinn, Hillgrove *et al.* (2018) showed that women face obstacles to improved eye health, from their individual values and perceptions towards eye health to socio-cultural barriers to economic restrictions and institutional barriers in the household and broader society. The researchers added that the most critical obstacles to women's access to eye health services are the lack of access to knowledge, fear of surgery and unfavorable outcomes, the expense of receiving eye health services, and restricted availability.

In a mixed-method research, Aurunga *et al.* (2019) reported that the important reasons for using TEM included lack of customer trust in orthodox medicine, deterioration of the health system, poverty, fear, cultural belief in TEM, traditional healer role, personal circumstances, and ignorance.

Oyediji *et al.* (2019) reported that factors that determined the choice of traditional eye therapy in Nigeria were belief in traditional eye therapy potency 54(40.3%), ignorance of orthodox medicine 24(17.9%), unaffordable orthodox medicines 23(17.2%), others benefitted 14(10.4%) among other

factors. Despite the belief in traditional treatment for eye disease, most of the participants, 114(85.1%), would not use traditional medicines for their other health conditions.

Sitotaw (2018) stated in a study conducted in Ethiopia that utilization of traditional medication was more common among traditional healers (TH) themselves, the elderly, people living in the rural part of the region that have little or no access to information as well as to modern eye healthcare. The majority of THs got feedback from their customers why they preferred to use their services they the THs over health care centers as; the strength of their service and efficacy of the treatments was good, fees for treatment with herbal medicine were cheapest or non-existent coupled with the lack of access to the health facilities (cost, distance, quality of service) for modern eye care. Because traditional medicine is culturally rooted, accessible, and affordable, the majority of the Gurage population rely on traditional therapies as a primary source of eye care (Kassaye *et al.*, 2006).

In a qualitative study reported by Okoye, Bell and Papadopoulos (2018) in Nigeria, it was stated that inability to fit eye care service's bill and poverty was the most significant barrier among the Nigerian population. Other barriers included the proximity of rural dwellers' eye care support centers, fear of service providers' financial abuse, fear of medical prognosis, and other affordable treatment choices. The ability to deal with an eye disorder, the severity of the symptoms, and the lack of responsiveness to eye conditions and the resulting risk factors were other obstacles recognized.

Nyathirombo, Mwesigye and Mwaka (2013) reported widespread use of TEM in Atyak sub-county in the Nebbi District of Uganda. It was identified that traditional eye health practices were used by 44.2% of household heads interviewed (Nyathirombo *et al.*, 2013). The group was predisposed to use potentially dangerous eye practices because of mistaken assumptions about the cause and

treatment of eye diseases. The immediate supply, cost-effectiveness, the power of social classes, faith and trust of traditional healers, and the perceived inability of modern medicine to treat eye diseases are other factors for the use of traditional medicine (Nyathirombo *et al.*, 2013).

A cross-sectional exploratory mixed study by Ofosu, Osei, Hagan, Biekro, and Awedoba (2018) in Ghana reported that the decision on the form of service used, according to the participants, was affected by service affordability (56.6%), flexibility (52.1%), accessibility (48.2%) and service efficiency. Several variables were correlated with pursuing eye care, according to this report. This covered the shortage of drugs (42.3%), the lack of visiting eye staff (36.9%), and eye care expense.

## **2.8 Ophthalmic Self-Medication**

The prevalence of ophthalmic self-medication has been reported in various studies. Asiedu *et al.* (2016) stated in Ghana that the incidence of self-medication was 25.2% for over-the-counter topical ophthalmic drugs. The prevalence of self-medication was 32.7% and 21.5% among females and males, respectively.

Research to determine the proportion of ophthalmic self-medication and related factors among adult ophthalmic patients attending Borumeda Hospital in Northeast Ethiopia was conducted by Adimassu, Woldetsadik, and Alemu (2020). They stated that the proportion of ophthalmic self-medication was 28.6%. Ophthalmic self-medication was strongly correlated and widespread in the 29-42 age group, absence of health insurance, more than 10 kilometers of distance commuting to get eye services, previous history of ocular disease, the experience of ocular disease by relatives or friends, availability of bottle/tube of ophthalmic medicine at home, and participants with inadequate awareness of self-risks.

A research performed in rural India by Gupta *et al.* (2017) found that 18.2% of the 2160 respondents interviewed reported using ophthalmic drugs without consulting an eye care provider, primarily to manage symptoms such as watering (37.1%), redness (27.7%), and itching (19.2%). The authors recorded that 26.4% of the respondents were self-medicated upon physical inspection of available eye drops that were used without a prescription. Steroids expired or were unlabeled were being used by 26.5% and 21.1% of respondents, respectively, and 13.2% of respondents used indigenous eye drops (Gupta *et al.*, 2017).

Cross-sectional research was performed by Asiedu *et al.* (2016) to determine the prevalence of self-medication among university students with over-the-counter topical ophthalmic drugs and the ocular symptoms for which self-medication was practiced. To complete questionnaires that collected information on self-medication with an over-the-counter topical ophthalmic drug, the participants were randomly and routinely chosen. Analysis of logistic regression found that gender and oral contraceptives were strongly related to self-medication for topical ophthalmic preparations.

In their cross-sectional questionnaire-based, retrospective research exploring the practice and trend of self-medication use among new patients attending the ophthalmology OPD in a Northern Indian tertiary care hospital, Gupta *et al.* (2017) reported that advice from friends or relatives living far from the hospital and high hospital treatment costs were correlated with ophthalmic self-medication. Among these, 122 respondents (41.2%) acknowledged having used eye medications before going to the eye hospital. The most common symptom with which the respondents preferred self-medication was redness, in 38 cases (31.1%). Forty-nine respondents (40.2%) did not know what medication they had taken. Of the different medications used, the most frequent

was the antibiotic eye medicine [33 respondents (27 %)], followed by steroids [13 respondents (10.7%)]. Nine respondents (7.3%) experienced side effects after self-medicating.

In a research conducted in Nigeria, Omolase and Mahmoud (2008) documented the numbers of individuals who performed ocular self-medication, the drugs used, and the reasons for needing to resort to ocular self-medication. They stated that most of the respondents (79%) admitted to ocular self-medication, while 20% did not practice it. The reasons cited by 41.1% of participants for using self-medication included their perception that the type of ocular disorder they had was minor enough to be amenable to self-care. Other reasons cited included non-readily available ophthalmic services (17.4%), financial constraints to accessing hospital care (14.6%), ignorance of the potential adverse effects of self-medication (12.7%), the certainty of the efficacy of self-medication used (11.5%), and lack of escort to facilitate access of care at a hospital (1.9%).

## **2.9 Summary**

The literature reviewed in this chapter helped the researcher to understand current opinions and findings of TEM and ophthalmic self-medication use. Very little research has, however, been conducted in Ghana to understand these trends. The gap in literature is the associated reason for engaging in these practices. The use of a combination of TEM and ophthalmic self-medication use have not been explored in literature. Prevalence and determinants of a combination of TEM and ophthalmic self-medication use have not been reported in Ghana. It can be concluded that a mixed method technique will be of significant benefit to quantitatively measure the practice of traditional eye practices and qualitatively understand the reasons behind these actions. A community-based study would give a broad avenue to identify the various practices by the natives in eye care.



## **CHAPTER THREE**

### **METHODOLOGY**

#### **3.1 Introduction**

This chapter includes the research methodology that was used in conducting the research. It contains information on the study design, study area and setting, study population, sampling, data collection procedure, data analysis, and ethical considerations.

#### **3.2 Study Design**

The study adopted a mixed-method descriptive and cross-sectional design to describe the traditional eye practices within the Ghanaian populace. This type of design was selected due to the nature of the research problem being investigated. That is, with the data collection on the Ghanaian populace at a single point in time, to enlist the traditional eye practices resorted to and determine the relationship between TEM and ophthalmic self-medication use followed by variables of interest. Cross-sectional studies were defined by Abramson and Abramson (2000) as 'snapshot' studies because they include a snapshot of the frequencies and related factors of a disease in a population at a given point in time primarily appropriate to inform the planning and allocation of health services.

A significant limitation of cross-sectional studies is that it is challenging to determine cause-effect relationships, which was not the intention of this study. Also, non-response and selection-bias are specific problems that affect cross-sectional studies. This can result in bias of the measure of

outcome, thus limiting generalizations from the findings. This is a specific problem when the characteristics of non-respondents differ from respondents (Kesley *et al.*, 1996). To circumvent these problems, the study was conducted in a rural setting where eye care service is woefully inadequate.

Both qualitative and quantitative research data were employed. The quantitative study uses measurable data to articulate facts and find research trends (Goertzen, 2017). Quantitative research studies reveal behaviors and trends. It is imperative to remember that they can not explain why individuals believe, feel, or behave in particular ways. Quantitative analysis, in other words, reveals patterns across data sets, but not the drive behind habits observed. Qualitative studies, such as focus groups, interviews, or open-ended survey questions, are successful for these analyses (Goertzen, 2017). Qualitative study is primarily exploratory research used to understand a trend's reasons, opinions, and motivations (Garbarino and Holland, 2009). It gives insight into the issue or leads to the development of potential solutions for quantitative analysis. Qualitative analysis has also been used to expose and explore further into patterns in thought and viewpoints.

Creswell and Pablo-Clark (2011) defined a convergent parallel design as “a research design that entails the researcher concurrently conducting quantitative and qualitative elements in the same phase of the research process, weighing the methods equally, analyzing the two components independently, and interpreting the results together.” Creswell and Pablo-Clark (2011) reported that mixed methods are more than just the aggregation of quantitative (QUAN) and qualitative (QUAL) data from two different strands. Mixed methods inherently involve connecting, integrating, or linking quantitative and qualitative information as well as intersecting QUAN and

QUAL information strands (Creswell and Pablo-Clark, 2011). Quantitative data and outcomes generate overall trends and relationships in the convergent design, while qualitative findings provide people with in-depth personal views (Creswell and Pablo-Clark, 2011). The combination of quantitative and qualitative outcomes not only adds more information but also full knowledge of what each database alone would have supplied. As a result, investigators can advance various views or even validate one database with the other by using convergent design. The different traditional eye practices the Ghanaian populace resorted to and its determinants were explored using structured questionnaire as a quantitative data collection tool. The accompanying reasons for them engaging in these traditional eye practices instead of visiting a professional eye care facility was also explored using the interview as a qualitative data collection tool.

### **3.3 Profile of the Study Area**

One of the seventeen (17) districts in the Central Region of Ghana is Asikuma Odoben Brakwa District. Its capital is Breman Asikuma and is predominantly rural. The communities in the Central Region of Ghana are populated with different socio-economic statuses, evident by the different types of settlements ranging from urban centers to small fishing villages (Service, 2013). Breman Asikuma is mostly a farming district where most natives are into cocoa and cassava farming. Three public health facilities are serving the district, namely the Asikuma Health Center, Jamra Health Center, and Our Lady Grace Hospital. There is, however, only one eye care center at Our Lady Grace Hospital serving this district and the neighboring districts (Assin North, Assin South, Agona, Gomoa, Ajumako, Enyan and Esiam). In effect, eye care services are, unfortunately, inadequate. This setting provides the opportunity to study the TEM and ophthalmic

self-medication use amongst the Ghanaian populace in Asikuma Odoben Brakwa District in the Central Region.

### **3.4 Study setting**

The study was conducted at the various households of the participants in each of the selected towns. We defined household according to Ghana 2010 Population and Housing Census, as “a person or a group of persons, who live together in the same house or compound, share the same house-keeping arrangements and recognize one person as the head of household” (Ghana Statistical Service, 2010: 26). Therefore, a household can consist of a man, his wife, kids, distant relatives, or a housekeeper who lives with them. The randomly selected towns that were included in the study were Abuokwa, Ahoyaa, Amanor, Amoanda, Asikuma, Attudawda, Ayipay, Bosomase, Baako, Bedum, Benin, Domeabra, Dompoease, Eshiem, Enyinabrem, Fosuansa, Fankyenku, Kuntanase, Kokoso, Kwabenakwaa, Otabilkwaa, Ofabir, Kwaanan, Nankese, Nwomaso, Ochisoa, Supuna, Twereduah, Wassabiampa, and Yenkukwah.

### **3.5 Study Population**

The study population included inhabitants of Asikuma Odoben Brakwa District in the Central Region of Ghana. The research included people from all 30 chosen towns with the communities populated by people with different socio-economic statuses.

### 3.6 Sample Population

The sample population consisted of residing occupants from all the selected households. Only the occupants who were present at the time that the investigator reached their household were chosen. Those occupants who were not present when the investigator visited their home, could not be interviewed.

### 3.7 Sampling Technique

The minimum sample size required for this study was 162, which was rounded off to 167, using a 3.1% attrition rate based on the intercensal growth rate (Service, 2013). The research population was calculated using Cochran's sample size formula.

Sample Size

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

Where n = sample size,

$Z$  = Z statistic for a level of confidence (95%) = 1.96,

$P$  = expected prevalence or proportion (Megbelayin and Babalola, 2015) = 11.9% = 0.119

$d$  = precision = 0.05

(Naing *et al.* 2006)

### 3.8 Sampling Method

The study employed an Expanded Program on Immunization (EPI) survey sampling method whereby the 30 towns in the district, based on the geographical location, were grouped as 30

clusters (Nath and Patowari, 2014). The 30 selected towns from the study area were the 30 clusters. From each town (cluster), a location near the center of the community was selected. The community park was selected as our starting point to undertake the house-to-house survey. The spinning of a pen selected a random direction. For inhabitants to participate in the study, the third random household along the chosen route, pointing out from the community park, was selected. If no household member was selected, the nearest household (door to door) to the one determined in the previous stage was selected and tested for conformity with the criterion for inclusion. The processes were repeated until seven participants were surveyed in each cluster. The research also enrolled participants who fell under the inclusion criterion who were not present in their homes when the investigator got to their homes. The investigator revisited the homes of participants who were not present when the survey was being conducted in their homes the next day to assess them. At most, the first two participants encountered were selected from each household. A cluster sampling procedure was employed to ensure that the sample was representative of the study population and that generalizations of the findings will have validity. Also, the sample size used for the study was statistically determined using the appropriate standard formula, with the design effect for cluster sampling factored in.

### **3.9 Inclusion Criteria**

Only consented participants 18 years of age and above who had used TEM or ophthalmic self-medication or a combination of the two for at most two months before the study, were included in the study. The age bracket for inclusion was chosen to reduce nonresponse from younger children who cannot express themselves well. The timeline of 2months for the inclusion into the study was

based on literature, which states that TEM users tend to present to the hospital later than one month after onset of their ocular complaint (Eze *et al.*, 2009).

### **3.10 Exclusion Criteria**

Any participant who had not used TEM or ophthalmic self-medication at most two months before the study were excluded.

### **3.11 Instrumentation**

The data collection tools used in the study included a questionnaire and instruments for visual assessment.

#### **3.11.1 Questionnaire**

A well-structured interview questionnaire was adopted from a study by Eze *et al.*, (2009) and modified to suit the study objectives (Appendix I). This tool was validated, and the psychometric reliability of the questionnaire was ascertained in a pilot study conducted in the household of 15 participants with the history of TEM use from Nyakrom, a town in the Agona West Municipal District of the Central Region of Ghana. Thereafter, the instrument was adopted by rephrasing some items into words that were familiar to the participants and for them to understand. The adopted questionnaire was only slightly modified to fit the Ghanaian context. All factors were identical to the original instrument except for two. First, a Likert scale question was added to the original instrument to explore more about TEM use in the Ghanaian context and second, questions to ask about the profile of ophthalmic self-medication were added to the original instrument. The validity of the questionnaire was tested for repeatability and reliability using Cronbach's alpha test during

the pilot study. The questionnaire was considered reliable when the Cronbach's alpha coefficient was  $\geq 0.7$ . The questionnaire had both open-ended questions with partial coding and closed-ended questions. The investigator administered the questionnaire through a face-to-face interview.

### **3.11.2 Instruments Used for Visual Assessment**

The table below reflects the instruments used during the visual assessment of the participants and its purpose.



***Table 3.1: Instruments for Visual Assessment***

<b>Instrumentation for Visual Assessment</b>	<b>Purpose</b>
Welch Allyn direct ophthalmoscope	Welch Allyn direct ophthalmoscope was used to examine the posterior structures of the eye for any ocular abnormality as a result of the use of TEM or self-medication
Welch Allyn 3.5v retinoscope	The Welch Allyn retinoscope was used for objectively measuring the refractive error of the participants to rule out refractive error as a cause of visual impairment
Snellen distance acuity chart,	Snellen distance acuity charts was used to measure the visual acuity of each eye.
Penlight and head-mounted loupe	Penlight and head-mounted loupe was used for penlight examination of the eyelids and adnexa, conjunctiva, sclera, cornea, and pupillary light reflex
Tonopen	Tonopen was used for measuring the intra-ocular pressure since, from literature, the practice of ocular self-medication and the use of traditional eye medication can increase intraocular pressure (Phulke, Kaushik, Kaur and Pandav, 2017).
Consumables (Fluorescein strips and 0.5% Tetracaine.)	Fluorescein strips were used to stain the cornea for any cornea ulcer or abrasions. The 0.5% tetracaine was dropped on the eye to numb the cornea during the examination of participants who are photophobic or report of a symptom of severe ocular pain during the investigation.

### **3.12 Data collection**

The data collection for this study will be detailed in this chapter. It entails the pilot study followed by the administration of the questionnaire and the ophthalmic examination for the primary data, a structured interview questionnaire, including both closed and open-ended questions was used to collect the information from participants. The Ophthalmic examination included the assessment of the visual integrity of the participants. An ophthalmologist, three optometrists, four ophthalmic nurses, one public health worker, and a statistician made up the research team. The ophthalmologist was in charge of the hospital's care of referred patients. The optometrist performed the visual assessment of the participants. The ophthalmic nurses were responsible for coordinating the participants at the examination ground and assisting the optometrist and the ophthalmologist during a visual examination. The public health personnel were responsible for the announcement and education of inhabitants on the research study. The statistician was responsible for the data entry.

#### **3.12.1 Pilot Study**

A pilot study was conducted to enable the investigator to assess whether all the research questions were understandable and appropriate, the order of data collection was right, and all ambiguous or leading questions identified (Fox, 2006). It also helped to familiarize the investigator with all facets of the project and to recognize problem areas needing improvements before the analysis was conducted to standardize the protocol for data collection. The pilot study was carried out in Nyakrom, with 15 participants. During the pilot exercise, both enrollments in the study and procedures were carried out as per the protocol. Data forms were completed, and the data entered into the database. Data entry and management associated with the pilot study were to ensure familiarity with all aspects

of the data process. Data cleaning and analysis was also conducted. The results were analyzed to determine the validity of the questionnaire using the Cronbach test. Based on the pilot study experience and findings, problem areas requiring attention were addressed as necessary.

### **3.12.2 Procedure for data collection**

The investigator started up at each study area from the community park in each selected town. He moved from the community park and, as per the direction of the spin of the pen, visited the third randomly selected household. The occupants of the household were asked if any resident had used TEM or ophthalmic self-medication, and based on the inclusion criteria, qualified participants were selected. As the investigator approached the participant, the participant was greeted, and the investigator introduced himself and the intention of engaging the participant in a conversation. He administered the information document (Appendix II) and explained into detail what the study entails. A participant who agreed to be enrolled in the study was given a consent form (Appendix III) to sign to participate in the study. Once consent was received, the questionnaire was administered.

### **3.12.3 Administration of the questionnaire and interview**

This section included the administration of a questionnaire followed immediately by an interview process.

#### *3.12.3.1 Questionnaire Administration*

A participant code (identification section for each participant) rather than their names was filled into the questionnaire. Binary numbers were given to each participant as the participant code to ensure confidentiality and anonymity. The questionnaire was administered in a room in the houses of the participants to ensure privacy. The participants were given sufficient time to provide responses to fill

in the questionnaire, and the investigator was available to explain or provide more information on the questionnaire. In the cases of participants that were illiterate, a translator read out the Ghanaian language (Akan), translated the questionnaire, and assisted the participants with the filling of the questionnaire. The questionnaire was translated by two independent bilingual translators.

#### *3.12.3.2 Interview Process*

For the interview, the participants were not given options to choose from but were asked to respond to questions on ocular complaint, remedy used and the reason behind choosing these practices over visiting professional eye care facility.

### **3.12.4 Ophthalmic Examination**

The investigator examined participants, and any complications seen were recorded on the recording sheet (Appendix IV). The visual acuity was recorded in Snellen's notation. Objective refraction was performed for participants with refractive error using the Welch Allyn retinoscope. Objective refraction was assigned to one optometrist to reduce the variability of results. +1.00 blur test was performed to rule out latent hyperopia. A penlight examination was performed, followed by a fluorescein stain to detect corneal lesions. The intraocular pressure was measured with a tonometer. Retinal and corneal photography was performed on some subjects for documentation purposes. Fundoscopy was performed with the Welch Allyn specialist ophthalmoscope. Conditions that were seen and warranted treatment were referred to Our Lady of Grace Hospital for further management based on their consent using the referral sheet (Appendix V). Participants who were referred were advised on the need to report to the hospital for further treatment.

### **3.13 Data Analysis**

The Statistical Package for Social Sciences (SPSS) version 25 was used to analyze the results statistically. Descriptive statistics were employed in describing the: prevalence and determinants of harmful eye practices, ocular complications of harmful traditional eye practices, barriers for not utilizing ophthalmic services, and ophthalmic self-medication. The outcome of the analysis was presented using graphs and tables. Chi-square test was used to explore determinants (socio-demographic factors) associated with TEM use only and ophthalmic self-medication only. The determinant associated with the use of a combination of TEM and ophthalmic self-medication was also assessed. The level of significance of the study was considered at  $P < 0.05$ .

### **3.14 Validity and Reliability**

Measurement error was reduced by employing the use of qualified personnel who were able to express themselves well in the local language and have stayed or worked in the Asikuma Odoben Brakwa district for at least 5years. Only one team was used throughout the data collection to reduce inter-observer differences. Standard data collection and matching it with the computer format before the study minimized data loss during data entry. Data entry was verified by the principal investigator after a designated member of the research team did the input. The data was analysed with the guidance of a qualified statistician from the University of Cape Coast statistical department.

### **3.15 Ethical Consideration**

The research adopted the tenets of the Declaration of Helsinki. Ethical clearance was sought from the KZNU Biomedical Research Ethics Committee (BREC) (Appendix VI). Permission to conduct the study was sought from the Regional Health Directorate. Ethical approval was sought from the Ghana Health Service Ethical Board (Appendix VII). Heads of selected towns were briefed on the purpose of the study after which, they signed an informed consent form (Appendix VIII). An informed consent form was given to each eligible participant to be signed. The informed consent form included the objectives of the study and the details of the study. If the participant was illiterate or could not read the form, personnel was made available at each of the houses to provide in-depth explanation of the information sheet in their local dialect before their consent. Contact details of the investigator, supervisor, postgraduate officer, and the Biomedical Research Ethics Committee (BREC) were provided on the consent form for further enlightenment about the study. Participants were not identified by names; hence their anonymity was ensured. They were assured that taking part in this research was entirely voluntary, and they may refuse to take part or withdraw from the study at any time without anyone objecting and without penalty or consequences. Permission was sought from Our Lady of Grace Hospital Eye Clinic (Appendix IX) in order to refer cases seen during the study that warrant treatment. There was some discomfort felt by the participants, but it was minimized as possible. All the procedures that were carried out were non-invasive and posed no physical harm. It was stored in secured storage and will be disposed of after five years. Only approved personnel were allowed access to the data.

### **3.16 Data Entry and Management**

The data was stored and locked under key in a cupboard. It will be shredded after five years. Electronic data were coded on a password-protected computer, and only persons associated with the study have access to it. Questionnaires that were not filled in full were exempted from analysis, and after five years, the electronic data will be deleted from the password-protected computer.

### **3.17 Summary**

The investigator employed a cross-sectional mixed method study using an EPI sampling to sample residents of Asikuma Odoben Brakwa who had used TEM or ophthalmic self-medication two months prior to the study. Administration of a questionnaire followed by an interview and ophthalmic examination were used in the data collection process. The study was approved by BREC and the Ghana Health Service Ethical Board.

# **CHAPTER FOUR**

## **RESULTS**

### **4.1 Introduction**

This chapter presents the analysis of the results of this study to explore the traditional eye practices within the Ghanaian populace. This aim was evaluated under the objectives of enlisting the prevalence, its distribution, determinants, and the resulting complication of traditional eye practices. The reasons why the populace does not go to professional eye care facilities when they encounter an eye problem was also investigated. An alpha level of 0.05 was used for all statistical tests. The results are presented in a coherent sequence based on the research objectives and follow the following series: screening of the data, participation rate, demographic characteristics, prevalence of TEM and ophthalmic self-medication, determinants of; TEM use, ophthalmic self-medication and eye complication, nature and reason for TEM use, and reason for non-use of professional eye care facility.

### **4.2 Screening of the Data**

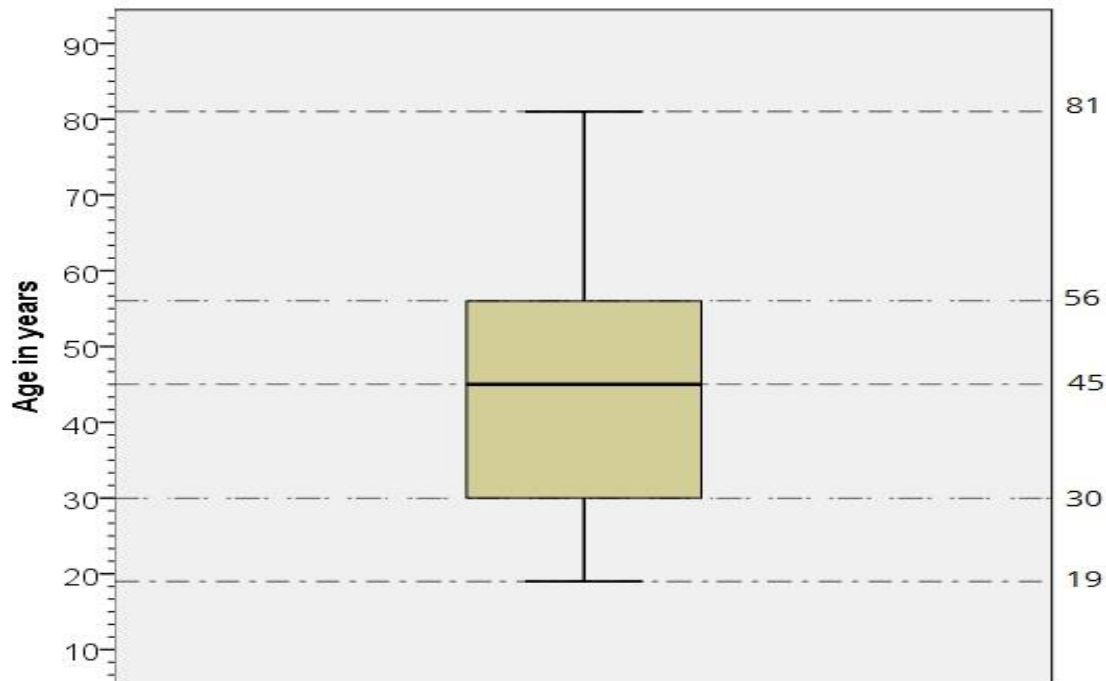
Missing variables and outliers of the data were screened using the box plot (Figure 4.1) and normality using the Quarter-Quarter plot (QQ plot) (Figure 4.2).

#### **4.2.1 Box plot**

Based on the box plot (Figure 4.1), the distribution of data revealed no outliers and missing variables. The minimum age in the dataset was 19 years old, while the maximum was 81 years old.



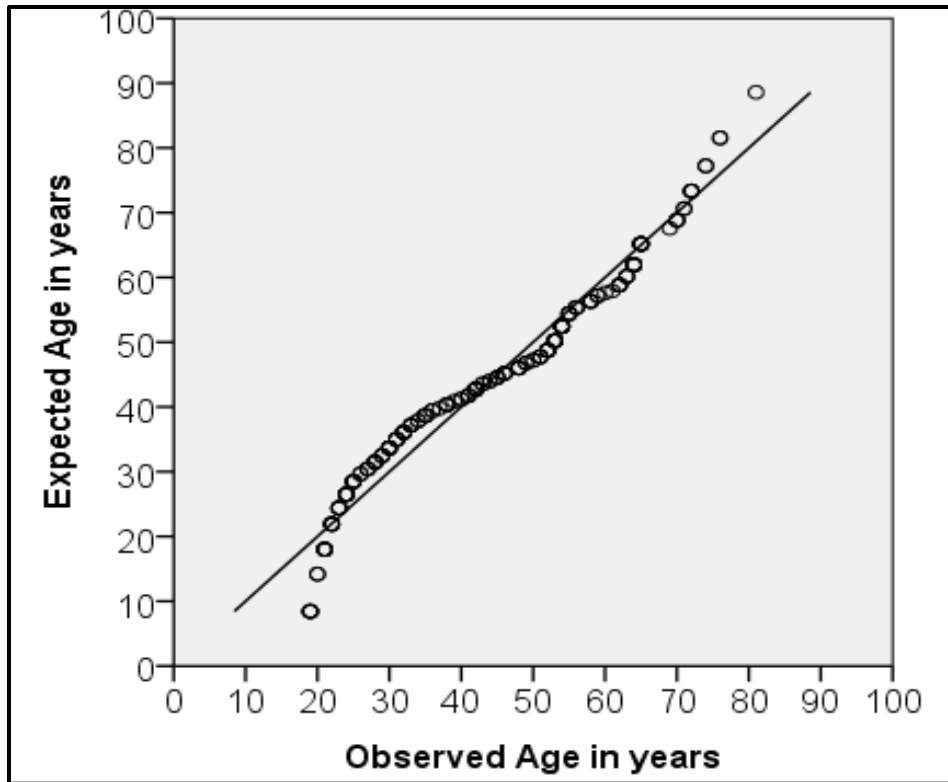
The dataset had 50% of its participants less than 45years old hence 50% being higher than 45years old.



*Figure 0.1: Box plot of Age in years showing no outliers*

#### 4.2.2 Quarter-Quarter plot

A Quarter-Quarter plot (Q-Q plot) was run to test for the normality of the data (Figure 4.2). The distribution was normal. The points in the Q-Q plot lie approximately on the line  $y = x$ ; hence the distributions are linearly related. The data set has a similar tail distribution shape and behavior.



*Figure 0.2: QQ plot showing the age distribution*

### 4.3 Participation Rate

The minimum sample size that was estimated for this study was 167 participants. A total of 1283 inhabitants sampled from 153 households in the 30 selected communities were included in this study. Participants were sampled until an approximate total of seven cases were chosen from each community. Of these, 16.21% (n=208) were found to be eligible based on the inclusion of being 18 years of age and who has used TEM or ophthalmic self-medication at most two months before the study. Of the 208 participants, two participants did not complete the questionnaire, while 15 participants did not consent to participate in the study; hence they were exempted. The remaining eligible participants of 91.83% (n=191) completed the entire study protocol and formed the basis for continuing analyses unless otherwise stated.

## 4.4 Demographic Characteristics

The demographic characteristics of the participants recruited to the study are as shown in Table 4.1. The gender distribution of the participants included more females [52.90% (n=101)] compared to males [47.10% (n=90)]. The participants were grouped under young adults (18 - 39years old), middle-aged adults (40 - 59years old), and old adults (60years old and above) (Wen-Bing, Cheng-Ping and Chun-Wen, 2001). According to this age category, the young adults accounted for the highest proportion [41.90% (n=80)] followed by the middle-aged adults [37.20% (n=71)] and lastly old adults [20.90% (n=40)]. The general average age of the participants was  $44.32 \pm 16.27$  years old. Married participants comprised the greatest percentage [42.90% (n=82)] of the sample population, followed by single marital status [26.20% (n=50)], with divorced being the least [6.30% (n =12)]. From the list of occupations, farming was the most predominant [34.60% (n=66)] followed by the unemployed [17.70% (n=34)] and trading [17.30% (n=33)]. Retirees were the least [4.20% (n=8)] in the category of occupation. The majority of the participants, under the category of educational status, had primary education [42.40% (n=81)] followed by the 'none' educational status of 32.50% (n=62). Participants with tertiary educational status were the least [9.40% (n=18)].

**Table 0.1: Demographic Characteristics of the General Participants**

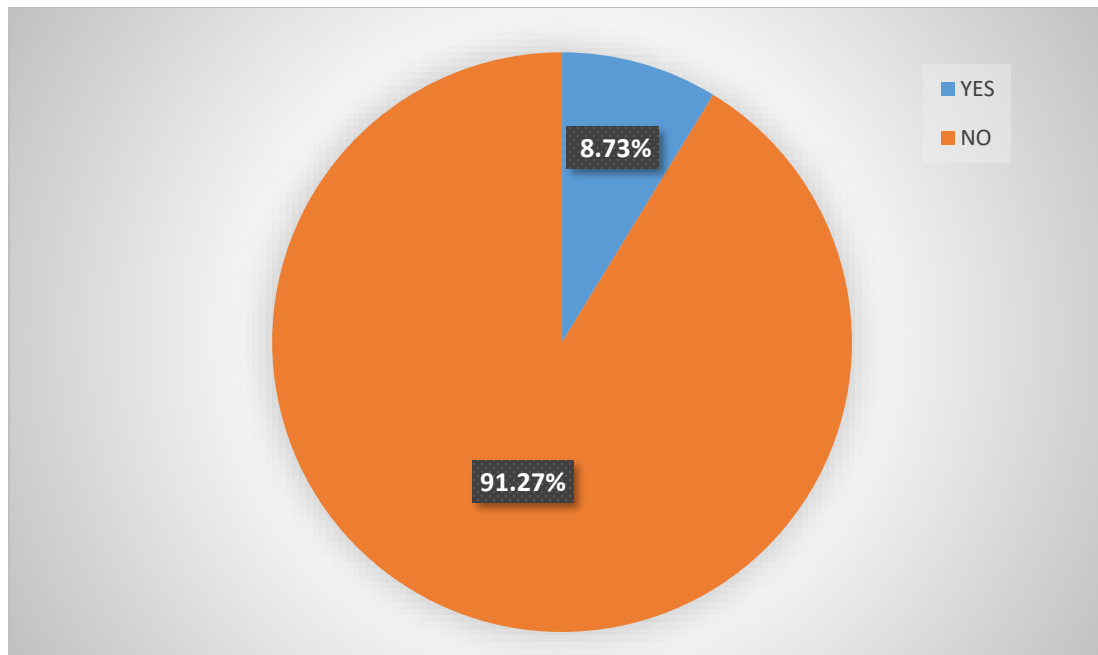
<b>Characteristics</b>	<b>N</b>	<b>%</b>
<b>Gender</b>		
Overall	191	100.00
Male	90	47.10
Female	101	52.90
<b>Age Category</b>		
Overall	191	100.00
18years – 39years	80	41.90
40years – 59years	71	37.20
60years and above	40	20.90
<b>Marital Status</b>		
Overall	191	100.00
Single	50	26.20
Married	82	42.90
Divorced	12	6.30
Separated	33	17.30
Widowed	14	7.30
<b>Occupation</b>		
Overall	191	100.00
Civil Servant	15	7.90
Trading	33	17.30
Fishing	25	13.10
Farming	66	34.60
Artisan	10	5.20
Unemployed	34	17.70
Retiree	8	4.20
<b>Educational Status</b>		
Overall	191	100.00
Primary	81	42.40
Secondary	30	15.70
Tertiary	18	9.40
None	62	32.50

## **4.5 Prevalence of the Use of TEM, Ophthalmic Self-Medication, and Combination of TEM and Ophthalmic Self-Medication**

Out of the 1283 inhabitants who were sampled from the general population, 112 participants reported having used TEM, and 84 participants reported engaging in self-medication. About 39 participants said having used TEM as well as self-medicated. The overall prevalence of traditional eye practices was 18.32%. The prevalence was calculated from the ratio of the sum of the participants who reported having engaged in the use of TEM only, ophthalmic self-medication only and a combination of the use of TEM and ophthalmic self-medication use (235 participants) to the total populace who were available for the study (1283 participants).

### **4.5.1 Prevalence of TEM Use**

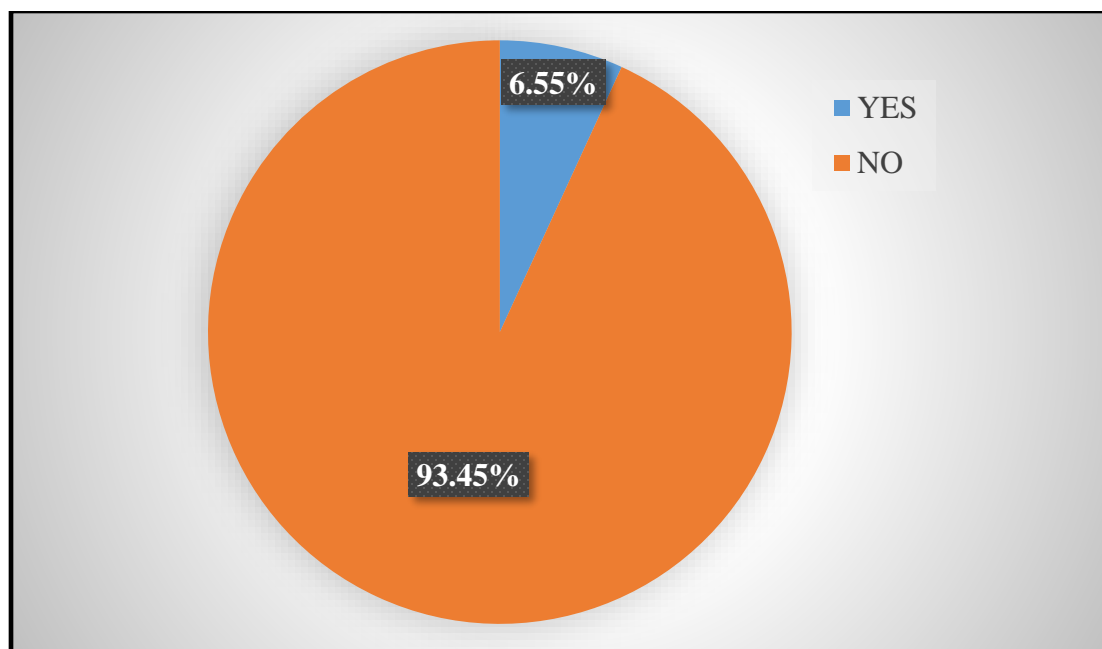
One hundred and twelve participants reported having used TEM only in at most two months before the survey. Those participants that use TEM only accounted for 9% of the populace who were available for the study (Figure 4.3). The prevalence was calculated from the ratio of the participants who reported having engaged in the use of TEM only to the total populace who were available for the study (1283 participants).



***Figure 0.3: Percentage of TEM Users Only***

#### **4.5.2 Prevalence of Ophthalmic Self-Medication**

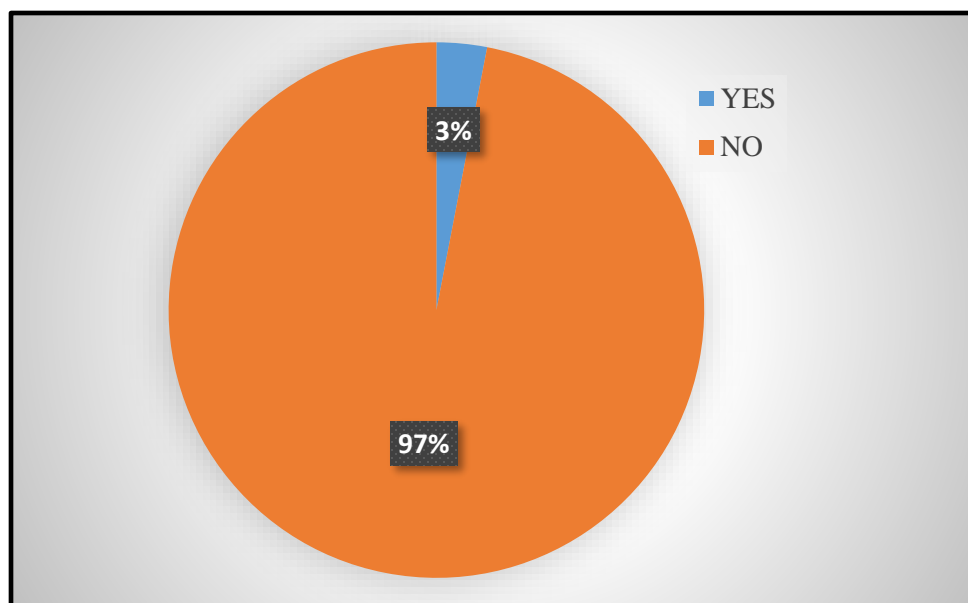
Eighty-four participants reported engaging in ophthalmic self-medication only. The prevalence of the use of ophthalmic self-medication was estimated at 7% (Figure 4.4). The prevalence was calculated from the ratio of the participants who reported having engaged in the use of ophthalmic self-medication only to the total populace who were available for the study (1283 participants).



*Figure 0.4: Use of Ophthalmic Self-Medication Only*

#### **4.5.3 Prevalence of Combination of TEM and Ophthalmic Self-Medication Use**

Thirty-nine participants reported engaging in TEM and ophthalmic self-medication use. The prevalence of the use of the combination of TEM and ophthalmic self-medication use is estimated at 3% (Figure 4.5). The prevalence was calculated from the ratio of the participants who reported having engaged in a combination of TEM and ophthalmic self-medication use to the total populace who were available for the study (1283 participants).



*Figure 0.5: Use of Combination of TEM and Ophthalmic Self-Medication*

## 4.6 Distribution of TEM Use

The study sought to determine the proportion of TEM use by socio-demographic characteristics, the nature of TEM used, and the main reason of TEM use.

### 4.6.1 Determinants of TEM Use Only by Socio-Demographic Characteristics

Females [66.30% (n=67)] reported to have used TEM more than males [50.00% (n=45)] participants (Table 4.2). There was a statistical association between gender and TEM use [ $\chi^2(1) = 5.237, p = 0.022$ ]. A binary logistic regression was done to ascertain the effects of gender on the likelihood that participants will use TEM. The model explained 3.7% (Nagelkerke  $R^2$ ) of the variance in TEM use and correctly classified 58.6% of cases. The model was statistically significant for gender  $\chi^2(1) = 5.183, p = 0.023$ , (95% CI; 1.099 – 3.534). Females were twice as likely to use TEM than male participants. Old adults [72.50% (n=29)] used TEM the highest



followed by young adult [57.50% (n=46)] and middle-aged adult [52.10% (n=37)] at  $p= 0.108$ . Similar results with regards to statistical findings were found for marital status category at  $p= 0.958$ , occupation at  $p=0.482$ , and educational status at  $p=0.674$ .

**Table 0.2: TEM Use Only by Demographic Characteristics of the Participants**

Characteristics	N(%)	TEM Use Only		p-value
		Yes (%)	No (%)	
<b>Gender</b>				<b>0.022*</b>
Overall	191(100.00)	112(58.60)	79(41.40)	
Male	90(47.10)	45(50.00)	45(50.00)	
Female	101(52.90)	67(66.30)	34(33.70)	
<b>Age Category</b>				0.108
Overall	191(100.00)	112(58.60)	79(41.40)	
18years – 39years	80(41.90)	46(57.50)	34(42.50)	
40years –59years	71(37.20)	37(52.10)	34(47.90)	
60years and above	40(20.90)	29(72.50)	11(27.50)	
<b>Marital Status</b>				0.958
Overall	191(100.00)	112(58.60)	79(41.40)	
Single	50(26.20)	30(60.00)	20(40.00)	
Married	82(42.90)	46(56.10)	36(43.90)	
Divorced	12(6.30)	8(66.70)	4(33.30)	
Separated	33(17.30)	20(60.60)	13(39.40)	
Widowed	14(7.30)	8(57.10)	6(42.90)	
<b>Occupation</b>				0.482
Overall	191(100.00)	112(58.60)	79(41.40)	
Civil Servant	15(7.90)	6(40.00)	9(60.00)	
Trading	33(17.30)	16(48.50)	17(51.50)	
Fishing	25(13.10)	14(56.00)	11(44.00)	
Farming	66(34.60)	43(65.20)	23(34.80)	
Artisan	10(5.20)	7(70.00)	3(30.00)	
Unemployed	34(17.70)	21(61.80)	13(38.20)	
Retiree	8(4.20)	5(62.50)	3(37.50)	
<b>Educational Status</b>				0.674
Overall	191(100.00)	112(58.60)	79(41.40)	
Primary	81(42.40)	51(63.00)	30(37.00)	
Secondary	30(15.70)	16(53.30)	14(46.70)	
Tertiary	18(9.40)	9(50.00)	9(50.00)	
None	62(32.50)	36(58.10)	26(41.90)	

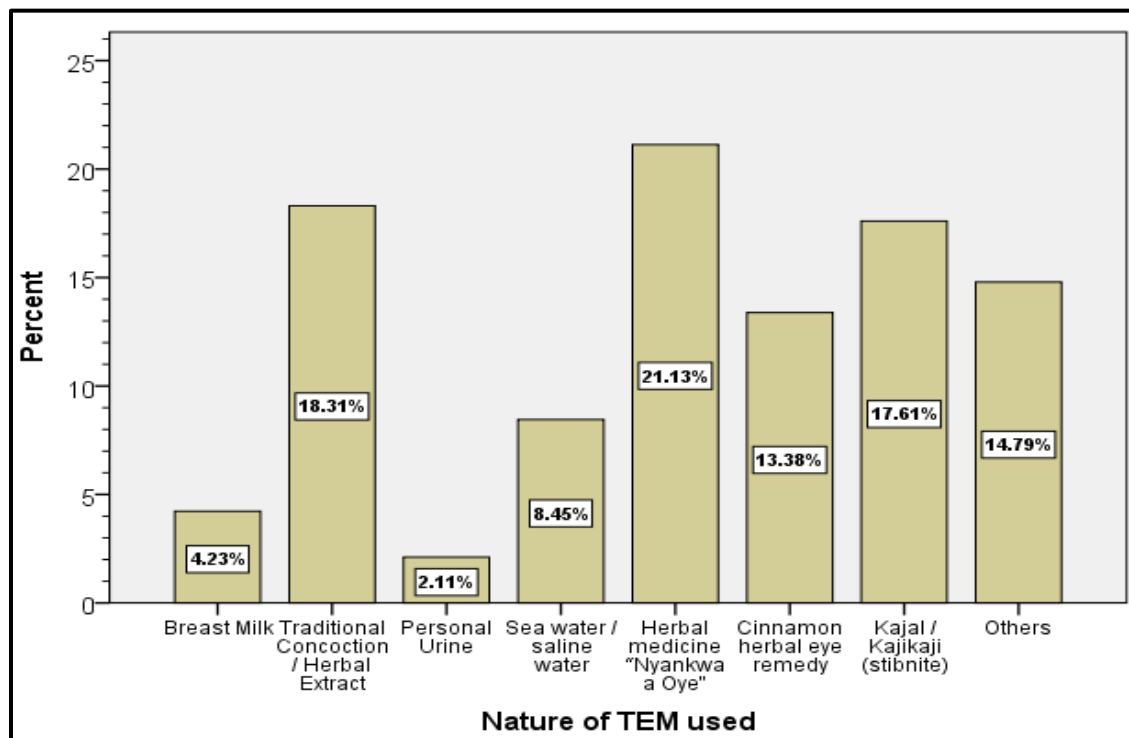
\* Suggestive significance (P:  $0.05 = p < 0.05$ )

## 4.6.2 Nature and Main Reason for TEM Used

Due to prevalence of TEM use only been greatest than ophthalmic self-medication use only and combination of TEM and ophthalmic self-medication use, the nature and main reason for TEM use was analysed.

### 4.6.2.1 Nature of TEM Used

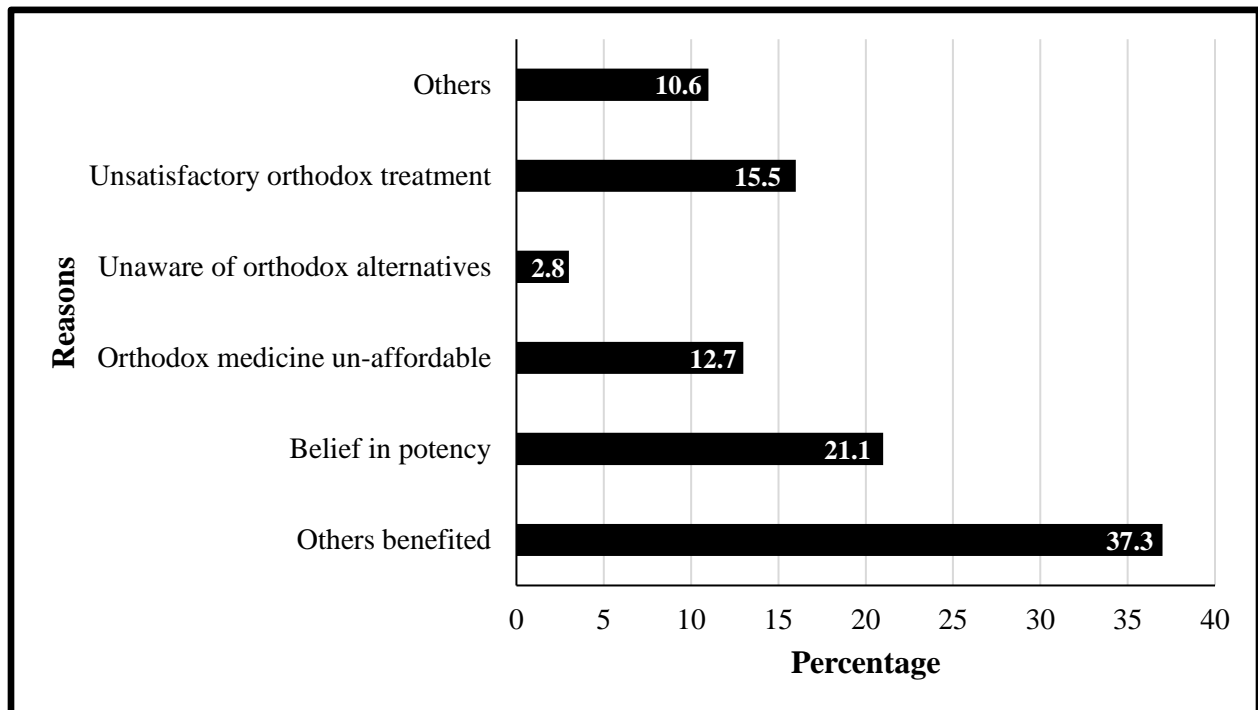
The study found a range of TEM used; breast milk, traditional concoction or herbal extract, personal urine, seawater or saline water, herbal medicine “Nyankwa a Oye”, cinnamon herbal eye remedy, kajal or “kajikaji”, and others. Herbal medicine “Nyankwa a Oye” accounted for the highest used of 21.13% ( $p= 0.508$ ) followed by traditional concoction or herbal extract 18.31% ( $p= 0.455$ ), and kajal or “kajikaji” (stibnite) 17.61 % ( $p= 0.962$ ). Other forms are shown in Figure 4.6.



*Figure 0.6: Nature of Traditional Eye Medication Used*

#### 4.6.2.2 Main Reason for TEM Use

The reasons for TEM commonly used in this study are reflected in Figure 4.7 with “others benefitted” [37.30% (n=53),  $p=0.874$ ] been the predominant reason followed by “belief in potency [21.10% (n=30),  $p=0.267$ ], and unsatisfactory orthodox treatment [15.50% (n=22),  $p=0.999$ ].



*Figure 0.7: Main Reason for TEM Use*

## 4.7 Determinants of Ophthalmic Self-medication by Socio-Demographic Characteristics

Female participants [45.50% (n=46)] reported to have engaged in ophthalmic self-medication more than the males [42.20% (n=38)] with level of significance at  $p=0.644$  (Table 4.3). Forty-five percent of the young adults [n=36] (18years - 39years) were engaged in ophthalmic self-medication followed by the middle-aged adults (40years - 59years) [45.10% (n=32)] then old

adults (60years and above) [44.00% (n=84)] at  $p= 0.850$ . Similar results were found with regards to statistical findings for marital status, occupation, and educational status at  $p= 0.607$ ,  $p=0.654$ , and  $p=0.607$  respectively.

**Table 0.3: Ophthalmic Self-medication by Demographic Characteristics of the Participants**

Characteristics	N(%)	Ophthalmic Self-medication		<i>p-value</i>
		Yes (%)	No (%)	
<b>Gender</b>				0.644
Overall	191(100.00)	84(44.00)	107(56.00)	
Male	90(47.10)	38(42.20)	52(57.80)	
Female	101(52.90)	46(45.50)	55(54.50)	
<b>Age Category</b>				0.850
Overall	191(100.00)	84(44.00)	107(56.00)	
18years – 39years	80(41.90)	36(55.00)	44(55.00)	
40years –59years	71(37.20)	32(45.10)	39(54.90)	
60years and above	40(20.90)	16(40.00)	24(60.00)	
<b>Marital Status</b>				0.607
Overall	191(100.00)	84(44.00)	107(56.00)	
Single	50(26.20)	22(44.00)	28(56.00)	
Married	82(42.90)	38(46.30)	44(53.70)	
Divorced	12(6.30)	7(58.30)	5(41.70)	
Separated	33(17.30)	11(33.30)	22(66.70)	
Widowed	14(7.30)	6(42.90)	8(57.10)	
<b>Occupation</b>				0.654
Overall	191(100.00)	84(44.00)	107(56.00)	
Civil Servant	15(7.90)	9(60.00)	6(40.00)	
Trading	33(17.30)	15(45.50)	18(54.50)	
Fishing	25(13.10)	9(36.00)	16(64.00)	
Farming	66(34.60)	32(48.50)	34(51.50)	
Artisan	10(5.20)	3(30.00)	6(70.00)	
Unemployed	34(17.70)	13(38.20)	21(61.80)	
Retiree	8(4.20)	3(37.50)	5(62.50)	
<b>Educational Status</b>				0.607
Overall	191(100.00)	84(44.00)	107(56.00)	
Primary	81(42.40)	32(39.50)	49(60.50)	
Secondary	30(15.70)	13(43.30)	17(56.70)	
Tertiary	18(9.40)	10(55.60)	8(44.40)	
None	62(32.50)	29(46.80)	33(53.20)	

## **4.8 Determinants of Combination of TEM and Ophthalmic Self-Medication by Socio-Demographic Characteristics**

Male participants [23.30% (n=21)] engaged in the use of a combination of TEM and ophthalmic self-medication more than females [17.80% (n=18)] at  $p=0.346$  (Table 4.4). Twenty-five percent of the middle-aged adults (40years - 59years) [n=18] engaged in the use of a combination of TEM and ophthalmic self-medication followed by the young adults (18years - 39years) [17.5% (n=14)] and old adults (60years and above) [17.50% (n=7)] with  $p=0.429$ . Similar results were found with regards to statistical findings for marital status, occupation, and educational status at  $p=0.928$ ,  $p=0.28$ , and  $p=0.739$  respectively.

**Table 0.4: Combination of TEM and Ophthalmic Self-Medication by Socio-Demographic Characteristics**

Characteristics	N(%)	TEM & Ophthalmic Self-medication		<i>p-value</i>
		Yes (%)	No (%)	
<b>Gender</b>				0.346
Overall	191(100.00)	39(20.40)	152(79.60)	
Male	90(47.10)	21(23.30)	69(76.70)	
Female	101(52.90)	18(17.80)	83(82.20)	
<b>Age Category</b>				0.429
Overall	191(100.00)	39(20.40)	152(79.60)	
18years – 39years	80(41.90)	14(17.50)	66(82.50)	
40years –59years	71(37.20)	18(25.40)	53(74.60)	
60years and above	40(20.90)	7(17.50)	33(82.50)	
<b>Marital Status</b>				0.928
Overall	191(100.00)	39(20.40)	152(79.60)	
Single	50(26.20)	9(18.00)	41(82.00)	
Married	82(42.90)	17(20.70)	65(79.30)	
Divorced	12(6.30)	2(16.70)	10(83.30)	
Separated	33(17.30)	7(21.20)	26(78.80)	
Widowed	14(7.30)	4(28.60)	10(71.40)	
<b>Occupation</b>				0.286
Overall	191(100.00)	39(20.40)	152(79.60)	
Civil Servant	15(7.90)	6(40.00)	9(60.00)	
Trading	33(17.30)	9(27.30)	24(72.70)	
Fishing	25(13.10)	5(20.00)	20(80.00)	
Farming	66(34.60)	9(13.60)	57(86.40)	
Artisan	10(5.20)	3(30.00)	7(70.00)	
Unemployed	34(17.70)	6(17.60)	28(82.40)	
Retiree	8(4.20)	1(12.50)	7(87.50)	
<b>Educational Status</b>				0.739
Overall	191(100.00)	39(20.40)	152(79.60)	
Primary	81(42.40)	14(17.30)	67(82.70)	
Secondary	30(15.70)	7(23.30)	23(76.70)	
Tertiary	18(9.40)	5(27.80)	13(72.20)	
None	62(32.50)	13(21.00)	49(79.00)	



## 4.9 Distribution of Eye Complication

This study adopted the definition of ocular complication as any definitive diagnosis that causes structural or functional damage due to an underlying condition. Glaucoma suspect [29.41% (n=35)] was the most predominant clinical diagnosis made among the participants (Table 4.5). Refractive error [27.73% (n=33)] was the second highest followed by “other diagnosis” [18.49% (n=22)], and cornea scar [10.08% (n=12)]. Others are shown in Table 4.5.

**Table 0.5: Clinical Diagnosis Seen In the Eye**

Clinical Diagnosis	Frequency (N)	Percent (%)
Glaucoma Suspect (C/D>0.5 OR IOP Difference $\geq$ 4mmHg)	35	29.41
Refractive Error (VA worse than 6/12 both eyes)	33	27.73
Others	22	18.49
Cornea Scar	12	10.08
Uveitis	10	8.41
Keratitis	3	2.52
Staphyloma	2	1.68
Pan / Endophthalmitis	1	0.84
Cornea Perforation	1	0.84
<b>Total</b>	<b>119</b>	<b>100.00</b>

#### **4.10 Reasons for the Non-use of Professional Eye Care Services**

This section aimed to explore the reasons why the populace do not go to professional eye care facilities when they encounter an eye problem in the Central Region of Ghana. Four questions were asked to achieve this objective.

**Table 4.6: Questions and responses on the reasons for the non-use of professional eye care services**

<b>Question</b>	<b>Response</b>
Which ocular conditions or symptoms need a professional eye care treatment?	<ol style="list-style-type: none"> <li>1. Severe trauma</li> <li>2. Blinding disease from already diagnosed conditions such as cataracts and glaucoma.</li> </ol>
Which symptoms do not need treatment at professional eye care facilities?	<ol style="list-style-type: none"> <li>1. Itching,</li> <li>2. Discharge,</li> <li>3. Mild blurred vision,</li> <li>4. Burning sensation,</li> <li>5. Foreign body sensation,</li> <li>6. Dry eye</li> </ol>
What form of traditional eye care practices were engaged?	<ol style="list-style-type: none"> <li>1. Ophthalmic self-medication</li> <li>2. Herbal eye ointment,</li> <li>3. Seawater,</li> <li>4. “kajal,”</li> <li>5. Sap from grounded leaf,</li> <li>6. Breast milk,</li> <li>7. Spiritual consultation</li> </ol>
What were the reasons for engaging in traditional eye care practices?	<ol style="list-style-type: none"> <li>1. Affordability,</li> <li>2. Potency,</li> <li>3. Unsatisfied orthodox treatment,</li> <li>4. Others benefited from such treatment,</li> <li>5. No medical insurance</li> <li>6. The eye clinic being closed on weekends.</li> </ol>

## **4.11 Summary**

Findings from the study revealed that the practises engaged in by the natives were the use of TEM, ophthalmic self-medication and a combination of TEM and ophthalmic self-medication. Gender was associated with the use of TEM only but the other socio-demographic characteristics were not associated with the use of TEM, ophthalmic self-medication or a combination of TEM and ophthalmic self-medication. These practises resulted in ocular complications. Affordability and potency TEM and ophthalmic self-medication were some of the reasons for the non-use of professional eye care services.

## **CHAPTER FIVE**

### **DISCUSSION**

#### **5.1 Introduction**

This chapter presents the results of the demographic characteristic, prevalence of TEM, ophthalmic self-medication and combination of TEM and ophthalmic self-medication. It also presents the distribution of TEM, determinants of ophthalmic self-medication and combination of TEM and ophthalmic self-medication, eye complication and reason for the non-use of professional eye care services.

The study had more than 91% participation rate. The rate of non-participation was minimal; hence, the results are a good representation of the populace in Asikuma Odoben Brakwa district in the Central Region during this study.

#### **5.2 Demographic Characteristics**

The discussion of the demographic characteristic of the participants will include gender, age, marital status, occupation and educational status.

Following extensive literature review, this survey was the first of its kind among inhabitants at Asikuma Odoben Brakwa district. From the overall participants included in the study, females were higher compared to males (Table 4.1). This is consistent with similar studies conducted in Ghana (Ofosu *et al.*, 2018), India (Gupta *et al.*, 2017) and Nigeria (Nwosu and Obidiozor, 2011) reporting 52.5%, 53.4% and 51.5% respectively. This research coincides with population-based

eye health surveys in Asia, Africa, and developed countries, which reveal that approximately two-thirds of women in the world bear the financial burden of vision-related problems (Abou-Gareeb *et al.*, 2001). This financial burden can influence the need for females to seek for alternative medicine and herbal concoctions to solve their visual needs more than males. Also, there is gender disparity in Ghana, with females outnumbering males in the last reported national census (Ghana Statistical Service, 2013).

The majority of the participants who engaged in the use of traditional eye practices (inclusive of TEM, self-medication, or a combination of TEM and self-medication) were in the age category of 18 to 60years old (Table 4.1). Kumado (2013) reported that the maximum age at secondary school is 18years and max age for retirement is 60years in Ghana. Coincidentally, the young adults belong to the working category and may be more prone to ocular insults and ailments, hence requiring ocular management. Study in Singapore by Chau *et al* (2011) reported that participants younger than 60years were more prone to ocular injury more than participants older than 60years. The old adults were least as they are mostly at home and tend to not engage in activities resulting in ocular complications with little or no need for treatment (Chau *et al.*, 2011). Furthermore, the majority of participants who used traditional eye practices were married with the age distribution linked to marital age (Table 4.1).

Farming (34.60%) was the predominant occupation reported by the participants who engaged in traditional eye practices (Table 4.1). Farm workers were termed as farmers in this dissertation and their occupation they engage in was termed farming. Farming had this proportion partly because the district has agriculture business as one of its primary sources of employment for most of the natives (Ghana Statistical Service, 2013). Farmers do have significant folk knowledge about the herbal benefits of some of the leaves they encounter on the farm (Boadu and Asase, 2017). This

knowledge was mostly transferred from one generation to the other. Farmers also earn less with this financial constraint influencing the use of traditional eye practices more than traders. Retirees had the least percentage of use, which is also reflected in the age category previously. A possible explanation for this could be seeking general treatment from the hospital due to age-related systemic complications. In turn, these participants may be referred to the eye clinic to access eye care services. A significant percentage of the participants reported having a primary level of education or none (42.40% and 32.50%, respectively) (Table 4.1). This finding accounted for the low socio-economic status of most inhabitants in the district (Ghana Statistical Service, 2013). This can be inferred that educational status is linked to traditional eye practice use.

### **5.3 Prevalence of TEM and Ophthalmic Self-Medication, and Combination of TEM and Ophthalmic Self-Medication Use**

The study reported that the overall prevalence of traditional eye practices was 18.32%. The prevalence in these participants was low in comparison to 44.20% observed in Atyak, Uganda (Nyathirombo *et al.*, 2013). This finding can be attributed to the higher sample size used in the study conducted in Uganda.

The present study reports that 9% of the participants had used TEM only as part of treatment for their ocular ailments. Similar studies have documented diverse prevalent figures of TEM use; 25.7% in rural India (Gupta *et al.*, 2017), 48.7% in Southern Nigeria (Kayoma and Ukponmwan, 2016), 11.9% in Nigeria (Megbelayin and Babalola, 2015), 27% in Atyak, Uganda (Nyathirombo *et al.*, 2013), 13.2% in Nigeria (Nwosu and Obidiozor, 2011) and 5.9% in South-Eastern Nigeria (Eze *et al.*, 2009). The difference in the prevalence of TEM use is partly due to different methods

used in sampling selection, study setting, and the study design used. Some of the countries have higher patient to eye professional ratio that they most often result to the use of TEM as source of ocular treatment.

The use of herbal preparations in Ghana has been a generational activity that dates to ancestors (Ofosu *et al.*, 2018). With the onset of blurred vision, most of the clients who associate their reduced vision to spiritual and sentimental causes resort to different remedies to alleviate the reduced vision. Anecdotal evidence suggests that most people associate piles “kookoo” to the reduction of vision hence buy a range of herbal preparations with the hope of curing the condition to improve their eyesight. Some natives also resort to the use of herbal ointments like “Nyankwa a Oya” whenever they have any form of eye problem (Figure 4.3). Most of the natives of Asikuma Odoben Brakwa believe that the sap of medicinal herbs in the farm can be used as first aid before they visit the hospital for treatment (Figure 4.3).

A total of 6.56% of the participants reported the use of ophthalmic self-medication as a source of remedy when they encountered ocular ailment (Figure 4.4). This figure was low in comparison to reported prevalence in similar studies by Marquez, Torres, Sanchez, Gramajo, Zelaya, and Pena (2012), who reported 25.6% in Argentina, and Asiedu, Kyei, Agyeman, and Gyamfi, (2016), who reported 25.2% among university students in Ghana. This low account can be attributed to the poor distribution of pharmaceutical outlets in rural areas as observed by the research team. A total of 3.04% of the participants reported the use of a combination of TEM and ophthalmic self-medication as a source of remedy when they encountered ocular ailment (Figure 4.5). Initially participants resorted TEM or ophthalmic self-medication use however, if this use in isolation did not resolve the condition, participants then engaged in the use of a combination of TEM and Ophthalmic self-medication which is reflected by the lower value.



## 5.4 Distribution of TEM Use

This section discusses the determinants of TEM by socio-demographic characteristics, nature of TEM used, and primary reason for TEM use.

### 5.4.1 Determinants of TEM Use by Socio-Demographic Characteristics

Females used TEM more than males (Table 4.2) with the association between gender and the use of TEM being statistically significant ( $p= 0.02$ ). This can be attributed to females being more attentive to their health compared to males resorting to any form of practise just to relieve them of their ailment (Viassoff, 2007). Logistic regression was done to ascertain the effect of demographic characteristics and TEM Use. The logistic regression model was statistically significant for gender [ $\chi^2(1) = 5.183, p = 0.023, CI = 1.099 - 3.534$ ] but was statistically insignificant for the other factors such as age, marital status, occupation and educational status. It could be inferred that females are two times more likely to use TEM than males. While Nwosu and Obidiorzor (2011) stated no statistical difference among gender, Kayoma *et al.* (2016) reported that males were more likely to use TEM as compared to females. This trend can be attributed to most Nigerian communities having males engaging the most in labour activities in order to provide for the family hence more likely to have ocular problems. Literature review revealed no statistical support to the current research findings however, there appears to be a noticeable change to the trend observed.

The other socio-demographic factors (age, marital status, occupation and educational status) were not associated with TEM use. Similar findings were reported in Zimbabwe (Jaya and Masanganise, 2014), and Brazil (Bertoldi *et al.*, 2014) with traditional eye practices not being dependent on the participant's age, level of education, religion, or marital status. This finding

contrasts with the study by Hughes, Aboyade, Clark and Puoane (2013), reporting that among hypertensive patients using traditional herbal medicine in South Africa, age was statically associated with the use of traditional herbal medicine. Bifari *et al.* (2020) also found out there was a strong relationship between age and traditional eye medication use among the populace of Taif City, Saudi Arabia.

Among the various age groups, the elderly adults (above 60 years) were more likely to use TEM only compared to middle-aged adults and young adults (Table 4.2). Aghaji *et al.* (2018) revealed that the elderly adults used TEMs predominantly because they were not financially capable as compared to when they were at a young age. Furthermore, Al-Akily *et al.* (2019) attributed that this age category having adequate knowledge in medicinal plants influenced TEM use. Under the marital status category, more than fifty percent of the respondents in each subcategory used TEM, however, no statistical significance was found (Table 4.2). Eze *et al.* (2009) revealed that following consultation with traditional medical practitioners, TEM use maybe influenced by prior marital family unit.

Among the occupation category, more than half of the participants who were artisan, farmers, retirees, unemployed, and fisher folks used TEM only (Table 4.2). Less than fifty percent of the traders, and civil servants used TEM only. Some herbal medicine practitioners have been found to misinform unskilled workers regarding their drug of choice (Boadu and Asase, 2017). They present their drugs as a “wonder drug” that can cure almost every form of medical condition of which the eye is not an exception. The proximity of the unskilled workers places of work and exposure to advertisement and information centers to herbal medicine practitioners, influence them to fall prey to this form of management (Boadu and Asase, 2017). They sometimes inform their clients that the various symptoms they have are because of them having piles “kooko.” Farmers

do have some folk herbal medicinal knowledge passed down from their fathers hence usually result in them using the TEM (Boadu and Asase, 2017). Most of the participants had elementary or no educational status, resulting in an economic barrier to them seeking professional eye care services whenever they had any ocular ailment (Eze *et al.*, 2009). Economic barriers to professional eye care services leave the natives with no other alternative but to seek the help of the traditional medical practitioners who incidentally reside with them in the community.

#### **5.4.2 Nature of Traditional Eye Medication Used**

The participants in this study reported different TEM used with the most common being herbal medicine called “Nyankwa a Oya” followed by traditional concoctions then “Kajal” (Stibnite) (Figure 4.3). Though the “Nyankwa a Oya” does not have any literature backing, the use of “Kajal” (Stibnite) by the participants is consistent with similar studies in Pakistan (Ullah, 2017) and Afghanistan (McMichael and Stoff, 2018). They reported, “*It is widely used as cosmetics to keep the eyes beautiful, bright, and fresh.*” “*It is also applied to the newborns and young children to ward off the evil eye.*” McMichael and Stoff (2018) reported that the beneficial effect of “Kajal” (Stibnite) is attributed to its protection against UV rays’ harmful effects and the glare of the sun. On the traditional concoctions, Al-Fatimi, Friedrich and Jenett-Siems (2005) reported that herbal extracts with high pH or those containing particulate foreign matter could have a blinding effect on the eyes. Alkaline substances may penetrate and opacify the cornea; others may damage the corneal epithelium, producing ulceration and even perforation (Al-Fatimi *et al.*, 2005). The nature of TEM used was not associated with the use of TEM. This can be attributed to the different belief and knowledge they have in regard to these TEM.

### **5.4.3 Primary Reason for TEM Use**

The participants stated that the most common reason for using TEM was “others benefited” followed by “belief in potency”, and “unsatisfactory orthodox treatment” (Figure 4.4). This trend can be attributed to community care among inhabitants in rural areas. Everyone is each other’s keeper; hence, information about the benefit of a drug is shared with other family members and friends when encountering such ailments (Boadu and Asase, 2017). They do believe in the potency of this TEM because previous users usually share testimonies about the merits of this TEM. Natives do see firsthand the healing of people who used TEM either personally or by a relative or friend. The availability and affordability of medications at medical facilities, as well as eye care practitioners, were not significant factors that influenced the participants to use traditional eye medicines (2.80% and 12.70%, respectively). This finding can be attributed to the presence of a primary eye care center in the vicinity that serves the district and other neighbouring districts in the Central region of Ghana. A study by O’Connor, Mu and Keefe (2008) reported that proximity and convenience of eye care facilities are the primary enablers to eye care use.

## **5.5 Determinants of Ophthalmic Self-medication by Socio-Demographic Characteristics**

Female participants engaged in ophthalmic self-medication more than the males (Table 4.3). This finding is comparable to the trend seen in the use of TEM aligning to the fact that females resort to any form of practise just to relieve them of their ailment (Viasoff, 2007). This gender difference however was not statistically significant. Participants between 18 to 39years old resorted to more self-medication use than those 40years old and above. This use of ophthalmic

medicines without consultation of eye-care providers could be attributed to visual stress and eye injuries being more common in participants less than 40 years (“Adult Vision: 19 to 40 Years of Age,” nd). Age and the use of self-medication however was found to be statistically insignificant. It was also noticed that the educated participants were more likely to self-medicate when compared to the uneducated participants. More than fifty percent of the participants who had tertiary educational status self-medicated whilst less than half of the participants who had primary school educational level and no educational level statuses engaged in ophthalmic self-medication. This trend can be attributed to the knowledge base of the elite who can easily map previous symptoms medication to current ailments (Bang, Sontakke and Thawani, 2011).

Among the occupation, civil servants had the highest use of ophthalmic self-medication practice followed by traders, unemployed, and farmers (Table 4.3). The proportion correlates with the trend seen with the educated participants engaging in self-medication. No significant association was found between the various demographic characteristic and ophthalmic self-medication use in the study. In contrast to our results, Adimassu *et al.* (2020) reported in their research that age groups 29-42 years, eye drug bottle/tube availability at home, distance commuting to get eye care facilities, and poor awareness of self-medication were important factors associated with the practice of ophthalmic self-medication. Also, Esan *et al.* (2018) stated that self-medication among undergraduates of a private university in Nigeria was significantly correlated with age, sex, college, and year of study.

It could be observed that participants who used TEM the most were the ones who engaged in ophthalmic self-medication the least and vice versa. Under occupation, skilled workers like civil servants and traders used TEM the least but used ophthalmic self-medication the most. Unskilled workers like farmers, fisher folks, artisans and unemployed used TEM the most but engaged in

ophthalmic self-medication the least. A similar finding was seen in the educational category where participants who had tertiary education used TEM the least but used ophthalmic self-medication the most. No educational status and the primary educational level participants used TEM the most but used ophthalmic self-medication the least.

## **5.6 Determinants of Combination of TEM and Ophthalmic Self-Medication by Socio-Demographic Characteristics**

It was observed that males used the combination practice (TEM and ophthalmic self-medication) more as compared to females (Table 4.4). This can be associated to the need of men requiring quicker healing in order to undertake their daily handy work sooner in rural settlements (Albuquerque *et al.*, 2011). Furthermore, the authors revealed that males appear more knowledgeable in medicinal plants than females. The gender difference in this study, however, was not statistically significant. It was observed that less than fifty percent of the participants within each of the subcategory under the age, marital status, occupation and educational status engaged in the use of traditional eye practices that is a combination of TEM and ophthalmic self-medication. This finding contrasts with the study by Gupta *et al.* (2017), reporting that more than fifty percent used TEM and ophthalmic self-medication. This contrast can be attributed to the higher sample size used. The association between age category, marital status, occupation, and the educational level, however, were all statistically insignificant when it was assessed against the use of traditional eye practices.

## 5.7 Distribution of Eye Complications

Among participants who were involved in traditional eye practices, ocular complications occurred in 62.30% (n=119) of the participants. The most common clinical diagnoses were glaucoma suspect followed by refractive error, other diagnoses, and cornea scar (Table 4.5). Aurunga *et al.* (2019) reported of corneal ulcer as one of the complications in Uganda. Choudhary *et al.* (2015) reported that cornea scarring, and perforation was associated with TEM users in India. Ukponmwan and Momoh (2010) reported similar findings in Nigeria.

## 5.8 Reasons for the Non-use of Professional Eye Care Services

One of the primary responses the participants reported on the question concerning symptoms that will be reported to the hospital was trauma to the eye. This response was a focal point for 42 of the 191 participants, and examples of their responses included “*I would report to the hospital when I experience cloudy vision and when something hits my eye*” by a 62-year old female farmer. A 29-year old male carpenter stated, “*It is important to visit the hospital when a stone hit your eye or when your vision is blurry.*” Trauma tends to cause significant structural damage, which can result in a functional deficit (Cockerham, Goodrich *et al.*, 2009). Participants were most particular about reporting this to the hospital because it was associated with severe pain and sometimes cloudy vision. Contrary to what was observed from our study, Ntim-Amponsah (2005) interviewed herbalists and traditional alternative practitioners in Akwapim South District of Ghana, and revealed that most of the eye injuries that were diagnosed were from a history of trauma. This difference could be attributed to the proximity of an eye clinic to natives in the Asikuma Odoben Brakwa District as compared to the participants in their study.

Another response the participants stated (n=53) was that they would report to the hospital when they had cloudy vision and when previously diagnosed of a blinding condition. The participants reported this as a response to this question. Examples of their answers were “*It is my opinion that when you cannot see, you would have to send it to the hospital*” (28-year old male mechanic). A 52-year old female trader stated, “*I will report to the hospital when something falls on my eye, have a cataract, and when I have a sudden loss of vision.*” Cloudy vision was of great concern to most of the participants because, without good eyesight, one cannot see well when farming or undertaking their daily activities. Blindness is noted to have a socio-economic impact on the whole family since extra care has to be administered to the affected person by the unaffected members (Pezzullo, Streatfeild, Simkiss *et al.*, 2018). Affected persons will need assistance to walk, dress, and perform their daily activities.

With reference to the second question of which symptoms does not need treatment at professional eye care facilities, seventy-nine participants reported that itching, discharge, mild blur vision, burning sensation, foreign body sensation, and dry eye could be treated without one visiting the eye care facility. Examples of their responses were “*I would not report to the hospital when I have mild itching and burning sensation. This experience is normal when one is on the sea*” (51-year old fisherman), and “*I would not travel to the hospital when my eye is mildly itching, tearing or redness*” (44-years old female hairdresser). They attributed their responses to the non-severity of the symptom. They based their assumption on previous experience and knowledge they have had from their treatment of these conditions. This finding was similar to a survey conducted by Gupta *et al.* (2017) in India which reported that 18.3% of the participants did not visit the ophthalmologist when they had itching, discharge, or mild blur vision but resorted to self-medication and the use of TEM.



In regard to the third question, the most effective traditional practice the participants stated of resorting to when they did not report to the hospital was the use of ophthalmic self-medication. Ophthalmic self-medication was the first answer of 48% of the participants, and examples of their responses included “*I will prefer to go to the drugstore to buy medicine because the waiting time at the hospital is tiresome*” (29-year old female hairdresser). A 52-year old female farmer stated, “*I would use the previous eye drop I was given since it did not finish.*” Ophthalmic self-medication was a significant practice the participants said they resorted to when they did not visit the hospital for treatment. Participants reported the use of ophthalmic self-medication sort their ocular problem partly because of hospital waiting time and cost of accessing healthcare. Self-medication when not used properly can adversely affect the eye (Adimassu *et al.*, 2020). In case of corneal laceration, with the protection barrier already been compromised, the type of drug used can also exacerbate the damage caused. This finding relates to a report by Asiedu *et al.* (2016), indicating the prevalence of ophthalmic self-medication being 32.7% in Ghana.

The second predominant practice gathered from their responses was the use of traditional eye medication. The use of traditional eye medication was the focal point of 43.4% of the participants, and an example of their response by a 32-year old male mechanic was that, “*you can use “Nyankwa a Oya” eye ointment when the eye is itching and discharging.*” A 58-year old male farmer stated, “*In the farm, you can rub tomato leaves and drop it on the eye when you happen to have blurry vision.*” Most of the participants are farmers and most often get ulcers or trauma to the eye, which causes the eye to be inflamed. They usually apply eye herbal preparations, which were known to them from their parents and elders in the villages. Some of these preparations, even though they have some therapeutic effects, also have other components that are not healthy to be used on the eye (Fraunfelder, 2004). Anecdotal evidence reveals that most herbal advertising firms also

ignorantly pollute the minds of the populace since their background in education on these conditions are limited. They usually misinform the natives that their herbal preparation can cure almost all eye conditions. The natives who unknowingly listen and patronize these preparations use them on their eyes, causing significant complications after use (Aurunga *et al.*, 2019). Most herbal informants who speak on radio stations and television stations also misinform the populace. They explore the symptoms these victims experience and prey on their vulnerabilities. This response was consistent with findings from Arunga *et al.* (2019). They stated that TEM users had a delayed presentation to the eye clinic.

Additionally, twenty-six participants reported the use of seawater, “kajal,” breast milk, and seeking spiritual direction for the treatment of eye condition. Examples of their responses included *“Burning sensation and “Apollo” can be treated with seawater or breast milk”* (45-year old female farmer), and *“Itching and discharges can be cured with the use of “Kajal.” “Kajal” has been used from generation to generation in my home since its common in the northern region”* (51-year old female trader). These products are well known locally for the treatment of eye condition by the natives, but they had no relevant therapeutic explanation to their use. The use of this product has been documented in studies in Ghana (Kyei, Owusu-Ansah and Boadi-Kusi *et al.*, 2016; Gyasi, Amoaku and Adjuik, 2007), Nigeria (Eze *et al.*, 2009), India (Gupta *et al.*, 2017), and Kenya (Nyenze *et al.*, 2013).

Concerning the reasons for engaging in traditional eye care practices, the principal reason the participants stated for engaging in these practices was its affordability over the orthodox medication given at the hospital. The affordability of TEM was a focal response from 137 participants. A 48-year old male farmer stated that, *“I prefer to use the previous eye drop I bought from the drugstore since it did not finish and the cost of the drugs is expensive at the clinic since I*

*do not have insurance*". A 33-year old female hairdresser also stated that, *"it is expensive to visit the hospital and pay bills when the alternative healthcare practitioner sells the same drug which is cheaper."* The cost of eye care service in Ghana is high when a client receives treatment without health insurance (Ilechie, Otchere, Darko-Takyi and Halladay, 2013). The burden of raising the family from the sale of their farm produce does not allow them to spend much on healthcare. They will always look for a cheaper alternative than to visit the hospital. This finding was also reported by Eze *et al.* (2009) in South-Eastern, Nigeria.

Secondly, they resorted to these practices because they believe in the potency of TEM and also because others benefited. Their answer was evident in the responses of 43 participants. A 47-year old female reported that, *"Nyankwa a Oya" is a potent remedy, and I have seen many people use it to treat itchy eyes.*" A 56-year old male said that *"leaves of Vitex doniana tree can be ground and the juice used as an eye drop to treat red-eye."* The use of TEM was held up high in rural communities because it was the most known treatment method of ocular conditions among the natives. The participants had evidence of the potency of this TEM from family members and friends. This influences their likelihood to choose this treatment option over the orthodox treatment. This finding was consistent with reports by Maregesi and Kauke (2016) in Tanzania on the health risk awareness of TEM use.

## **5.9 Summary**

The study highlighted the prevalence of TEM only to be the highest followed by ophthalmic self-medication and the use of a combination of TEM and ophthalmic self-medication. The prevalence of the various traditional practices was low compared to literature. The use of TEM can be concluded as a native remedy of eye conditions in the populace. Age, marital status, occupation

and educational status had no significant association with the use of TEM, ophthalmic self-medication and the use of a combination of TEM and ophthalmic self-medication. Some participants were diagnosed of ocular complications for engaging these traditional eye practises.

# **CHAPTER SIX**

## **CONCLUSION, LIMITATION AND RECOMMENDATION**

### **6.1 Introduction**

This chapter discusses the conclusion from the study, limitations and recommendations, and summary on the use of traditional eye practices by natives of the Central Region and Ghana as a whole.

### **6.2 Conclusion**

The key findings established in this study are as follows:

- i. The prevalence of the use of TEM only accounted for 9%, ophthalmic self-medication was estimated at 6.56%, and the combination of TEM and ophthalmic self-medication use was estimated at 3.04%.
- ii. The determinant of TEM use only by demographic characteristics of the participants was statistically significant for gender  $\chi^2 (1) = 5.183$ ,  $p = 0.023$ , (95% CI; 1.099 – 3.534). Females were twice more likely to use TEM than males. The other socio-demographic factors were not associated with TEM use only.
- iii. The most common TEM used was herbal medicine called “Nyankwa a Oya” (21.10%), followed by traditional concoctions (18.30%) then “Kajal” (Stibnite) (17.60%).

- iv. The reasons behind the use of TEM were; others benefitted from it (37.30%), belief in its potency (21.10%), and unsatisfactory orthodox treatment (15.50%).
- v. There was no significant association between demographic factors and the practice of ophthalmic self-medication.
- vi. There was no substantial correlation between demographic factors and the practice of a combination of TEM and ophthalmic self-medication.
- vii. During an optometric examination, glaucoma suspect (29.41%), refractive error (27.73%), other diagnoses (18.49%), and corneal scar (10.08%) were the most predominant ocular complications following the use of traditional eye practices.
- viii. Reasons for the non-use of professional eye care services were; traditional eye practices were affordable, the eye clinics did not work on weekends, potency of traditional eye practices, others benefitted from traditional eye practices, uninsured participants, and unsatisfied with orthodox treatment.

The use of TEMs should be outdated due to its devastating consequences on the eyes of individuals indulging in their usage. The traditional practices that were identified among the natives were the use of TEM, ophthalmic self-medication, and the use of a combination of TEM and ophthalmic self-medication. The study showed that the proportion of TEM use only was lower compared to other studies reported in literature. Females should be the primary focal point during the education of natives on these traditional eye practices because they were found to be the most predominant participants to have engaged in TEM use. The engagement of these practices led to ocular complications, which were detrimental to the sight and health of the individuals.

## **6.3 Limitation**

The limitations to the study are as follows:

- i. As inhabitants were busy engaging in their daily activities, they quickly answered the questions that were asked despite the data collection team providing sufficient time for them to answer.
- ii. The study could not justify whether the ocular complications identified were because of the traditional eye practice engaged in or due to prior ocular history.
- iii. Some of the participants felt a little discomforting and shy to openly discuss their situation since they perceived they did wrong by engaging in traditional eye practices.
- iv. Some of the responses given during the interview session was partly influenced by the answers given when filling the questionnaire.

## **6.4 Recommendation**

Based on the findings of the study, the following recommendations were made.

- i. A suitable and convenient time should be considered when administering questionnaires and interviews so that participants are more relaxed when answering the questions hence, more thought is given to the answers.
- ii. A case study should be conducted to ascertain if traditional eye practices are associated with ocular complications. Also, in the sampling method, prior history of ocular conditions should be excluded from the study.

- iii. During the introduction of the researcher to the participants, participants should be reassured that they will not be judged for the practices they have engaged in. Researchers should adopt a neutral response to answers provided by the participants.
- iv. The interview should be conducted prior to the questionnaire to prevent biased response. The administration of the questionnaire and the interview should be administered to different samples not to contaminate the result.
- v. Public education on the use of TEM and ophthalmic self-medication and its consequences should be organized, targeting the natives, mainly, females in the rural communities by the Ghana Health Service.
- vi. Further research should be conducted by the Ministry of Health and Food and Drugs Authority to determine the effects of herbal medicine called “Nyankwa a Oye” on the ocular tissues.
- vii. The government should:
  - a. Institutionalize policies to ban the buying of eye drops from the drug stores without prescriptions and also enforce the removal of uncertified herbal medications from the market to avert the use of ophthalmic self-medication.
  - b. Subsidize the costs of professional eye care services owing to the apparent impact on families.
  - c. Engage with donors and other agencies to invest in and support eye care programmes.



## **6.5 Summary**

The study was fundamentally aimed at finding the prevalence, determinants, complications, and reasons for traditional eye practices, within the Ghanaian populace, and why they do not go to professional eye care facilities when they encounter eye problems. The study employed a mixed-method design and an EPI survey sampling method to sample 191 residents living in the Asikuma Odoben Brakwa District. A questionnaire and ophthalmic examination were administered to consented participants above 18 years of age who had used TEM or ophthalmic self-medication or a combination of the two almost two months before the study. To the best knowledge of this investigator, this was the first study examining these outcomes in residents in the Central Region of Ghana.

## References

- Abou-Gareeb, I., Lewallen, S., Bassett, K., & Courtright, P. (2001). Gender and blindness: A meta-analysis of population-based prevalence surveys. *Ophthalmic Epidemiology*, 8(10), 39-56. <https://doi.org/10.1076/oep.8.1.39.1540>
- Abramson, J. H., & Abramson, Z. H. (2000). *Survey Methods in Community Medicine*, (5th Ed.). Edinburgh & London: Livingstone.
- Achigbu E. O., Achigbu K. I. (2017). Traditional eye medicine use among ophthalmic patients attending a secondary health care center in Southeast Nigeria. *Port Harcourt Medical Journal*, 11(2), 79-83. [https://doi.org/10.4103/phmj.phmj\\_5\\_16](https://doi.org/10.4103/phmj.phmj_5_16)
- Adimassu, N. F., Woldetsadik, G. Z., & Alemu, H. W. (2020). Proportion of ophthalmic self-medication and associated factors among adult ophthalmic patients attending Borumeda Hospital, Dessie, Northeast Ethiopia, *Journal of Ophthalmology*, 2020, 1-7. <https://doi.org/10.1155/2020/6932686>
- Aghaji, A. E., Ezeome, I. V., & Ezeome, E. R. (2018). Evaluation of content and cost of traditional eye medication in a resource-poor country - Implications for eye care practice and policy. *Nigerian Journal of Clinical Practice*, 21(11), 1514–1519. [https://doi.org/10.4103/njcp.njcp\\_201\\_18](https://doi.org/10.4103/njcp.njcp_201_18)
- Ajite, K & Fadamiro, O. (2013). Prevalence of Harmful/Traditional Medication Use in Traumatic Eye Injury. *Global Journal of Health Science* 5(4), 55-59. <https://doi.org/10.5539/gjhs.v5n4p55>
- Al-Akily, S., Bamashmus, M., & El-Gorafi, I. (2019). Traditional Eye Therapies in Yemen. *EC Ophthalmology*, 10, 478-488.

- Al-Fatimi, M., Friedrich, U., & Jenett-Siems, K. (2005). Cytotoxicity of plants used in traditional medicine in Yemen. *Fitoterapia*, 76(3-4), 355–358. <https://doi.org/10.1016/j.fitote.2005.02.009>
- Aurunga, S., Asiimwe, A., Apio Olet, E., Kagoro-Rugunda, G., Ayebazibwe, B., Onyango, J., Newton, R., Leck, A., Macleod, D., Hu, V. H., Seeley, J., & Burton, M. J. (2019). Traditional eye medicine use in microbial keratitis in Uganda: A mixed methods study. *Wellcome Open Research*, 4, 89. <https://doi.org/10.12688/wellcomeopenres.15259.2>
- Asiedu, K., Kyei, S., Agyeman, F., & Gyamfi, K. (2016). Self-medication with over-the counter topical ophthalmic medications: A study of undergraduates in Ghana. *Indo Global Journal of Pharmaceutical Sciences*. 6(1). 34-37.
- Bang, S., Sontakke, S., & Thawani, V. (2011). Pre and post-interventional pattern of self-medication in three common illnesses in staff of a tertiary hospital. *Indian Journal of Pharmacology*, 43(3), 275–277. <https://doi.org/10.4103/0253-7613.81517>
- Bertoldi, A., Camargo, A., Silveira, M., Menezes, A., Assunção, M., Gonçalves, H., & Hallal, P. (2014). Self- medication among adolescents aged 18 years: the 1993 Pelotas (Brazil) Birth Cohort Study. *Journal of Adolescent Health*, 55(2), 175-181. <https://doi.org/10.1016/j.jadohealth.2014.02.010>.
- Bifari, I., Alkhaldi, A., & Almalki, R. (2020). Use of traditional eye medicine and self-medication among population of Taif City, Saudi Arabia : A cross sectional study. *Middle East Journal of Family Medicine*. 18(1), 43-48. <https://doi.org/10.5742/MEWFM.2020.93722>.

- Bisika, T, Courtright, P, Geneau, R, Kasote, A, Chimombo, L & Chirambo, M. (2009). Self-treatment of eye diseases in Malawi. *African Journal of Traditional, Complementary and Alternatives Medicines*, 6(1), 23 – 29. <https://doi.org/10.4314/ajtcam.v6i1.57070>
- Blenkinsopp A, & Bradley C. (1996). Patients, society and the increase in self-medication. *British Medical Journal*. 9(1), 629-632. <https://doi.org/10.1136/bmj.312.7031.629>
- Chan, M. N. (2008). *Address at the WHO Congress on Traditional Medicine*. Paper presented at the meeting of World Health Organization, Beijing, China.
- Chana, H.S., Schwab, L., & Foster, A. (1994). With an eye to good practice: traditional healers in rural communities. *World Health Forum*, 15(2), 144-6
- Choudhary, P., Chalisgaonkar, C., Marathe, N., & Sujata, L. (2015). Use of traditional eye medicines by patients with corneal ulcer in India. *International Journal of Medical Science and Public Health*. 4(7), 1001-1005. <https://doi.org/10.5455/ijmsph.2015.29032015206>.
- Chua, D., Wong, W., Lamoureux, E. L., Aung, T., Saw, S. M., & Wong, T. Y. (2011). The prevalence and risk factors of ocular trauma: the Singapore Indian eye study. *Ophthalmic Epidemiology*, 18(6), 281–287. <https://doi.org/10.3109/09286586.2011.628775>
- Cockerham, G. C., Goodrich, G. L., Weichel, E. D., Orcutt, J. C., Rizzo, J. F., Bower, K. S., & Schuchard, R. A. (2009). Eye and visual function in traumatic brain injury. *Journal of Rehabilitation Research and Development*, 46(6), 811–818. <https://doi.org/10.1682/jrrd.2008.08.0109>
- Creswell, J. W., & Plano Clark, V. L. (2011). *Designing and conducting mixed methods research*. Thousand Oaks, CA: Sage.

- Dorcas, W., Emilienne, E., Estella, T., Joseph, E., Naidoo, K., Jaggernath, F. C. (2019). An overview of herbal traditional eye care practices and the development of eye health promotion strategies in Cameroon. *Journal of Advances in Medical and Pharmaceutical Sciences*. 20(4), 1-6. <https://doi.org/10.9734/jamps/2019/v20i430118>.
- Ebeigbe, J. (2013). Traditional eye medicine practice in Benin-City, Nigeria. *African Vision and Eye Health; South African Optometrist* 72(4), 167-172. <https://doi.org/10.4102/aveh.v72i4.54>
- Esan, D. T., Fasoro, A. A., Odesanya, O. E., Esan, T. O., Ojo, E. F., & Faeji, C. O. (2018). Assessment of self-medication practices and its associated factors among undergraduates of a private university in Nigeria. *Journal of Environmental and Public Health*, 3(4), 1-7. <https://doi.org/10.1155/2018/5439079>
- Eze, B. I., Chuka-Okosa, C. M., & Uche, J. N. (2009). Traditional eye medicine use by newly presenting ophthalmic patients to a teaching hospital in south-eastern Nigeria: socio-demographic and clinical correlates. *BMC Complement Alternative Medicine and Therapies*, 9(1), 1. <http://doi.org/10.1186/1472-6882-9-40>
- Fox, N. (2006). *Using Interviews in a Research Project*. East Midlands: Yorkshire & the Humber.
- Fraunfelder F. T., Meyer S. M (1984) Ocular toxicology update. *Australian and New Zealand Journal of Ophthalmology* 12(4), 391-394.
- Fraunfelder, F. W. (2004). Ocular side effects of herbal medicines and nutritional supplements. *American Journal of Ophthalmology* (138), 639–647. <http://doi.org/10.1016/j.ajo.2004.04.072>

- Garbarino, S., & Holland, J. (2009). *Quantitative and Qualitative Methods in Impact Evaluation and Measuring Results*. Retrieved from <http://www.gsdr.org/docs/open/EIRS4.pdf>
- Ghana Statistical Service (2013). *2010 population and housing census: National analytical report*. Ghana Statistical Service, Accra
- Goertzen, M. J. (2017). Applying quantitative methods to E-book collections. *American Library Association*, 53(4), 12-18.
- Gupta, N., Vashist, P., Tandon, R., Gupta, S. K., Kalaivani, M., & Dwivedi, S. N. (2017). Use of traditional eye medicine and self-medication in rural India: A population-based study. *PLOS ONE*, 12(8), <http://doi.org/10.1371/journal.pone.0183461>
- Gyasi, M., Amoaku, W., & Adjuik, M. (2007). Epidemiology of hospitalized ocular injuries in the upper East region of Ghana. *Ghana Medical Journal*, 41(4), 171–175.
- Habtom G. K. (2018). Perceptions and attitudes of modern and traditional medical practitioners about traditional medical practice in Eritrea. *International Journal of Complementary and Alternative Medicine*. 11(1), 6-19. <http://doi.org/10.15406/ijcam.2018.11.00340>
- Hardon A., Hodgkin C., & Fresle D. (2004). *How to investigate the use of medicines by consumers*. World Health Organization and University of Amsterdam, Geneva.
- Hughes, G. D., Aboyade, O. M., Clark, B. L., & Puoane, T. R. (2013). The prevalence of traditional herbal medicine use among hypertensives living in South African communities. *BMC Complementary and Alternative Medicine*, 13(1), 38. <https://doi.org/10.1186/1472-6882-13-38>

- Ilechie A. A., Otchere H., Darko-Takyi C., & Halladay A. C. (2013). Access to and utilization of eye care services in Ghana. *International Journal of Health Research*, 6(3), 7-15.
- Jimba M., Poudyal A. K., & Wakai S. (2003). The need for linking healthcare-seeking behaviour and health policy in rural Nepal. *Southeast Asian Journal of Tropical Medicine and Public Health*, 34, 2-3.
- Kassaye, K., Amberbir, A., Getachew, B. & Mussema, Y. (2007). A historical overview of traditional medicine practices and policy in Ethiopia. *Ethiopian Journal of Health Development*, 20(2). <https://doi.org/10.4314/ejhd.v20i2.10023>
- Kayoma, D. H., & Ukponmwan, C. U. (2016). Determinants of the use of traditional eye medication in a semi-urban community in Southern Nigeria. *Journal of the West African College of Surgeons*, 6(3), 49–67.
- Kelsey, J. E.; Whittemore, A. S.; Evans, A. S., & Thompson, D. (1996). *Methods in Observational Epidemiology*, (2nd Ed.). New York: Oxford University Press.
- Kyei, S., Ocansey, S., Abu, E., & Gyedu, B. (2014). Appraisal of the practice of ocular self-medication in Cape Coast Metropolis, *Ghana.Optometry Reports*, 4(1), 1-6. <https://doi.org/10.4081/optometry.2014.2164>.
- Kyei, S., Owusu-Ansah, A., Boadi-Kusi, S., Abbey, D. N., & Abu, E. (2016). Occupational Hazards Correlates of Ocular Disorders in Ghanaian Fisheries. *Healthcare in Low-resource Settings* 4(2). <https://doi.org/10.4081/hls.2016.5482>

- Loyola-Filho A. I., Lima-Costa M. F., & Uchôa E. (2004). Bambuí Project: A qualitative approach to self-medication. *Cadernos de Saúde Pública*, 20, 1661-1669. <https://doi.org/10.1590/s0102-311x2004000600025>
- Maregesi M, S., & Kauke, B. (2016). Traditional Eye Medicines in Tanzania: Products, Health Risk Awareness and Safety Evaluation. *Herbal Medicine: Open Access*, 2(1). <https://doi.org/10.21767/2472-0151.10008>
- Marquez G. E., Torres V. E., Sanchez V. M., Gramajo A. L., Zelaya N., Pena F. Y., Juarez C. P., & Luna, J. D. (2012) Self-medication in ophthalmology: A questionnaire-based study in an Argentinean population. *Ophthalmic Epidemiology*, 19:4, 236-241. <https://doi.org/10.3109/09286586.2012.689076>
- Megbelayin, E., & Babalola, Y. (2015). Health seeking behaviours of patients attending primary eye care centre in Nigeria. *Open Access Library Journal* 2(5), 1-8. <https://doi.org/10.4236/oalib.1101489>
- Mselle J. (1998). Visual impact of using traditional medicine on the injured eye in Africa. *Acta Tropica*, 70(1), 185-92. [https://doi.org/10.1016/s0001-706x\(98\)00008-4](https://doi.org/10.1016/s0001-706x(98)00008-4)
- Munaw, M., Assefa, N., & Hayilu, D. (2020). Practice and associated factors among adult residents towards traditional eye medicine in Gondar City, North West Ethiopia. *Advances in Public Health*, 2020, 1-7. <https://doi.org/10.1155/2020/3548204>.
- Naing, L., Winn, T., & Rusli, B. N. (2006). Practical Issues in Calculating the Sample Size for Prevalence Studies. *Archives of Orofacial Sciences*, 1, 9-14.



- Nath, D. C., & Patowari, B. (2014). Estimation and comparison of immunization coverage under different sampling methods for health surveys, *International Journal of Population Research*, 2014, 1-14. <https://doi.org/10.1155/2014/850479>
- Neyhouser, C., Quinn, I., Hillgrove, T., Chan, R., Chhea, C., Peou, S., & Sambath, P. (2018). A qualitative study on gender barriers to eye care access in Cambodia. *BMC Ophthalmology*, 18(1). <https://doi.org/10.1186/s12886-018-0890-3>.
- Ntim-Amponsah, C., Amoaku, W., & Ofori-Amaah, S. (2005). Alternate eye care services in a Ghanaian District *Ghana Medical Journal* 39(1), 19–23.
- Nwosu, S., & Obidior, J. U. (2011). Incidence and risk factors for traditional eye medicine use among patients at a tertiary eye hospital in Nigeria. *Nigerian Journal of Clinical Practice*, 14(1), 405-7. <https://doi.org/10.4103/1119-3077.91744>
- Nyathirombo, A., Mwesigye, F., & Mwaka, A. (2013). Traditional eye health practices in Atyak sub-county Nebbi District- Uganda. *Journal of Ophthalmology of Eastern, Central and Southern Africa*, 16(1)
- O'Connor, P., Mu, L. & Keeffe, J. (2008). Access and utilization of a new low-vision rehabilitation service. *Clinical and Experimental Ophthalmology*, 36(1), 547-52. <https://doi.org/10.1111/j.1442-9071.2008.01830.x>.
- Ofori A., Osei I., Hagan M., Biekro L., & Awedoba A. K. (2018). Eye health knowledge and health-seeking behaviours in Ghana. *African Vision Eye Health*, 77(1), <https://doi.org/10.4102/aveh.v77i1.426>

- Okoye, R., Bell, L., & Papadopoulos, I. (2018). Barriers to accessing good eye care services in Nigeria: A focus on Anambra State. *Journal of Nigerian Optometric Association*, 20(1).
- Omolase, C., & Mahmoud, A. (2008). Perceptions of Nigerian ophthalmologist about traditional eye care treatments in Nigeria. *Journal of Medical Science*, 37(5), 255-259.
- Oyediji, F., Ramyil, A., Odugbo, P., & Mpyet, C. (2019). Traditional eye practices: a facility-based study in North Central Nigeria. *JOS Journal of Medicine*, 13, 67-75.
- Pawaskar M. D., & Balkrishnan R. (2007). Switching from prescription to over the counter medications: A consumer and managed care perspective. *Managed Care Interface*, 20(1), 40-41.
- Pezzullo, L., Streatfeild, J., Simkiss, P., & Shickle, D. (2018). The economic impact of sight loss and blindness in the UK adult population. *BMC Health Services Research* 18(63). <https://doi.org/10.1186/s12913-018-2836-0>
- Phulke, S., Kaushik, S., Kaur, S., & Pandav, S. S. (2017). Steroid-induced Glaucoma: An Avoidable Irreversible Blindness. *Journal of Current Glaucoma Practice*, 11(2), 67–72. <https://doi.org/10.5005/jp-journals-l0028-1226>
- Rakoma, T.F. (2017). Traditional eye treatments amongst patients consulting at eye clinic at the Letaba Regional Hospital, Limpopo Province of South Africa.
- Rim, T. H., Lee, C. S., Lee, S. C., Chung, B., Kim, S. S., & Epidemiologic Survey Committee of the Korean Ophthalmological Society (2015). Influence of visual acuity on suicidal ideation, suicide attempts and depression in South Korea. *British Journal of Ophthalmology*, 99(8), 1112–1119. <https://doi.org/10.1136/bjophthalmol-2014-306518>

- Shah, K. (2014). *Report on the bionic eye*. Retrieved from [http://www.academia.edu/9522360/Report\\_on\\_bionic\\_eye](http://www.academia.edu/9522360/Report_on_bionic_eye)
- Singh, P., Tyagi, M., Kumar, Y., Gupta, K. K., & Sharma, P. D. (2013). Ocular chemical injuries and their management. *Oman Journal of Ophthalmology*, 6(2), 83–86. <https://doi.org/10.4103/0974-620X.116624>
- Thogarapalli, N. (n.d). The human eye: what and importance. Retrieved September 23, 2018, from <http://www.odec.ca/projects/2006/thog6n2/importance.html>
- Ukponmwan, C. U., & Momoh, N. (2010). Incidence and complications of traditional eye medications in Nigeria in a teaching hospital. *Middle East African Journal of Ophthalmology*, 17(4), 315–319. <http://doi.org/10.4103/0974-9233.71596>
- Ullah, H. (2017). Comparative study of heavy metals content in cosmetic products of different countries marketed in Khyber Pakhtunkhwa, Pakistan. *Arabian Journal of Chemistry*, 10(1), 10-18. <http://doi.org/10.1016/j.arabjc.2013.09.021>.
- Wen-Bing H., Cheng-Ping L., & Chun-Wen C. (2001). Classification of age groups based on facial features. *Tamkang Journal of Science and Engineering*. 4. 183-192.
- World Health Organization (2003). Traditional Medicine: Our culture, our future. *African Health Monitor*, 4(1), 22-23.
- Xue, C. C. L., Zhang, A. L., Lin, V., Costa, C. & Story, D. F. (2007). Complementary and alternative medicine use in Australia: A national population-based survey. *The Journal of Alternative and Complementary Medicine*, 13(6), 643-650. <https://doi.org/10.1089/acm.2006.6355>

## **APPENDIX I**

### **SURVEY QUESTIONNAIRE**

TOPIC: A Survey of Traditional Eye Practices: A Case Study of Central Region in Ghana

PARTICIPANTS: Residing occupants from all the selected households.

INSTRUCTIONS: 1. Tick good (✓) against the correct response/s in the spaces provided.

2. Provide additional information as appropriate in the spaces provided

#### **SECTION A: SOCIO-DEMOGRAPHIC CHARACTERISTICS**

**Please could you give us a few bits of information about yourself so that we can put your replies in greater context?**

1. Sex: (a) Male ( )  
(b) Female ( )
2. Age ( years/months/weeks) \_\_\_\_\_
3. Marital status: (a) Single ( )  
(b) Married ( )  
(c) Divorced ( )  
(d) Separated ( )  
(e) Widowed ( )

4. Occupation: (a) Civil servant ( )  
(b) Trading ( )  
(c) Fishing ( )  
(d) Farming ( )  
(e) Artisan ( )  
(f) Unemployed ( )  
(g) Minor ( )  
(h) Retiree ( )  
(i) Others specify \_\_\_\_\_

5. Educational status: (a) Primary ( )  
(b) Secondary ( )  
(c) Tertiary ( )  
(d) None ( )

6. Residence: (a) Urban ( )  
(b) Rural ( )

## **SECTION B: PROFILE OF (TRADITIONAL EYE MEDICATION) TEM USE**

Circle/ Tick or fill in the needed responses of the structured questionnaire on the use of TEM.

7. Nature of TEM: \_\_\_\_\_

8. Route of administration of TEM: (a) Topical ( )  
(b) Oral ( )

(c) Face wash ( )

(d) Inhalation ( )

(e) Per aural ( )

(f) Injection ( )

(g) Fume bath ( )

(h) Shower ( )

(I) Instillation ( )

(j) Others specify \_\_\_\_\_

9. Prescriber of TEM: Traditional medical practitioner

(a) Traditional Healer ( )

(b) Clergyman ( )

(c) Alternative Medicine Practitioner ( )

Non-traditional medical practitioner

(a) Patient ( )

(b) Friend ( )

(c) Relation ( )

(d) Do not know ( )

(e) Others specify \_\_\_\_\_

10. Which symptom necessitated the use of TEM

a) Trauma ( )

b) Discharge ( )

c) Blur vision ( )

- d) Inflammatory symptoms (redness, pain, and itching) ( )
- e) Others specify \_\_\_\_\_

11. Main reason for TEM use:

- (a) Others benefited ( )
- (b) Belief in potency ( )
- (c) Orthodox medicine un-affordable ( )
- (d) Unaware of orthodox alternatives ( )
- (e) Unsatisfactory orthodox treatment ( )
- (f) Others specify \_\_\_\_\_

12. Duration of TEM use (years/months/weeks): \_\_\_\_\_

13. Cessation of TEM use: (a) Yes ( )

(b) No ( )

14. If yes in No 19, what is your main reason?

- (a) No improvement ( )
- (b) Condition worsening ( )
- (c) Advised to stop ( )
- (d) Intolerant of TEM ( )
- (e) Adverse reaction ( )
- (f) Others specify \_\_\_\_\_

15. Any adverse interaction with prescribed medicines? (a) Yes (b) No ( )

For each of the following statements, please tick to indicate whether for you

Strongly Agree ----- SA

Agree ----- A

Undecided ----- U

Disagree ----- D

Strongly Disagree ----- SD

Statements	SA	A	U	D	SD
16. Do you agree that TEM should be used to treat eye conditions?					
17. Do you agree that seawater should be used to treat red eye “Apollo”?					
18. Do you agree that the use of herbal drugs to treat piles “kooko” can cure eye condition?					
19. Do you agree that TEM is better than orthodox medicine?					
20. Do you agree that breast milk should be used to treat eye infections in children?					
21. Do you agree that the use of unknown unprescribed eye drops can cause ocular complications?					



## SECTION C: PROFILE OF SELF MEDICATION

Circle/ Tick or fill in the needed responses of the structured questionnaire on the use of ophthalmic self-medication.

22. Did you self-medicate? (a) Yes (b) No ( )

23. If YES, what is the reason of self-medication? (Please tick the relevant)

1. Affordability ( )
2. Dissatisfaction by health care system service ( )
3. Access to hospital (24/7) ( )
4. Similarity of symptoms with past illness ( )
5. Emergency use ( )
6. Long waiting time ( )
7. Perceive illness as mild ( )
8. Need quick relief ( )
9. Unable to afford the health care fee ( )
10. If other; please mention: \_\_\_\_\_

## **SECTION D: Outline of Interview Discussion**

- Probe into ocular conditions or symptoms that the participants perceive need a professional eye care treatment.
- Probe into symptoms the participants perceive do not need treatment at professional eye care facilities
- Probe into the form of traditional eye care practices that were engaged in by the participants for the second question
- Probe into the reasons for engaging in these traditional eye care practices.

Thank you

## **APPENDIX II**

### **INFORMATION SHEET**

**Title: A Survey of Traditional Eye Practices: A Case Study of Central Region in Ghana**

**Principal Investigator:** Enimah Eugene Buah

**Supervisor:** Mrs. Urvashni Nirghin

#### **General Information about Research**

My name is Dr Enimah Eugene Buah, a master's student at the University of KwaZulu-Natal, at this time researching on the topic; A Survey of Traditional Eye Practices: A Case Study of Central Region in Ghana. Whenever researchers conduct a study, we talk to the participants and ask them for their permission. However, you are free to agree or disagree to participate in this study.

**Aim:** The goal of the current study is to assess some of the traditional eye practices people resort to, the reasons behind them, aftermath complications and ways to control these practices.

#### **Procedures**

Every participant above 18 years from each household who has used TEM or self-medication within a two month prior to the study will be enrolled into the study after he or she has signed a consent form. I will take the participant through the interview questionnaire and examine their visual integrity. All clarifications needed to be made about the questions will be explained to him/her. I will administer the interview questionnaire which would take about 10 minutes in a private room to ensure privacy of the responses. The study's data collection will span for 16 weeks. The data collected after the study will be stored under lock and disposed off after 5years.

#### **Possible Risks and Discomforts**

No discomfort would be felt since all the procedures to be carried out are non-invasive and pose no harm.

## **Confidentiality**

All information obtained for this study will be kept strictly confidential. We will not release any information about you to anyone

## **Voluntary Participation and Right to Leave the Research**

You are being asked to take part in this research by volunteering to be a participant. You are to understand that

1. Taking part in this research is entirely voluntary.
2. You may refuse to take part or withdraw from the study at any time without anyone objecting and without penalty or loss of any benefit to which you are otherwise entitled to.
3. Consent for child participation will be sought from parents/guardians

## **Contacts for Additional Information**

Further information pertaining to this research can be obtained from Dr Eugene Buah Enimah, on +233248462355 or email; [enimah.eugene@gmail.com](mailto:enimah.eugene@gmail.com) and the supervisor, Mrs. Urvashni Nirghin on the telephone number +27312607940 or email; [nirghinu@ukzn.ac.za](mailto:nirghinu@ukzn.ac.za)

## **Your rights as a Participant**

This research has been reviewed and approved by the Biomedical Research Ethics Committee (BREC) (Approval number BE342/19). If you have any questions about your rights as a research participant, you can contact the Administrator through the phone line (031) 260 2486 or email address: [BREC@ukzn.ac.za](mailto:BREC@ukzn.ac.za).

## APPENDIX III

### INFORMED CONSENT FORM

#### Certificate of Consent

I hereby give consent to participate in this research study which will involve myself completing one interview questionnaire and clinical assessment. I have read the foregoing information, or it has been read to me. I have had the opportunity to ask questions about it and any questions that I have asked have been answered to my satisfaction. Further information pertaining to this research can be obtained from Dr Eugene Buah Enimah, on +233248462355 or email; enimah.eugene@gmail.com and the supervisor, Mrs. Urvashni Nirghin on the telephone number +27312607940 or email; nirghinu@ukzn.ac.za. If I have any questions or concerns about my rights as a study participant, or if I am concerned about an aspect of the study or the researchers then I may contact BREC Administrator through the phone line (031) 260 2486 or email address: BREC@ukzn.ac.za. I hereby consent / do not consent to the audio recording of this interview. I consent voluntarily to participate as a participant in this study.

**Signature of Participant** \_\_\_\_\_

**Age of Participant** \_\_\_\_\_

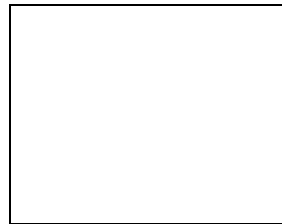
**Thumbprint of participant if illiterate**

**Date** \_\_\_\_\_

**Day/month/year**

\_\_\_\_\_

**Signature of Translator (Where applicable)**



## APPENDIX IV

### RECORDING SHEET

1. Main presenting ocular complaint: \_\_\_\_\_

2. Duration of main presenting ocular complaint: \_\_\_\_\_

3. Best corrected distant visual acuity: (a) Right eye \_\_\_\_\_ (b) Left eye \_\_\_\_\_

4. Main definitive clinical diagnosis: (a) Right eye \_\_\_\_\_

(b) Left eye \_\_\_\_\_

5. Location of ocular pathology: (a) Anterior segment ( )

(b) Posterior segment ( )

(c) Anterior and posterior segments ( )

(d) Extra-ocular ( )

6. Associated medical conditions. (a) HBP ( ) (b) DM ( ) (c) HIV/AIDS ( ) (d) cancer ( )

(e) Asthma ( ) (f) Others Specify \_\_\_\_\_

7. Are you on prescribed medicine (a) Yes ( ) (b) No ( )

Thank you

## APPENDIX V

### REFERRAL SHEET

**FACILITY: OUR LADY OF GRACE HOSPITAL, BREMAN ASIKUMA**

Name:

Date:

Age:

Time:

Residence:

The said client was referred from a general eye screening held as part of a research project undertaken in the Asikuma Odoben Brakwa district. Research Topic; A Survey of Traditional Eye Practices: A Case Study of Central Region in Ghana.

#### Reason for Referral

Refractive Error

☐

Glaucoma Suspect

☐

Cataract

☐

Conjunctivitis

☐

Pterygium / Pincuecula

☐

Stye/ Chalazion

☐

Others .....

**Signature .....**

**Optometrist: Dr Enimah Eugene Buah**

Tel: +233248462355

Email; [enimah.eugene@gmail.com](mailto:enimah.eugene@gmail.com)

## APPENDIX VI



05 June 2019

Dr EE Buah (219031318)  
School of Health sciences  
College of Health Sciences  
[219031318@stu.ukzn.ac.za](mailto:219031318@stu.ukzn.ac.za)

Dear Dr Buah

Protocol: A survey of traditional eye practices: A case study of central region in Ghana  
Degree: MOptom  
BREC Ref No: BE342/19

### BREC EXPEDITED APPLICATION: APPROVAL LETTER

A sub-committee of the Biomedical Research Ethics Committee has considered and noted your application received 02 May 2019.

The conditions have been met and the study is given **full ethics approval** and may begin as from 05 June 2019. Please ensure that site permissions are obtained and forwarded to BREC for approval before commencing research at a site.

This approval is valid for one year from **05 June 2019**. To ensure uninterrupted approval of this study beyond the approval expiry date, an application for recertification must be submitted to BREC on the appropriate BREC form 2-3 months before the expiry date.

Any amendments to this study, unless urgently required to ensure safety of participants, must be approved by BREC prior to implementation.

Your acceptance of this approval denotes your compliance with South African National Research Ethics Guidelines (2015), South African National Good Clinical Practice Guidelines (2006) (if applicable) and with UKZN BREC ethics requirements as contained in the UKZN BREC Terms of Reference and Standard Operating Procedures, all available at <http://research.ukzn.ac.za/Research-Ethics/Biomedical-Research-Ethics.aspx>.

BREC is registered with the South African National Health Research Ethics Council (REC-290408-009). BREC has US Office for Human Research Protections (OHRP) Federal-wide Assurance (FWA 678).

The sub-committee's decision will be **noted** by a full Committee at its next meeting taking place on **11 June 2019**.

Yours sincerely

Prof D Wassenaar  
Acting Chair: Biomedical Research Ethics Committee

cc: Postgrad Admin: [khumalot8@ukzn.ac.za](mailto:khumalot8@ukzn.ac.za)  
Supervisor: [Nirghinu@ukzn.ac.za](mailto:Nirghinu@ukzn.ac.za)

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#### Biomedical Research Ethics Committee

Professor V Rambiritch (Chair)

Westville Campus, Govan Mbeki Building

Postal Address: Private Bag X54001, Durban 4000

Telephone: +27 (0) 31 260 2486 Facsimile: +27 (0) 31 260 4609 Email: [brec@ukzn.ac.za](mailto:brec@ukzn.ac.za)

Website: <http://research.ukzn.ac.za/Research-Ethics/Biomedical-Research-Ethics.aspx>




Founding Campuses: Edgewood Howard College Medical School Pietermaritzburg Westville



## APPENDIX VII

**GHANA HEALTH SERVICE ETHICS REVIEW COMMITTEE**

*In case of reply the number and date of this Letter should be quoted.*

  
Your Health. Our Country.

MyRef.  
GHS/RDD/ERC/Admin/App/19/229  
Your Ref. No.

Eugene Buah Enimah  
C/o Our Lady of Grace Hospital  
P. O. Box 3  
Breman Asikuma

Research & Development Division  
Ghana Health Service  
P. O. Box MB 190  
Accra  
GPS Address: GA-050-3303  
Tel: +233-302-681109  
Fax + 233-302-685424  
Email: ghserc@gmail.com

18<sup>th</sup> June, 2019

The Ghana Health Service Ethics Review Committee has reviewed and given approval for the implementation of your Study Protocol.

GHS-ERC Number	GHS-ERC 044/05/19
Project Title	A survey of Traditional Eye Practices: A case study of Central Region in Ghana
Approval Date	18 <sup>th</sup> June, 2019
Expiry Date	17 <sup>th</sup> June, 2020
GHS-ERC Decision	Approved

**This approval requires the following from the Principal Investigator**

- Submission of yearly progress report of the study to the Ethics Review Committee (ERC)
- Renewal of ethical approval if the study lasts for more than 12 months,
- Reporting of all serious adverse events related to this study to the ERC within three days verbally and seven days in writing.
- Submission of a final report after completion of the study
- Informing ERC if study cannot be implemented or is discontinued and reasons why
- Informing the ERC and your sponsor (where applicable) before any publication of the research findings.
- Please note that any modification of the study without ERC approval of the amendment is invalid.

The ERC may observe or cause to be observed procedures and records of the study during and after implementation.

Kindly quote the protocol identification number in all future correspondence in relation to this approved protocol

SIGNED.....  
Dr. Cynthia Bannerman  
(GHS-ERC Chairperson)

Cc: The Director, Research & Development Division, Ghana Health Service, Accra

## **APPENDIX VIII**

### **INFORMED CONSENT FORM FOR HEAD OF COMMUNITY**

#### **Certificate of Consent**

I hereby give consent for this research study to be conducted in the community. I have read the foregoing information, or it has been read to me. I have had the opportunity to ask questions about it and any questions that I have asked have been answered to my satisfaction. Further information pertaining to this research can be obtained from Dr Eugene Buah Enimah, on +233248462355 or email; enimah.eugene@gmail.com and the supervisor, Mrs. Urvashni Nirghin on the telephone number +27312607940 or email; nirghinu@ukzn.ac.za. If I have any questions or concerns about my rights as a study participant, or if I am concerned about an aspect of the study or the researchers then I may contact BREC Administrator through the phone line (031) 260 2486 or email address: BREC@ukzn.ac.za. I consent voluntarily for this study to be conducted in the community.

**Signature of Head of Community** \_\_\_\_\_

**Thumbprint of Head of Community if illiterate**



**Date** \_\_\_\_\_

**Day/month/year**

\_\_\_\_\_

**Signature of Translator (Where applicable)**

# ASIKUMA - ODOBEN - BRAKWA DIST. ASSEMBLY



REPUBLIC OF GHANA

Tel: 0332 - 09 15 17

Our Ref: H.3/VOL.I/09

Your Ref: .....

In case of reply the  
number and date of this  
Letter should be quoted.



P. O. Box 36  
Bremam Asikuma

Date: 10<sup>th</sup> April 2019

## **RE: APPLICATION FOR APPROVAL TO CONDUCT A STUDY**

### **Letter of Approval**

I acknowledge with much gratitude, the receipt of your letter dated 8<sup>th</sup> April, 2019 with the above captioned subject addressed to this Office.

Furthermore, I wish to give this Office's approval to you to undertake the study in the 30 selected communities within this District.

Don't hesitate to revert to the undersigned in case of any challenges in any of the communities for possible redress.

Wishing you the very best and we continue to count on your usual cooperation.

**HARRY NII KWATEI OWOO**  
(AG. DISTRICT CO-ORDINATING DIRECTOR)  
For: **DISTRICT CHIEF EXECUTIVE**

DR. EUGENE BUAH ENIMAH  
EYE UNIT  
OUR LADY OF GRACE HOSPITAL  
**BREMAN ASIKUMA**

### **Cc:**

Hon. Presiding Member, Asikuma-Odoben-Brakwa District Assembly, **Bremam Asikuma**.  
Sister in Charge, Our Lady of Grace Hospital, **Bremam Asikuma**.

## APPENDIX IX



# NATIONAL CATHOLIC HEALTH SERVICE

ARCHDIOCESE OF CAPE COAST  
**OUR LADY OF GRACE HOSPITAL**



Our Ref: OLGH/EYE /19/0012  
Your Ref:

Post Office Box 3  
Bremas Asikuma, C/R


Tel: 0558338460/ 0209885013  
Email: ourladyofgracehosp@gmail.com

### LETTER OF GATEKEEPERS PERMISSION: EYE CLINIC

I hereby give permission to accept and treat participants referred in from this research. I have read the foregoing information, or it has been read to me. I have had the opportunity to ask questions about it and any questions that I have asked have been answered to my satisfaction. Further information pertaining to this research can be obtained from Dr Eugene Buah Enimah, on +233248462355 or email; enimah.eugene@gmail.com and the supervisor, Mrs. Urvashni Nirghin on the telephone number +27312607940 or email; nirghinu@ukzn.ac.za. I consent voluntarily to receive and treat participants from this study.

Head of Department: **Dr Mercy Dawson**

Signature of Head of Department

  
OPHTHALMOLOGIST  
OUR LADY OF GRACE HOSPITAL  
P. O. BOX 3  
BREMAS ASIKUMA

In God is our Help and our Health